UNIVERSITY OF KENTUCKY

COLLEGE OF AGRICULTURE

Extension Division

THOMAS P. COOPER, Dean and Director

CIRCULAR NO. 275

(Revised)

Profitable Turkey Management

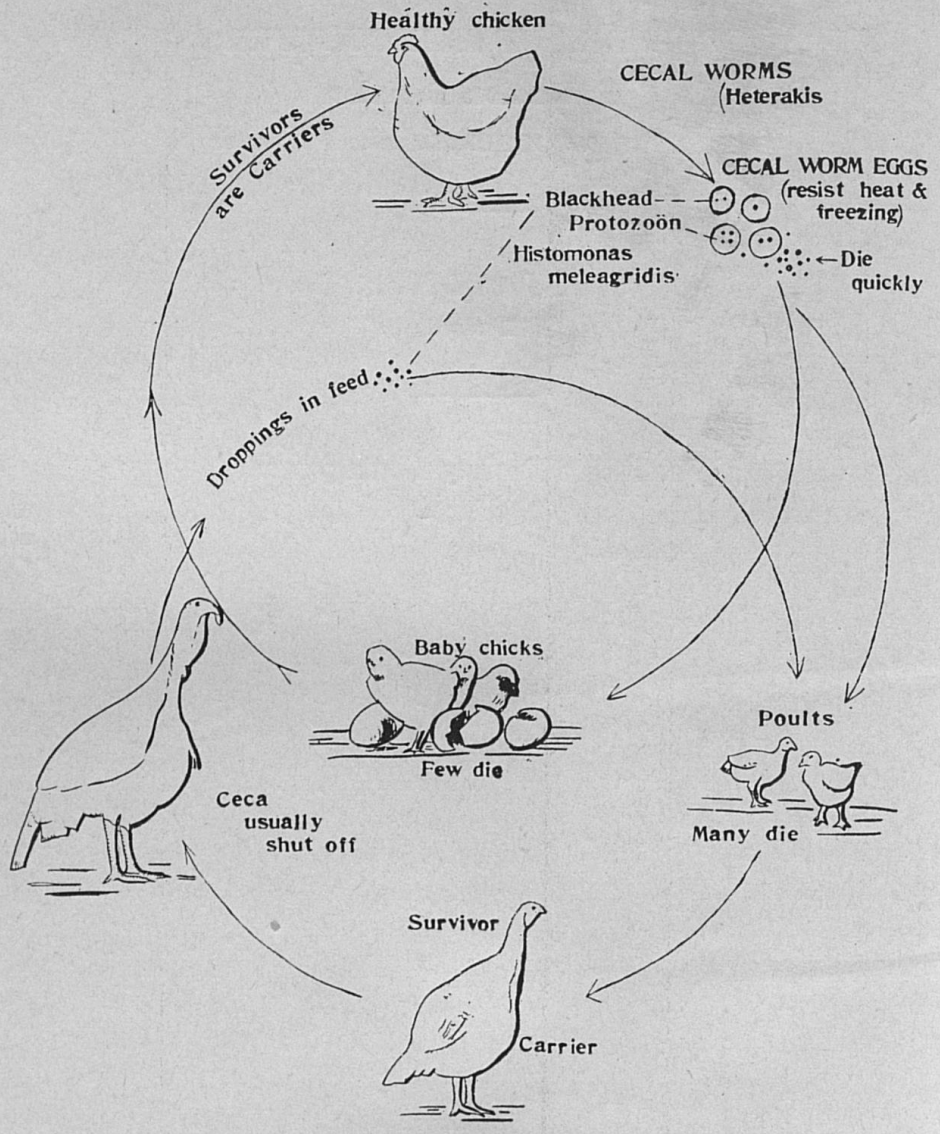
"Bred in Old Kentucky"

Lexington, Ky.

March, 1937

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

CHICKENS AND TURKEYS "DON'T MIX"



BREAK THE CYCLE

Following the arrows it will be noted that cecal worms (*Heterakis*) which are in the chicken's ceca produce eggs that are given off in the droppings. Some of these eggs contain the germs (*Histomonas meleagridis*) which cause blackhead. Cecal worm eggs resist the heat of summer and freezing of winter and the blackhead germs within them are protected. Those blackhead germs which are not within cecal worm eggs die quickly. The cecal worm eggs may be picked up either by young poults or baby chicks. If they are picked up by poults most of the poults die of blackhead soon after the cecal worm eggs hatch and permit the blackhead germ to get into the turkey's blood stream. An occasional turkey survives and is a carrier of blackhead, altho the ceca usually are so diseased that they are stopped up. Those infected turkeys which grow to maturity pass the disease on by means of droppings which fall into the feed of the next generation of young poults. If baby chicks pick up the cecal worm eggs which have within them the blackhead germ, few of these chicks die. They grow to maturity carrying the blackhead germs as well as the cecal worms in their ceca. These chickens then serve as a source of spreading both the cecal worms and the blackhead germs. To control blackhead the cycle must be broken. The simplest way to break it is to *keep chicken droppings out of the reach of young poults*, and turkey droppings out of the poult's feed. Raising turkeys on clean ground, away from chickens accomplishes this end.

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Profitable Turkey Management

By J. HOLMES MARTIN

In 1935 turkeys were raised on 28,459 farms in Kentucky. Even tho the average flock consists only of one tom and 5 or 6 hens, the annual income from turkeys in Kentucky exceeds a million dollars. Kentucky stood eighth among the 48 states in turkey production according to the 1935 census. In the past few years a number of Kentucky farmers have expanded their program and raised as many as 1,000 or more turkeys (in one case 5,000) in one year.

SANITARY PRECAUTIONS

Partial confinement combined with sanitary precautions must be adopted if the mortality of poults is to be greatly lessened. The adoption and practice of approved methods has proved profitable to many Kentucky turkey raisers. Intestinal worms and blackhead are the greatest source of loss. The surest method of avoiding loss is to raise poults on clean ground which has not been used for either chickens or turkeys the previous two seasons. Even if the ground is uninfested, it may easily become infested if chickens are allowed to run with the turkeys. If chicken hens are used to brood young poults, they should be kept confined to a brood coop with a floor. This floor should be thoroly cleaned at least once a week and the litter and droppings removed out of reach of the poults.

GROWTH AND FEED CONSUMPTION

A turkey consumes approximately 4 pounds of feed per pound of body weight, during the first six months of its life. The following table should be of assistance in calculating the feed requirements of a brood of turkeys.

Age	Feed Consumption Per Turkey	
	Grain and Mash	
	Average	To Date
1 to 4 wks.	2 lbs.	2 lbs.
5 to 8 "	5 "	7 "
9 to 12 "	7 "	14 "
13 to 16 "	11 "	25 "
17 to 20 "	16 "	41 "
21 to 24 "	19 "	60 "

In order to determine if the young stock is growing normally it is wise to weigh a few average size birds every few weeks and compare them with normal weight for their age. The normal rate of growth for Bronze turkeys is indicated in the following table.

NORMAL GROWTH RATE OF BRONZE TURKEYS

Age	Males	Females
4 wks.	14 oz.	12 oz.
8 "	3 lbs. 2 oz.	2 lbs. 11 oz.
12 "	6 " 9 "	5 " 4 "
16 "	10 " 5 "	7 " 11 "
20 "	14 " 8 "	9 " 11 "
24 "	18 " 4 "	11 " 2 "
28 "	21 " 6 "	12 " 8 "

A 16-pound young turkey tom has consumed approximately 64 pounds of feed, and an 8-pound capon about the same amount. Hence it is more profitable to produce turkeys than capons *if the mortality is low* in both cases. However, feed consumed by the poults that die before reaching market age must be paid for by those that live; so it is obvious that *high mortality,* especially after the first two weeks, *will offset most of the profit.*

SELECTION AND CARE OF BREEDING STOCK

If the breeding stock is vigorous, poults of any breed may be raised in confinement. In selecting breeding stock, constitutional vigor is of most importance. Vitality is the foundation of any breeding program. Many turkey raisers make the mistake of keeping late-hatched, undersized birds for breeders because the larger birds top the market and bring a greater cash return. Breeding stock free from crooked breasts should be selected in the fall of the year before any birds are sold on the Thanksgiving market. It should be kept in mind that rapid growth and early maturity are inherited characters and that all slow-growing, late-maturing birds should be marketed. An extra tom should be saved. Well-matured young hens may be used, altho yearling hens are to be preferred. Hens may be kept several years if they continue to lay well. The only disadvantage of yearling or adult hens is that they do not start laying so early or lay as many eggs during the hatching season. It is possible to increase the egg production by selection of the turkey breeders for high egg production just as with chickens. However, this necessitates the use of the trapnest, which involves extra labor when the caretaker is busiest. Since turkey eggs may be used on the

family table fried, scrambled or boiled or may be used in many recipes (using 2 where 3 chicken eggs are called for), the breeding of turkeys for high egg production in seasons other than the spring may pay well. As many as 15 hens can be mated to a vigorous tom with good results. Toms weighing 20 to 25 pounds (when not fat) are best, as birds weighing much more frequently injure the hens. If the tom's toenails and spurs are sharp, they should be trimmed with a file. If heavy toms still injure the backs of the smaller hens, canvas saddles should be used on the hens. If the toms fight, alternate them. Never inbreed turkeys. If careful not to mate parent to offspring, nor brother to sister one need fear no ill effects from other degrees of relationship. Confine the breeders to small yards or pasture lots (with ample green feed) during the breeding season, so that the eggs may be easily found and gathered often. While a five-foot fence is desirable, turkeys have been confined by a four-foot fence when sufficient feed is available in open hoppers or range self-feeders. It may be necessary to clip one wing of the hens, but the tom's wings should not be clipped. Provide nests of old barrels (laid on the side) or boughs arranged in tee-pee fashion.

LAYING MASH

During the breeding season the turkeys should be given a dry mash. They should receive a laying mash early in January. A satisfactory mixture consists of 200 pounds of mixed wheat feed (bran and middlings), 200 pounds of coarse-ground yellow corn, 100 pounds of high-grade tankage or meat scrap, and 5 pounds of salt. This mixture or any good laying mash fed the chickens should be kept before the turkeys thruout the breeding season. It is highly desirable to add 2 percent (1 quart per 100 pounds) of a fish liver oil such as cod liver oil or sardine oil. Limestone or oyster shell should be available. Artificial light from 4 a. m. to daylight, starting in January, increases the lay of February and March eggs, but under such conditions the fertility may be low if the weather is cold and stormy.

FEED CONSUMPTION

An average size turkey hen on full feed eats about 3¼ to 3½ lbs. per week in the fall and winter and 2¾ lbs. per week in the spring. If kept on a maintenance ration, chiefly of grain in the summer, the consumption will run 1¼ to 1½ lbs. per week. This is a total of 120 pounds of feed (grain and mash) per year for a

mature hen. Mature toms consume about twice as much as hens.

EGGS FOR HATCHING

Turkey eggs of all sizes may be set and good hatches received. Abnormally large eggs do not hatch as well as those of average size. In filling orders for hatching eggs select eggs of uniform size. The eggs should be kept in a cool place above freezing and below 68° F., preferably between 50° and 60° F. It is best to set the eggs before they are ten days old, altho fair hatches have been had from eggs four weeks old. If kept for a week or more it is advisable to turn the eggs daily. An egg case containing duckegg fillers, which may be obtained from a huckster or produce dealer, is a very satisfactory container for holding and shipping turkey eggs. Do not use the plain, smooth, cardboard flats as there will be more breakage than if cup-type flats are used. If the eggs are held in an egg case it is a simple matter to turn them by propping the case against the wall and reversing ends daily.

NATURAL INCUBATION

Turkey eggs require 28 days to hatch. The eggs may be set under chicken hens, turkey hens or in incubators. For Kentucky, April and May are best for hatching. Late June and July hatched poults are hard to raise. Mortality is higher and crooked breast bones more common among late-hatched poults. A chicken hen should cover 10 turkey eggs and a turkey hen 15 to 18. There is little if any difference between the chicken and turkey hen for hatching. Do not interfere with the hen during natural incubation, only make sure that she is free from lice and mites and gets sufficient feed and water.

Lice live on the body of a turkey and can best be controlled by dusting the broody hen with sodium fluoride before she is set and again a week before the eggs are due to hatch. *Mites* live around the roosts and in the brood coops and crawl on the birds at night to suck the blood. They may be controlled by painting or spraying the coops and the roosting quarters with crankcase drainings or cresol stock dip.

ARTIFICIAL INCUBATION*

Any good, well-ventilated incubator will hatch turkey eggs if carefully operated. Adjust the thermometer so that the bottom

*"Incubation Experiments with Turkey Eggs," Ky. Exp. Sta. Bul. 359, reports results of interest to those who plan to hatch turkey eggs artificially. A copy may be obtained from the College of Agriculture, Lexington, Ky.

of the bulb is 1⅞ inches above the tray and just clears the top of the eggs. Keep the temperature at 100½° F. the first week, 101½° the second, 102½° the third week and 103° the fourth week. A temperature of 103½° to 104° (at the level of the top of the eggs) during the last week injures the poults and decreases the hatch. Turn the eggs 4 to 6 times daily, from the second day until the first egg pips. In the sectional incubator it is desirable to rotate the turning crank over, back and over, so that the turning device passes across the tray, then back and across again at each turning. This ensures all eggs being turned.

Artificial incubation is aided by more moisture, especially the last week of incubation. The humidity within the incubator may be increased by placing moist sand in the trays or by additional pans. Darken the incubator door while the hatch is coming off, and do not open it except when absolutely necessary.

When incubating turkey eggs in a forced-draft incubator, keep the same temperature which has given the best hatches with chicken eggs.

Turkey eggs require as much moisture during incubation as chicken eggs, if not more, especially during the last three days of incubation. The relative humidity should be about 60% until *just before the eggs pip, when it should be increased to* 70%. If the forced-draft incubator is run at 99½° F. (dry bulb) this means a wet bulb temperature of about 88° F., until the twenty-fifth day and 90 to 91° F., while the eggs are hatching.

Observation of the size of the air cell in the large end of the egg, by means of an egg candler, gives the operator a guide on the rate of evaporation. If the incubator has insufficient moisture, the air cell increases in size too rapidly.

Faulty incubation frequently results in weakened poults. These physical handicaps may last several days and later cause mortality sometimes attributed to other factors such as feed, brooding temperature, litter and the like.

Artificial incubation will increasingly play a large part in the development of the turkey industry, since sufficient experimental work has been done to show that turkey eggs hatch well in most well-built incubators, if properly managed.

Until experimental results indicate the desirability of a change, it is wise to follow, with turkey eggs, those incubation procedures that have given the best hatches with chicken eggs.

METHOD OF BROODING

Artificial brooding of poults eliminates most of the dangers from lice, mites and diseases from the mother hen. A 10′ x 12′ brooder house such as is commonly used for chicks, provides room for 100 to 150 poults. (See Fig. 1). A coal or oil colony brooder stove or a brick brooder in which green hardwood is burned may be used. Instructions for building the brick brooder and the brooder house

Fig. 1. A healthy brood of poults raised in semi-confinement at the Robinson Substation in Breathitt County, Kentucky. (Note brooder house in which poults were brooded under a colony brooder stove until 10 weeks of age).

may be had from the College of Agriculture without cost.* Coarse sand or fine gravel is satisfactory for litter and its use avoids the fire hazard of wheat straw or shavings. Poults tend to eat the litter if feed is not available at all times in open hoppers, especially when the poults are first put into the brooder. If colony brooder houses are built especially for the poults the expense of a floor may be avoided and the brick brooder built on the ground if the brooding area is far enough away from barns and other outbuildings to avoid trouble from rats. The same equipment that was used for an early brood of chicks may be used for brooding poults provided it is thoroly scraped, swept, scrubbed with lye water (a 13-oz. can of lye in 13 gal. of water) and then disinfected. Have a small opening on each side of the colony brooder house and alternate the poults in

*Send for Kentucky Extension Circular 157 "Brooding Chicks Artificially." Electric hovers of the latest type and oil burners which consume the vaporized oil (kerosene) may be used with satisfactory results in brooding poults.

the small runs or yards. If crows, owls and hawks are troublesome it is wise to stretch cord or twine back and forth (6 inches to a foot apart) over the top of the yard where the young poults range. This frightens wild birds as they seem to be afraid of becoming entangled in the string.

A brood coop (see Fig. 2) is a necessity in raising poults by the

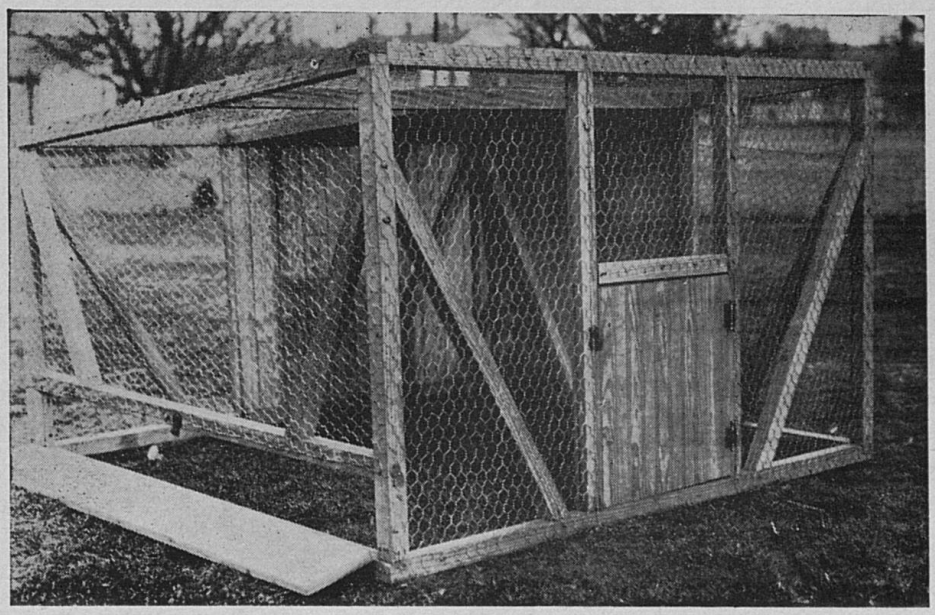

Fig. 2. Turkey brooding coop for hen and 15 to 20 poults. The coop is 5 feet square, and has one corner protected with top and sides. Blueprint plans may be secured at cost (10c) from the College of Agriculture, Lexington. Ask for blueprint No. Ky. 11-7171-1.

natural method. The coops should be placed in a clean pasture, several yards apart. A turkey hen with 15 to 20 poults should be placed in each coop. It is a good plan to confine them to the coop until the poults are a week old. Move the coops 15 to 20 feet once each week. If the weather is suitable during the first week the long, narrow door may be opened to let the poults out while the hen is still confined to the coop. After the first week the hen may be let out with the poults where other poultry does not range. The hen with her brood should always be put back into the coop at night and the doors shut to keep out prowling animals. On stormy or rainy days leave the hen and poults confined to the coop until the weather is clear. Little pools or puddles of stagnant water to which the turkeys go to drink are often sources of blackhead infection. The coop should be used as a shelter until the poults are large

enough to roost in the open. If the turkeys are being brooded on a hillside, place the coops at the bottom of the hill and gradually move them up. Since narrow roosts have been known to cause crooked breasts, roosts at least 4 inches wide should be provided if trouble from this source has been common in the flock. Do not put roosts close to the fence as the birds are inclined to fly over when

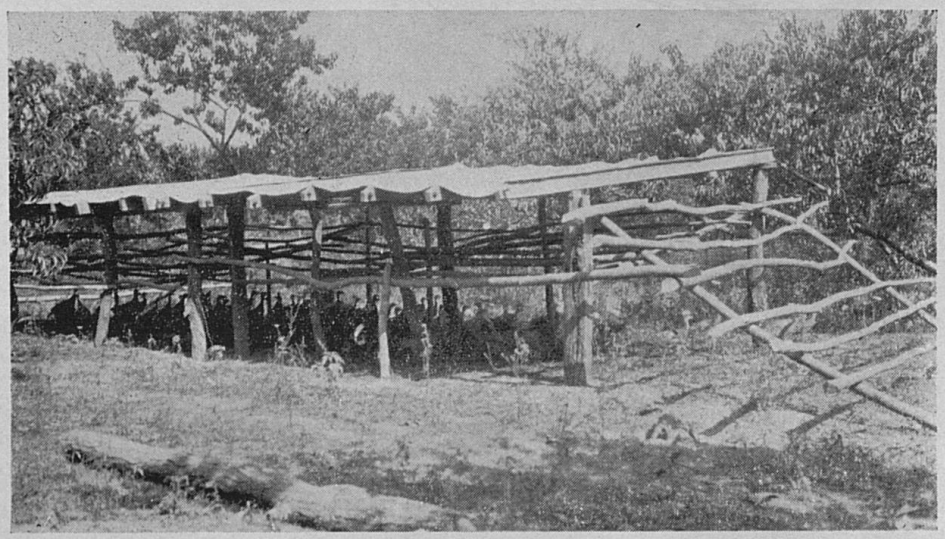

Fig. 3. Roosting shed for turkeys in a peach orchard.

leaving the roosts in the morning. It is advisable to have a roof over the outdoor roosts (see Fig. 3) to which the poults are transferred when moved from the brooder house, unless these roosts are well protected by trees.

In the fall, when the young turkeys have become attractive to thieves, it is wise to drive the flock to a yard or pasture close to the residence. If this is impractical, the roosting quarters or range may be lighted with cannon-ball torches (such as those used on highways under repair) so the flock can be seen from the residence during the night. If a few guinea eggs are set with the turkey eggs and the young guineas are raised with the turkey poults, they will serve to warn the owner in event an attempt is made to steal the turkeys.

FEEDING POULTS

The use of cottage cheese, baked corn bread and other costly, troublesome delicacies is to be discouraged, as it seldom results in the giving of a uniform, well-balanced ration.

During the first few weeks, poults require a higher percentage of

protein than do chicks. Any formula that has been fed chicks with good results may be fed poults; the protein level may be increased by also feeding buttermilk or skimmilk. If sour milk is fed, the whey as well as the clabber should be given. Crooked breast bones may result from feeding a ration too low in certain essential minerals (particularly phosphorus) and vitamin D. The rations recommended herein provide these essentials as well as the other important nutrients in ample amounts and suitable proportions. The following rations are recommended to persons who wish to mix their own feed. The local miller or feed dealer will mix a ton of the mash if several customers request feed of the same formula.

Dry mash should be available in self-feeders when the poults are removed to the brooder. Allow five feet of mash-hopper space, both sides of which are available, and two 1-gallon fountains, for 100 poults. After the first week poults are ready for self-fed grain. Place a mixture of equal parts wheat and coarse-ground corn (not sifted cracked corn from which the germs have been removed) in open hoppers and the poults will gradually increase their consumption of grain. Shelled corn may be fed as soon as the poults are large enough to eat it. Turkeys fatten better in the fall on crushed or cracked corn than on whole. No special fattening feed is needed if the turkeys are fed a good growing ration. Poults do not like dry mash well enough to overeat of it at any time. Place fresh mash in the self-feeders every day, putting in only as much as the birds will consume in 24 to 36 hours. When the mash hoppers are placed out-of-doors they should be protected by a projecting cover or roof. If a driving rain should dampen the mash, do not add more dry mash until the wet mash is consumed. It is almost impossible to supply too much hopper space to growing stock (See Fig. 4). When dry mash is first fed, green alfalfa leaves or clabber sprinkled on the mash aids in inducing the poults to eat the mash. After the poults are 6 to 8 weeks old the fish-liver oil should be omitted from the mash, unless the birds are confined.

FORMULAS

If an ample supply of milk is available, mash mixture No. 2, 4 or No. 5 should be fed. If the ingredients of mash mixtures No. 1 to No. 4 are not available, the simple all-mash formula No. 5 may be mixed at home and fed with skimmilk or buttermilk.

Farmers' Bulletin No. 1409* recommends the following two starting mashes to feed poults during the first six to eight weeks. Starting mash No. 1 is preferred if liquid milk is not available.

U. S. Starting All-Mash	No. 1
Ground yellow corn	17 lbs.
Dried milk	17 "
Meat scrap (50% protein)	13 "
Middlings (shorts)	12 "
Finely ground oats (including the hulls)	12 "
Bran	12 "
Fish meal (65% protein)	8 "
Alfalfa leaf meal	6 "
Cod liver oil†	2 "
Salt	1 "
Total (protein 26%)	100 lbs.

U. S. Starting All-Mash	No. 2
Yellow corn meal	45 lbs.
Middlings (shorts)	15 "
Bran	15 "
Meat scrap (50% protein	12 "
Fish meal (65% protein)	5 "
Alfalfa leaf meal	5 "
Cod liver oil†	2 "
Salt	1 "
Total (protein 19%)	100 lbs.

"Starting mash No. 2 is advised for feeding when liquid skimmilk or buttermilk is kept before the poults at all times. Some water is furnished, allowing one dish of water to several of milk. These starting mashes are fed without scratch grain; but water, green feed, and hard grit such as fine gravel, coarse sand, or commercial granite grit should be supplied."

Kentucky Turkey Starters

(Feed these mixtures dry along with grain. Use No. 4 when liquid milk is fed)

Ingredients	No. 3	No. 4
Ground yellow corn	20 lbs.	40 lbs.
Mixed wheat feed or shipstuff	35	30
Finely ground or pulverized oats	10	10
Meat and bone scrap (not tankage)	17	7
Dried buttermilk or skimmilk	10	(liquid)
Alfalfa meal	5	10
Fish liver oil†	2	2
Salt	1	1
	100 lbs.	100 lbs.

All-Mash Formula—No Grain Needed
(To be fed with liquid milk)

	No. 5
Ground yellow corn	7 lbs.
Mixed wheat feed	3 "
Bone meal	½ "
Salt	3 level tablespoonfuls

*Farmers Bulletin 1409, "Turkey Raising," by Marsden and Lee, may be secured thru the county agent.

†A fish liver oil such as cod liver oil or sardine oil altho desirable is not essential if the poults are out in direct sunshine several hours each day. One pint of the oil weighs approximately one pound.

Both the all-mash and milk must be available at all times and the poults should receive green feed and direct sunshine. In event the poults do not have several hours of direct sunshine daily, add 2% of cod liver oil to No. 5.

When it is desired to change the poults to a growing mash at 6 to 8 weeks of age the following formula No. 6 may be used.

Growing Mash—Feed With Grain

(For growing poults and breeders receiving grain)

	No. 6
Mixed wheat feed	200 lbs.
Ground yellow corn	100 "
Ground oats or barley*	100 "
Meat and bone scrap	100 "
Salt	5 "
	505 lbs.

Fig. 4. Outdoor self-feeders provide grain and mash for young stock. Blueprint plans for construction may be obtained from the College of Agriculture, Lexington, at cost (10c). Ask for blueprint No. Ky. 11.7271-11.

NEW CORN

New corn as well as any grain in the milk stage may cause indigestion in young turkeys. Early in the fall it is best to keep the turkeys out of the cornfield, but if they get green corn and have indigestion, usually a tablespoonful of castor oil given each turkey will be of some help. However, they must be treated as soon as they show signs of sickness. Turkeys should be fed and fattened on old corn or new corn that has been thoroly dried. As soon as new corn

*If oats or barley are not available increase the corn to 200 pounds.

is dry enough to shell and grind it is perfectly safe to feed to turkeys. If it is impossible to fence the turkeys away from green corn, they should be fed a mixture of whole oats and old corn liberally the first thing in the morning, so that their appetite for grain will be well satisfied before they roam to the cornfield.

LICE AND MITES

Lice cause the loss of many poults each year. The control of lice and mites is very simple when the poults are hatched in incubators and brooded artificially. With natural methods, when a hen is set she should be thoroly dusted with sodium fluoride, a powder which may be purchased at the drug store for about 40 cents a pound. This should be repeated a week before the hatch is due. If lice do get on the poults it is best to put a little melted lard on the head of each at night or, if more than a week old, each poult may be dusted with 2 pinches of sodium fluoride. The hen should be dusted with sodium fluoride before she is let out in the morning.

The brood coops should be kept clean and free from mites. This can be done by cleaning and spraying the coops thoroly with crank case drainings or a 5 percent solution of some cresol stock dip or carbolineum. Thirteen tablespoonfuls (a pop bottle full) of the dip to one gallon of water makes a solution of this strength.

BLACKHEAD

Blackhead in turkeys may be much more easily recognized by the condition of the liver than by the appearance of the head. In many cases of blackhead there is no change whatever in the appearance or color of the head. The dark color of the head means nothing more than that the bird is "off feed," which has caused a slow movement of the blood to the head parts. This may or may not occur when the actual disease of blackhead is present. The general symptoms of the disease are unthrifty appearance, ruffled feathers, and drooped wings. A greenish-yellow diarrhea frequently accompanies the disease, but it is only a symptom, not the disease itself. The only way to positively diagnose a case of blackhead is to kill and cut open the sick poult and examine carefully the liver and the ceca. The ceca, or blind guts (the poult's appendix) are found at the very end of the intestinal tract just a short distance from the vent. In bad cases the ceca are greatly enlarged and inflamed and usually contain a firm, bloody, cheesy material. The liver is usually enlarged and

has on its surface spots or areas which appear very much like rotten spots on an apple (see Fig. 5). These may vary in size from a pea to a half dollar. The areas are firm and appear slightly sunken. If the liver is cut, it will be seen that these spots extend deep into the tissue.

Vaccination for blackhead has not proved a practical method

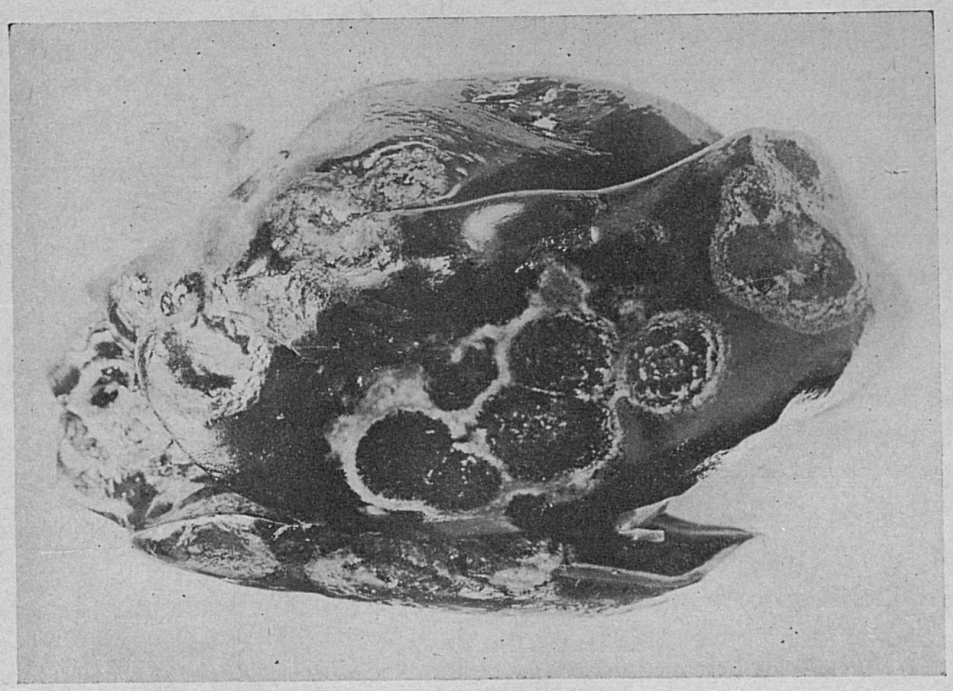

Fig. 5. A typical blackhead liver showing large diseased areas on surface.

of preventing infection. If one has had a heavy mortality in past seasons it is advisable to put into practice the recommendations given herein. Sanitary measures give more promise for the control of blackhead and intestinal parasites than all the medicines, vaccines and tonics on sale. Sanitation cannot be purchased, it must be practiced*

Vaccination for fowl pox has proved effective in the control of pox and fall colds (roup) in turkeys.

THE REAL DANGER

One of the greatest dangers in turkey raising is contaminated soil. The importance of raising turkeys on fresh ground away from

*Details of a sanitation program for chicks that can be applied equally as well to turkeys are given in Kentucky Extension Circular 265 "Poultry Parasites and Sanitation," which can be secured from the county agent.

chickens cannot be overemphasized. Chickens have been found to be carriers of blackhead. Many farmers say that it is impossible for them to provide a special range for young turkeys. In such cases they may find it practically impossible to raise turkeys. The organism which causes blackhead lives over from season to season in the soil, consequently, ground on which chickens or turkeys have run usually is contaminated. Much of this danger of infection may be avoided by raising the poults on fresh ground each year. If the young poults should become infected with the blackhead organism, the danger would be greatly minimized if the soil were free from the common intestinal parasites of chickens. The tiny intestinal worm known as the pin worm, or cecal worm, which is found so commonly in chickens, also infests young turkeys. The young turkeys swallow the eggs of this worm and the eggs hatch in the poult's intestines. It is known that this worm egg carries the blackhead germ which causes the dreaded blackhead disease.

The conclusion should not be drawn that the cecal worm itself causes the disease. However, this worm which is the carrier of the blackhead organism permits the blackhead organism to gain entrance to the intestinal tract from which it goes into the blood stream of the young poult. Once the blackhead organism is in the blood, there is no known way to cure or control blackhead. There is no remedy that expels all cecal worms, so the only solution is to keep turkeys free from cecal worms and blackhead germs.

INTESTINAL PARASITES

If the soil of the turkey range is thought to be infested with roundworms,* the danger of loss from this source may be greatly lessened by adding 4 pounds of tobacco powder (1.9% nicotine) to each 100 pounds of growing mash. There is no known remedy that expels all tapeworms*, altho kamala and iodine vermicide are partially effective against them. In giving the remedy it is a good plan to try the dosage suggested on the package on a few poults to observe the results before treating the entire flock. The use of worm expellents usually retards growth of the treated poults, altho untreated poults would not grow rapidly if they harbored a large number of intestinal worms.

* Roundworms are round threadlike worms which reside loosely in the intestines and are more easily expelled. Tapeworms are flat and segmented (like earthworms) and bury the head (scolex) deeply into the wall of the intestines. Each segment when released may contain from 200 to 300 eggs.