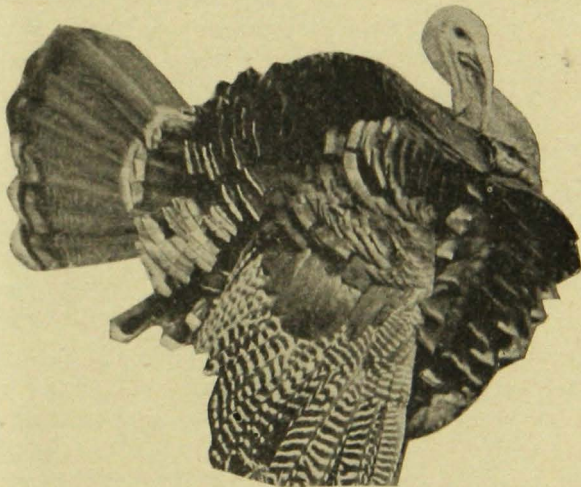


TALKING TURKEY

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By
Dr. W. A. Billings



On most farms turkey raising has become a gamble. So much so that turkeys are becoming extinct in many sections. This booklet attempts to outline a plan whereby turkeys may be domesticated and raised in confinement. We believe the suggestions are practical.

UNIVERSITY OF MINNESOTA AGRICULTURAL EXTENSION DIVISION

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FOR the last ten years or more efforts have been made to raise turkeys by so-called artificial means. In the main, most of the trials have been successful. For two years in succession the

Minnesota Agricultural Experiment Station made tests of artificial incubation, brooding,

BROADCASTERS and close confinement of the flock. The success was so gratifying that the Extension division determined to put it into practice

on the farm. After two years of trials on several thousand farms, several hundred of which have been under the direct supervision of the writer, this plan has been a complete success. The whole plan is nothing more than a plain, common sense attempt to put **REAL SANITATION** to work. Hundreds of enthusiastic growers will testify to the success of the method.

The centers of our turkey population are constantly shifting. First one state and then another has led in producing the greatest numbers of our national holiday bird. Owing to these waves

in production in the various states we hear from time to time that the turkey is on its way to **BECOME EXTINCT**. If you

A LITTLE TURKEY HISTORY

care to travel back a few years the noticeable thing is that the industry seems to be constantly shifting to a new and more or less virgin territory—that is, so far as tur-

key growing is concerned. The middle and far western states are now raising turkeys heavily. The question is, then, How long will they continue to be profitable?

In some sections of the United States and even in this state, a farmer will say, "**WE USED TO RAISE A LOT OF TURKEYS BUT WE CAN'T DO IT ON THIS FARM ANY MORE.**" This, in brief, has been the general opinion of the majority of ex-turkey-raisers. The chicken population has always been more or less stationary as to distribution. It is generally conceded that it is not especially difficult to raise a few hens. Raising turkeys has never been standardized as has raising chickens. It has been a "hit or miss" affair with emphasis on the "miss." There is very **LITTLE LITERATURE ON TURKEYS**. Until the last few years, little or no experimental work has been done at the experiment stations on the important subjects of incubating, brooding, and feeding.

A certain farmer said the other day that he would like to raise a few turkeys but didn't see how he could very well because he didn't have any trees on the farm. Another farmer doesn't like them because they get him into trouble with his neighbors.

A TREELESS TURKEY FARM

Very often you hear the statement that after the birds "shoot the red" the chances are better to avoid losses from any of the various diseases. This is a FAIRY TALE. They will die of blackhead, become infested with lice, or HAVE ANY OF THE DISEASES of turkeys regardless of the state of "red." There is about as much truth in this statement as in the common practice of giving chickens cayenne pepper to make them lay more eggs in the winter months.

SHOOTING THE RED

The whole field of turkey husbandry is crowded with superstitious beliefs about turkeys. Some say they can not be domesticated and that they are as WILD AS HAWKS and must be kept as nearly like their wild ancestors as possible. Turkeys are not wild. They are EASILY DOMESTICATED. If the chickens were encouraged to be wanderers as turkeys are we would not call them domesticated either. Turkeys are docile and gentle by nature. They respond quickly and thrive in domestication. Instead of gradually making it easier for turkeys to stand confinement we have deliberately bred for wildness, even to the extent of introducing wild blood occasionally. The WILD BOAR doesn't stand confinement gracefully, but we now have the pig family pretty well satisfied with their lot.

ARE THEY WILD?

Before trying to raise turkeys, get all the information you can about them. Learn what diseases they are likely to have and be able to recognize them when they occur. For example, BLACK-HEAD is an important disease of turkeys. We know of hundreds of turkey raisers who do not know that this disease has nothing to do with the color of the bird's head. Another thing, don't try to go in for turkey raising blindfolded. Don't start in too heavily. Begin on a small scale and grow up. You will learn a lot

BECOME
TURKEY WISE

more than any one can tell you in a booklet of this kind. WE ARE TRYING TO POINT OUT ONLY THE BIGGEST PITFALLS. There are others too. It is generally known that poults suffer from LICE but nothing is done about it. Recently on a farm visit we found a flock in which there had been many deaths. We suspected blackhead but were disappointed. THE BIRDS WERE SIMPLY WALKING OFF WITH LICE.

When one starts in to read the available literature on turkeys he is confronted with varying opinions on this subject and that. He may wonder who is right. As a general thing the differences are of minor importance. All mothers don't raise their babies just exactly alike but they are agreed on the fundamentals with some mental reservations. This little booklet aims to discuss with the reader quite informally the subject we are both interested in. No attempt is made at COCKSURENESS.

In order to try successfully anything that is new we must approach it with an open mind. In order to make your turkey operations a success, a clear understanding of what is required is necessary. If you are interested enough to read this booklet through, you are making a start in the right direction. YOU DON'T BE AN "IN AND OUTER" CAN RAISE TURKEYS if you understand the difficulties and make an honest effort to overcome them. If you don't make a hundred per cent success the first season, DON'T QUIT. Perhaps you have made some mistakes or tried to make some short cuts or thought some of the suggestions made are unimportant.

You may be asking yourself—Why all this preliminary talk? Why raise turkeys in confinement, anyway? CHICKENS AND TURKEYS DON'T MIX In order to make ourselves clear we will have to understand the bane of all turkey growers—that is, this disease blackhead. I do not mean to imply that other things do not kill turkeys. They do, but we can OVERCOME THE OTHERS EASILY.

The readers who have had a good measure of success using their present methods will not want to change. Those who are

disgusted with turkeys from some previous sad experience, but are willing and generous enough to try something new, will find the suggestions here

**LET'S TRY IT
OUT ANYWAY**

given novel, perhaps, but the best part of it is—THEY ARE WORKABLE. THE MINNESOTA EXPERIMENT STATION HAS PRACTICED ARTIFICIAL INCUBATION, BROODING, AND CONFINEMENT OF FLOCKS FOR THREE YEARS WITH GOOD SUCCESS.

The workers have tried them out, and while they are not completely satisfied they feel that they are on the right track. Other institutions besides Minnesota have reported good results.

Any farmer will admit that turkeys usually bring a good price. The stickler is to have the turkeys to sell. Many have tried and failed with them for various reasons. Under the present system the business is too precarious to be attractive. Many people keep at it because the price stays good—otherwise they wouldn't fool with turkeys a minute.

**HERE'S THE
PLAN**

Even with a 50 per cent loss, turkeys have continued to pay a good profit. The thing, then, to do is to reduce these losses from 50 and even 75 or 80 per cent to perhaps as low as from 10 to 20 per cent. TO MAKE A LONG STORY SHORT, we are going to attempt to do it by what are usually termed artificial means. Turkeys have been raised in confinement here and at several other experiment stations, on a small scale. Even with limited space it has been clearly demonstrated that turkeys are EASILY DOMESTICATED and can be SUCCESSFULLY RAISED IN COMPARATIVELY CLOSE CONFINEMENT.

The idea is not new and neither is it original. For as long as 20 years turkeys have been artificially hatched and brooded. The mortality of baby turkeys is too large. These losses are sometimes due to mismanagement, faulty feeding, inconsiderate hen mothers, lice, mites, and last but not more to be dreaded than

**THIS IDEA
IS NOT NEW**

all the rest—Blackhead. Blackhead is said by some writers to be a disease of old turkeys, while others say that only the young are affected. As a matter of fact it is both. The young turkey may suffer most, and many losses due to blackhead pass unnoticed

or unrecognized or are blamed to other causes, such as the "dew on the grass."

The thing that has had us all guessing the last few years is how to prevent and cure blackhead. This is the disease that has been the limiting factor in turkey raising. It has actually driven people out of the business. Perhaps they will not admit this. However, it is a good bet that they don't know the disease when it exists. **MOST GROWERS DON'T. NOW THEN, LET'S TACKLE THIS PROBLEM FIRST** and I think you will understand what this all means.

BLACKHEAD

The name of this disease does not truly describe the trouble because almost all turkeys' heads become dark colored when the birds are sick. Many farmers will say, "No, I haven't had this disease in my turkeys because their heads didn't get black." **THE COLOR MEANS HEADS DON'T GET BLACK** NOTHING more than that the bird is off feed and the veins about the head become clogged with slow moving blood. It is not a **BOWEL TROUBLE**. The birds have a greenish yellow diarrhea but that is only a **SYMPTOM**, and not the disease itself, even as headache might be an indication of several different things.

It is a truly **CONTAGIOUS DISEASE**. It is caused by a parasite or germ that the bird very likely takes in with its food and drink. This germ is able to live a long time in the soil and once a farm becomes infected it is hard to say just when the infection dies out. **THIS NEXT PART IS IMPORTANT.**

In the last few years a lot of investigation on blackhead has been done at various institutions. Much has been learned and there is still more to be found out. We have discovered, however, that it is **WELL-NIGH IMPOSSIBLE TO RAISE TURKEYS AND CHICKENS TOGETHER**. We have **HERE'S WHERE THE WORM COMES IN** hinted at this before and will now tell you why. The **SMALL INTESTINAL WORM** of chickens often acts as a carrier of the germ of blackhead. If turkeys on a blackhead infected farm are housed with the chickens they are almost certain to die—at least a large percentage will.

LET'S GET THIS STRAIGHT. Chickens and turkeys may be affected with three kinds of worms: (1) Tape worms, (2) the common intestinal round worms and (3) the little hair-

THE HEN'S APPENDIX

like worms found usually in the caecum or BLIND GUT. We might aptly call this blind gut the chicken's appendix. The last named worm, which does not cause chickens a great deal of trouble, is the one we are accusing of helping to spread blackhead to turkeys. The other two worms we will say more about later on. You may now rightly ask, HOW DOES THIS TAKE PLACE? On a farm where the blackhead germ exists, the soil becomes badly polluted with it. The soil also contains innumerable eggs (worms do lay eggs) of this small caecal worm. The young turkeys eat the worm eggs and these hatch out in the intestines. After hatching, it is believed, the worm in some way injures the lining coat of the intestinal wall and this, you see, enables the germ that is already in the intestines to enter the blood vessels, set up an inflammation in the wall of the intestine, and then be carried on to the liver. These two places, namely, the caecum or blind gut and the liver, are the only locations where signs of the disease will be found.

It is likely that the germ can produce the disease in turkeys without the assistance of these worms, but it has been clearly demonstrated that if we can keep this worm from heavily attack-

SERIOUS LOSSES CAN BE PREVENTED

ing the turkeys we will be comparatively free from serious losses. Many investigators claim that where losses would be about 95 per cent, they can be kept down to 5 to 10 per cent. Surely this is worth trying. TO RECOUNT THEN—the germ of blackhead is almost always present in the soil of an infected farm. We have definitely convicted the worm of being the chief agent in the spread of the disease. OUR JOB then is to make it possible for these turkeys to be kept free of the infestation of caecal worms.

AS A LAST WORD ON THIS SUBJECT—the worms ALONE can not produce the disease. BUT—THE WORM PLUS the germs which are in the soil is the combination that encourages blackhead. All effort must be directed to keeping the birds on clean soil—soil that has not been

WORMS PLUS

contaminated by chickens with these small intestinal worms or their eggs.

To the writer, ALL SICK CHICKENS LOOK PRETTY MUCH ALIKE. In a measure this applies to turkeys also. Turkeys can die of blackhead at any age altho it is more common when they are very young or as Thanksgiving draws near. Little time

SYMPTOMS OF BLACKHEAD

need be spent on the symptoms of the sick bird. They JUST LOOK SICK and lag behind the rest of the flock. The heads do not have to be dark. The birds frequently have a very yellow or greenish yellow diarrhea. That is all we can safely say as to what the sick birds look like. If that is the case how are you going to recognize the disease? I will tell you very quickly. OPEN A DEAD BIRD. That is the ONLY way it can be positively identified.

Don't be afraid to open one. Some people hate to touch a bird that has died. Examine just two places—the liver and the blind gut, or caecum. The germ starts operations in the caecum and from there

THIS IS THE WAY TO TELL BLACKHEAD

is carried into the liver, which is the other place we observe. We will look for an enlarged caecum, which may be filled with a yellow cheesy material. In the absence of this the caecum may be merely inflamed.

When affected, the liver will show round spots or ulcers which often have a greenish yellow border around them. These spots on the liver resemble a rotten spot in an apple.

There is no cure for blackhead. Many publications have prescriptions that are supposed to be of benefit. The writer has seen them all tried. They are worse than useless. DON'T VACCINATE for it,

HOW ABOUT A CURE

either. There is no such thing. If your flock is affected with this disease get busy and put into practice the things we are recommending in this pamphlet. They hold out more promise than all the pills in Christendom.

As mentioned before, turkeys may have other diseases too, but they are not so serious as blackhead. This plan will effectively control worms—both tape and round worms. The saving in time

**THIS PLAN
WILL PREVENT
OTHER ILLS
ALSO**

will permit the owner to treat them oftener for lice and mites. They are all together and easily caught and quite tame. The ravages of tuberculosis are more easily kept down. **LAST BUT NOT LEAST!** You will raise turkeys with less uncertainty than you ever did before. Under the common system the writer would not recommend any one to embark in the business of raising turkeys. It's too much dependent on **GOOD LUCK**. One thing is certain, you who are intending to raise turkeys had better take heed or you will join the **GREAT ARMY OF EX-TURKEY-GROWERS**.

THE PLAN IN DETAIL

We are asked many times to designate the best breed of turkeys. We will side-step that question by saying that the breeds most commonly seen in Minnesota are Bronze, Holland, and

**WHAT IS THE
BEST BREED?**

Bourbon Red. The Bronze far outstrips the others in popularity because of its greater size. Hollands are usually chosen because of their placid disposition and because they were supposed not to be roamers. Under this plan this virtue is not considered, because none of them will roam. So far as breeds go, you can't go wrong on any of them for they all have their good points.

Don't start with more than can be handled well. For the average farmer who uses hens for hatching, and makes somewhat of a side-line of the turkeys, 6 or 8 hens should be enough. Grow

**HOW MANY TO
START WITH**

into the business rather than grow out. On the other hand, if an incubator is to be used, perhaps 12 or 15 hens should be used to provide a plentiful supply of eggs. You will note later that it is not good to keep eggs over two weeks—therefore the larger number of hens, where incubators are used.

Select strong males that have all the best characteristics of the breed well defined. Do not mate more than 10 or 15 hens

**HOW MANY
MALES**

to one male. Young males or females may be used if they are hatched early and well developed. Never use small, undersized birds as breeders. If a hen is a good layer

she may be profitably kept for three or four years. One mating is enough for each clutch.

HOW TO WINTER AND CARE FOR THE FARM BREEDING FLOCK

Let us imagine it is late fall and you have selected your breeding flock for next year's operations. If you have any number of hens and toms up to 12 or 15 they should be placed in a yard at some little distance from the farm buildings. I should say about a hundred yards from the farmyard. A lot a quarter of an acre or even an eighth is plenty big. If you have only a half dozen hens and a tom, the yard need not be larger than 50 or 60 feet wide and 100 feet long. Erect the cheapest kind of shelter. A three-sided affair with the open front away from the wind is all right. There is no objection to a better building, however. Protection from extreme weather is all that is desired. Turkeys don't like wind.

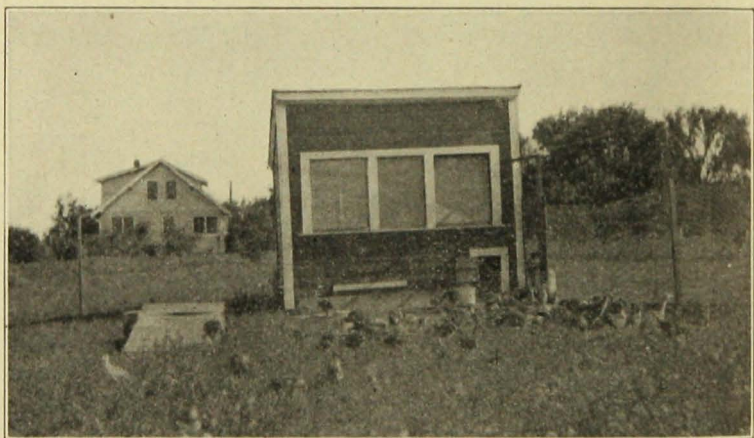


Fig. 1. Simple and Cheap Brooder House.

It should be on skids and easily movable. An opening on all four sides will provide four new yards without moving the house.

Put them on a maintenance ration consisting of the mash as described under the paragraph called "rearing ground rations." Give them essentially the same grain ration but feed it only night and morning. About the middle of January or the first of February put them on full feed. Our regular feed can be used or any other good laying mash may be substituted. Remember you can not get early eggs on potato peelings.

If you are keeping two toms they may be allowed to run with the flock at the same time, provided they do not fight. If they do, alternate them. If the toms are big and heavy, and show a tendency to tear the hens, as they sometimes do, trim off the spurs or file them down and bind with adhesive tape.

When the first hen shows a desire to lay, place boxes or barrels in convenient spots. You may camouflage the boxes with some straw or other litter. Pick up the eggs twice a day and store them in a room at a temperature of about 42 to 45 degrees. Turn them at least once a day.

The breeding stock will lay better in yards than they will if allowed to lay all over a section of land. On most farms half the eggs are often frozen or chilled and many are never found.

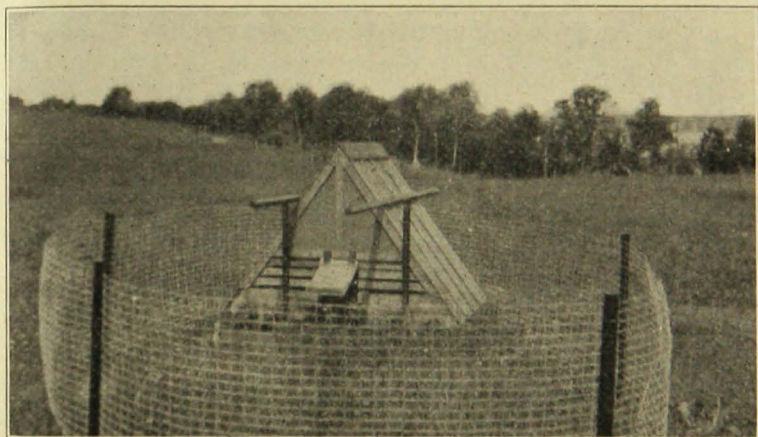


Fig. 2. A Common Type of Movable Brood Coop.
Place coops away from farm buildings and move frequently.

ARTIFICIAL INCUBATING AND BROODING

Never set hen eggs and turkey eggs together. There are several reasons why you should not. Eggs may be hatched under chicken hens or turkey hens, or in an incubator. Some farmers have thought that turkey eggs could not be successfully hatched in an incubator. Turkey eggs can be hatched very well in an incubator and THIS METHOD IS GAINING FAVOR

EACH YEAR. It is safer in every way.

Under this plan it is better to hatch with an incubator but the hen can be used. On the average farm a machine for 100 to 250 hen eggs is big enough.

The machine should be set up a few days before the eggs are put in so that it is sure to be running properly. The starting temperature should be $101\frac{1}{2}$ degrees with a standing thermometer. As hatching progresses the temperature will rise to 103-104 degrees toward the end. This is due to the generation of bodily heat by the developing poult in the shell. The eggs should be turned twice

INCUBATORS

daily. A little additional moisture is needed and this can be supplied by placing in the machine a plate of sand that is CONSTANTLY KEPT WET.

Turkey eggs hatch in 28 days. Newly hatched poults should remain on the egg tray of the incubator until thoroly dried off. Then allow them to drop into the nursery after covering the burlap or wooden bottom with paper. Put a little dry sand in the nursery so that the young turkeys may get a little grit before feed. After all the poults are hatched and dried, remove the egg tray. Gradually reduce the heat to 95 degrees by lowering the flame and opening the door of the machine ever so little. The poults may be kept in the incubator nursery until they are 24 or 36 hours old or until they appear strong on their feet. They are then removed to the brooder.

Some growers start the hatches under both chicken hens and turkey hens and then transfer them to the incubator for the last two or three days. This plan is not to be recommended.

Brooding may be done in portable brood coops or artificially with a brooder house and hover. If at all possible use a brooder house and keep the poults away from the hens entirely. If one does not have a brooder house, perhaps a makeshift one can be provided to take its place. Brooding with either turkey hens or common hens is not nearly so safe as the complete separation of the young poults from the old hens. The brooder house enables the caretaker to keep them on clean ground and away from the source of black-head infection. Poults as young as two weeks may die of blackhead.

BROODING

On pages 14, 15, and 16 are plans for a brooder house. If one is to be constructed it is a great advantage to set it on skids, as

shown in the drawing. This enables one to move it frequently onto new ground. If a portable brooder house is used, **BE SURE TO HAVE**

THE BROODER HOUSE **FOUR OPENINGS** or doors for the poults to leave the house. If this is done we will

stake off four runs as shown on page 16.

These runs are 8 feet wide and 4 or 5 feet high. They are only temporary and are taken down each time the brooder house is moved. If this plan is followed the poults will be allowed to have run No. 1 the first week. The second week this run is shut off and the birds are allowed to go into run No. 2; the third week, into run No. 3; and the fourth week into No. 4. This gives four distinct runs and is easily arranged if you have a portable brooder house.

Between 200 and 300 poults can be handled in this 12x14 brooder house.

For heat, a hard coal stove is best but any other arrangement that will maintain an even temperature of about 98 degrees may be used. As the birds grow older and as the season advances the heat is gradually reduced until they require very little.

When the poults are about 8 weeks of age and the weather is favorable, they may be removed to the plot of ground set aside for this purpose. (See page 16.)

NATURAL OR HEN HATCHING AND BROODING

If the entire hatching is done with hens a little different procedure is necessary. A chicken hen will cover from 9 to 11 eggs. A turkey hen will cover from 15 to 18 eggs. Be sure to rid them of **LICE** before they are set. This can be done with **SODIUM FLUORIDE**. (More about this in a chapter on diseases.) The boxes or barrels should be carefully cleaned to make sure that they are free of **MITES**. **CARBOLINEUM** is a good spray to keep these pests away.

In Minnesota and other northern states, May is perhaps the best month to hatch. Ordinarily, the earlier the better. Birds hatched in June are not as profitable but can be made marketable by Christmas. With good breeding stock it is not impossible to have toms hatched before May 10 reach 24 pounds for the Thanksgiving market. In the northern states the problem seems to be

WHEN TO HATCH

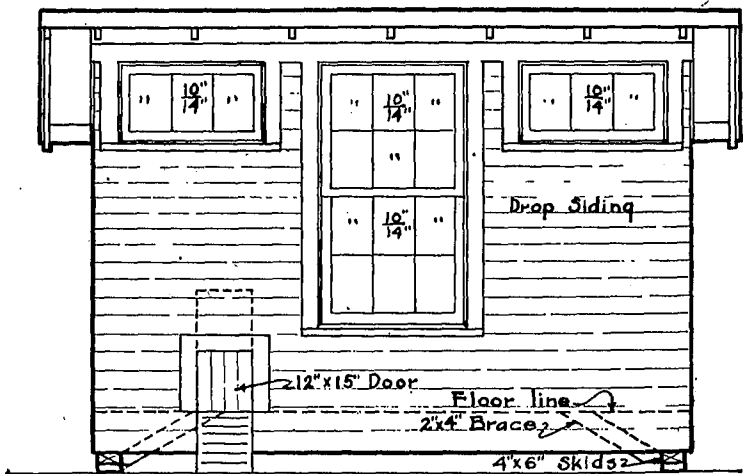
to get the hens laying early enough to have the first hatch off before the middle of May. If incubators and brooders are used, the earlier the hatch the better.

If the incubator and brooder method is used, hatching may be earlier. The MIDDLE OF MAY should be about right if hens are used for hatching. In most years the weather is usually somewhat settled and outdoor brooding can be done. However, additional protection must be provided for the poults in damp or wet weather.

In carrying out the plan of using the natural method of incubation and brooding, it is necessary to provide movable brood coops. These need not be expensive but must supply a shelter for the mother and her brood.

After the eggs are hatched the hen and the young poults are placed in the coop on clean ground. The best place to put the coop is in an orchard or clover or alfalfa pasture. At any rate, it must be on ground away from the farm buildings and on soil not contaminated by chickens. If there are several broods they should be placed several rods apart and moved once a week.

A MOVABLE BROOD COOP



SOUTH ELEVATION

Fig. 3. Front View of the Portable Brooder House.

The door marked A is also cut in all four sides of the building so as to provide an opening to all four runs. The doors of the runs not in use are kept shut.

Keep the poults confined the first few days and after that they may be allowed to range. The mother hen, however, is not permitted to be outside the coop UNLESS the coops are inside a field that is fenced in with poultry wire and free from chicken associates.

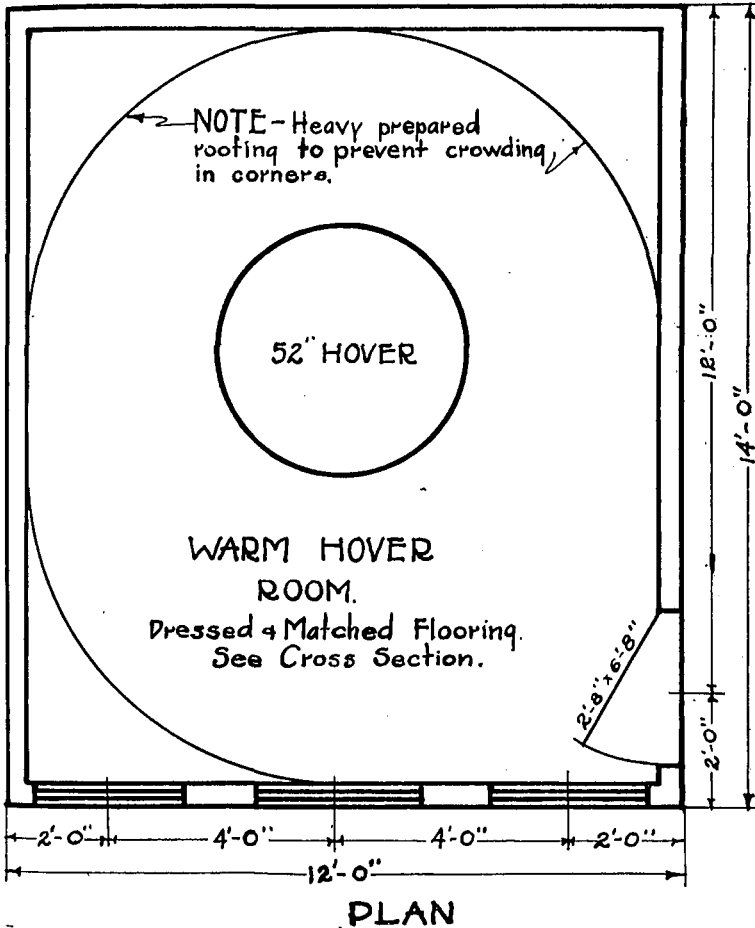


Fig. 4. Floor Plan of Portable House

Newly hatched poults sometimes forget where to get warm. This roofing paper fence is placed about the hover the first few days until the poults get acquainted with the stove and know enough to go to it when cold. It need be only 2 feet high.

The same feeding methods are followed as with artificially raised poults. COMPLETE FEEDING DIRECTIONS are given, beginning on page 19.

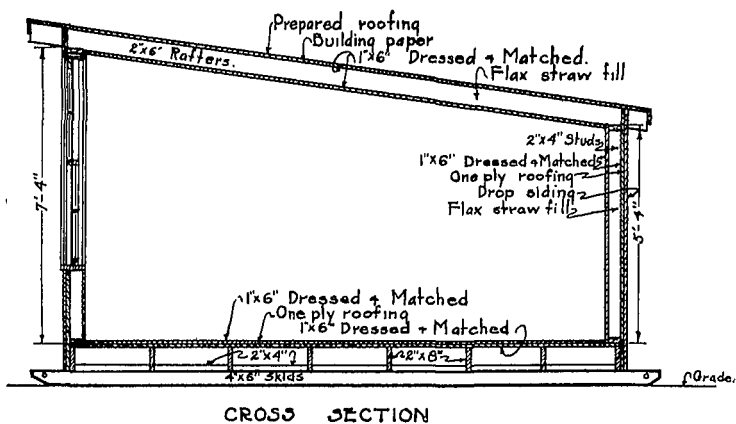


Fig. 5. Side view showing method of construction and arrangement of skids under the building.

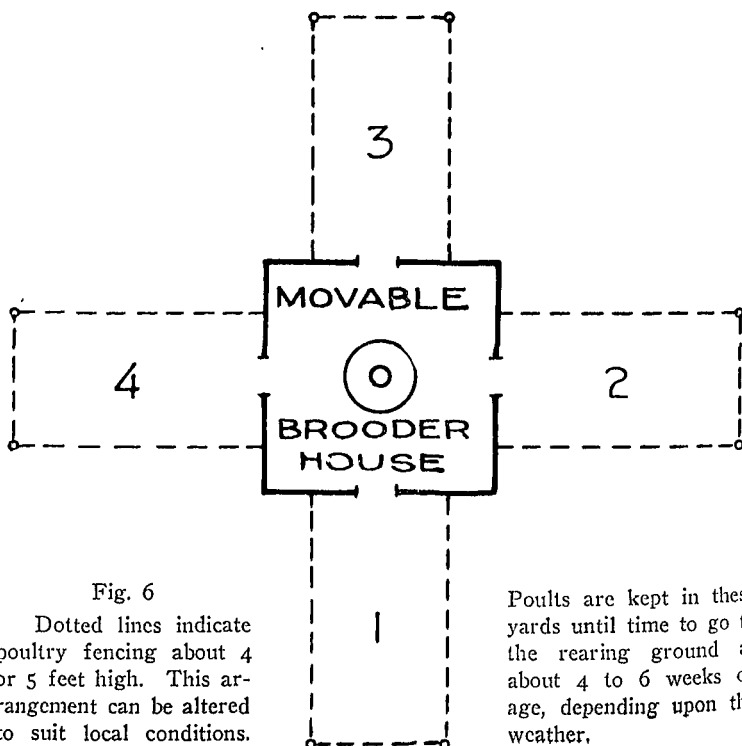


Fig. 6

Dotted lines indicate poultry fencing about 4 or 5 feet high. This arrangement can be altered to suit local conditions.

Poults are kept in these yards until time to go to the rearing ground at about 4 to 6 weeks of age, depending upon the weather.

When the poults are from 6 to 8 weeks old, or even younger if the weather, is fine, they may be removed to the REARING GROUND. From this point on, the handling of the natural and the artificially raised birds is the same.

REARING THE POULTS

The yard that we call a rearing ground need not be large. Two or three hundred birds can easily be raised on a quarter acre if this quarter acre is changed for a clean one at least once a month.

POULT REARING GROUND

In Figure 7 you will find a four-lot rearing ground. If this takes up an acre altogether, it would mean a quarter acre for each month. This, however, requires more wire fencing than many are willing to get. This plan can be modified in this way. Instead of using the four-lot rotation plan, one could simply fence in a quarter acre with 5- or 6-foot woven wire netting; and by using three-cornered steel posts, the yard could be put up and taken down readily once a month. On the average farm this would likely be the best and cheapest way.

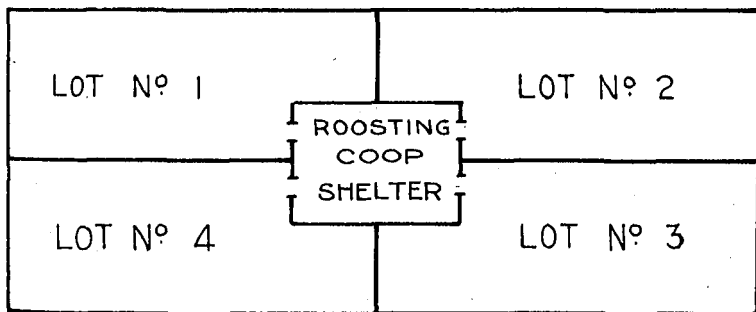


Fig. 7. Four-Lot Rearing Ground.

The shelter in the center has four openings or doors, one leading into each lot. The birds are placed on this rearing ground when they are from 6 to 8 weeks old, depending upon the weather. They are kept on Lot No. 1 for a month, then they are moved onto Lot No. 2 for a month, etc. These four lots cover about one acre. The whole enclosure is fenced with poultry wire not over 6 feet high. If the birds fly, clip one wing. Birds raised in a brooder do not show the same tendency to fly as those raised naturally by hens. If the birds are driven into the shelter each night for a week they will not cause trouble.

The floor of the shelter should be cleaned carefully each week.

If possible, select an alfalfa or clover field for your yarding operations. Pasture land is all right if it is clean. Clover and alfalfa are a cheap source of greens. The only trouble is that some folks make their yard too close to the farm buildings and that won't work. It must be far enough away to be free from chicken contamination. If clean ground is selected and this quarter acre yard is moved **REGULARLY** we can almost guarantee the results aside from pure accidents.

The fence need not be over 6 feet high. Most people use a 5-foot wire. The birds do not fly over to any extent and when they do they walk up and down trying to find a place to get back in. If the birds fly they can be stopped by clipping the flight feathers on one wing or by placing a hobble over their backs.

In the rearing ground we must have some sort of shelter. Do not make an expensive shelter. Put a few posts in the ground

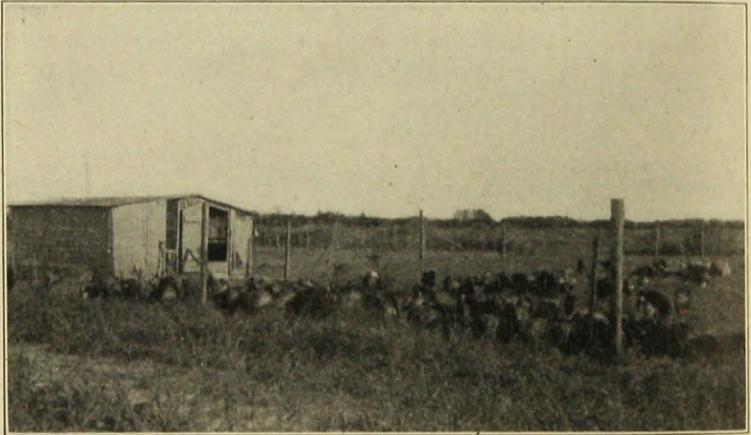


Fig. 8. A Small Farm Flock

It is away from the farm buildings. The shelter is on skids. A new yard is provided once a month. The fence is five feet high. The birds are contented and happy.

and use a few slabs or what-not for a roof. This is all that is necessary. Throw straw over the slab roof. Three sides can be boarded up roughly and roosts installed. This shelter can be built on skids and moved when the yard is changed. Otherwise, a new shelter will have to be set up. Some growers do not use much shelter but simply have outdoor roosts—that is, until the fall rains arrive. The picture shows a shelter used by one of our growers. The cheaper the better.

Have plenty of feed-hopper space. Don't use toys. Have a feed hopper 5 or 6 feet long. The same applies to a hopper for the scratch grain. Have several feeders if necessary. If you want a feed-hopper plan, drop us a line and we will send you one. Do not use a hopper that has to be filled two or three times a day.

As long as the turkeys are kept on clean ground away from chickens there should be no losses from blackhead. If blackhead appears it is definite proof that the soil was infested with chicken worms or worm eggs. Turkeys require lots of greens, or forage. When they begin to appear crowded, enlarge the individual lots and keep rotating.

DON'T FORGET THIS

Along in August or September, during threshing time, you may be tempted to let them out in the grain field. **DON'T DO IT.**

This plan of confinement requires feeding the flock. Some people think that unless grasshoppers are thick—all is lost. Feed them as outlined in the following schedule. It will pay big dividends. Turkeys can exist without feeding them when they have the run of the farm, but they will do a great deal better under this plan of confining and feeding.

CARE AND FEEDING OF POULTS DAY BY DAY

By A. C. SMITH

THE FOLLOWING FEEDING OUTLINE is designed to enable a greenhorn to feed satisfactorily. However, any other accepted feeding plan will work all right. We insist on clean ground and away from the chickens—that should never be lost sight of.

THE WEEK BEFORE HATCHING

Prepare the brooder and exercise pen—first clean and wash the brooder including both hover and chicks' exercise pen with strong soap suds or lye; then disinfect carefully. Run the brooder for several days to become skilled in its operation.

Newly hatched poults should remain on the egg tray of the incubator until thoroly dried off. Then let them drop into the nursery, after covering the burlap or wooden bottom with paper. Put a little dry sand in the nursery so the young turkeys may get a little grit before feed. After all the poults

FIRST DAY

are hatched and dried, remove egg tray. Gradually reduce heat to 95 degrees F. by lowering the flame and by opening the door of machine slightly.

Keep poults in the incubator nursery until 24 or 36 hours old or until they seem strong on their feet. Then remove them to a brooder, the floor temperature of which should have been regulated to 95 degrees F. This temperature should be maintained for several days.

SECOND DAY

When 36 to 48 hours old, give them sweet skim milk, short grass on the sod, or young tender greens such as leaf or head lettuce.

When 48 to 60 hours old feed eggs boiled for thirty minutes, crushed, and mixed with an equal quantity of dry stale bread. Give this on a board or boards of sufficient length that all the turkeys may have easy access to it. Feed every two hours. Twenty minutes after each feed remove board and remainder of food. Never feed sour or moldy bread.

THIRD DAY

Feed as on the second day.

Feed as on second day and give in addition a mash composed of finely ground cornmeal, PURE wheat bran, oat flour, wheat middlings, and beef scraps in equal amounts

FOURTH DAY

by weight. Add one pound of table salt and 2 pounds of powdered charcoal to each 100 pounds of mash and mix thoroly. Place this mixture in a hopper.

Feed as on the fourth day. On the seventh day give a little steel-cut oatmeal or well seasoned corn or wheat cracked to the size of steel-cut oatmeal;

FIFTH, SIXTH, AND SEVENTH DAYS

or a mixture of two parts corn, two parts wheat, and one part steel-cut oatmeal by weight for night feed. At this age poults will eat only a little grain. Feed lightly and see that the feed does not accumulate in the litter.

EIGHTH UNTIL TWENTIETH DAYS

Continue feeding mash and greens as on the seventh day but increase the amount of scratch grains as the appetites increase, giving the scratch grains in relatively small quantities at morning and at noon and a little more at night. See that the scratch grain does not accumulate in the litter.

Feed as on the twentieth day but substitute a mixture of coarser cracked corn and whole wheat in the proportion of two of cracked corn and one of wheat for the night feed and use the smaller scratch feed instead for morning and noon feeds. Continue this feeding until poults go on range at 6 or 8 weeks according to the season.

TWENTY-FIRST DAY

Feed a mash composed of equal parts of cornmeal, ground oats, wheat middlings, pure wheat bran, and beef scraps in hoppers and also a scratch mixture of two parts corn and one of wheat in hoppers. Give sour or sweet skimmilk as a beverage. Keep oyster shells and hen's grit constantly before them. Cover the floor of the roosting coop with clean sand or gravel.

REARING GROUND RATIONS

THE RATION DESCRIBED IN THE ABOVE PARAGRAPH is to be used throughout the season after the birds leave the brooder. No fattening ration is needed. When fall approaches and loose grain lies in the fields don't be tempted to turn them out. Some have done this to their sorrow, because it means you are slipping and soon the birds will be congregated around the farm buildings. Stick to your yards right up to market time and FEED.

MILK IS A WONDERFUL SUPPLEMENT and should be used whenever possible. It is a very cheap form of protein when fed as skimmilk or buttermilk. Use no water at all if there is enough milk to take its place. It can be fed either sweet or sour but do not feed it sweet one day and sour the next. Cottage cheese is good, but why take the trouble when plain milk is satisfactory. If milk is fed, the meat scrap in the mash may be reduced to 8 or 10 per cent. Milk in commercial form as dried milk powders or semi-solid buttermilk, can be used up to 10 per cent in the mash. Reduce the meat scrap proportionately. Commercial dried milks are sometimes expensive and this must guide one's judgment. On the average farm where skimmilk is available, there is probably no occasion for using dried milk.

NEW CORN has been accused of causing blackhead. This is not true. New corn and other grains should not be used unless they are thoroly dried. Hundreds of bushels of new corn are fed annually but always dry. If it is not dry, stack it up back of the kitchen range and dry it. Turkeys fed a mash all season are

rather lazy and may turn up their noses at the corn on the cob. Moral is—pick it off for them.

We do not use any special fall fattening ration. The flock is kept on the standard ration throughout the growing season and will mature and fatten perfectly without any change in the diet. It has been demonstrated with hogs as well as with turkeys that it is uneconomical to carry them on a mere maintenance ration during the summer and then push them hard the last few weeks. Stick to the regular ration right straight through.

Turkeys love roots of all sorts. Rutabagas, carrots, mangels, pumpkins, are great. The birds will eat any of them, but they don't like to be fed one root today and a different one tomorrow. They are finicky and have to be humored. Roots are **VERY IMPORTANT** because they will determine your feed cost to a large extent. Feed all they can get away with. Whatever root is fed, always split it open.

FALL FATTENING

DON'T FORGET THE CABBAGES

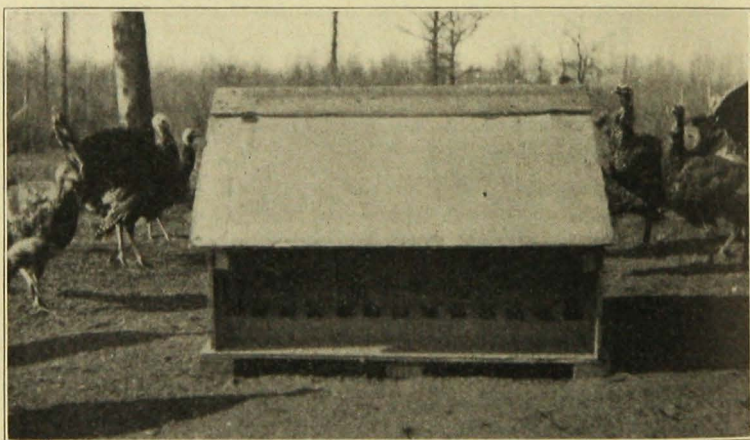


Fig. 9. Home-Made Feed Hopper.

Have two of them at least—one for the mash and another for the scratch feed. If the flock is large several may be needed. A plan for this is furnished on request.

If the flock is maintained as directed with the mash and scratch feed before them at all times together with a generous allowance of roots, the cost per pound of turkey should not exceed 10 cents. We have many records of costs ranging from $6\frac{1}{2}$ to $7\frac{1}{2}$ cents per pound. In other words, feed for a 20-pound turkey should not cost over \$2.00.

NOW ABOUT FEED COSTS

DON'T WORRY ABOUT OVERFEEDING

After the poults are a couple of weeks old it is impossible to stuff them. Keep the feed in hoppers before them at all times.

AILMENTS OF TURKEYS

Many poults die or are seriously injured by lice. This is unnecessary, because they are so easily controlled. If the poults are mothered by **LICE CARRYING HENS** the young birds are sure to be affected. If you are using hens for hatching be sure to **DELOUSE THE HENS** before the turkeys are hatched. If this is done lice are not so likely to appear.

LICE

The common kinds of lice are the head and body varieties. **HEAD LICE** can usually be eliminated by the application of lard or vaseline to the head. **BODY LICE**, which are commonest, are best handled by the use of the old reliable **SODIUM FLUORIDE**. This is a white odorless powder that can be purchased from any drug store. Before the poults hatch apply several pinches of the powder to the skin of the setting hen. Do not shake it on the feathers but rather push back the feathers and rub the powder on the skin. The hen will now be clean and the young poults will not be exposed to lice as soon as they are hatched. Sodium fluoride can be used on the young poults after they are a week old but use only about **TWO SMALL PINCHES**. Apply the same as to the older birds.

If poults are brooded artificially in a brooder house, be sure this is free from **MITES**. If poults are to be raised by their mothers, with movable brood coops, be sure to clean the coops thoroly before putting them to use. The best thing to use is **CARBOLINEUM**. This is an oily preparation and is very effective in keeping mites away as well as in destroying those present at the time of treat-

MITES

ment. This liquid is best applied as a spray but can be brushed on a brood coop. **BE SURE TO LET IT DRY OUT FULLY BEFORE THE BIRDS ARE PUT IN**, otherwise the fumes may be too irritating. One good application is often sufficient for the year. If carbolineum can not be secured, waste crank case oil from a Ford is all right.

In adult or half-grown turkeys the disease is more often seen as a swelling or **POUCH UNDER THE EYE**. In this case the inner passages of the head become affected much the same as in a similar trouble in man. When this pouch is seen the eye is usually clear unless the swelling extends to it.

When seen in young poults this disease appears much the same as in chickens. There may be a slight discharge from the eyes and nose which is often followed by a swelling of these parts.

TREAT THIS WAY if the bird is badly affected and the head is badly disfigured—cut off its head. Another treatment, for mild cases in which the eyes are just watering, is to bathe the eyes with a weak solution of boric acid, about a teaspoonful to a quart of warm water. Repeat as often as necessary.

A still better thing to do is as follows: Go to the drug store and get a couple of ounces of a 10 per cent solution of **ARGYROL**. In the early eye form, put a drop or two of this solution in the eye with an ordinary medicine dropper or fountain pen filler.

The older birds, with the swelling or pouch in the face, are best treated by lancing or opening the swelling with a worn-out safety razor blade or a sharp-pointed knife. This will allow the pus to drain or be squeezed out. Wash out the abscess and then inject some of the argyrol solution and then pack the hole with a bit of cotton that has been saturated with the argyrol. If this treatment does not help, destroy the bird.

Tuberculosis is not nearly so common in turkeys as in chickens. However, it does occur and seems to be on the increase, no doubt because the disease is common in poultry and on farms where the poultry flock is badly infected we may expect to find the turkeys also infected, especially if they range together about the farm buildings.

Tuberculosis is a germ disease and is very contagious. Mature birds are more often seen diseased than young ones. The symp-

toms are much the same as in chickens. **BUT DON'T FORGET THAT SYMPTOMS DO NOT MEAN MUCH, BECAUSE ALL SICK BIRDS LOOK PRETTY MUCH ALIKE.** The bird may get thin and develop a diarrhea, as in blackhead. On this account it is difficult to distinguish tuberculosis from that disease. The best way to be sure is to **OPEN A DEAD ONE.** This plan never fails.

Look for yellowish or grayish white spots on the liver, spleen (that round body under the liver), and intestines. On the intestines the spots may look like warts. These spots or lumps are hard and dry. You can tell tuberculosis from blackhead by the character of the liver spots. In blackhead the spots are soft and mushy with greenish yellow borders.

There is no cure for tuberculosis. If the disease gets a firm hold in the flock it is best to get rid of all the birds and start over. If the plan of separating the turkeys from the farm flock of chickens is followed, this trouble will not be so likely to occur. **IF YOU GET STUCK** and are unable to tell this disease from blackhead send a sample to the **VETERINARY DIVISION, University Farm, St. Paul.** Here it will be examined free of charge.

The bird tick is relatively uncommon except in certain sections of Minnesota. In these places it is quite a pest and the cause of considerable losses. **DON'T MISTAKE THIS FOR THE FOWL TICK.** It is entirely different. It looks something like a wood tick to the average observer. **SOME FOLKS TAKE IT FOR A BEDBUG.** It seems to prefer to attach itself to the skin about the head and neck. It acts like other ticks, burrowing into the skin and causing irritation. If present in large numbers, bird ticks will kill the poults.

There is no treatment except to pick them off by hand. If they are discovered it will be necessary to go over the poults often and pick them off and destroy them, preferably by fire.

These ticks very likely get on the birds from ranging on ground previously covered by wild birds, as pheasants and partridges.

These parasites were seen commonly in northern Minnesota in the summer and fall of 1926. They had not been previously reported here.

WORMS

We will consider the ROUND WORMS first. They are white, sharp-pointed on both ends and may range in size from an inch to 3 inches long. They may become as thick as a common safety match. When they are present in numbers they will cause a lot of trouble

ROUND WORMS and perhaps the death of the birds affected. **DON'T GUESS AT WORMS.** Examine the carcass of a dead bird or kill one that is sick and examine it carefully. Open the intestines with a pair of scissors. Some folks do not like to do this but you can not be sure otherwise. The writer has seen a considerable number of sick chickens and turkeys and is unable to tell whether or not they have worms without opening them.

If, upon examination, you find the worms, the rest is simple. Without an examination you might be treating blackhead-infected turkeys for worms without knowing it. The best treatment we have at the present time for these parasites is the use of **NICOTINE SULPHATE**. This drug can be purchased in capsule or pill form. It is an **INDIVIDUAL TREATMENT**—that is, each bird gets a pill. With the old method we mixed a certain amount of drugs in the mash or drinking water and then hoped that each bird would get its proper amount. With this method there is **NO GUESS WORK**. These nicotine sulphate capsules are now marketed by several concerns and are easily obtained. If you have trouble in getting them, consult your county agent or write the University. In giving the pills always follow the directions on the package. This treatment is also better because it does not require you to starve the birds before or physic them afterward.

TOBACCO DUST, also, is used to eradicate round worms. This can be purchased from your drug store. Tobacco dust added to a dry mash in the proportion of one pound to 50 pounds of mash and fed daily for a couple of weeks is sometimes effective.

Repeated doses of **EPSOM SALT** at the rate of one pound for each 100 birds has been found beneficial also. By repeated doses is meant every ten days for about three times.

In Minnesota we have had considerable trouble with tape worms in turkeys. They are very serious and often cause great losses. In order to tell whether your birds are suffering from

TAPE WORMS

these worms it is essential that you examine a dead bird. The worms are white and thread-like and made of links or segments. They have sucking mouths and attach themselves to the sides of the intestinal wall and suck blood. This attachment also makes them doubly hard to remove. Sometimes they tie up in a ball like a mass of snarled thread or string. If the bird is affected with diarrhea you may see small white specks in the bowel movements. If closely examined these may seem as segments or links of the worm which have broken off. However, as long as the head end of the worm is left **IT IS STILL ABLE TO DO BUSINESS.**

The treatment most recommended is the use of the drug **KAMALA**. This drug is not new but has recently been resurrected and put to work. The Kamala capsules or pills can be purchased the same as the nicotene sulphate capsules, or your druggist can make them up for you. The dose is one gram for an adult bird. A very large and heavy bird could take two. Do not give a full dose of one gram to any bird under 6 pounds in weight. For birds between 6 and 3 pounds, a half gram is safer. Under 3 pounds the treatment is at your own risk. Remember that any good worm expeller is a poison or it wouldn't be a good worm expeller. Small poults that are filled with tapeworms are poor prospects. They will die without treatment and some will be so weak and run down as to die from the shock of the treatment. This does not mean that you should not treat them. Treat them anyway, but do not be surprised at a few losses. Poults weighing under 3 pounds might be tried on a quarter gram and if a few come through all right, increase the dose up to a half gram. **IF YOUR FLOCK IS WORMY, IT IS CONCLUSIVE EVIDENCE THAT YOU HAVE NOT BEEN KEEPING IT AWAY FROM THE OLD CHICKEN GROUND.** Follow this outline as to brooders placed on clean ground at some distance from the farm chicken range and you won't be bothered with worms.

DO NOT STARVE BEFORE TREATMENT FOR EITHER VARIETY OF WORMS. A PHYSIC IS NOT NECESSARY AFTER.

PLEASE READ THIS NOTICE

This little pamphlet outlines a **SIMPLE METHOD** whereby turkeys may be raised **FREE FROM BLACKHEAD, WORMS, ETC.**

We have attempted to make it as simple as possible. **PLEASE READ IT CAREFULLY**, and get the plan clearly fixed in your mind.

WE ARE ADVOCATING YARDS AND CONFINEMENT OF THE FLOCK.

There is a reason for this. We must have **CLEAN** ground that is free from **CHICKEN CONTAMINATION.**

Under **ORDINARY FARM CONDITIONS** the only way we can be **SURE** our turkeys are on clean ground is to yard them on clean ground and **KEEP** them there. This means **ALL SEASON.**

IF YOU DON'T HAVE BLACKHEAD or **CHICKENS** on the farm and didn't import it this **TALE** would be different. However, **CONDITIONS** being as they are—this plan has been devised to help **YOU.**

DON'T LAY OUT your yards **CLOSE** to the farm buildings. This spells **FAILURE.** Get them out on an alfalfa field or some good pasture.

WE THINK the **SYSTEM OF YARDS** on Page 17 is the **SIMPLEST** for your purpose. This refers to the **REARING GROUND.**

DON'T use the same ground next year—**MOVE** on to another **CLEAN SPACE.**

THIS PLAN calls for **FEEDING.** It pays to do this. **GARBAGE** may be all right for hogs but it won't raise turkeys. If the poults are out in early May and fed as per the **FEEDING SCHEDULE** on page 19 they will weigh close to 25 pounds by **THANKSGIVING.**

We hope you have good success. **IT WILL WORK IF YOU DO YOUR PART.**