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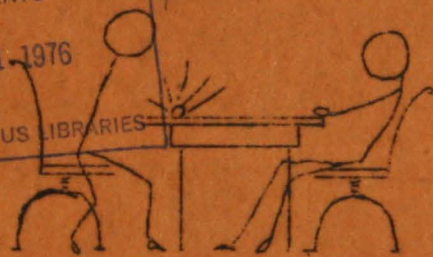
FORM V-1

TALKING TURKEY

By

Dr. W. A. Billings

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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 semi-confinement. We believe the suggestions are practical.

F. W. Peck, Director. FREE-Cooperative Agricultural Extension Work, Act of May 8 & June 30, 1914.

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THE UNIVERSITY OF MINNESOTA

Agricultural Extension Service
Saint Paul, Minnesota

* TALKING TURKEY *

For the past ten years or more many efforts have been made to raise turkeys by so-called artificial means. In the main most of the trials have been successful. The last two or three years the Minnesota Experiment Station has carried out
BROADCASTERS artificial incubation, brooding and comparatively close confinement of the flock. Their success has been very gratifying. This work together with that that of other Stations has led this department to advocate similar methods on the farm.

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. Due to these waves in production in the various states
A LITTLE TURKEY HISTORY we hear from time to time that the turkey is on its way to BECOMING EXTINCT. If you 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 turkey 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. At any rate it is generally conceded that it is not especially difficult to raise a few hens. The raising of turkeys has never been standardized as has 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, feeding, etc.

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
A TREELESS TURKEY FARM he didn't have any trees on the farm. Another farmer doesn't like them, because they get him into trouble with his neighbors.

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.
SHOOTING THE RED 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 there would be in following out the common practice of giving chickens cayenne pepper to make them lay more eggs in the winter months.

The whole field of turkey husbandry is crowded with superstitious beliefs about turkeys. Some say they cannot be domesticated and that they are as WILD AS HAWKS and must be kept as nearly like their wild ancestors as possible. Turkeys ARE THEY WILD 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 have the pig family pretty well satisfied with their lot now.

Before trying to raise turkeys, try to 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, BLACKHEAD 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 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 quite 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 you are confronted with varying opinions on this subject and that. You may wonder who is right. As a general thing the difference is of minor importance. All mothers don't raise their babies just exactly alike but in the main 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 successfully try 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. DON'T BE AN "IN AND OUTER" YOU 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 will have made some mistakes or tried to make some short cuts or thought some of the suggestions made to be unimportant.

You may be asking yourself--why all this preliminary talk. Why raise turkeys in confinement anyway. 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.

Those 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 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. They have tried them out themselves 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.

HERE'S THE PLAN Many people keep at it because the price stays good--otherwise they wouldn't fool with turkeys a minute. Even with a fifty 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 to 80% to perhaps as low as 10 to 20%. 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 at Minnesota and several other Experiment Stations. On a small scale of course. Even with very limited space they have clearly demonstrated that turkeys are EASILY DOMESTICATED and can be SUCCESSFULLY RAISED IN COMPARATIVELY CLOSE CONFINEMENT.

THIS IDEA IS NOT NEW This idea is not new and neither is it original. As long ago as 20 years turkeys have been artificially hatched and brooded. The infant 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 all the rest--Blackhead. Blackhead is said by some writers to be a disease of old turkeys, while others point out 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 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 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 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 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. Of course, the birds have a greenish yellow diarrhea but that is only a SYMPTOM, and not the disease itself any more than headache might be an indication of several different things.

HEADS
DON'T
GET
BLACK

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 long periods of 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.

The last few years a lot of investigation on blackhead has been done at various institutions. Much has been learned and we have still

more to find out. We have discovered, however, that it is WELL NIGH IMPOSSIBLE TO RAISE TURKEYS AND CHICKENS TOGETHER. We have HERE'S hinted at this before and will WHERE now tell you why. The SMALL THE WORM INTESTITINAL WORM of chickens often COMES IN 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 of them will.

LET US 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-like worm 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 THE trouble is the one we are accusing HEN'S of helping to spread the disease APPENDIX to turkeys. The other two worms we will speak 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 the germ of blackhead. The soil also contains innumerable eggs (worms do lay eggs) of this small caecal worm. The young turkeys eat the worm eggs and these in turn hatch out in the intestines. After hatching, it is believed that the worm in some way injures the lining coat of the intestinal wall and this you see enables the germ which is already present 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 you will find signs of the disease.

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 attacking the turkeys we will be comparatively free from serious losses. Many investigators claim that where losses would be around 95%, these can be kept down to 5 to 10%. Surely this is worth trying. TO SERIOUS LOSSES CAN BE PREVENTED RECOUNT THEN--the germ of blackhead is almost always present in the soil of an infected farm. We have now 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 cannot produce the disease. BUT--THE WORMS PLUS the germs which are in the soil is the combination which encourages blackhead. All effort PLUS must be directed to keep the birds on clean soil that has not been 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 SYMPTOMS OF BLACKHEAD near. Little time need be spent on the symptoms of a sick bird. They JUST LOOK SICK and lag behind the rest of the flock. The heads do not have to be dark. They frequently have a very yellowish or greenish yellow diarrhea. That is about all we can safely say as to what the sick birds look like. If that is the case,

how are you going to tell it then? 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 them. Some people hate to touch a bird that has died. Examine just two places,--The liver and the blind gut or the caecum. The germ starts operations in the caecum and from there is carried on 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 which are supposed to be of benefit. The writer has seen them all tried out. They are worse than useless. DON'T VACCINATE for it 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 tapes and round worms. The saving in time 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 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.

T H E P L A N I N D E T A I L

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 the Bronze, Hollands, and the Bourbon Reds.

WHAT IS THE BEST BREED The popularity of the Bronze far out-strips the others because of greater size. The Hollands are usually chosen because of their placid disposition and the fact that they were not supposed 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 makes somewhat of a sideline of his turkeys, six or eight hens should be enough. Grow into the business rather than grow out.

HOW MANY TO START WITH

Select good strong males which have all the best breed characteristics well defined. Do not mate more than 10 or 15 hens to one male. It is considered best to use birds over a year old. This applies to the females as well. Never use small undersized birds as breeders. Don't make the mistake of keeping hens only a year or two. If the hen is a good layer, she may be profitably kept for four or five years. One mating is enough for each clutch.

HOW MANY MALES

EGGS FOR HATCHING SHOULD NOT BE KEPT OVER TEN DAYS. A lot of trouble with low hatchability is the result of keeping eggs too long. The eggs should be collected each day and kept at an even temperature of 50 to 60 degrees. They should be turned over each day. A WORD ABOUT THE EGGS Turkey hens will lay eggs in places prepared for them. Disguised boxes or barrels placed suitably will do very well. Some growers confine the birds until they have laid.

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 HATCHING THE EGGS hens, 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 100 to 250 hen-egg machine will be big enough.

INCUBATORS 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 101½ 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 daily. A little additional moisture is needed and this can be supplied by placing in the

machine a plate of sand which is CONSTANTLY KEPT WET.

Turkey eggs hatch in twenty-eight day. 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 twenty-four or thirty-six 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 to the incubator for the last two or three days. This plan is not to be recommended.

Brooding may be done with portable brood coops or the poults may be brooded artificially with a brooder house and hover. If at all possible use a brooder house and keep the poults away from the hens entirely after hatching. If one
BROODING 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 as 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 blackhead infection. Poults may die of blackhead as young as two weeks.

On page 15 you will find plans for a brooder house. IF a brooder house is to be constructed it

is a great advantage to have it set 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 FOUR

THE
BROODER
HOUSE

OPENINGS or doors for the poults to leave the house. If this is done we will stake off four runs as shown on page 18. These runs are eight feet wide and four or five 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 run No. 3 and the fourth week they are on run No. 4. This gives four distinct runs and is easily arranged if you have a portable brooder house.

If you should have a permanent brooder house four runs can be arranged in front of the building as shown in the drawing on page 18. If the soil about the brooder house is badly contaminated from chickens it will be very necessary to spade it up and turn it over thoroly. If possible seed it down to oats or some other fast maturing crop. This will help renovate the soil.

Between two and three hundred poults can be handled in this 12 by 14 brooder house.

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

When the poults are about eight weeks of age and the weather is favorable they may be removed

to the plot of ground which we have set aside for this purpose. (See page 17)

N A T U R A L O R H E N H A T C H I N G
A N D B R O O D I N G

If the entire hatching is done with hens a little different procedure is necessary. A chicken hen will cover 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 and make sure that they are free of MITES. CARBOLINEUM makes a good spray to keep these pests away.

In Minnesota and other northern states, MAY is perhaps the best month to hatch. DON'T HAVE JUNE HATCHED BIRDS. They do not mature properly and are not usually profitable.

WHEN TO	
HATCH	

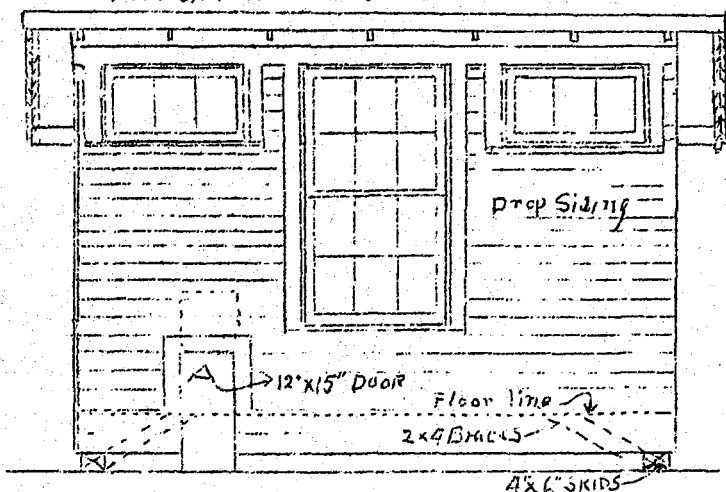
If one is using the incubator and brooder method earlier hatching may be practiced. The MIDDLE OF MAY should be about right for one who is using hens for hatching. In most years the weather is usually somewhat settled and outdoor brooding can be done. However, additional protection must be provided for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

In carrying out this plan 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 place the coop would be in an

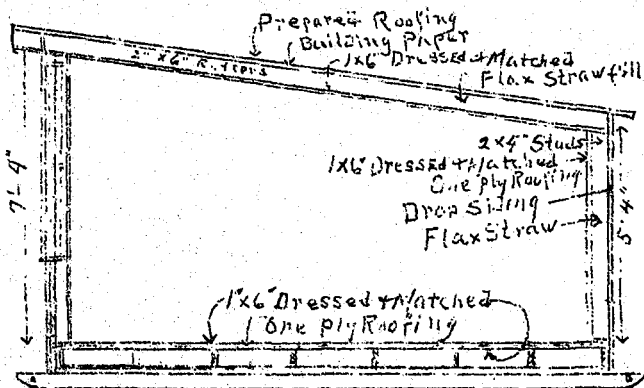
PLAN OF PORTABLE BROODER HOUSE

From Sp. Bulletin 16, 1905



SOUTH ELEVATION

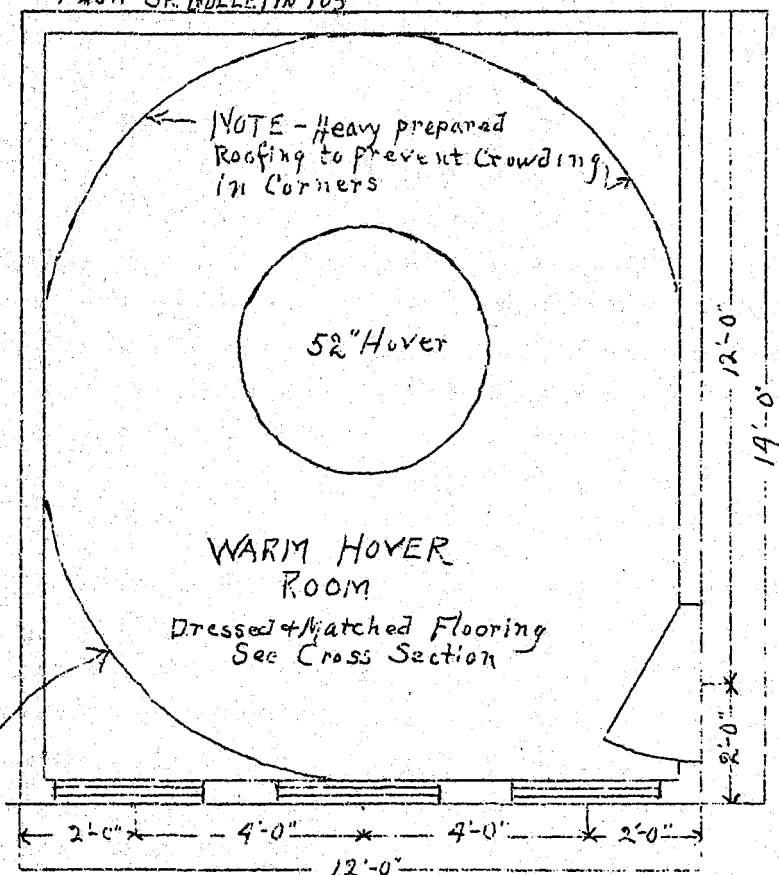
This is a front view of the portable brooder house. The door marked A is also cut in all four sides of the building so as to provide an opening to all four runs. The doors of the runs not in use are kept shut.



CROSS SECTION

This is a side view and shows the method of construction and arrangement of skids under the building.

FROM SP. BULLETIN 165



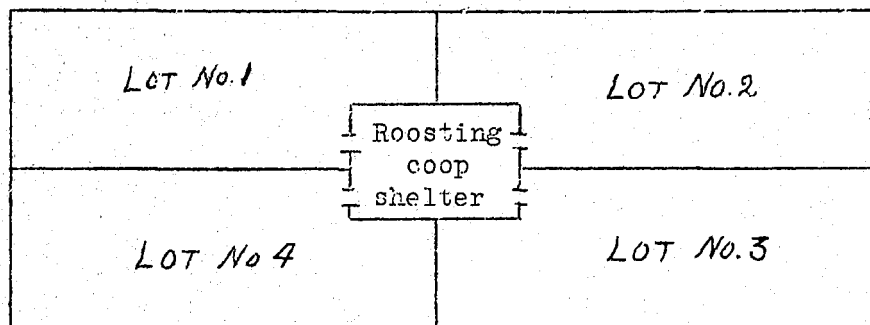
FLOOR PLAN

of portable brooder 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 a couple of feet high.

TURKEY REARING GROUND

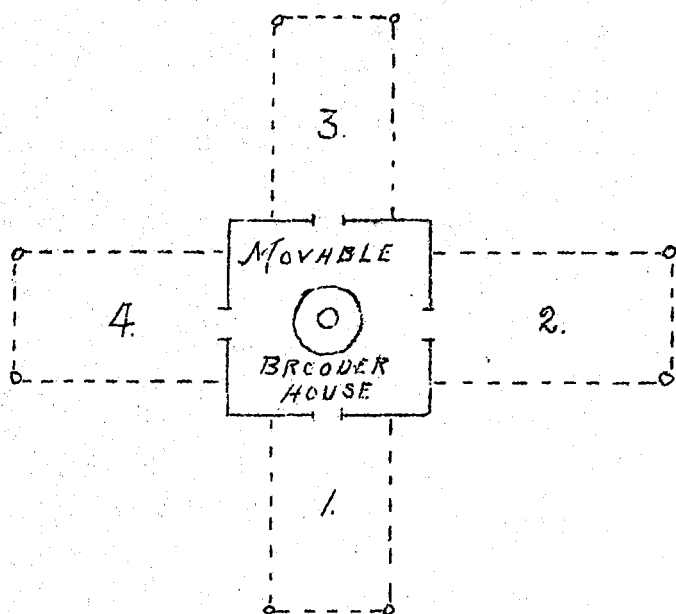
Foults enter here from the brooder



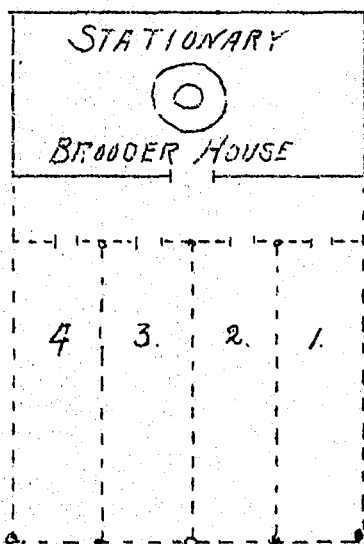
This is a four-lot rearing ground. The shelter in the center has four openings or doors, one leading into each lot. The birds are placed on this rearing ground when they are from six to eight weeks old depending upon the weather. They are kept on Lot No. 1 for a month, then they are moved onto Lot No. 2 for a month, etc. These four lots cover about one acre. The whole enclosure is fenced in with poultry wire not over six feet high. If the birds fly, clip one wing. Brooder raised birds 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.

BROODER HOUSE YARDS



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.



orchard or clover or alfalfa pasture. At any rate
A MOVABLE it must be on ground away from the
BROOD COOP farm buildings and on soil not con-
taminated by chickens. If there are
several brood they should be placed several rods
apart and moved once a week.

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 which
is fenced in with poultry wire and free from
chicken associates.

The same feeding methods are followed as in
the artificially raised. COMPLETE FEEDING DIREC-
TIONS will be found in a succeeding chapter.

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

R E A R I N G T H E P O U L T S

This plot which we will term a REARING
POULT GROUND need not be especially large
REARING because two or three hundred poults
GROUND can be successfully reared until
 they are half grown on an acre.

This acre should be selected in the corner
of a clover or alfalfa field or orchard where
chickens have not ranged to any great extent.

It should be fenced in with poultry fencing
so as to keep chickens out and the poults in. This
fence need not be over six feet high. If some of
the birds should show a tendency to fly, one or
both wings may be clipped. However, brooder raised
poults do not seem to acquire this habit as readily
as hen brooded poults.

On page 17 you will find a diagram of a convenient way to lay out the rearing ground.

THIS MAY BE MODIFIED to suit local conditions but do not forget that it is planned mainly to PROVIDE ROTATED LOTS ON CLEAN GROUND AND AWAY FROM SOIL CONTAMINATION BY POULTRY.

As long as the turkeys are kept on clean ground away from chickens there should be no losses from blackhead. If blackhead DON'T should appear it is definite proof that FORGET the soil was soiled with chicken worms THIS or eggs.

Approximately 150 birds can be kept on this rearing ground until they are half grown. Turkeys require lots of greens or forage. When they begin to appear crowded enlarge the size of the individual lots and keep rotating.

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.

THE CARE AND FEEDING OF POULTS DAY BY DAY

By A. C. Smith

Prepare the brooder and exercise pen, first clean and wash the brooder including both hover

THE WEEK
BEFORE
HATCHING

and chicks' exercise pen with strong soap suds or lye; then disinfect carefully. Run the brooder for several days to become skillful in its operation.

Newly hatched poults should remain on egg tray of incubator until thoroughly 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 nursery so that the young turkeys may get a little grit before feed. After all the poults are hatched and dried, remove egg tray, gradually reduce heat to 95 degrees F. by lowering flame and by opening door of machine slightly.

FIRST
DAY

Keep poults in the incubator nursery until 24 or 36 hours old or until they seem quite strong on their feet. Then remove them to a brooder, the floor temperature of which should have been regulated to 95 degrees F. which temperature should be maintained for several days. When 36 to 48 hours old give turkey sweet skimmilk, 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 so 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 mouldy bread.

SECOND
DAY

THIRD DAY Feed as on the second day.

Feed as on second day and give poults in addition a mash composed of finely ground cornmeal, PURE wheat bran, oat flour, wheat middlings and beef scraps in equal amounts by weight. Add one pound of table salt and two pounds powdered charcoal to each one hundred pounds of mash and mix thoroly. Place this mixture in a hopper.

FOURTH DAY

Feed as on the fourth day. On the seventh day give a little steel cut oatmeal or well seasoned corn or wheat
FIFTH, SIXTH AND SEVENTH DAY cracked to the sizes of steel cut oatmeal, or mixture of two parts of corn, two parts of wheat and one part of steel cut oatmeal by weight for night feed. At this age poults will eat only a little grain. Feed lightly and see that it does not accumulate in the litter.

Continue the feeding of 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 the twentieth day but substitute a mixture of coarser cracked corn and whole wheat, proportions 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.
TWENTY-FIRST DAY
Continue this feeding until poults go on range at six or eight weeks according to the season.

Feed a mash composed of equal parts of corn meal, ground oats, wheat middlings, pure wheat bran and beef scraps in REARING GROUND RATIONS
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 and have the floor of the roosting coop covered with clean sand or gravel.

A I L M E N T S O F T U R K E Y S

Very many poults die or are seriously injured by lice. This is quite unnecessary because they are so easily controlled. If the poults are mothered by LICE CARRYING HENS the young birds are sure to be affected also. If you are using hens for hatching be sure to DE-LOUSE THE HENS before the little ones are hatched. If this is done lice are not so likely to occur. The common kinds of lice are the head and body varieties. The HEAD LICE can usually be eliminated by the application of lard or vasline to the head. The BODY LICE which are the commonest ones are the best handled by the use of the old reliable SODIUM FLUORIDE. This is a white odorless powder which 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 this the same as with the older birds.

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

This liquid is best applied as a spray but can be brushed on in the case of 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 of this is often sufficient for the year. If carbolineum cannot be secured, waste crank case oil from a Ford is all right.

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.

In adult or half grown turkeys the disease is more often seen as a swelling or POUCH UNDER THE EYE.

ROUP In this case the inner passages of the head become affected much the same as a similar trouble in man. When this pouch is seen the eye is usually clear unless the swelling extends to it.

The best TREATMENT for the eye and nose form will be the application of a mild solution of BORIC ACID to the eye and nose. Dissolve about a teaspoonful of boric acid in a quart of warm water and use this as an EYE LOTION. Repeated treatments and care in giving the birds protection from bad weather is usually successful.

The older birds with the swell or pouch in the face are best handled by lancing. By this is meant opening the pouch with a sharp pointed knife. This will allow the pus to drain out. Wash it out with the Boric Lotion. A small strip of cotton tape might be soaked in Iodine and packed in the wound. This should be left in for a day or two so that the wound can get good drainage.

Tuberculosis is not nearly so common in turkeys as in chickens. However, it does occur and seems to be on the increase. This TUBERCULOSIS is no doubt due to the fact that the disease is so common in poultry and on those farms where the poultry flock is badly

infected we may expect also to find the turkeys infected especially if they are permitted to range together about the farm buildings.

Tuberculosis is a germ disease and is very contagious. The more mature birds are more often seen diseased. The symptoms 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 the same as in blackhead. On this account it is difficult to distinguish from that disease. The best way to be sure of it is to OPEN A DEAD ONE. This plan never fails.

Look for yellowish or greyish white spots on the liver, spleen (that round body under the liver) and intestines. On the intestines these spots may appear to look like warts. These spots or lumps are hard and dry. You will be able to tell it from blackhead from 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 foothold in the flock it is best to get rid of all of them and start over. If the plan of separation of 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 in 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 THE BIRD TICK THIS WITH THE FOWL TICK. It is entirely different. It looks something like a wood tick to the average observer. Some folks take it for a BED BUG. It

seems to prefer to attach itself to the skin about the head and neck. They act like other ticks and burrow into the skin and cause an irritation. If present in large numbers they will kill the poults.

There is no treatment for them except to pick them off by hand. If they are discovered it will be necessary to go over them 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 such as pheasants and partidges.

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

We will consider the ROUND WORMS first. They are white, sharp-pointed on both ends and may range in size from an inch to three 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 and perhaps death of the birds affected. DON'T GUESS AT WORMS. Examine the carcass of one that has died or kill one that is sick and examine it carefully. Take a pair of scissors and open up the intestines. Some folks do not like to do this but you cannot be sure otherwise. The writer has seen a considerable number of sick chickens and turkeys and is unable to tell whether they have worms or not without opening them up.

If upon the 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 up 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 quite easily secured. 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 flock before or physic them afterward.

TOBACCO DUST is also 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 fifty pounds of mash and fed daily for a couple of weeks is sometimes found to be effective.

Repeated doses of EPSOM SALTS at the rate of 1 pound for each 100 birds has been found to be beneficial also. By repeated doses is meant every ten days for about 3 times.

In Minnesota we have had considerable trouble with tape worms in our turkeys. They are very serious and often cause great losses.

TAPE WORMS In order to tell whether your birds are suffering from these worms it will be 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 a 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 THEY ARE STILL ABLE TO DO BUSINESS.

The most recommended treatment at the present time is the use of the drug KAMALA. This drug has been used before but has recently been resurrected and put to work. These Kamala Pills can be purchased the same as the nicotine sulphate capsules. Your druggist can also make them up for you if you cannot get them otherwise. The dose is ONE GRAM for each bird. In a very large bird one might give two capsules. If only half or one-third grown one-half gram will be enough. This drug has been found to be very efficient.

D o n ' t T r y T o T r e a t O r
E r a d i c a t e B o t h K i n d s O f
W o r m s W i t h T h e S a m e
D r u g

Each worm requires a different treatment.

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