

Soils and Crops

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HEN-HOUSE LIGHTS HELP POULTRY PROFITS.

During the last few years the subject of artificial illumination for poultry-flocks has been a topic of keen discussion. When the idea first became popular it was supposed that by some psychological process the hen was made believe that she was going through two days instead of one and naturally the old erroneous adage, "An egg a day" would mean two eggs a day. The process is purely a physiological one, however, and not one of psychology at all.

At present we can find records at most college plants and experiment stations which all point in the same direction—more winter eggs.

The underlying principle of artificial illumination is a problem in feeding. It is said that the crop of a hen will contain only enough feed to keep the digestive tract busy for a period of four or five hours. In other words, in the short winter days a hen goes to roost about 4.30 or 5.00 p.m. We have always attempted to send her to bed with a full crop, but now we see that this supply is going to be well on its way before midnight. Then where is the heat and energy to come from for body maintenance? We know that an animal body makes demands on the food and stored materials first for body maintenance. In other words, heat must be supplied. Broken-down tissue must be replaced, energy must be supplied and the natural secretion must be kept up. These functions we find take from three-fourths to four-fifths of all the feed consumed. The excess, if any, will be used for production, or in the case of a hen, for reproduction. We find that in the short winter days the hen has a small amount of excess food to be used for production, due to the short feeding hours and the long hours of inactivity.

The economies of artificial lighting reveals an increase in winter production which means an increase in eggs when the price is high. While a slight increase can be expected in early production this is not great enough to add materially to the profits. We really take the heavy spring laying and distribute it over the winter months while prices are better.

Electric, gasoline and kerosene lights are used, but the most economical and successful is electric current. We find many people using gasoline lights and having excellent results. They are not quite as satisfactory, however, for a large plant, due to the labor in tending the lights. Kerosene lanterns do not give very satisfactory results. Automatic devices can readily be arranged for electric lights, thus reducing materially the labor. Where electric current is available two forty or fifty W. T. lights will light a pen 18x20 quite nicely. These lights should be arranged at a point slightly forward of the middle of the house and spaced about evenly from the ends. This reduces the shadows to a minimum. A single light tends to produce more shadows. The lights may be fastened to a rafter or joist. It is not necessary to drop the light closer than six or six and one-half feet from the floor. A reflector will aid materially in lighting up the floor area. One gasoline lantern will illuminate a pen 18x20 quite efficiently.

Since lighting is essentially a feeding practice it will be seen that it must be very regular and never fail. This has led to the use of several automatic devices being invented, to turn the lights on and off. This is practical only where electric lights are available. Many large plants use a time switch. This is an instrument designed to turn the lights on and off automatically. While the original cost is rather high it is doubtless a good investment on a large plant where many birds are being kept. We have, however, many simple home-made devices which rank with equal satisfaction and at a much less cost. These usually consist of alarm clock attachments. Possibly the simplest is an ordinary tumble switch set out from the wall. The alarm clock is then placed so the winding stem in turning throws the switch over. I have seen several modifications of this same idea

Distributing Liquid Manure.

A prosperous farmer who owned two hundred acres of valuable land also maintained a large herd of dairy cattle. The barns were carefully cared for, and all refuse was collected in a manure pit.

One end of the pit contained a sump in which the liquids ran. Since this liquid represented the most valuable part of the manure it was hauled out to the fields as fast as it accumulated.

But so much time was consumed when disposing of it in the usual manner that a more economical means was sought. The farm owner had a two-ton truck, which was a sort of a general-purpose conveyance. It was decided to equip this with a tank and, by means of the exhaust gases from the engine, spray the liquids over the fields.

The tank held three hundred gallons. A faucet six-eighths of an inch in diameter was attached to the out-

let. The exhaust pipe was continued back of the muffler, and it terminated just beneath the rear end of the tank. Fifty cents paid for a heavy galvanized iron dustpan of suitable type. This was soldered on the pipe and the seam also soldered, so that the exhaust would emerge and spread fanwise across the upper side of the dustpan.

A short piece of hose was attached to the faucet and brought to within two inches of this outlet. After reaching the field, the driver set the faucet to discharge the proper quantity, then went on over the field, the exhaust throwing the liquid over an area from six to fifteen feet wide, depending upon the rate of discharge.

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but they are all relatively simple, inexpensive and reliable. Any one who has a mechanical turn of mind and a genius for invention can easily fix up a home-made device at a very small cost.

EARLY BREAKFAST OR LATE SUPPER. Poultrymen are employing several systems of illumination which might be summarized as follows:

1. Morning light.
2. Evening light.
3. Combination of morning and evening light.
4. Night lunch method.

These possibly explain themselves. Where morning light is used the lights are turned on about 4.00 a.m. and off at daylight. This system has an advantage where electric lights are used. No dimming device is required as is necessary with evening lights. Feed and water can be put in the pens the night before and the attendant gets away from late hours at work. This system has a strong appeal to the hired man whose interests in the evenings are not in the chicken coop.

The evening light is often used where gasoline lanterns are used. The lights are put in at dusk and allowed to stay on until 8.30 or 9.00 p.m. A dimming device is necessary with this system in order to get the birds to roost. With lanterns this is accomplished by gradually turning down the light.

A combination system is commonly used by farmers who make a practice of turning the lights on in the morning when going to do their chores, and again in the evening.

The night lunch system consists of allowing the birds to go to roost as usual and putting the lights on about 8.00 o'clock for an hour while the birds are given a feed of scratch feed. This system is most economical on fuel, the lights being on but for a short time.

It is considered that a fourteen-hour day is possibly the correct length of lighting. We would not recommend using lights in excess of that amount.

FEEDING BIRDS UNDER LIGHTS.

Birds under lights must be fed more than they otherwise would and must be kept constantly busy. The birds are in heavier production and are exposed to just as much severe weather. The grain ration should be increased. Fourteen pounds of grain per day to each 100 hens would not be too much. This should be given in four feeds. The common practice where morning lights are being used is to feed the night before for morning. Grain is fed again at 8.00 o'clock, right after dinner, and again before the birds go to roost. The last feeding should be the heaviest, with a liberal feeding in the morning. If the birds do not consume large amounts of grain they are sure to lose in weight and go to pieces in the spring. A dry mash is kept before the birds at all times. It is advisable to increase the corn content ten per cent. to aid in maintaining body weight. The common practice where evening light is being used is to feed three times a day on grain. In the morning about three pounds; at noon about two pounds; and at dusk about three pounds per hundred birds. Then when the lights are turned on a feeding of about six pounds.

In addition to the above methods, care must be taken to keep a supply of clean water before the birds at all times. This is sometimes difficult in mornings when the water freezes over fast. If there is snow on the ground dump the water in the evening and fill the dishes with snow. This will give very good results until water can be supplied a little later in the morning. Do not neglect the green feed and oyster shell.

LIGHTS IN SPRING.

Many persons using lights have had an unhappy ending to a productive winter by turning the lights off too suddenly in the spring. Any sudden change must be avoided and we usually take from two to three weeks to complete the change, cutting them down gradually a few minutes each day by May 1. The early and late feeding must be continued even after the lights are turned off.

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How I Feed Plants.

Plants grown in pots thrive much better for me if given some feeding. Plants that are kept in pots year after year, like ferns and begonias, will require constant feeding, as well as repotting now and then. It is better to keep up liberal feeding than to repot often. Repotting will always check the plant some, provided it has not become so crowded for root room that it is already checked. I have known ferns to be kept growing well, with very little soil left in the pans, just by feeding regularly and well.

I never feed a weak plant or a sick one. A plant should be healthy and growing normally if feeding will benefit it, and a weak plant is likely to be killed outright by even a light dose of plant food. Neither do I feed plants when the soil is dry. The strength of the solution should be weak at first and gradually increased, while an application once in two weeks at first may be increased to weekly, and with heavy feeders even to twice a week.

For mixing into the soil, bone meal is a safe fertilizer. Most of the prepared plant foods have as a base. Nitrate of soda and ammonia are good nitrogen carriers, and will make the foliage luxuriant and a deeper color. Too much nitrogen is likely to give foliage at the expense of flowers, and to dull the colors of some of the foliage plants. Bone meal is rich in phosphorus, and has some nitrogen.

—A. H.

English farmers learned during the war that sulphate of ammonia, of which the country had been exporting thousands of tons, was good for increasing crop production. Now they are using 230 per cent. more of this product than before the great conflict.

I find a six-inch rule the handiest thing in sewing, to turn hems, to measure widths in seams.—M. R. M.

Do you want something with a kick in it? Try milk.

Market-Type Demand in Hogs is Clearly Known

Overseas Trade Will Not Wait for Breeders' Experiments.

A professor at one of the Canadian agricultural colleges recently remarked: "What I should like to know is why June grass, the most perfect feed we know, in a dairy cow is converted into rich milk and in a beef steer into prime beef."

This pertinent question is evidence of the newer spirit and trend everywhere visible in livestock work. It is true that all foods and feeds when consumed take on the character of things very dissimilar—meat and hair and horn and tissue—within the body of the self-same animal. The technical explanation of this is a matter for scientists. But the result is something which interests intelligent livestock men in what is confessedly the most practical way—through their pockets.

Is not the broad reason for the differing uses of the same feeding material by different animals due to what is becoming better known as "type"? In hogs the effect is very plainly exemplified. In a wide sense general hog feed fed to a "select" type tends to become muscular tissue of lean with

Storehouse or Junk Heap.

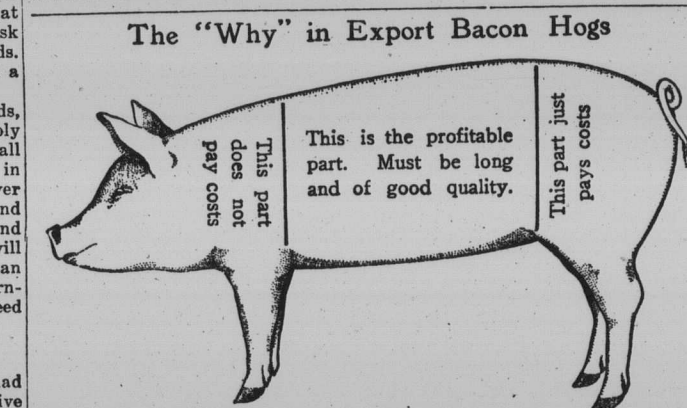
A friend of mine broke a piece of harness the other day. He was in a hurry to get started, but the harness had to be fixed. After a half hour's hunt he found his punch.

Then more time was lost in locating the rivets and riveting machine. Then came a hunt for a suitable piece of leather. Every odd corner turned up its piece of leather, but they were neither the right size nor shape to use. Another hour was lost, then the farmer used a piece of rope and started out.

I could not help but compare this man to another farmer of my acquaintance. If he had broken the same piece of harness it would have taken him just long enough to look into a certain cupboard in the wagon house to know whether or not he had the leather. If he had found the leather, the rivets, punch and riveting machine were in their places on a shelf in front of his bench, and the only lost time would have been the minutes actually consumed by the labor itself.

One man had just as much stored up the other. The farmer keeps a pile, the latter a storehouse. His lumber supply is neatly piled—oak planks for floors, wagon tongues, and so on, are in one pile, fence boards in another. His tools are neatly arranged in racks in front of his work bench. Nails, screws, bolts and staples are sorted and in boxes upon their proper shelves. Each piece of machinery has its kit of tools which are never found outside of the tool box.

There is only one difference between these two men. One takes a few minutes after each job to put things back where they belong. The other would rather spend an hour hunting for things before he begins work—at least that's the impression you get. One knows where to lay his hand on what he has in store. If he does not find it he knows he does not possess it. The other hunts around a while; then, not finding it, he thinks that perhaps he has it, but still he is not sure, so he buys new.—W. F. Messenger.



A "Wiltshire side" of bacon as exported is sold in one piece, shoulder, middle and ham. The diagram tells why Canadian hogs should be long-bodied. The best weight "Wiltshire side" is about 60 lbs.; this can be cut from a 200-lb. hog of "select" quality.

inter-larded fat, or streaked bacon. Fed to a heavy Duroc-Jersey or Poland-China the same feed becomes fat, lard and grease. True, an excess of fat-forming foods would tend to make a bacon hog fat, but in the main, if care is taken in this regard, "type" is the first requisite in the production of a market class.

Type is not breed, though it is hard to know where type hardens into breed and where breed blends with type. After all, both are the result of fixed characteristics: breed definitely separated after selective crossings and carried on from generation to generation and type perhaps the same thing within breeds but not yet clear in the line though in the process of becoming clear.

In the bacon hog we know that the characteristics or the marks of a type to suit Canada's best market—and it must be clearly understood that other types are as important for other markets—are the long body, with an inherent capacity to form lean, tender flesh quickly. In addition the "type" must be ready to take a "finish" as near to 200 lbs. as can be. What

ieties in some breeds of swine of which Berkshires are the outstanding example, one definitely lard type and the other approximating the bacon type. It will, of course, be possible to keep on selective mating within these breeds so as to produce a clear line, for that is the way in which in the past breeds have been evolved. But it is a long and costly process so far as Canada is concerned. Our market is clearly set for one type. We must get that type on our farms by the shortest possible method.

One thing is sure; this overseas bacon market will not stand still for us the long years necessary to building up new types from lard hogs. In other words, if Canadian farmers in large numbers do not "get after" this valuable overseas market in bacon by the shortest possible route and furnish it with that which it demands some other farmers will. That has been the secret of Danish success.

Why bother with what will not pay? Let us in Canada feed our hog feeders to types that we know will suit our trade and yield, year in year out, the margin over cost that the world calls profit.

THE SUNDAY SCHOOL LESSON

DECEMBER 9

The Outreach of the Early Church, Acts 8: 1 to 15: Golden Text—Ye shall be witnesses unto me both in Jerusalem, and in all Judaea, and in Samaria, and unto the uttermost part of the earth.—Acts 1: 8.

LESSON SETTING.—The time had come when the Gospel, having begun in Jerusalem, must reach out. Geographically, Samaria looks like the most natural place for the extension of the Gospel. But it was an unlikely field when we remember the hatred existing between Jew and Samaritan. A fierce persecution of the Christian Church had broken out under the leadership of Saul. God uses this wrath of his enemies for his own purpose.

I. PHILIP BEGINS A GREAT WORK IN SAMARIA, ACTS 8: 4-8.

Vs. 4-6. They that were scattered abroad. The martyrdom of Stephen marks the beginning of persecution. The leader of the persecution is Saul, afterwards the great apostle of the Gentiles. He manifests as a persecutor the same intensity of purpose that he afterwards shows in the service of Christ. The result of the persecution was that many disciples fled wherever safety was most assured. Every where preaching the word. This scattering of the disciples brought about the very thing that Saul sought to prevent. It was like trying to extinguish a fire by scattering it. Every fugitive was a witness for the truth.

Philip. He was one of the seven "deacons" appointed to attend to the distribution of alms among the poor Christians, ch. 6: 1-6. Samaria, the capital city of the district of Samaria. Preached Christ unto them. Rather, "proclaimed the Christ unto them." Philip presented Christ to them as the Messiah. Without doubt he would speak of the beauty and love of the life of Christ, but his main theme was that this Jesus who had been crucified had risen again, and was the fulfiller of God's divine purpose and the answer to men's expectations.

Vs. 9-8. The people with one accord gave heed. There is a general and ready response. The people are ready for the message. We may prove that the program of missions must be universal by pointing to the definite command of Jesus to go into all the world as well as by the spirit of the Old Testament utterances. We may also prove the same fact by pointing to the world response made to the word of God. Hearing, the miracles which he did. The meaning of the word translated "miracle," is "sign." A miracle is a sign, a seal, a confirmation by God of the human message. Unclean spirits, possessed, lame, dumb, blind, etc., were cured. They are all miracles of mercy. Great joy in that city. The gospel was to the people of Samaria "good news."

II. PETER AND JOHN CONFIRM THE WORK, ACTS 8: 14-17; 25.

Vs. 14-17. When the apostles . . . at Jerusalem heard. The apostolic band remained in Jerusalem in spite of the persecution. Very naturally they were not only leaders in Jerusalem, but their authority extended with the extension of the gospel field. They were the living witnesses of the risen Christ. News is sent to them of the great happenings at Samaria. Sent, the apostles Peter and John. They came not as critics and censors, but as helpers and advisers. Their presence would be a confirmation of the words of Philip. Prayed . . . that they might receive the Holy Ghost. The New

Testament clearly points to the outpouring of the Holy Spirit in a special manner and degree. The apostles here, by their prayer to God, make manifest that the gift was the direct gift of God, and not in their own power. Laid their hands on them, an outward sign of the imparted gift. V. 25. When they had testified and preached, thus with wholeheartedness they endorse the new extension of the gospel. Returned to Jerusalem, returned towards Jerusalem. Preached the gospel in many villages of Samaria. John had once preached to Jesus that he should command a fire to consume the inhabitants of a Samaritan village that rejected Jesus (Luke 9: 54), but his whole attitude is now changed.

APPLICATION.

1. The outreach of the early church came about through being thrust out. Acts 8: 4-8. The spread of the church from Judaea into Samaria was not the result of cool deliberation or a missionary resolution carried unanimously. If something out of the ordinary had not happened, the disciples would have tarried in Jerusalem indefinitely, and humbly speaking there was some danger that Christianity might continue to be a mere annex to Judaism. But Stephen, that morning star of St. Paul and of the Protestant reformation, started a new movement out of the old Jewish church. For this he was arrested, tried, condemned and martyred. His action caught fire and became a general persecution of the early Christians. The scattered followers of Jesus bore witness to him in new places, and with a vigor and power that was a good thing for the fortunes of the faith that this outbreak of fury came. "Blessed are ye when men shall persecute you." Blessed is any good cause that has not too easy a time. A kite rises against the wind. The blood of the martyrs has been the seed of the church. Though God can take good out of evil, he can take good out of evil as well. God can make the wrath of men to praise him.

II. This outreach of the early church into Samaria was spontaneous in effort, but followed up by the careful supervision of the central church at Jerusalem, vs. 14-17. That Christianity should be organized and governed from some central point from within, surely needs no proof. It was Christ himself who established the fellowship of disciples. He said, "I will build my church." No mere host of secret disciples could have successfully buffeted the waves of persecution in early times, or survived the inundation of the barbarian invasion of the Roman Empire in later days. In our age there is a tendency to over-emphasize individual liberty, and to resent suggestions from the center. Let us remember that there can be no great output of strength without co-ordination, and no co-ordination without centrality of control.

III. The outreach of the early church was formally reported to the central church and systematically approved, v. 25. There was here no mere arbitrary exercise of power without any regard to the free play of enthusiasm on the part of Samaria. Not only was enthusiasm obedient, but authority was sympathetic.

they are saucy fellows." Rolly had just brought a chair out on the porch alongside Bruin's. He had finished up the supper work and was ready to enjoy the evening with his guest and newly made friend. "You have a very pretty place here for your house," said Bruin, "and such near neighbors."

"They are old settlers around here," said Rolly. "Squirrel lives over my head, and Sammy Squirrel lives over Rolly Rabbit, pointing out. 'He is a good fellow and a neighbor.' 'Over there' the east, 'is Willy Wabbit' and just beyond that Chipmunk lives." "What a fine place," said Rolly.

"Yes, but," said Rolly with a sigh. "You look so sad, kind friend. May I ask why?" questioned Bruin. "I do not like to bother others with my misfortunes, but seeing that you ask me, I will tell you," said Rolly Rabbit. "Perhaps you have noticed that I live alone here."

"Yes," said Bruin, "and ever since I came I have wondered why." "This is the reason," exclaimed Rolly. "It happened just about this time last year. Mrs. Rolly Rabbit and I were out after some early dewberries. We went to the patch where we had always picked them. Finding none, we wandered far away to the edge of the Big Woods. We were both very careful, for we had heard of some of our neighbors who had gone out there and never came back. Just when we were both real busy picking berries, I looked up and saw—"

Here big tears began to roll down Rolly Rabbit's cheeks. Bruin felt very sorry for him. But Rolly went on, "I saw a big man Woodstock K. K. horrid bang-bang things pointing right at my wife—I was faint and hollered 'run!' Just then there was a terrible bang! I ran as fast as I could and hid in some bushes. In a few minutes I peeked out. What I saw I shall never forget! The big man was going away with time a see one now."

Mrs. Rolly Rabbit's hind foot hanging out of his big pocket. That was the last I saw of her."

THE CHILDREN'S HOUR

HIDE-AND-GO-SEEK WRITING.

Little folks love jokes just as much as do grown-ups, and they are always anxious to turn the tables on their playmates, and even big folks.

Here is a little surprise trick that you can fool your little friends with, and perhaps papa and mamma.

Let us call it hide-and-go-seek writing. First, squeeze the juice of a lemon in a thoroughly clean ink bottle, being sure that every trace of ink has been removed. With a new steel pen point write with this fluid on ordinary writing paper.

The writing will be invisible and you will have to be careful to have plenty of the fluid on your pen. After this is thoroughly dry, press it firmly with a hot iron and you will be surprised to see the writing plainly.

It would be fun to write several lines on a sheet of paper and when daddy comes home from work to-night, to ask him what is on the sheet. When he tells you he can see nothing, pass the hot iron over the paper and surprise him by letting him read it. But try this, too, when your little friends come to visit you in the afternoon to play games. With the lemon ink write the names of half of those present on a slip of paper and pass them to those whose names you did not write. When they press these slips with a hot iron, they will learn who their opposite player will be in the next game.

WHY ROLLY RABBIT LIVES ALONE.

"This is surely a fine evening," said Bruin. "The cool air makes my bee stings feel much better. Those horrid bees! I'm afraid I shall run every time a see one now."

"Oh, they won't bother you unless you molest them," replied Rolly Rabbit. "But when you do trouble them, last I saw of her."