# THE PROGRESSIVE FARMER

THE INDUSTRIAL AND EDUCATIONAL INTERESTS OF OUR PEOPLE PARAMOUNT TO ALL OTHER CONSIDERATIONS OF STATE POLICY.

Vol. 17. Raleigh, N. C., April 8, 1902. No. 9




## Agriculture.

### THE MOTH CATCHER.

**Entomologist Sherman Carefully Examines the Arguments, Pro et Con, and Concludes: "I Should not Think of Purchasing One if I Were a Farmer"**

Correspondence of The Progressive Farmer.

As there has been more or less discussion of this device for trapping insect pests, a few words regarding it may not be out of place.

The trap lantern is not new, nor is it original with Mr. Haseltine. Years ago, when the government officials were conducting special investigations of the cotton insects, trap lanterns were used to catch the adult insects, but the results proved to be so indefinite that they went out of use, and have never since been used extensively in general practice.

I have never operated the Haseltine Moth Catcher, but have received specimens from a party who was employing it, and have examined the victims of a lantern on another farm. Further than this, it has been my custom, as it is of every entomologist, to collect insects that are attracted to brilliant lights both in the country and in the city.

This moth catcher has no more magic attraction for insects than other bright lights. Many of the most serious insect pests fly only in the day or at dusk, and are not attracted in this way. In the case of moths, and often among other insects, it is not the flying insect that does the damage, but it is the caterpillar or grub that may hatch from the eggs. After the eggs are laid, therefore, it does no good to catch the moth. It is also of no avail to catch the male moths, and I think I am safe in saying that male moths are more often attracted to lights than the females. There is one good feature about the Haseltine Catcher above ordinary lights, and this is the reflectors, which increase the lighting power and, when the insects fly against them, they fall into the pan which is prepared with a liquid to kill them. The older trap-lanterns did not have the reflectors, so far as I am aware, but had the light in an ordinary globe and insects flying against the globe, fell into the pan.

Mr. Haseltine has several testimonials for his lantern from this State. One of the parties is a man known to me, is decidedly intelligent, and not likely to make hasty mistakes Yet I know that there are those who have been much misled by the same catcher, and I am of the opinion that it gives an appearance of much better work than it performs.

Many insects of various kinds are attracted to lights and if some pests happen to be less numerous while a farmer is testing the catcher, it is easy for him to come to the conclusion that "the catcher does it." Experience is a good teacher, but continuous experience is more apt to lead to sound conclusions.

A lot of insects caught by one of these lanterns was sent me. Careful examination showed that the balance [of injurious over beneficial insects] was in favor of the catcher, but so slightly so that I would not recommend its use. This was in the heart of one of our best fruit-growing regions. At another place a farmer was telling me in glowing terms of the merits of the catcher. I counted over the remains of the insects in the pan, and did not find a single serious pest that I could recognize, while there were several whose habits rendered them unimportant.

There are certain cases, however, in which there can be no question as to the use of the trap lantern. Leaf-feeding caterpillars in green houses come mostly from small moths and many of them are attracted to lights. As a remedy for the moth that causes the corn ear-worm, it is of such doubtful utility that I should not recommend it.

CONCLUSION.

The catcher will do some good, but it is my judgment that it will not be found to noticeably lessen the number of pests in any field or orchard. For small gardens and green houses it *may* be found profitable, but for my part I am not prepared to recommend it. It can never overcome the spray pump for the reason that diseases would not be affected by it, even though it were to exterminmate the insects (which I claim will never be the case) and Bordeaux mixture and Paris green will be in use long after Mr. Haseltine's catcher is forgotten.

I do not condemn the catcher, for there are instances in which it *may* prove to be of use, but I should not think of purchasing one if I were a farmer. If need arose, I could easily rig up a light of my own, and the plan would be nothing new. It has been done before Mr. Haseltine's trap appeared upon the scene.

FRANKLIN SHERMAN, JR.
Entomologist Dep't of Agriculture,
Raleigh, N. C.

### WHAT IS A SEED, AND HOW IS IT PRODUCED?

Correspondence of The Progressive Farmer.

A seed may be defined as a young plant and its reserve food material enclosed within a normally protective layer.

Some times the food material is deposited beside or around the plantlet, as in the seeds of Indian corn and wheat. Again the food material may be collected in the plantlet itself, giving it a white, meaty appearance. Bean seeds are of this structure.

It is a mistake to say that plants grow from the seed; or rather it is a half-truth, for the question is, Whence did the plantlet come that is already present in the seed and needs only to renew its development when the seed germinates? This can be answered in a word. Leaving out some peculiar conditions of development, it may be said that all plantlets in seeds arise from eggs.

The next question is, Whence comes the egg from which the plantlet develops? The reply is, that the egg, as in all other instances, is produced in the body of a female plant.

Still another question: Where is one to look for the female plant of a rose or willow, or any other seed-producing species? To this, we answer that the female dsvelops from a spore.

Again one inquires, Where is the spore to be sought? To this is the response that it is found in the young *ovule* or rudimentary seed.

What then is the seed rudiment? It is a spore case which produces at its centre the single, large, thin-walled spore. Such a spore is called an *embryo-sac*, and it may be easily found by opening pine seeds in cones not more than one year old.

How is it possible for a such an egg, developed and retained within the tissues of a spore-case, to obtain fecundation? Here comes into play an adaptation on the part of the male plants of the seed-producing varieties. The pollen grain, which is a *microspore*, is blown by the wind or carried by an insect from the stamens of the plant (or the flower) to the pistil, where it is deposited on the stigma, which is the opened end of the pistil. Here the pollen-spore germinates, producing a delicate thread, like a cob-web, which grows through the tissues of the *style* down to the surface of the large spore, imbeded in the rudimentary seed. By this time the female has developed within the large spore and has produced her egg. The end of the pollen-tube penetrates a sperm which fuses with the egg, and then fecundation is accomplished.

Then the egg becomes an embryo which grows and produces a short stem, one or more seed leaves (in most plants) and a root. While the embryo is developing, the tissues of the spore-case and the membranes surrounding it become modified into the outer layers or seed-coats. When the embryo pauses in its growth and passes into a temporary dormant condition the seed is said to be ripe. It may not, however, be able at once to germinate.

If the reader has followed this explanation closely, I believe he will have a faint conception of what a seed is and how it is produced.

J. C. BEAVERS.
A & M College, West Raleigh, N. C.

### NEWS OF THE FARMING WORLD.

**Our Washington Correspondent Tells What Progress is Being Made in the Various Sections of the Country.**

Correspondence of The Progressive Farmer.

What was practically the maiden speech in the Senate of Senator Dolliver, of Iowa, was delivered one day last week during the discussion of

THE OLEOMARGARINE BILL.

Senator Dolliver's speech was an admirable defense of the cow, forming a picture as he spoke of the prosperous farms of the Iowans, "wrapped in the arms of the rivers Missouri and the Mississippi." During the course of his talk, being a believer of illustration better than description, he produced from his desk numerous descriptive signs of the oleo dealers and also a package of the much-discussed oleomargarine. This package, he stated, was marked according to law, but he challenged any Senator to find such label. Senator Tillman, always ready for the fray, accepted, but after an exhaustive examination acknowledged his defeat. Laughingly, Senator Dolliver showed snugly tucked away in the very last fold of the wax wrapper, in small design, the label marking the package as oleomargarine. The

PREDOMINANCE OF THE FARM BOY

was emphasized when Mr. Dolliver described an incident which occurred on the late President McKinley's Western tour. As the train was passing through Iowa early one morning the President was observed to be laughing to himself as he watched the antics of two boys warming their feet on the spot where a cow had been lying during the night. "Gentlemen," said President McKinley, "one of the pleasantest and most delightful recollections of my boyhood is the solid comfort which those boys are now having—warming frost-bitten feet in the place where the cows have been lying. I wonder how many of you have had a similar experience." One after another of the members of the Cabinet, Governors, Senators and Representatives, who were of the party, bore witness to the same experience, beginning with John Hay, who did his feet-warming partly in Ohio and partly in Illinois, and ending with Secretary of Agriculture Wilson, who warmed his feet in the heather of Scotland.

The New York Cornell Experiment Station has been continuing its

EXPERIMENTS IN THE CULTURE OF POTATOES

along the same lines as in previous years and some additional results have been noted by the Department of Agriculture. "On a soil well supplied with humus the moisture may be conserved even through a severe drought, and a fair crop of potatoes produced," says the report. The great importance of thorough tillage has been very clearly brought out in the experiments, but it has also been shown that intensive tillage alone is not sufficient to produce a large yield of potatoes, as it may be over done. During a drought only so much tillage is needed as will keep the surface mulch loose and thoroughly dry The drier the surface layer of soil, the more slowly will moisture be absorbed by it from the soil beneath. A practice which has been deemed wise by the experiments is harrowing potato land before the plants appear above ground. The use of Bordeaux mixture in nearly every case resulted in an increased yield, even when blight was not prevalent. Pruning potato vines to one main stem, on the other hand, was not beneficial.

But the report admits that methods of procedure which are applicable during one season, must be modified to meet the requirements of another; the treatment of one soil, which in that instance is correct, may be radically wrong when applied to another. Success will be attained only by thorough familiarity with the plant and its habits of growth, and then conditions must be made to meet as completely as possible the requirements of the plant.

GUY E. MITCHELL.
Washington, D. C.

**Extremes of ups and downs in food soon dry up a cow.**

### AN EXPERIMENT IN SOIL IMPROVEMENT —ALSO SOME OBSERVATIONS AS TO TENANT LABOR.

Correspondence of The Progressive Farmer.

For some time I have intended to write you the result of an experiment made by me a few years ago. I had long been a believer in green manuring as the most expeditious, as well as the most economical, route to enriching land, a little at a time; for the idea of bringing it up on a large scale with manure, with limited means was out of the question.

We therefore selected a spot of poor red clay loam that had on it a crop of little bumblebee cotton, supposed to make about 175 pounds seed cotton per acre or less. Sowed it in annual clover in September, sprinkled a light sprinkling of stable manure all over it, about two cords to the acre, near as could be guessed at, then ran a cultivator over it. Rain soon fell, and the nitrifying bacteria began to work in the soil, and by frost the soil ferment started by the little manure had given the clover a good start.

In the winter several snows fell and gave the soil the ammonia usually found in the first falling of snows and rains. In the spring the clover started off well, and as soon as the soil became warm enough, the bacteria with which the land had been inoculated by the application of the manure, started the soil ferment again, and by May 16th the clover was in full bloom, not a heavy crop, however, but enough to cut off if clover had been the whole object. But instead of mowing it, we gave it 300 pounds acid phosphate to the acre and plowed it in the land. Three weeks later we sowed and lightly plowed in two bushels peas to the acre, going across the former plowing These peas soon covered and shaded the ground.

Just before we expected the first killing frost, October 8th and 11th, had a drag made and dragged the pea vines down, tops towards the way the plow would run so as to get them to turn under ground. Sowed 400 pounds acid phosphate on the vines and turned all under with deep two horse plow.

First of November sowed Fultz wheat at rate of one and a half bushels an acre; when reaped, threshed and measured, it made at the rate of 37 bushels to the acre. In the condition of the land only one year before, it would not have made five bushels.

Here then is an acre of land made rich in one year, at a cost of 700 pounds acid phosphate, $4.90; 25 pounds annual clover seed, $2.50; one and one-half bushels wheat, $1.50; stable manure, $3. Total, exclusive of labor, $11 90.

Now 37 bushels wheat at 80 cents, $29 60; straw, $10; and chaff, $1 Total, $40.60, plus one acre of land worth $40.

And the land ready now for another crop of pea vines, which will come off in time for another crop of annual clover, to be followed with corn, which may be expected to yield 80 bushels per acre with a good season.

The experiment confirmed my opinion that the green crop annual clover and peas properly treated with the acid phosphate, is the quickest and by long odds the cheapest method of bringing up our lands to a point in fertility to yield the intelligent farmer from three to four times what they now do. If only one acre a year, in five years it will be five acres.

But some will argue, "Feed the clover and pea vines and put the manure back on the soil." We answer, Yes; you do not take proper care of the little manure you make, and you would do no better with the manure from these green crops. Besides, your land will rapidly grow rich in proportion to what you put on it, not what you take off.

But no agricultural country will improve where the tenant system is fostered and encouraged. The tenant cares nothing about improving and strengthening the land; all he wants is to get all from it he can, then leave it for some other ignorant tenant; and so it goes year in and year out. A lien bond, a few sacks of commercial fertilizer, and the land sapped of a crop of cotton seed to haul to the oil mill.

Wonderful progress has been made in agriculture along certain lines, but most of that progress, if not all, consists of labor-saving machinery. We are shipping our land across the ocean faster than we are making it. It has been said that Ireland was shipped to America in the form of oats, so that now the country can scarcely produce enough for home use. The same may now be said of the South: we are shipping our lands away in form of cotton faster than we are making the land.

I intended to explain the chemical reaction that takes place in the soil when these green crops are turned under with the acid phosphate. As the green vegetation undergoes decay, ammonia is released and coming in contact with the sulphuric acid used in making the acid phosphate, sulphate of ammonia is formed which is a fixed salt of ammonia and will not evaporate, while the lime is released as a hydrate and acts upon any potash or humus in the soil. Other acids also combine with the ammonia while the phosphoric acid may or may not undergo a change in proportion as free lime is present, or phosphate of potash may be formed.

When renters are very limited as to means to purchase, the seed and acid phosphate used as in the foregoing experiment (as most of them are), would it not abundantly repay the land owner to furnish these things and to see to it that his land is improved on a plan like this, or something better if he knows of anything better? Unless some uniform system having for its object the enriching and improving our lands in the South, in less than fifty years very little of it will be worth owning, that is of the land constantly let to ignorant tenants. The climate and other natural advantages possesshd by the South renders it one of the best agricultural countries in the world; but oh, how these natural advantages have and are being abused! Largely over half the corn, meat, hay and flour consumed in the South now comes from the West. It is questionable if education will do much to remedy this evil in many years unless the young men educated in our agricultural schools and colleges are given a better showing as regards home patronage than they have been in the past.

Hoping that the above plan for rapidly enriching some of our worn out soils will receive the attention which it merits, I will close, but I must say that this plan will charge the soil with sufficient humus to feed twenty crops of wheat.

D. P. MEACHAM.
Wake Co., N. C.

### THE EAST TENNESSEE FARMERS' CONVENTION.

The East Tennessee Farmers' Convention and Farmers' Institute will hold its 27th annual meeting in Knoxville on May 21, 22 and 23. The railroads have granted a single fare for the meeting and the tickets will be good from May 20th and 25th inclusive This is the first time that a single fare has ever been obtained for this convention and in view of the fact that there was such a fine attendance last year, there is every reason for anticipating a much larger number of farmers at the coming meeting.

It is expected that Secretary Wilson, ex Gov. Hoard, Hon T. B. Terry and other noted agricultural experts will be present and deliver addresses at the different sessions of the convention. The detailed programme is now in process of preparation and will be issued during the last week in April.

Those desiring special information about the meetings can secure the same by applying to Prof. Andrew M. Soule, Secretary, Knoxville, Tenn.

Hillsboro Observer: Our farmers report that wheat is improving and the prospect for a fair crop is growing brighter in some sections. This seems to be the news from all over the State as to wheat. It is said that the oat crop in this county will be almost a complete failure.

### SILK CULTURE.

**The State Department of Agriculture to Import a Supply of Silk Worm Eggs—How the Worms are Fed.**

Correspondence of The Progressive Farmer.

In order to introduce and test the best race of Italian silk worms the North Carolina Department of Agriculture has sent to Lombardy for a small supply of silk worm eggs. The eggs are expected to arrive about April 15 or 20. Citizens of the State, schools and public institutions desiring to attempt the silk industry will be supplied at net cost with enough eggs to start the work. No one person without previous experience should attempt to incubate more than one tenth ounce of eggs the first year. We will send one-tenth ounce to any one for 30 cents in postage stamps. Those desiring the eggs should make application at once.

One-tenth ounce of silk worm eggs will produce about 4,000 worms. To feed these will require about 200 pounds of fresh mulberry leaves. The Chinese or *multicaulis* mulberry is the best. This is the large, dark-leaved, yellow-rooted tree very common in the State, and a great sprouter from the roots. The *catheite* mulberry is not very good for worms, but may be used when the worms are older. A hedge made of seedlings of the white mulberry around an ordinary town lot or a barn yard will furnish leaves enough to feed the produce of two or three ounces of eggs. This is as much as the average family should attempt.

One year seedlings of the white mulberry can be purchased of Mehan & Sons, Philadelphia, Pa, for $20 per 1,000.

It will not be advisable to attempt to grow cocoons for sale the first year. All the cocoons should be used to increase the supply of eggs for the second year's crop.

The Department will publish shortly a revised and enlarged edition of the bulletin on silk growing, originally issued in November, 1901. In the meantime, a few copies of the former edition remain and will be sent free to those interested in the new industry.

Applications for silk worm eggs should be made to the undersigned, and to receive attention must be accompanied by the cash. Not more than two-tenths ounce will be sent to any one person. Address

GERALD MCCARTHY,
Biologist N. C. Department of Agriculture, Raleigh, N. C.

### CUMBERLAND FARM NOTES.

Correspondence of The Progressive Farmer.

Farmers here are making good use of the beautiful weather for farm work now. If they act according to their expressions, they will plant less cotton this year and raise more home supplies. My observation and information in the parts of the State where I have traveled in the last few months, is the tobacco acreage will be right much increased, a probable decrease in cotton, and a much larger increase in acreage for home supplies. J. C. BAIN.
Cumberland Co, N. C.

**I know so many farmers who, in their desire to economize and save, deny themselves the very things that, taken advantage of, would be the stepping stones to fortune. The farmer that belongs to this class will not hire extra help in time of need, and at the end of a busy season is apt to find himself in bed with a doctor's bill to pay. He will not buy improved farm implements, but waits to borrow of a neighbor, while his crops go down in the field for want of cutting, or spoil for lack of cultivation. Having but little time to leave home, and taking no agricultural paper to keep him informed as to the state of the markets, he disposes of his produce at a disadvantage. Conveniences about farm or household would be be considered extravagant. At the end of the year there are no profits in sight, so the old cry of "farming don't pay" is started again. We must remember that in all kinds of business there must be a certain outlay before success can come.—G. T. Shirley, Summit Point, W. Va.**