

Killing Eggs of the Gypsy Moth on a Large Elm Tree



The attempt on the part of the State of Massachusetts to eradicate the gypsy moth has been generally considered as one of the most important attempts at modern economic entomology. The conditions involve the extermination of a highly prolific species, well established over an area of more than 200 square miles. The introduction of the gypsy moth was made by Professor L. Trouvelot, the French savant, who was interested in the matter of raising silk from native silk worms. The manner of their subsequent escape is not clearly known, but the result was most unfortunate. Twelve years from the time of its introduction, the moth became a serious nuisance in the neighborhood where it had escaped. The State of Massachusetts has expended in the annual appropriations for the gypsy moth work the sum of \$1,155,000.

Lack of Potash May Cause a World's Famine

Edward Atkinson's Dire Prediction.

VERY now and again some scientific investigator, delving deep into the secrets of natural forces, has unearthed a menace which has seemed to threaten world-

all the arable land. Mr. Atkinson's suggestion, which is unique at least, is that the world famine is likely to come in the form of a potash famine—through the using up of the potash in the soil, and the consequent failure of the land to produce food crops. It is safe to say that most persons never have taken potash into consideration as one of the food essentials of the planet. It is a fact, however, that it possesses real importance in the production of almost every food crop that grows. Potash is present

would seem probable that such large deposits would be of frequent occurrence. But, as Mr. Atkinson points out, exactly the reverse is the case. In discussing the matter before the Association for the Advancement of Science he called attention to the fact that the world's entire supply is at present being drawn from the mines of Strassfurt, Germany, and that, while other fields equally great may possibly exist, they have not been uncovered up to the present time. Practically every bit of the potash used in the United States is imported, and the volume of these imports is increasing rapidly, as the constant working of the soil makes the use of fertilizers more and more necessary. At the present time these imports amount to more than \$2,000,000 yearly, although the proportion of our soil



requiring artificial stimulus is relatively very small. Potash is not now expensive, even with the necessity of bringing it across the Atlantic. The real danger, as Mr. Atkinson sees it, is in the exhaustion of the source of supply when the demand grows, as it is practically certain to do in ever increasing ratio.

Not even Mr. Atkinson contends that a food famine from the exhaustion of the potash supply is imminent, but the possibilities of such a famine are interesting to contemplate. It would come about gradually, of course, the dwindling of the supply being accompanied by a steady increase in price. The first result, therefore, would be to place this once humble product among the precious metals. As time went on it would rank, as Mr. Atkinson suggests, even above silver and gold.

whatever. That is the principle of the destructibility of matter. At a dinner of scientists held in Washington at which the predictions of Sir William Crookes and Mr. Atkinson formed the leading topic of discussion, this principle was advanced as the chief argument against their conclusions. The scientists were confident in the belief that the potash taken in a thousand forms from the earth would in some form return to the earth, and that in some way the conversion of potash from varied sources into shape by which it could feed the soil, would come about when necessity demanded it. There is no doubt, however, that the discovery of an addition to the world's supply of potash is a matter of real importance, and it is likely that the sensation caused by the statements of Mr. Atkinson will lead to a vigorous search for deposits in this country. If such deposits of any considerable extent are in existence in any part of the country they undoubtedly will be uncovered before the German field is worked out.

CARING FOR THE FLAG.

Some Valuable Suggestions From a Lieutenant in the Navy.

Flags, in a certain way, are a country's clothes, which it puts on in the morning and lays aside at night. This we see in symbolic pictures, where Uncle Sam, representing United States, is dressed in the Stars and Stripes, and John Bull, representing Great Britain, wears the Union Jack for a waistcoat. A flag should, therefore, be laid aside as neatly as a valued garment, and when used it should be handled so as not to be soiled or torn.

A flag, properly made, has a light canvas binding along its hoisting edge, through which runs a piece of small rope. At the top of the binding the rope has a toggle, while about a fathom hangs out at the bottom and is called the "bending line." The name and size of the flag are stencilled on one side of the binding near the toggle.

To make up the flag, fold it lengthwise, with the name outside, two or more times, until it is in a strip about a foot wide. Lay the strip name-side downward; take up the end farthest from the binding and fold the strip down back and forth two or three times, each fold on top of the preceding, the last fold being thus toward the binding.

Then roll the flag up to the binding; take one tight turn around the bundle with the bending line (or two turns if



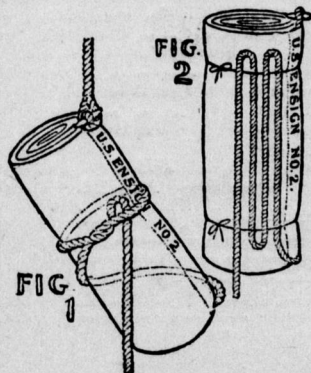
the flag is large and the line long enough) and push a bight of the line between the turn and the flag as shown in Fig. 1.

In this condition the flag is said to be "made up," and is ready for laying away, or for bending on to the halyards. If laid away when thus made up, its name and number will be in plain sight, so that it need not be unrolled to be identified, and when it is unfurled it will be as if newly ironed. When made up it can be carried about without trailing in the dirt, and will remain in a compact bundle so long as no strain is brought upon the bending line. This being bent to the lower part of the halyards, however, a sharp pull on the latter will slip the bight and "break the flag."

If the flag is a large one, a turn around its middle is not enough to keep it in a compact bundle, so it should then be secured by tying around it near each end a piece of cotton string. In this case the bending line is first laid along the side of the bundle in three bights, so that the upper string passes through all three, and the lower one through the first two, as shown in Fig. 2. A sharp pull on the lower part of the halyards will break the strings and unfurl the flag as before.

It is not customary to hoist the flag all the way to the masthead made up, but only high enough to get it clear of dirty ground, or of obstructions such as rigging, trees, or the eaves of houses; then it is "braced" and hoisted unfurled.

Flags are only mastheaded made up



when it is necessary that they should unfurl instantly, as at the firing of a salute, or at some climax in a public ceremony.

Above all things, flags should be kept dry; and if they are wet when hauled down, they should be spread out under cover until there is an opportunity to dry them in the sun, so that the white portions will keep bleached.—John M. Elliott, Lieutenant United States Navy, in Youth's Companion.

Easily Accomplished.

When reproved on one occasion for not attending a committee called to consider the paving of St. Paul's Churchyard with wood, Charles Macklin, the noted Irish actor, said: "Oh, lay your heads together, and it will soon be done."—The Argonaut.

FARMERS' CORNER

A Combination Hog Food.

The yield obtained at the Kansas station from Kafir-corn, soy beans, and alfalfa hay, the sowing of only one crop failure in 11 years, and the good results obtained from fattening hogs with combination of these feeds show a greater certainty of crop and more pounds of pork per acre than is usually secured by ordinary feeds.

Bee Poison and Sting.

The workers and queen are supplied with a weapon which they use infrequently, for without this it would be impossible to protect their hard-earned stores from their many enemies. When a honey bee inserts her sting, she deposits a tiny drop of formic acid. It is this which causes the intense pain and swelling. Bee poison has considerable antiseptic properties and is known as a cure for rheumatism and gout. It is this ingredient which preserves honey indefinitely.

How to Feed Clover Hay.

When clover hay is fed to stock the animals may receive more proportion than they require, and a portion will pass off in the manure. It is economical, therefore, to feed straw and corn fodder with the clover hay, for the reason that the animals will be fully as well maintained and at less expense. The experiment of mixing clover and the cheaper foods has been made, and it was demonstrated that cows gave fully as much milk and kept in as good condition as when clover hay only was used.

Concerning Fences.

The fences between pastures and cultivated fields should be made strong in the spring before the cattle are turned out, but it is well to keep watch on them at later times, especially if the pasture grows scanty. Then a look over the fence at a field of corn or waving grain is a temptation that should be guarded against, as it may not be easily resisted. Then in some localities there are a class of trespassers who think little of throwing a stone off the wall or letting down a rail in the fence to make an easier passage for themselves when they go that way gunning, fishing or berry picking. Such parties should be punished, but it is not always easy to detect them. We have seen a half rod of stone wall that had been thrown down, apparently to get out some woodchuck or rabbit, and left, as if the one who had done the mischief thought there was no need of any wall there.—The Cultivator.

Left-Over Ensilage.

No harm if you have at the beginning of summer some left-over ensilage. It used to be thought that cattle would not eat ensilage in warm weather. This is found to be a mistake. If it is only kept sweet and good the cows will like it and thrive on it just as well in summer as winter. It is more likely to spoil in warm weather than in cold and extra precaution will be required. The silo had better be of smaller size.

There is often a dry spell in July or August when green fodder is hard to get and then this left-over ensilage will meet the want. It is practicable to refill a small silo from early planted corn. Corn for such purpose should be already in the ground. Some persons find it profitable to have a separate silo for winter and summer use. Probably persons in the dairy business appreciate the silo better than those who merely have the ordinary farm assortment of live stock and do not make a specialty of the dairy. Good green fodder or ensilage is milk-producing.

Grit Essential for Chickens.

Grit for hens is as essential as teeth for horses. When a horse begins to lose his grinders all the oats or corn in the world will not keep him fat. The only thing to do is to feed him with ground feed or mash.

Probably every person who has had to do with chickens knows that gravel or grit of some sort is the kind of grinders that the fowl must have to thrive, not to say to live. Perhaps all do not know what will be the result of lack of grit; others may not have known that even young chickens must have access to grit. A writer in the Poultry Monthly, V. M. Couch, makes these points very clear: "The chickens and fowls should be provided with grit or gravel at all times, for if not, dysentery will be liable to develop at any time. It seems that a chicken that has little or no grit, can digest whole kernels of grain better than it can when the grain is ground; this, I suppose, is because the kernels grind against each other in the bird's crop, while the soft feed clogs and packs together. The necessity for some kind of hard, sharp grit for chickens in small runs, is imperative. They should have it as soon as they begin to eat. Plenty of grit keeps the digestive organs in good shape and in action, and a bird in this condition is able to stand a little sour feed without becoming sick, while if the chicks do not have grit, and some get one single mess of soft feed that is sour, indigestion or crop-bound is sure to follow, and then comes dysentery. At the same time, all feeders should use every care and see that the chicks have no sour feed, whether they are provided with grit or not. It is a good plan to scatter pin-

head oat meal, broken rice or coarse meal in boxes with sand and gravel for the chickens, and in this way, they will take up a good part of the latter while eating the cracked grain."

The editor in publishing this adds: "Still many claim that young chicks should not have a free supply of grit, and that they are liable to eat so much as to injure themselves if they do have it. What does the Doctor say?"

Growing Barley.

It seems that growing barley is again in a sense becoming popular in sections where at one time it was quite an important industry. A writer in the National Stockman and Farmer, in answer to an inquiry about growing barley, writes as follows:

We have grown considerable barley in past years and we think it pays to grow it for feeding stock, especially hogs. Barley almost always yields fairly well and is not as hard on our land as oats.

The time for sowing barley is just as early in the spring as the soil can be properly fitted (and it pays to fit the soil well). I have seen quite good yields of barley which was sown very late, but as a rule the earlier it can be sown the better. Again, the time to sow depends on the weather conditions and location. Here in Central Michigan we can usually sow our barley from first to middle of April. We plow our ground in the spring, and think, one year with another, this is the best time to plow, as the ground can be worked to a nice seed bed easier and quicker.

The time of ripening is just about the same as wheat, sometimes a little later, and the yield, of course, depends on condition of weather, richness of soil, etc. I do not think that the old-fashioned bearded barley yields quite as much as the beardless barley. In 1897 a measured acre yielded for us 37½ bushels by machine measure; by weight it went considerably over these figures, and in 1898 about 30 bushels by machine or from a thrashing machine.

The amount of seed used both years was as near 100 pounds an acre as the drill would sow. The beardless barley grows somewhat larger than the old variety and stands up better, and, in regard to handling, we would rather handle it than bearded wheat, to say nothing of bearded barley. Of course the ground for barley should be rich, as poor ground will not give good yield of barley or anything else. If farmers would grow more barley I think they would be well paid, for barley makes fine hog feed.

Another writer in the same paper says: Sow as early as the ground will work well. Sow two bushels an acre on good, strong land. It will yield from 40 to 60 bushels an acre. We had 68 bushels an acre one year on eight acres. It gets ripe about the same time that the wheat does. We sometimes cut our barley before we cut wheat. Barley makes good feed for all kinds of stock. Stock will leave good hay and eat barley straw. Barley, oats and Canada peas sown together make good feed for feeding green or cured for hay.

Farm and Garden Hints.

Thin the fruit early.
Sheep appreciate salt.
Study the wants of your poultry.
Carrots make the horse's coat shine.
Harvest the entire crop of potato bugs.

"Blood will tell" in seeds as well as stock.

You can save money by investing in a milk tester.
All varieties of blackberries are subject to the rust.

If you are missing little chicks keep your eye on the cat.

The farmer should be at war with the insects continually.

The Whipoorwill cowpea has been found the best for silage.

Don't make slaves of your horses. Make them your partners.

Farmers pay dear for the privilege of having weeds on the roadside.

One thing to be said in favor of ducks is that they do not require much attention.

Take pains to assort and pack as it should be the produce that is intended for the market.

Currants are easily grown; a clay soil that is rich and moist, but not wet, is to be preferred.

Cows weighing between 1000 and 1300 pounds are generally considered the most profitable.

It is only within recent years that farmers have appreciated the value of the different grasses.

Never hoe or cultivate beans when they are wet, as this is one of the ways of causing bean rust.

It is a mistake to expect the best or even good results by planting a single variety of grass in a pasture.

Have the barrels of apples, potatoes, etc., the same quality all the way through as they are at the top.

Farmers try to do too little with the manure instead of striving to see how much they can do to improve it.

What a difference between the improved sheep of modern times and the animals that our great-grandfathers kept.

No farmer was ever so smart but that at times the advice of an enterprising farmer would be a source of profit to him.

It is said that throughout the country an average of four cents more per dozen is paid for clean eggs than for dirty ones.



PROSPECTING FOR POTASH IN ARIZONA.

wide disaster and destruction to the human race, says the New York Herald. It would be hard to tell how many scores of times the people of the earth have been called upon to face the prospect, remote or immediate, of their own annihilation. They have been asked to consider the results which, in some future cycle, will come from the steady cooling of the earth's surface, to prepare for mundane annihilation through collision with some whirling comet and to give attention to dozens of other hypotheses equally unalluring.

In the multiplicity of these theories it would seem that the possibilities had been exhausted, but every now and then a new deduction is brought forward to startle the world. It has remained for Mr. Edward Atkinson, the scientist, essayist and political agitator, to develop the newest and most surprising theory as to the nature of the embarrassments which will force themselves upon the world's inhabitants as the centuries roll around. Mr. Atkinson believes with Sir William

in every part of the earth's crust, at least in every part presenting an arable surface. Soluble potassium salts are found in quantities in all fertile soils. These salts are sucked up by the roots of plants and trees, which eagerly seek them out as necessities of life. It is a significant fact that even where soda predominates in the soil the plants take up the potash salts in preference.

After taking part in the processes of nutrition and being transformed into organic salts the potash salts may resume their original form through combustion. There is a loss in quantity, however, and in the case of plants which are used for food or in the various human arts there is, of course, a nearly complete loss. The cause for concern in regard to the question of the world's future food supply lies in the fact that potash is not renewed in the manner of some other elements of vegetable life. It is a mineral deposit arising through the natural decomposition of certain rocks. On tilled land there is no opportunity for re-

Before this point was reached, however, the rise in the value of the mineral would cause it to be sought after eagerly in every part of the world, would lead to the conserving of the present sources of supply and to an attempt to find new ones. Men would prospect for potash with greater zeal than they now put into the search after gold. The terrors of the alkali deserts would be braved and men would bore for the precious deposits all over the burning plains of the Southwest.

At the same time, efforts would be made to gather the product from the scattered sources of supply now in existence in some financially profitable manner. According to Professor Dittmar, the very greatest of all these sources is the ocean, and no doubt the brains of inventors and scientists would be racked to devise a means of separating this potash from the waves. In all primitive countries where the supply of wood is large potash is obtained by the lixiviation of wood ashes.

This source also would be brought into use, and gradually the forest trees and such plants as nettles, wormwood, tobacco and kelp, all of which are capable of supplying potash in considerable quantities, would be burned to rejuvenate the impoverished soil. Men would live more and more largely upon the food plants, requiring only a small amount of potash for their growth, and a complete change in the accepted systems of diet would result.

To pursue the unpleasant transformation to its final result it is necessary to picture a world growing gradually more and more completely devoid of life, farms barren of vegetation, houses and cities deserted and a race of beings growing steadily weaker and weaker, and, even in the intermediate stages of the change, entirely different from those who now inhabit the earth.

It is reassuring to note that the consensus of opinion among scientists is that this extreme condition never will be realized. There is one great principle generally accepted as holding good for all the operations of nature, which scientists bring up in opposition to those who predict a final cataclysm of the world in any form



AN AMERICAN FARM IF WHAT MR. ATKINSON SAYS COMES TRUE.

Crookes and some other eminent scientific speculators that the great difficulty, when it arises, will come in the form of hunger—the exhaustion of the world's food supply. But he does not believe this will be reached through over-population or the taking up of

newal in the ordinary course of rotation. It must be supplied, if at all, from large mineral deposits.

This would be a simple matter if these deposits were large and numerous. Inasmuch as potash is found in almost every part of the world it