

ILLUSTRATED CIRCULAR

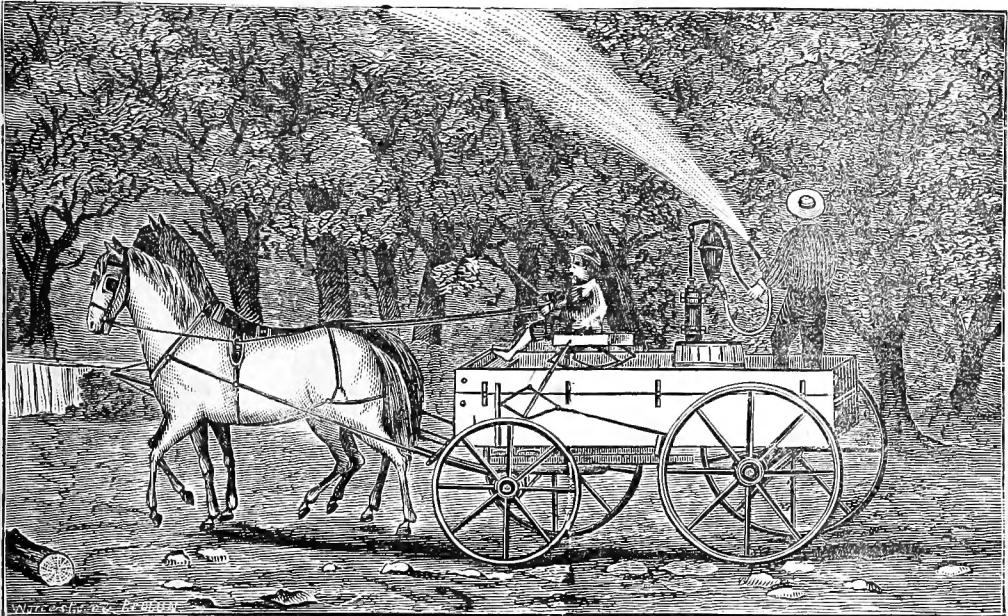
OF

The Field Force Pump Co.'s

LATEST IMPROVED OUTFITS

FOR

Spraying Fruit Trees by Hand or Horse Power



CONTAINING HINTS, SUGGESTIONS, RECIPES,

AND GENERAL INFORMATION FOR THE

PROTECTION OF FRUIT FROM THE RAVAGES OF INSECT PESTS.

OF SPECIAL INTEREST TO FARMERS AND ORCHARDISTS.

ADDRESS :

Field Force Pump Co.,

LOCKPORT, N. Y.

1888 + 9 —

DEATH TO THE COTTON WORM

"THE GEM OF TEXAS"

SPRAYING OUTFIT.

THE ONLY PRACTICAL OUTFIT FOR FIGHTING THE COTTON WORM.

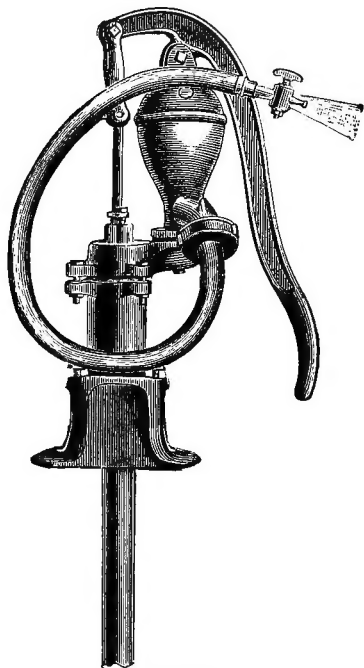


FIG. 41.

THE GRADUATING SPRAY NOZZLE

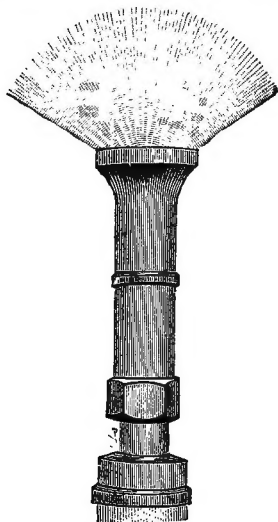


FIG. 42.

If you prefer it we will send this Fig. 42 Nozzle with the outfit, instead of the "Boss" shown on the hose in Fig. 41.

After careful experiments, we have at last found the only reliable **COTTON WORM DESTROYER**—simple in its construction, easy to operate, throws a constant spray, practical and **CHEAPER THAN THE CHEAPEST**, but a terror to the cotton worm, and when used with the proper insecticides, is a sure preventative of the ravages of that curse of the cotton growing States.

It consists of Field's Improved Spraying Force Pump which has $2\frac{1}{2}$ inch cylinder, and is fitted with 3 ft. rubber discharge hose, and a "Boss" spraying nozzle as shown on the hose, or a graduating spray nozzle as shown in Fig. 42, it has also 3 ft. of iron suction pipe, and is ready to mount on a barrel.

From thirty to forty acres per day can be sprayed with this outfit.

This outfit can be used for spraying Orchards where trees are of only medium height and give the best satisfaction, and for spraying Potato Fields, there is nothing in the market so well adapted or so reasonable in price.

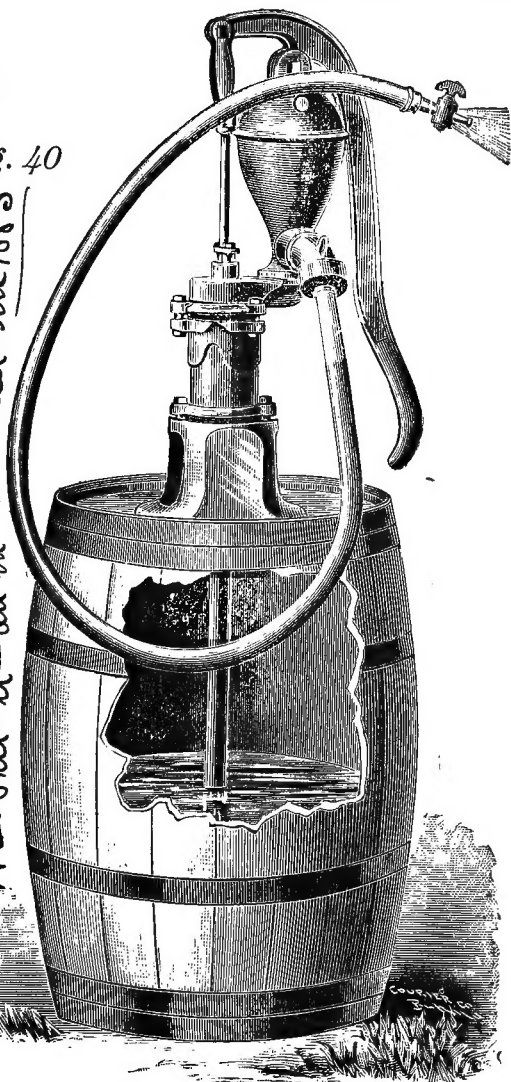
Price of Outfit Complete, (as shown in Cut,) \$8.50.

SEE RECIPES ON LAST PAGE.

THE FIELD FORCE PUMP CO.'S "Standard" Spraying Outfit.

FOR HAND POWER.

This was the first barrel sprayer ever illustrated and advertised especially for spraying trees. Put it on the market in 1883.



The following formula is recommended for rigging the pump for spraying trees: Mount the pump which, as per the accompanying illustration, is equipped with suction pipe, eight feet of discharge hose and a "Boss" spraying nozzle, upon an oil barrel or whiskey cask, place the barrel on a wagon, and you are ready for business. The nozzle should be attached to the end of a long pole (a bamboo pole is light and convenient), so that none of the spray can fall upon the operator. Drive slowly through the orchard, and be particular to shower every part of each tree.

**One Hundred Trees per hour
can be sprayed with
this Outfit.**

**A Popular and Practical Outfit for
Spraying Orchards by Hand Power.**

The Pump has a 3-inch cylinder and is furnished with eight feet of discharge hose and "Boss" Spraying Nozzle and Couplings. Also, 2½ feet of Suction Pipe, all fitted ready to mount on a barrel. In orchards where trees are unusually tall it may be desirable to use hose longer than eight feet. In that case, extra hose can be furnished at small additional expense.

Price of Outfit Complete (Not Including Barrel), \$10.00.

THIS OUTFIT WEIGHS 50 POUNDS. It can be mounted on a barrel, cask or tank, and used for Spraying Orchards, Orange Groves, or Potato Fields, and when not in use for these purposes can be used in a cistern or well, for protection against fire, washing wagons, carriages, etc., sprinkling gardens and lawns and is useful for a thousand purposes about the farm and home.

It can be fitted with Suction Hose instead of Iron pipe when so ordered, at additional cost.

SEE RECIPES ON LAST PAGE.

FIELD FORCE PUMP CO.'S "PERFECTION" SPRAYING OUTFIT

FOR HAND POWER.

It Supplies the Spraying Nozzle and keeps the Liquid Stirred up in the Barrel.

FIG. 45.



ONE HUNDRED TREES PER HOUR
CAN BE SPRAYED WITH
THIS OUTFIT.

This Pump is fitted with **ten** feet of discharge hose and a Graduating Spray Nozzle, the above being attached to the Pump at the spout "A." At the aperture "B" is attached three feet of return hose, at the lower end of which is connected a discharge pipe, so that, at every stroke of the Pump, a small part of liquid is re-discharged into tank near bottom of suction pipe, which **keeps the poison and water well mixed.** There is also a tight cap furnished, to close up opening "B" when desired.

The Pump has three-inch cylinder, and is furnished with iron suction pipe ready to mount on a barrel. Weight 55 pounds.

This outfit is also furnished with a fine strainer at bottom of suction pipe which will effectually prevent leaves or dirt from getting into pump or nozzles.

PRICE OF OUTFIT, COMPLETE (not including Barrel), \$12.00.

LONDON PURPLE.

For the convenience of farmers who may not be able to purchase London Purple near home, we will send it in one pound tin cans, superior quality, at 25 cents per pound. If sent with the spraying outfit, it will cost nothing extra for freight or express charges. It can not be sent by mail. Address

FIELD FORCE PUMP CO., - - LOCKPORT, N. Y.
SEE RECIPES ON LAST PAGE.

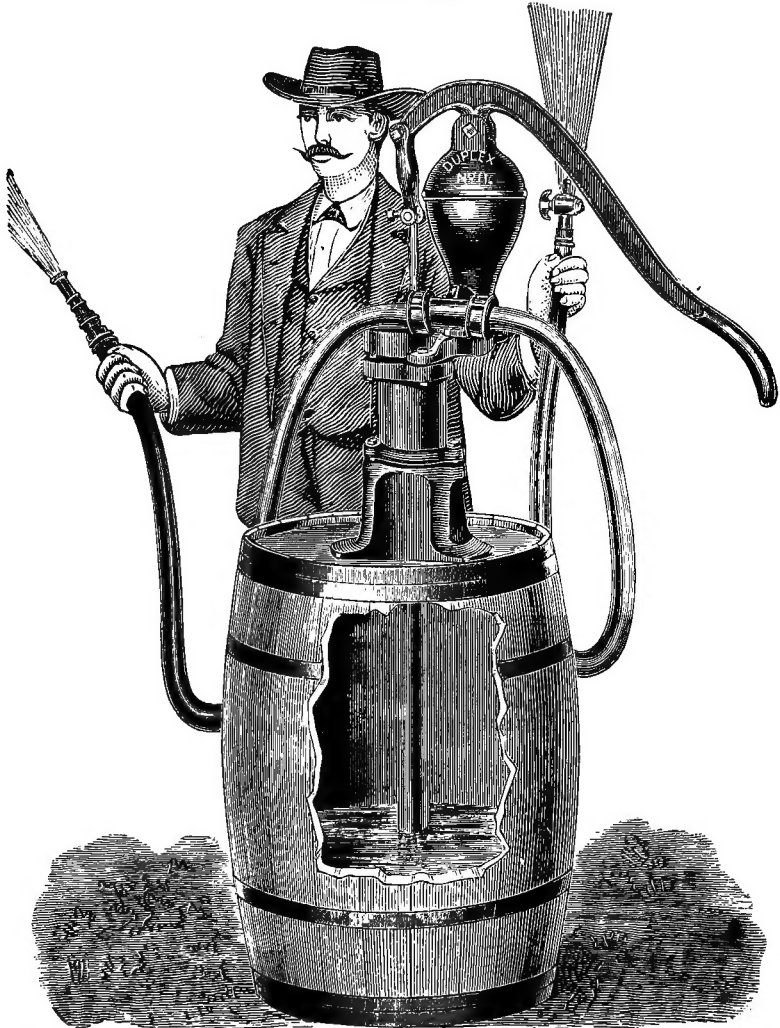
FIELD FORCE PUMP CO.'S
“Duplex” Spraying Outfit

FOR HAND POWER.

IT SUPPLIES TWO SPRAYING NOZZLES,

And will spray two rows of trees or plants at the same time.

FIG. 46.J



This Pump is fitted with two EIGHT-foot sections of Discharge Hose and one each "Boss" and "Graduating Spray" Nozzles, and 2½ feet of Suction Pipe (we will send both Nozzles alike when so ordered.) It is substantially the same as the "Standard" outfit with the addition of an extra Sprayer. There is a tight cap furnished to close up either opening when desired. Weight 62 pounds.

Price of Outfit Complete (Not Including Barrel), \$14.00.

With this outfit the Spray can be concentrated on a limited space or can be diffused over an area of twenty-five to fifty feet.

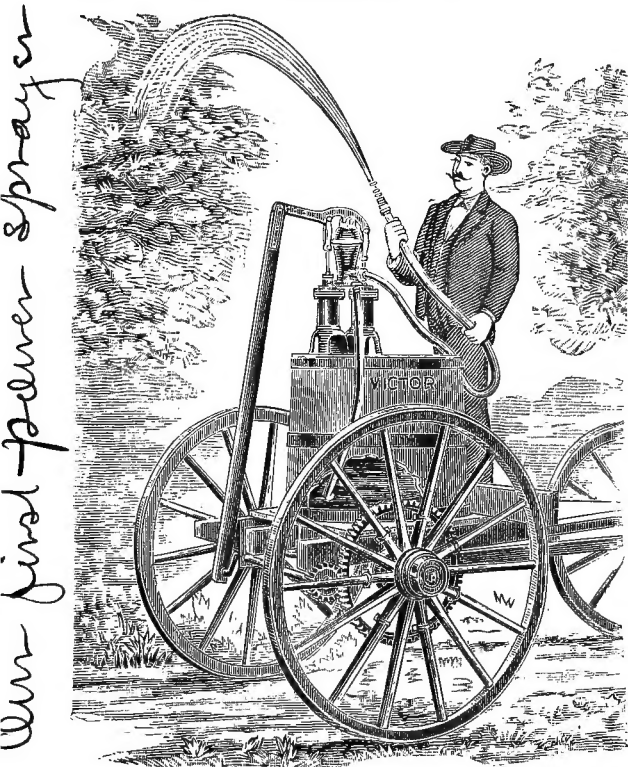
A splendid outfit for use in ORANGE GROVES, COTTON FIELDS, VINEYARDS, and large FRUIT ORCHARDS.

SEE RECIPES ON LAST PAGE.

THE FIELD FORCE PUMP CO.'S "VICTOR" * SPRAYING * APPARATUS.

OPERATED BY HORSE POWER.

Designed for Spraying Orchard Trees, Cotton Fields, Orange Groves and Potato Fields, Destroying Insects and Saving Fruit, Time and Labor.



Our first power sprayer

This illustration represents a gearing attached to a wagon wheel, its purpose being to spray large orchards by the revolution of the wheel and without labor. A frame work is placed upon a wagon, on which is mounted a wooden tank containing the liquid. Field's Double-Acting Force Pump is placed upon the tank, to which is attached a connecting rod. This is attached at the other end to the crank at bottom of frame-work, the crank shaft being attached to same by metal boxes. At the end of crank-shaft is a cog-wheel which is operated by a larger cog-wheel, the latter being fastened to the spokes of the wagon by straps of iron, adjustable to any ordinary wheel. The pump is fitted with double discharge, the lower one returning into bottom of tank, which serves to keep the liquid at all times stirred up, and prevents sediment forming at bottom of tank. It also prevents bursting of the hose in case the discharge nozzle should clog. The regular discharge hose is fitted with a Graduating Spray Nozzle, and when the wagon is in motion the driver can hold the nozzle, thus saving the labor of one man, and doing the work more rapidly, more efficiently and more satisfactory.

Fig. 38.

This outfit is also supplied with a fine strainer for bottom of suction pipe.

SPRAY YOUR TREES WITHOUT LABOR.

It mixes the fluid and keeps it stirred up in the tank while in operation, the Pump is double acting having two three-inch cylinders, and supplies the spraying hose and the return hose that stirs the liquid.

PRICE OF OUTFIT COMPLETE (Not Including Tank), \$30.00.

This includes the Double-Acting Pump, with suction pipe and hose and seven feet of discharge hose, and a Graduating Spray Nozzle. Also four feet Return Hose and Coupling for re-entering tank. Also the two Cog Wheels, Crank and Crank Shaft, Boxes and Connecting Rod, with bolts to attach to pump and to frame work of wagon.

The weight of this apparatus without the tank is 150 lbs. We have a wooden tank which holds 107 gallons and weighs 116 lbs. When knocked down and boxed for shipment the weight is 156 lbs.

We will quote a low net price on application. This tank can be placed on any cart or wagon of ordinary width.

A double horizontal lever can be furnished when desired, with which the pump can be worked by one or two men when wagon is not in motion, or when it is preferable to operate the pump by hand.

SEE RECIPES ON LAST PAGE.

THE FIELD FORCE PUMP CO.'S SPRAYING APPARATUS "ORCHARD KING."

OPERATED BY HORSE POWER.

Besides Stirring the Liquid in Tank, it Supplies
TWO SPRAYING NOZZLES.

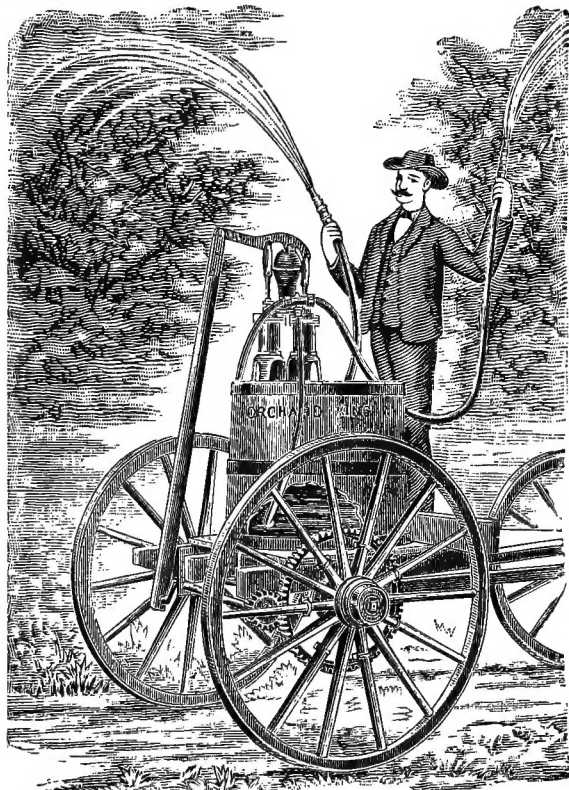


FIG. 47.

This apparatus differs from the "VICTOR," shown in Fig. 38, only in the size and capacity of the Pump, and its having *DOUBLE SPRAYERS*. Thus a man may drive and guide one stream, while a boy can guide the other. The gearing attachments are the same as described on the preceding page. It has also a fine strainer for bottom of suction pipe.

The Pump has $3\frac{1}{2}$ inch cylinders, a large air-chamber and greater forcing capacity, it will easily perform the work required, and give the best satisfaction.

A double horizontal lever will be furnished (when ordered), to be operated by one or two men, and can be used when wagon is not moving. This Pump, when not in use for spraying purposes, will be found valuable at the barn, warehouse, or factory, for protection against fire, or for general purposes.

Price of Outfit Complete, (not including tank,) \$36.00.

With this apparatus mounted on a cart or wagon, a great area can be covered in one day,—two "graduating" nozzles are furnished, which can be so regulated as to diffuse a fine mist over a space of fifty or sixty feet. *Invaluable for Cotton and Potato fields, as well as for Orange groves and fruit orchards.*

A tight cap is furnished to close up either opening of spout, when desired.

Weight, without tank, 165 pounds.

SEE RECIPES ON LAST PAGE.

THE ECONOMY GARDEN ENGINE.

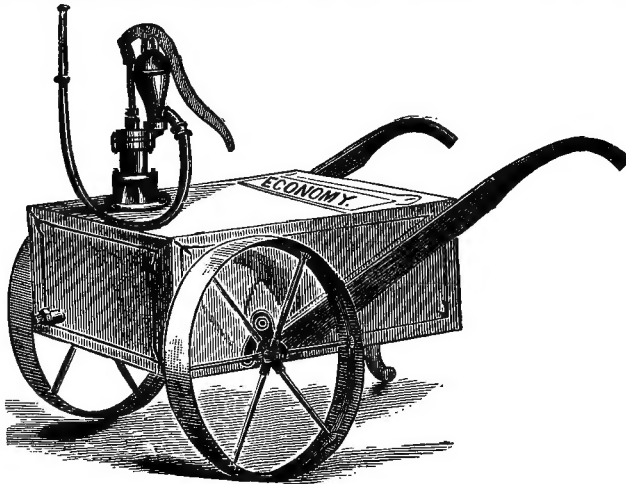


Fig 111

This machine was originally designed as a Lawn and Garden Engine. Its size is 35x14 x22 inches, and holds forty gallons; is mounted on two strong iron wheels, with tires 2½ inches wide. Total weight 175 pounds. It can be moved about by hand to spray small orchards, or mounted in a wagon, it can be used for large orchards.

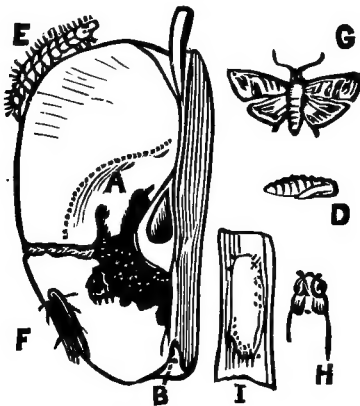
Price Complete, including three feet Discharge Hose and "Boss" Nozzle, \$20.00.

With Return Hose and Discharge Pipe for stirring liquid, \$22.50.

Additional discharge hose can be furnished at a reasonable price.

TO DESTROY THE CODLING MOTH.

Prof. Cook gives illustration and description of the codling moth, as follows:



larva leaves the apple, which may have fallen to the ground, and seeks a secluded place in which to spin its cocoon, I, and pupate. The pupa or chrysalis, D, is much like those of other moths. The pupae of the June and July larvae are found in the cocoons soon after the latter are formed, while those of the autumn larvae do not pupate till Spring, but pass the winter as larvae in the cocoons. The eggs of the second brood are laid in July, August and September. The larvae feed in autumn and often till mid-winter, while just as stated they do not pupate till Spring.

Professor Cook prefers London purple to Paris green because it is cheaper and easier to mix in the water. The mixture is as follows: I mix the powder one pound to 100 gallons of water. It is best to wet the powder thoroughly and make a paste before putting into the vessel of water, that it may all mix, and not form lumps. Always keep the liquid well stirred. One common pail of the liquid will suffice for the largest tree. For a large orchard a common barrel should be used, drawn in a wagon. I prefer to have the barrel stand on end, with a close movable float with two holes through it, one for the pipe or hose from the pump, and the other for a stirrer. If very large orchards are to be treated, a good force pump should be fastened to the barrel. In Western New York the handle of the pump is attached to the wagon wheel, so that no hand power is required other than to drive the team and manage the pipe that carries the spray. This apparatus is manufactured by the Field Force Pump Company, at Lockport, N. Y., and is known as the Victor. The spray may be caused by a fine perforated nozzle or a graduating nozzle. The finer it is the less liquid will be required. The important thing is to scatter the spray on all the fruit, and get just as little on as possible. The larva is killed by eating the poison, and we find that the faintest trace suffices for the purpose.

The moth, F and G, is accurately represented in the picture in form and size. The main color is gray, flecked with darker dots and bars, and with a characteristic copper-colored spot at the end of its front wings. This spot will always enable one to distinguish the moth. In May, about two weeks after the blossoms appear, the female moth commences to lay eggs in the calyx of the blossoms, B. These soon hatch, when the minute larva (shown full grown, E) eats into the apple and feeds upon the pulp around the core, filling the space with its fecal filth.

The whitish larvae attain their full growth in about four weeks. This period will be lengthened by cold and shortened by heat. When mature, the

The danger from this practice I have found to be nothing at all. Of course we should not turn stock into an orchard till a heavy rain has washed the poison from all herbage under the trees.

CURCULIO AND INJURY TO CHERRIES.

The following is a summary of the experiments and conclusions from Bulletin No. 4 Ohio Experiment Station :

1. These experiments were undertaken to learn what effect the application of London purple and lime to cherries, soon after the fruit forms, would have in preventing the injuries of the plum curculio, or in other words in lessening the number of wormy cherries.

2. For the carrying on of the experiment a half-acre orchard of bearing trees was set aside and a part of it treated while the rest was left as a check.

3. London-purple was applied in a water spray, mixed in the proportion of one-half pound to 50 gallons water.

4. Lime was applied in a water spray, mixed in the proportion of 4 quarts to 50 gallons until the leaves were whitened.

5. The cherries were critically examined when nearly ripe and the exact number of specimens injured by the curculio recorded. In this way 22,500 cherries were individually cut open and recorded.

6. From eight trees sprayed thrice with London purple 8,000 cherries were examined of which 280, or 3.5 per cent. were wormy, while from seven companion trees not treated 7,500 were examined, of which 1,085 or 14.5 per cent. were wormy. This represents a saving of 11.14 or 75.8 per cent. of the fruit liable to injury.

7. From two trees sprayed four times with London purple 2,000 cherries were examined, of which 69, or 3.45 per cent were wormy.

8. Two quarts of cherries from each of these lots were chemically examined at the time of ripening by Professor H. A. Weber and showed no trace of arsenic in any form.

9. Five trees sprayed four times with lime yielded 465 wormy cherries out of 5,000 examined, while five check trees yielded 778 wormy cherries from 5,000 examined. The percentage of the former was 9.3 while that of the latter was 15.6, which gives a percentage of benefit from the treatment of 40.3.

CONCLUSIONS.

These experiments apparently show, so far as the results of a single season's work with a single variety of cherry can be relied on:

1. That three-fourths of the cherries liable to injury by the plumb curculio can be saved by two or three applications of London-purple in a water spray (in the proportion one ounce to five gallons water) made soon after the blossoms fall.

2. That if an interval of a month occurs between the last application and the ripening of the fruit no danger to health need be apprehended from its use. As a precautionary measure, however, I would advise in all cases, and especially when there are few rains during this interval, that the fruit be thoroughly washed before it is used.

3. That lime is not so certain in its preventive effect as London purple, saving in these experiments only forty per cent. of the fruit liable to injury.

Successful Apricot and Plum Culture.

1st. There are no fruits more delicious than these.

2d. No other fruit trees are more prolific in bearing.

3d. No fruit has a more persistent and deadly enemy than the Curculio is to these delicate products.

4th. Few fruits yield so profitable returns for the space they occupy and labor they require.

5th. In no fruit culture has the average farmer been more discouraged.

THE REMEDY.

Spraying the trees thoroughly with London purple, one-fourth pound to fifty gallons of water, just as soon as the Curculio makes its appearance. Repeat the operation in a week.

It may be asked : "How does spraying effect the Curculio, as it eats neither fruit nor foliage, but punctures the fruit and deposits the egg therein?" We reply that the spray falling upon the fruit finds its way into the crescent-shaped incision and is present when the egg is hatched and the larvæ begins to eat its way to the pit, which it invariably does, and its first food is the insecticide, which satisfies its appetite for life, without damage to the fruit, which heals up from the bottom of the wound and ejects both insecticide and dead larvæ, leaving but a mere speck apparent on the skin when the fruit is matured. Try the experiment and watch results. After several years' experience, the Messrs. Moody & Sons, of this city, have found it quite impracticable to dispense with spraying under any circumstances, while as a result they have found it necessary to pick off from one-third to one-half of their plums in order to prevent the trees overbearing, and have marketed large crops of plums at remunerative prices each year, having about fifteen thousand plum trees in bearing.

THE AGRICULTURAL COLLEGE OF MICHIGAN.

EXPERIMENT STATION.—BULLETIN NO. 39.—SEPTEMBER, 1888.

DEPARTMENT OF ZOOLOGY AND ENTOMOLOGY.

EXPERIMENTS WITH INSECTICIDES.

CODLING MOTHS.

For the past eight years I have demonstrated annually the value and safety of London purple, arsenite of lime, as a specific against the codling moth.

This season (1888) I repeated the experiments with three objects in view. First, to ascertain the relative value of spraying once, twice, and three times. Secondly, to study the effects of the mineral on the foliage when used more than once, and thirdly, to note if the quantity of fruit on a tree was important in the results attained. As previously reported, I have several times sprayed the trees only once; just after the blossoms had all fallen, with perfect success; and that when the apples on trees adjacent, not sprayed, were seriously injured. Last season; as reported, once spraying was not so effective; yet, still enough so, not only to pay well, but in most instances practically good enough. As we had heavy rains last year, soon after the treatment, I was led to believe that the rains caused the diminished effects.

Again, reports came to me of the injurious effects of the poison in blighting the foliage, even though as dilute as one pound to one hundred gallons of water. I hoped that by applying the poison on some trees once, on others twice, and on others three times, I might be able to formulate some rule, and the following are the

CONCLUSIONS.

It is more and more patent that it pays remarkably well to spray our apple trees. It is, if not the only way, certainly by far the cheapest and most practical way that we can conquer this terrible apple pest and secure nice, sound marketable apples.

We should never spray until the blossoms fall from the trees. To spray earlier endangers the bees, and the honey they gather, and is too early to give the best results. *Too early*, first, because it is not needed till the blossoms fall, and the earlier it is scattered the sooner it will disappear, or lose its effect; and second, because the longer the poison is on the trees the more likely it is that it will be washed off by heavy rains. We should, however, spray as soon as the blossoms have all fallen from the trees. At this date no possible harm can come to bees or honey; to wait longer, is to wait so long that some of the larva will already have entered the fruit, and be safe from the poison. I think we shall be in time if we wait till

the blossoms have fallen, even from such trees as Northern Spy, where the blossoms are slow to appear and so, late to fall. In case there is no heavy rain, this one application is enough. In case there is a heavy rain, especially if the trees are bearing sparingly, it will often pay well to spray a second time, two weeks after the first.

STRENGTH OF THE MIXTURE.

The proportion of the mineral (London Purple or arsenite of lime, as I have proved some years since, is the best) to the water is important. One (♄) pound to one hundred (100) gallons of water is abundantly strong. And as even this strength is sometimes injurious to the foliage, especially if applied so thoroughly as to insure contact with each apple, we should never use a stronger mixture. Even three-fourths of a pound to one hundred (100) gallons will often prove more satisfactory than a stronger mixture, especially so if two applications are to be made. The second application should never be stronger than one pound to one hundred and fifty gallons of water.

PUMPS, ETC.

As spraying with insecticides is becoming so exceedingly profitable, every person with few or many fruit trees will desire to know of and to secure the best pump.

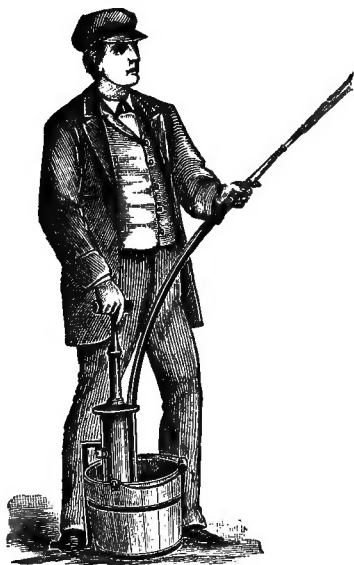
For a large orchard, I know of no pump comparable with the Victor Field Force Pump.

This runs with gearing attached to the hind wheels of any common wagon; so the force that draws the wagon does the pumping at the same time. The pump is double acting, and by driving at a rapid walk of the horses, the liquid is thrown with great force and so is thoroughly scattered, and very likely to reach the calyx of every apple. A second pipe discharges into the barrel with great force, and so the poison is kept stirred. This pump operates so easily, the horses doing the work, that a lazy man is liable to do good service, even if the wind blows, and he has to go on all four sides of each tree. In truth it is fun to simply drive and man the hose. I think it will often pay for four or five neighboring farmers to unite and buy this pump at \$30, its cost, rather than for each to buy a cheaper one. One farmer might buy this pump, and then spray all the orchards in the neighborhood. His neighbors could well afford to secure his services, and doubtless would generally be very glad to do so. I urge this pump, for it is natural for the average man to do more thorough work when the work is easy.

This same company, Field Force Pump Company, Lockport, New York, also makes a fine hand pump, the "Perfection Outfit," which is reasonable in price and stirs the liquid automatically. The Graduating Nozzle works well, and can be made to throw much or little, and also maintain the force. This nozzle and the Perfection pump make a most excellent combination.

CHAMPION FORCE PUMP AND FIRE EXTINGUISHER.

Fig. 1.



(Patented August 29, 1882).

This cut illustrates our NEW PORTABLE FORCE PUMP, which combining as it does the efficiency and durability of the higher priced Pumps now on the market, is offered at a price which places it within the reach of all.

Being made of either Brass or Galvanized Iron with WHITE METAL TOP AND BASE, it will not rust or corrode. It is capable of throwing from 8 to 10 gallons per minute to the distance of 50 feet.

For washing windows, carriages, verandas, boats, etc., it has no equal.

By simply adjusting the Sprinkler, which goes with each Pump, it is adapted for spraying gardens, lawns, etc.; also for throwing liquid solutions of all kinds, to destroy noxious insects on plants, vines or small trees.

It can also be used successfully for controlling swarms of bees when in the air, and is, an ever ready syringe for horses and cattle.

With this Pump there is furnished two feet of one-half inch Discharge Hose, and a Tin Nozzle and Sprayer. It can be furnished with additional hose and with any of our Spraying Nozzles when desired.

It has no suction Hose as the Pump sets in the water thus securing perfect suction.

The weight when boxed for shipment is 8 pounds.

Retail Price, Iron, \$2.50; Brass, \$3.50.

☞ Samples sent to any address on receipt of price.

☞ We do not Recommend this Pump for Spraying Large Orchards.

THE ORCHARD AND NURSERY.

From "American Agriculturist," June, 1883.

First, last, and all the time, the orchardist must keep up his fight with insects. Success in fruit growing so largely depends upon the destruction of insects that we feel it our duty to keep this subject prominently before our readers.

The Codling Moth or Apple Worm.—Heretofore it has been supposed that destroying the fallen fruit and trapping, by means of cloths around the trunks, the worms which left the apples remaining upon the tree, were the only helps. The young grub as soon as hatched, eats its way into the center of the little apple, and there "growing with its growth," works its mischief.

Poisoning the Worm.—Experiments by some Western Orchardists show that Paris green may be successfully used to destroy the apple worm. Soon after the young fruit is set, the whole orchard is

showered with water, in which a small quantity of Parris green is stirred, in the proportion of a table-spoonful to a barrel of water. The liquid should be thrown in fine spray, in order to wet every young apple. In its early state, the young fruit is erect, its calyx upward, and the least particle of poisoned water falling upon it is sufficient to destroy the young apple worm when it attempts to eat into the fruit.

Is It Not Dangerous?—It will be asked. We do not regard the process as at all risky. Assuming that all the poison falling upon the young fruit could remain until that was ripe, there would be but little danger; but as the rains of months will fall upon the fruit, there is no danger to be feared. Fruit growers look upon this method of treating the apple-worm as a discovery of great value.

AN INJURY TO APPLE TREES.

Mr. C. L. Jones, Rush Co., Ind., sends us specimens of a peculiar worm which he says is "doing great damage to young apple trees" in his vicinity, and asks if it is likely to become a serious pest. The insect proves to be what is sometimes called the "Unicorn Prominent" on account of the peculiar horn-like protuberance on the front portion of its back. The worm is reddish brown, with more or less white on its back, and a brown head. It eats almost the whole of the leaf, and where numerous, as in the present case, often does serious mischief, especially to young trees. Early in Autumn the full grown caterpillar descends from the trees and forms a thin cocoon among the fallen leaves, in which it remains until the following spring, when it comes fourth as a moth, which lays eggs for another lot of worms. In the North there is usually but one brood a year, but further south the insect is double-brooded. These insects may be readily killed by spraying the infested trees with a solution of Paris-green or London-purple.

HOW TO SEND MONEY.

Remittances can be made with perfect safety by Express Money Orders, which can be obtained at any office of the American, Wells, Fargo & Co., or United States Express Co., at the following rates: \$1 to \$5, 5 cents; \$5 to \$10, 8 cents; \$10 to \$20, 10 cents; \$20 to \$30, 12 cents; \$30 to \$40, 15 cents; \$40 to \$50, 20 cents. When these companies have no office, remit by Bank Draft on New York, Postoffice Order or Registered Letters payable to

FIELD FORCE PUMP CO., LOCKPORT, N. Y.

TO PREVENT RUSTING OF ORANGES.

From the *Florida Farmer and Fruit-Grower*.

The season for active operations, if we intend to keep our oranges bright, is at hand. Already the rust mite is coming. I find on some trees the leaves are swarming with them, and they will soon reach the fruit, and then the work of discoloration begins.

Some of the readers of last year's **FARMER AND FRUIT GROWER** will perhaps remember an article from me on this subject. Since then I have received many letters from parties in different parts of the State, asking for further information, methods used, and as to results at the end of the season. Allow me to answer through your columns some of these questions.

As to results, I am well pleased with last year's experience. Not over 5 per cent. of my oranges were rusty, and these but slightly. But, owing to carelessness, about 5 per cent. additional were slightly spotted or burned by the solution being too strong. This was caused by not having the whale oil soap and potash in every application thoroughly dissolved before beginning to use it, and on getting near the bottom of the barrel it became thick and too strong.

My formula last season was, 5 pounds whale oil soap, $\frac{1}{2}$ pound concentrated potash and $1\frac{1}{2}$ pounds of sulphur, to 40 gallons of water. But I am satisfied that was unnecessarily strong, and I think I shall leave out the potash this season. Lime or sulphur are equally as efficient in destroying the rust mite.

Place 5 or 6 pounds of good stone lime and 1 pound of sulphur in a barrel. Add water enough to slake. Then fill up and let settle. Then use. This is somewhat cheaper and somewhat more difficult to handle, owing to danger of whitewashing trees and fruit. Early in the season it would not matter much if leaves and fruit were whitened somewhat, but later the solution would have to be used clear.

As to the method of application, I apply with one of the Field Force pumps, manufactured for this purpose at Lockport, N. Y., and advertised in your columns. It has eight feet of delivery hose, with fine spray nozzle, and two and three-fourths feet of suction pipe mounted on frame work on top of the barrel. The solution can be rapidly applied.

ALFRED BAILY.

SAN MATEO, Putnam Co., Fla.,
May 15th, 1888.

TO DESTROY THE CODLING MOTH.

To destroy the Codling Moth, Canker Worm or Apple Curculio, use one-fourth pound London Purple to 40 gallons of water, and spray the trees about the time the blossoms are falling, or just as the fruit is beginning to form. This should be repeated two

weeks after the trees are out of blossom. Care should be taken to keep the poison and water well mixed by frequent stirring. Prof. Cook thinks the third spraying injurious to the foliage.

TO DESTROY THE SCALE BUG.

The following explains itself :

ORANGE, LOS ANGELES CO., CAL.

FIELD FORCE PUMP Co.—*Gents.*—The two brass cylinder pumps received from you were very fine pumps, and I was well pleased with them. I used them for spraying twelve hundred large orange trees, and will spray four or five hundred more this week. We have the red and black scale-bugs to fight, and have to spray our trees every year. We

boil one pound of whale oil soap in one-half gallon of water in order to dissolve the soap, and then add water to make it one-half pound to the galloa. It kills all the young scale-bugs, and most of the old ones. We throw a very fine spray in order to wet every leaf and branch, using as little water as possible. We use about two gallons of the preparation per tree. Yours truly,

T. D. COLLINS.

TO DESTROY COTTON WORMS.

Ed. Connally, in *Home and Farm*.

Put five pounds of arsenic in five gallons of water and boil; add one pound of sal-soda, or enough to dissolve the arsenic, but not too much sal-soda as it will burn the cotton. Use one pint of this mixture in forty gallons of water applied with a force pump which can be mounted on a barrel, using hose and a nozzle or sprinkler. The water should be strained through a sieve; the barrel mounted

on a wagon, with extra barrels filled to supply the one on which pump is mounted. Five rows can be sprayed at once. Forty gallons should cover about two acres. Take three men—one to drive, one to pump and one to guide the sprayer. In this manner you can spray thirty to forty acres per day. If directions are followed it will kill the worms effectually and not injure the cotton.

OF SPECIAL INTEREST.—From correspondence with the most extensive and most successful fruit growers in America, and from careful experiments, we have learned the following facts of special interest: First—Use London purple for spraying fruit trees, because it is soluble in water and not so liable to damage the foliage as Paris green. Second—Use a more dilute preparation than has before been recommended; one-fourth pound to forty gallons of water is strong enough. Third—Soak the London purple over night; having decided on the amount necessary for the following day's work, weigh it out and put in a tin can or other old dish and add water enough to cover it well, allowing it to soak twelve hours—it will then mix readily with the water. When using, keep the liquid well mixed by frequent stirring.

Yours truly,

FIELD FORCE PUMP CO.