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1895

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DESCRIPTIVE  
CATALOGUE 

OF \_\_\_\_\_

ECLIPSE  
SPRAY PUMPS  
EUREKA

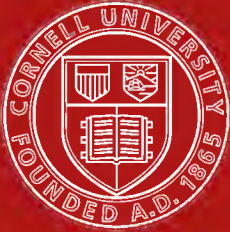
MANUFACTURED  
BY \_\_\_\_\_

....MORRILL & MORLEY....  
(INVENTORS)

BENTON HARBOR, MICH.  
U. S. A.

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1895  
PATTERSON, PRINTER AND BINDER  
BENTON HARBOR, MICH.



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1895

..Price List..

OF

Eclipse and Eureka Spray Pumps

Eclipse Knapsacks . . . .

Universal Nozzle Rig . . . .

Nozzles . . . . Hose . . . .

Self-Agitating Tanks . . . . Etc. . . . .

...MORRILL & MORLEY...  
(INVENTORS)

BENTON HARBOR, MICH.

Patterson, a Printer, Benton Harbor, Mich.

## ...How To Order...

...Read Carefully...

THE OLD PLAN of attaching a few feet of cheap hose to a pump and putting a nozzle on it and calling it an outfit, does not satisfy anybody now; consequently, we have adopted a plan of listing each article separately, letting each customer select what he needs for his particular kind of work. The experience of pump-makers is that farmers generally wait until they need a pump before ordering; this has made it impossible for the past two years to supply the demand during the months of March and April. This is not satisfactory to either purchaser or seller. Whatever you want, decide and buy early, then when you need it, it is ready.

Never send an Order without enclosing Payment for same.

We guarantee all our goods and will return the CASH for anything that does not prove just as represented—provided the goods are promptly returned in good order, after allowing a reasonable time for trial.

Send money by Express Order, Bank Exchange, or Postal Order, but please do not send personal checks.

## Prices on.....

# Pumps.....

### Eclipse Knapsack

Solid copper tank, solid brass detachable pump, right and left slip handle, 18-inch extension rod, improved Vermorel nozzle, \$12.00.

### Eclipse No. 2

Barrel or tank pump, solid brass cylinder, plunger, valves and valve seats, steel air chamber, malleable-iron reversible handle, galvanized iron clinch barrel plate, \$10.00.

### Eclipse No. 3

Barrel or tank pump, solid brass throughout, malleable-iron reversible high or low working handle, galvanized clinch plate. The best pump on earth! \$20.00

### Eureka No. 4

Cylinders, plungers, valves and valve seats, solid brass; air chamber steel, reversible handle, slip plate for tank or barrel 16 to 36 inch deep, \$10.00.

### Giant Eureka

The most powerful pump on the market. Solid brass cylinders, valves, valve seats, air chambers, head and and body, galvanized clinch plate, malleable reversible handle; will carry 200 lbs. pressure and throw four solid streams or eight sprays. \$40.00.

# Universal Nozzle Rig

For four nozzles; solid brass throughout with five feet best connecting hose and special brass round way pump cock, enabling the man at pump to control discharge, \$13.00.

Special 7 bbl. self-agitating tank, \$14.00.

## Hose.

There is as much variation in the quality of hose as there is in clothing. We have therefore listed as our cheapest grade the standard hose used by other pump men, and have added two higher grades.

Standard Guaranteed Hose.....	15c. per ft.
Ridgewood, Special High Grade.....	20c. per ft.
Maltese Cross, carbolized for chemicals, steam, or extra high pressure, Best Hose made.....	25c. per ft.

Order in multiples of five feet and we will put in fittings.

## Nozzles.

We are jobbers in this line of goods, and will furnish nearly all the standard nozzles as cheap or cheaper than you can buy them elsewhere.

Vermorel, the Standard.....	<del>35c.</del> each	.50
Calla or Lilly, also Excelsior.....	50c. each	
"Mystic," Best Graduating.....	50c. each	
McGowen.....	<del>1.25</del> each	1.50

## Extension Rods. *Double Vermorel 1.00*

No man can do pleasant or economical work without an extension rod and shut-off. We find seamless brass tube the very best that can be used.

4-foot Extension Rod, with shut-off.....	\$ 1.00
6-foot Extension Rod, with shut-off.....	1.50
8-foot Extension Rod, with shut-off.....	2.00

## Discounts.

To the first purchaser at any post-office in the United States or Canada, whose order contains full remittance, we will rebate ten per cent. of amount.

To any club or order of three pumps, fifteen per cent. may be retained.

For orders of one-half dozen or more pumps, write for prices.

**SPECIAL.**—To each one of our customers we will mail the best hand book on spraying ever published. Ready about March 1st.

No use of long correspondence, our prices are very low for the class of goods we offer and we propose to satisfy all our customers.

Yours Respectfully,

MORRILL & MORLEY, Benton Harbor, Mich.



DESCRIPTIVE

✧CATALOGUE✧

OF THE

✧ECLIPSE✧



SPRAY PUMPS

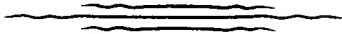


✧EUREKA✧

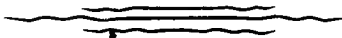
✧MANUFACTURED BY✧

...MORRILL & MORLEY...

(INVENTORS)



BENTON HARBOR, MICH.



FROM THE PRESS OF  
PATTERSON, PRINTER AND BINDER,  
BENTON HARBOR, MICH.

# ...Introductory

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**T**HE INVENTORS of the "ECLIPSE" and "EUREKA" Spray Pumps are not shop mechanics working at pump-making on the old lines, but are extensive fruit growers, having nearly three hundred acres in market fruits, (a large portion of which require spraying), and commenced spraying their fruit before there was such a thing as a regular spray pump on the market. From that time until the present we have been learning lessons by hard work at the pump-handle, or nasty, poisonous work at the nozzle end of the job.

A little more than a year ago, one of our leading Horticultural papers said: "Poor, cheap, hard-working and short-lived pumps have done more to discourage spraying than all other causes combined."

No single sentence could have explained the spraying situation better. We had tried for years to get hold of a durable and easy-working pump, but after trying nearly all the standard makes and finding some fatal defect in each one of them, we concluded that the manufacturers could, or would not, realize what was needed for our business. We determined during the winter of '93 and '94 to see what could be done towards remedying the defects common in the pumps then on the market. With this idea in view, we employed the best hydraulic machinist and expert pattern-maker we could find and commenced our experiments, continuing them at a cost of hundreds of dollars, until we had overcome the last of these defects. We then manufactured a few of the pumps, placing one in our State Experiment Station and Sub-station, selling a few to large orchardists and vineyardists who have had long experience in spraying, besides putting them on our own fruit farms, giving them the hardest possible tests and giving them absolute neglect as to cleaning, etc.

How well they have stood these tests, the following pages will explain.

Yours Respectfully,

MORRILL & MORLEY.



A  
Chapter  
On . . .

## Spray Pumps....

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From the foregoing introductory it will readily be seen that our efforts have been directed towards remedying certain defects in spray pumps.

### Where They Fail.

Manufacturers all agree that in order to sell any tool to the average farmer, “it must be cheap in price.” Next, that very few tools can be sold unless an agent is employed to talk it into you, and last, that the agent must have twenty-five to sixty per cent. for planning your business for you.

There is no doubt that in a general way the above claims are correct, and it will be readily seen that the only outlet for the manufacturers who wish to do much business, is to use the cheapest possible materials and methods of construction, or quit.

“The strength of a chain is determined by its weakest link,”—so the life of a spray pump is determined by its weakest part.

The use of leather, rubber, etc., to make joints, valves and plungers tight, works very well on cheap pumps as long as only water comes in contact with them, but when lime, sulphate of copper and ammoniacal compounds come in contact with them they are quickly destroyed, and repairs and expense begins, to say nothing of lost time and vexation of spirit.

Many of these cheap iron pumps have a packing box through which the piston works. These are man-killers. They must be screwed down tight or they leak under pressure, and oil on the piston does no good, as the lime and copper sulphate are acrid, sticky substances that destroy the oil immediately.

A pump with a stuffing-box might furnish good training for a prize-fighter, but the average farmer or his hired man are hardly strung up to a point where they can enjoy it. This is a very common fault with Knapsack sprayers, and many of them have been thrown aside in disgust for this single reason.

A pump that sets on the top of a barrel is objectionable because it is top-heavy and always in the way of low limbs, besides the suction pipe has to be fitted to your barrel. If too long, you have to take it to a shop and cut off; if not long enough, you cannot pump your barrel dry.

All this class of pumps need priming, which is very inconvenient, and every little delay counts when the weather is just right and you are anxious to get started.

Any pump that takes the liquid through the plunger must be short lived, as the sediment will surely settle on top at the outer parts, and as our lime mixtures always contain grit, every stroke of your pump rasps away at the interior of the cylinder and plunger. In most of these pumps it would cost nearly as much to replace a cylinder as it would to get a new pump. Some pump makers have learned that it is necessary to have brass working parts, but instead of using solid brass parts bore the cast-iron and put in a thin brass lining. These soon wear out and cannot be replaced except at the shop where made. Some are using a brass cylinder on their more expensive pumps and some are trying porcelain linings in cast-iron cylinder, but the well known tendency of porcelain to flake off of cast-iron is very objectionable. There is no doubt but some makers would be willing to use better material if their customers were willing to pay for it, but brass is expensive, while cast-iron is cheap, and so long as the user demands the cheapest pump, just so long will he get cast-iron with cheap makeshifts for brass, such as thin linings, porcelain, etc., and the maker can comfort himself with the knowledge that all fruit-growers must spray to be successful and the sooner a pump plays out, the sooner a new one must be bought.

**ECLIPSE KNAPSACK PUMP.**

OUTFIT No. 1.

**This  
Outfit**

Is especially designed for use in places where the larger pumps cannot be used, especially adapted to vegetable gardens, vineyards or small orchards, washing windows, etc. We claim to make the best Knapsack Sprayer on the market, using the patent features of our Eclipse Pump, which does away with the stuffing-box, that fatal objection to other knapsacks. It is impossible for it to leak or slop on top of the tank. Large air chamber, copper tank made of durable plate, pump all brass, brass extension rod, Vermorel nozzle and our new right and left handle, changing readily when one arm is tired. This feature will be appreciated by any man who has ever used a knapsack.

This pump is not soldered in like others, but can be removed in a minute without tools if you wish to clean or examine.

The manner of attaching the hose is a decided improvement, as it cannot wrinkle down and shut off the stream when it becomes a little worn, as all hose will do when attached to perpendicular nipple, causing constant annoyance.

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## Agitation of Material.

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This part of our spraying operations is one of the most important, and one that has caused many experiments with a notable lack of good results.

The first plan of agitation was by a large paddle, or by using a dasher like an old fashioned churn-dasher, and for reliable, efficient results has never been improved upon. The only fault that can be found with it is that careless men often neglect to keep the liquid properly stirred, thereby causing the foliage to be badly scorched.

The common practice now of pump-makers is to provide for the return of a part of the liquid through a hose or pipe. This works very well if the return stream is large enough and does not get clogged, and you always stir the liquid thoroughly by some other means before you begin pumping.

This method has the following serious objections: 1st—It requires double the pumping.


2nd—The return almost invariably gets clogged, and if you are not on the look-out, the material settles and damage is done.

3d—While you stop pumping in passing from tree to tree it runs your pressure down and you have to pump up again before you can do any work.

4th—There can be no agitation until you get up a pressure when you have filled your pump with the sediment. Now, if you commence spraying more damage is done. The best you can possibly do with it, is to make double work and constant risk of damage. One or two days work with it is generally enough and it is discarded. “If you have to do double work, put on two nozzles and get over your orchard in half the time.

The “ECLIPSE” Mechanical Agitator does the business. Does it right, and at the right time; is in operation with the first motion of the pump-handle; never fails, and no man can detect the additional work. Don't let any man tell you that agitation is not essential because his pump don't provide for it.

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 Ten to fifteen acres of Grapes per day can be sprayed with our “Eclipse” and “Universal” Nozzle Rig, and every vine sprayed from bottom and top at the same time. *No other outfit can do this.* A man and horse do as much as an expensive geared machine.

**ECLIPSE SPRAYER No. 2.**

**The  
Eclipse  
No. 2**

Is what we call a Combination Pump. The cylinder plunger and valves are solid brass, of the finest possible workmanship. The air chamber is of steel. The handle, patent barrel plate, agitator, etc., are of malleable iron, and cost us double the price of ordinary cast-iron, which is commonly used. Is adjustable in volume of liquid. Is designed for 1, 2, or 4 lines of hose and for handling our Universal Grape. Cotton and small fruit attachment described farther on. For full description see other pages.

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## Air Chambers.

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An air chamber is an absolute necessity with a good spray pump, but there is such a thing as right sizes and wrong sizes, a right place and a wrong place for them. When an air chamber sticks up in the air from two to four feet above the top of the barrel or tank it is in the way of limbs and liable to get caught and tip over or get broken off. When made of cast-iron they are very liable to have sand flaws and the air leaks out; then you have no air cushion to depend on for steady discharge. While a good-sized air chamber is desirable, some makers have gone so far as to make their air chamber a storage-tank and claim that it will hold enough to keep up a steady spray thirty to forty minutes. Now stop and think what this means. The liquid must in all cases be taken from the lowest point in an air chamber, and certainly in ten minutes, or possibly five, the mixture has settled to a dangerous extent, and after that time you would be spraying destruction on your tender foliage. A prominent manufacturer of this class of pumps said recently when pressed on this point: "Any fool would know better than to spray very long without pumping in liquid to stir it up." He was right, but what is it there for, if not to use? They charge you for it; make a strong point of it in selling, then say: "Any fool would know better than to use it." How is that?

Prof. Lodeman, of Cornell, writes that he considers an air chamber that is larger than is necessary to maintain full pressure longer than is commonly used by two or three strokes of the pump-handle, is superfluous, but most people who have had large experience will prefer one that will hold a good discharge fully one minute. Too small an air chamber is inconvenient, but it has the merit of being safe. While the extra large ones are dangerous affairs, except in the hands of experienced men which we do not find on every farm.

The "ECLIPSE" and "EUREKA" air chambers are  $2\frac{3}{4} \times 32$  inches, and will maintain a steady spray through the nozzles in common use from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  minutes. This nearly every experienced man will pronounce about right, while the form is the best possible to secure greatest tensile strength, and perfect elasticity with least weight of metal. All our pumps are tested up to 175 pounds and frequently 200 pounds per square inch.



**ECLIPSE SPRAYER No. 3.**

This pump is identical with our No. 2, except that every part of it is solid brass, polished and fitted as neatly as a steam engine. The handle and barrel plate are malleable and galvanized. Every well informed fruit grower knows that spraying has come to stay and must be done, if we expect a profit from our business; this pump is especially designed for the men who want the best tools that it is possible to make.

We confidently claim that our No. 3 will do more and better work than any other pump in use, and will outwear any five of them. Hot water, brine, acids, chemicals, white-wash, kerosene, or any material that you may want to pump, can be used in this pump without a particle of injury to any part of it. This can not be claimed of any other pump. This is the pump to buy, it should last a life-time.

A  
Few  
Words

## About Chemicals....

Every farmer does not know why their pumps play out so soon. If nothing but water was used they would not do so, but since the introduction of copper sulphate and ammoniacal compounds, all iron pumps are short-lived. When copper sulphate is used in connection with lime it is not so destructible as when used alone, but we are learning that the cheapest and most efficient work is done with pure copper sulphate solution early in the spring before buds begin to swell. No doubt this will be the universal method of beginning the annual battle with Fungi within two or three years, and no iron pump can stand that.

Other mixtures equally hard on metal, leather, rubber, etc., are used to a limited extent, but none of them seem to be equal to copper sulphate for fighting Fungi.

### What to Avoid in Buying a Pump.

Any pump that stands on top of a barrel; because it is always in the way, and the suction-pipe must be fitted to the barrel.

Any pump that has any projection that will catch in limbs of trees; because it is a nuisance.

Any pump that has leather or rubber valves, washers or plungers; because everybody who has tried it condemns it after the first season. The chemicals destroy it and cause constant repairs and annoyance, as well as lost time.

Any pump that has not a good reliable agitator that cannot get out of repair.

Any pump that has a stuffing-box; unless you are a Sampson and willing to use it yourself.

Any pump that is fastened together with iron bolts or set screws.

Any pump that passes the liquid through the plunger; because both plunger and cylinder are soon worn out by the grit that is always present.

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Spraying beats the curculio on the plum and cherry every time *if you begin early enough*.

**EUREKA No. 4.**

This is what one of our customers aptly styles "A Giant in a Barrel." It is a double cylinder pump and contains most of the essential features of our Eclipse. It has two pistons, each cylinder being independent, the labor of pumping being divided between the upward and downward stroke. Many people prefer this, and we have never heard anything but praise for this pump from those who have used it. It is so arranged that either stroke can be lightened or dropped entirely to suit the pleasure of the operator. This is a combination pump; the cylinders, valves and plungers being solid brass; the air chamber steel, and the balance iron; it has two discharge ports for two lines of hose. A greater pressure can be applied on this pump than any other on the market—150 to 200 pounds to the square inch if you want it.

No agitator is attached to the Eureka No. 4.

Any pump that uses the so-called Hydraulic Storage Air Chamber ; as they are unnecessary, expensive, bulky and in inexperienced hands, dangerous.

If in the above, we have named a single objection that does not commend itself to any intelligent, experienced orchardist as of vital importance, we would be pleased to know which it is.

What  
Are  
They....

## Eclipse and Eureka Pumps

### And Where Are They Superior ?

This is the first question a practical buyer asks, and one we must be able to answer and prove what we claim by trial.

First, we use no leather, rubber, or other destructible material in either of them. The valves are of our own patent, made of solid brass on solid brass seats that screw into place and ground to an air-tight face, and are of the type known among steam-fitters as a self-grinding valve and cannot get out of repair. By removing a plug in the body of pump the whole interior is open for examination.

The plunger is solid brass, hinged to the piston with broad bearing and in such a manner that no matter what angle the piston may be working, it cannot bind or wear unevenly.

The stroke is adjustable, so that you can increase the capacity of the pump from twenty-five to forty per cent. in five seconds by simply changing a single pin in the handle. This is a very important device when you want to use from two to four nozzles.

The pump is inside and on the bottom of the barrel, and is so arranged that no priming is ever needed. If there is  $\frac{3}{8}$  of an inch of liquid in the barrel it will always work.

It is so made that it adjusts itself to any depth of barrel or tank from 14 to 36 inches, and is instantly fastened there as solid as if in a vise by our patent hinged barrel plate. It can be placed and in operation in two minutes after the hole is ready in top of barrel or tank and there is no fitting to do.

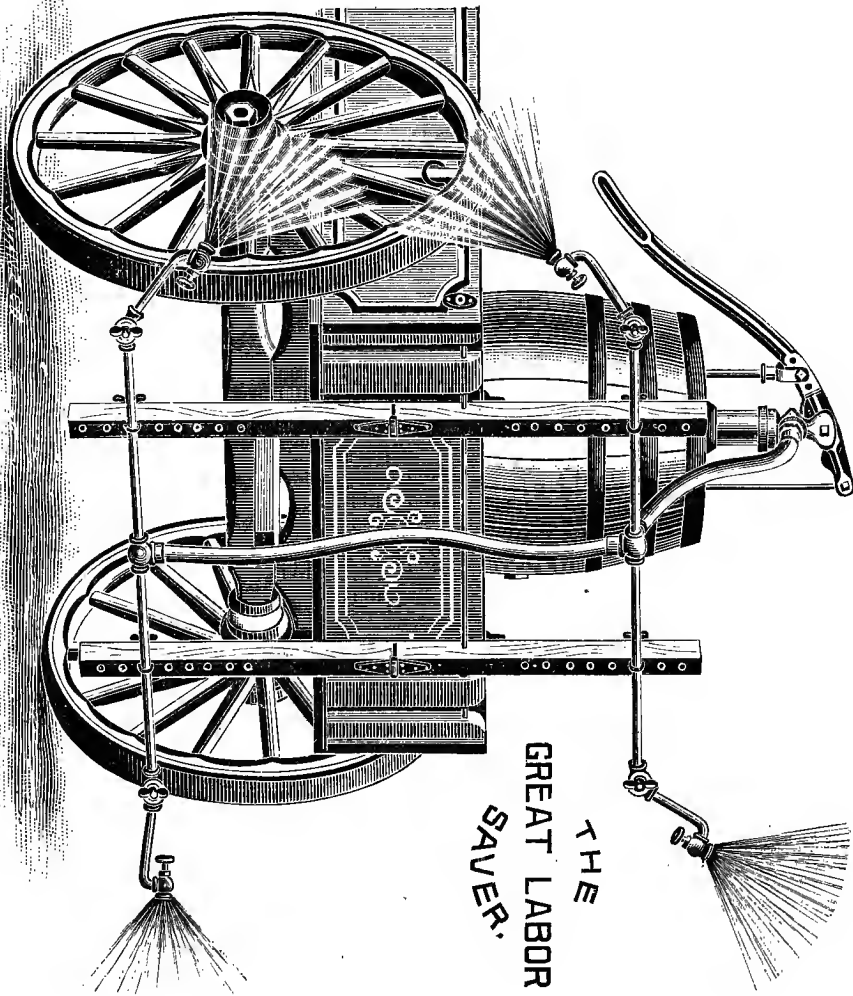
Placed in an ordinary oil barrel the pump only projects above the head sufficient to attach the handle and hose, probably seven to eight

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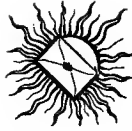
☞ Apples at 50 cents per bushel beats \$2.00 wheat ; still you give the wheat field the best care and neglect the orchard.

# UNIVERSAL NOZZLE RIGGING, No. 6.

(FOR DESCRIPTION SEE PAGE 17.)



THE  
GREAT LABOR  
SAVER.



## ..Testimonials..

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" Kind Words, They Never Die."

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It is very easy to secure any number of testimonials for any pump that will spray, if the work is kept among new beginners, because any man who sprays intelligently and watches the outcome will gladly testify to the good results ; but now the country is full of spray pumps and none but a good one can go into competition and win.


It will be noticed that we only publish the testimonials of the leading authorities of the country in such matters.

When a pump can be placed in an experiment station in a great fruit growing State like Michigan, coming into competition with the leading makes, and receive the endorsement of such a man as Professor Taft, "that after a full season's work, he prefers it to any that he knows of," it means that it is the best.

Hon. T. T. Lyon, Government Agent of the Department of Pomology, and Director of the South Haven Fruit Testing Station, says after having used one all summer, giving it six weeks constant service at one time: "It is the best we have ever tried," and further says "that his men who do the work will not take any other pump into the orchards now."

Mr. Lyon is the oldest and best living authority on horticultural matters, and has gained a National reputation for careful and reliable statements.

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 Its hard work to work hard, and a cheap cast-iron pump is an instrument of torture as soon as it begins to corrode inside.

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## UNIVERSAL NOZZLE RIG No. 6.

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(SEE ILLUSTRATION ON PAGE 15.)

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Growers of grapes, cotton and small fruit have for years felt the need of some cheap, reliable method of holding two or more nozzles in proper position for effective work, without the expense of an extra man to hold the same.

For some reason the manufacturers of spraying machinery have not "caught on" to our needs in this direction and the few clumsy attempts in that line that we find on some of the geared machines is the only thing offered. So far, these are practically failures, for they are fastened on iron pipes having no joints, and cannot have their positions changed, consequently the conditions of growth, training, etc., must conform to the machine instead of the machine meeting the requirements of different fruits, methods of training, etc.

In designing our Universal nozzle rig we have had the benefit of many years of hard, practical experience, and think we understand fully what is needed in that line, and believe any experienced man will readily see that we have accomplished the desired object.

It is so arranged that it can be hooked onto any cart or wagon at any needed height, the nozzles fastened to our Universal swing joint, which can be set at any conceivable angle, and locked in position instantly without the use of any tools. All four nozzles can be trained on one row, on two rows, or four rows. A row can be sprayed from both sides at once, or a row of grapes can be sprayed from above and below at the same time, using either two or four nozzles as needed.

This rig can be used with any pump having good capacity, but is especially designed for use in connection with our "Eclipse No. 3," and when so connected we furnish a special round way cock, by which the pump operator controls the delivery of material.

This rig is hinged in such a manner that it cannot be injured by running against any obstruction nor will it interfere with the work.

The machine is of solid brass, equipped with four improved Vermorel nozzles. Can be folded up in very small space, and can be spread ready for business in ten seconds. Is sure to be in great demand wherever small fruit is grown.

Next comes Mr. S. D. Willard, of Geneva, N. Y., who is known the length and breadth of the Nation as an honorable and reliable nurseryman, and the most successful orchardist in the State of New York, with the statement that our pump is the best that he has ever tried in every respect.

These testimonials, coming as they do, from three as good authorities as there are in America, carry more weight than a whole volume of testimonials from new beginners, who have no opportunity for competitive trials.

To the above we will add other indorsements from well known sources, that will settle beyond a doubt the fact that our pumps are the very best on the market.

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## The Eclipse Spray Pump.

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(From Practical Farmer and Fruit Grower, October 6, 1894.)

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Since spraying to destroy insect enemies and fungi diseases has become universally practiced and recommended by all up-with-the-times fruit growers, the genius of invention has been busy in constructing pumps for this purpose, and many and varied have been the patented concerns put on the market. But few of these spray pumps are of any practical service. Many are entirely unworthy of notice, especially those cheaply constructed, and which are offered at a cheap price. At first, these cheap pumps may seem to do as good work as the better made and higher priced ones, but the staying qualities are not there, and one season's spraying ends their usefulness and a new pump must be purchased. A cheaply made machine is dear at any price, and this is forcibly true with regard to spray pumps. In this connection we wish to say that the P. F. & F. G. is not given to indiscriminate puffing of manufacturers and their wares, but occasionally we come across an article of such merit that we deem it worthy of special attention. While at the recent West Michigan fair we saw a spray pump containing so many good points that we do not hesitate to endorse it as one of the very best manufactured. This pump is known as the "Eclipse"



and is the invention of the well-known nurserymen, Morrill & Morley, of Benton Harbor, Mich. We examined this pump thoroughly and found it correct in principle, made of lasting material and of perfect workmanship. There is not a particle of leather, rubber, or other destructible material used in its construction. The cylinder and valves are made of solid brass, and therefore cannot be eaten by poisonous solutions. The air chamber is large and long thereby securing great force with but slight muscular exertion. It has a mechanical agitator, which keeps the solution thoroughly agitated. This agitator is made on a different plan from any we have seen; it is entirely frictionless and requires no extra strength to keep it going. The pump can be adjusted to any length and size of barrel. The weight of pump is on the bottom of the barrel, and is not easily tipped over as many other spray pumps with air chambers on top of barrel. This gives but a short and partial description of some of the good points of this pump, which should be seen and used to be appreciated. We think a full description of this pump would interest any fruit grower, and it can be easily obtained by writing to the manufacturers, Morrill & Morley, Benton Harbor, Mich.

THE RURAL NEW-YORKER,

Established in 1850.

ELBERT S. CARMAN, Editor-in-Chief.  
HERBERT W. COLLINGWOOD, Managing Editor.  
JOHN J. DILLON, Business Manager.

COR. CHAMBERS AND PEARL STS.

NEW YORK, December 1, 1894.

MORRILL & MORLEY,

Benton Harbor, Mich.

DEAR SIRS:—The more I see of your pump the better I like it. I saw Mr. Willard the other day and he insists that it is “the best spray pump on earth.” I hardly know what to say about the matter of agents’ commission, etc. Farmers ought to buy direct, and I think they can be induced to do so, though the agents would all have us think otherwise.

In case you decide to make an effort for direct trade we will gladly call attention to the fact and do what we can to make a success of it.

Yours Truly,

H. W. COLLINGWOOD.

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 MICHIGAN AGRICULTURAL COLLEGE.
 

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HORTICULTURAL DEPARTMENT.

L. R. TAFT, Professor.

AGRICULTURAL COLLEGE, P. O., November 27, 1894.

MORRILL &amp; MORLEY,

Benton Harbor, Mich.

GENTLEMEN:—I have given your Eclipse pump careful trial and cannot say too much in its favor. It does better work than any pump I have tried, using the same power upon the handle. Your Eureka throws as good a stream, but as it has two cylinders the power required on the up stroke of the handle makes it harder to work. You have combined more good points in the Eclipse than any pump that I know of possesses.

I think of especial value the fact that it has a solid plunger and dispenses with leather or rubber valves, and that it has no stuffing-box to be continually leaking unless it is repacked is a point in its favor. Your agitator is also preferable to the return stream of water for keeping the materials in suspension. That the pump can be readily fitted to any barrel or tank is a convenience, and that it stands so low in the barrel that there is no danger from its tipping over or catching in overhanging branches is something in which it stands ahead of other pumps.

It seems to be well made, of simple construction, not likely to get out of order and yet readily taken apart if repairs become necessary.

With the increased use of copper sulphate it is certainly well to have all parts that come in contact with the spraying mixture of brass. I shall be glad to recommend it.

L. R. TAFT.

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 MICHIGAN AGRICULTURAL EXPERIMENT STATION.
 

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FRUIT-TESTING SUB-STATION.

L. R. TAFT, Horticulturalist.

T. T. LYON, Agent.

SOUTH HAVEN, MICH., June 5, 1894.

MORRILL &amp; MORLEY,

Benton Harbor, Mich.

DEAR SIR:—I have just put the spray pump received from you recently into work and tried it upon the apple trees on the station prem-

ises yesterday and to-day. It does the work admirably—very much more satisfactorily than the one I have been using. I congratulate you upon its success, and doubt not it will have a successful run.

The only fault, or rather lack, which I find is the need of a ready method of shutting off the discharge in passing from tree to tree.

Very Truly Yours,  
T. T. LYON.

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OFFICE OF  
HAMMOND & WILLARD,  
NURSERYMEN.

GENEVA, N. Y., November 5, 1894.

MORRILL & MORLEY,

Benton Harbor, Mich.

DEAR SIRs:—Yours of the 3d at hand. We have been using your pump for the last ten days, more or less, to get our fall spraying out of the way, and can only say: so far it has shown itself to be the best pump we have ever had in every respect.

This I think is fully comprehensive to show you that we appreciate it.

Yours truly,  
HAMMOND & WILLARD.

S. D. W.

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**From the Land of Big, Red Apples.**

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MISSOURI STATE HORTICULTURAL SOCIETY.

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We, the committee appointed by the Missouri State Horticultural Society, to examine the Eclipse Spray Pump, manufactured by Morrill & Morley, of Benton Harbor, Mich., would respectfully report:

“That it is the best spray pump, all points considered, that has ever come under our observation.”

A. H. GILKERSON, S. W. GILBERT, ARTHUR PATTERSON, N. F. MURRAY,	}	Committee.
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Dated at Trenton, Mo., Dec. 6, 1894.

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## From the Garden of the World.

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### ILLINOIS STATE HORTICULTURAL SOCIETY.

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Your committee to whom was referred the spraying and other tools on exhibition, would report as follows :

“We find a spray pump shown by Morrill & Morley, of Benton Harbor, Mich., known as the Eclipse, embodying principles of construction that in our opinion makes it superior to any with which we are acquainted. We also find the machine to be well-made.”

Adopted by unanimous vote.

G. W. McCLEUR,	
Horticulturalist, State Experiment Station.	
T. E. GOODRICH,	
Manager Cobden Experiment Station.	
R. L. BRYANT,	
Nurseryman, Princeton, Illinois.	
	Committee.

Dated at Dixon, Ill., December 13, 1894.

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N. B.—The above reports from the Missouri and Illinois State Horticultural Societies, were made after the respective committees had made the most severe and practical tests possible, and, be it said, to the entire satisfaction of the said committeemen.

## Hose.

The difference in quality of hose is very great, so much so that we prefer to let a buyer make his own selection of grade and length, so have listed it separately. The practice of putting six or eight feet of hose on a pump and a nozzle on that does not satisfy any man after he has had a little experience. We think for convenience that not less than twenty-five foot lengths should be used, and no line of hose is ready for economical work without a stop-cock and extension rod so the operator can control the spray and pressure at will.

See list on hose, nozzles, spreaders, Universal outfit, extension rods, stop-cocks, strainers, etc., on another page.

## Nozzles.

We furnish any nozzle on the market as cheap or cheaper than it can be bought elsewhere, as a very small profit on them will satisfy us.

There are three principles in common use in making spray nozzles. One is to give the liquid a circular motion before discharging it through the orifice. This is accomplished in various ways and produces the finest possible spray, and uses less material than any other, but does not reach so far. The best of these nozzles are the Vermorel, Myers and Cyclone—probably in the order named.

The next and the best for long distance, is the plan of dividing the stream before discharging, then discharge in such a manner that each stream cuts into the other. This produces a good, fine spray and reaches a good distance. The best of this class of nozzles is the McGowen and the Calla.

There is another very convenient and efficient long distance spray made by discharging a direct stream against a smooth surface held at a slight angle with the nozzle. This is sometimes called the spoon nozzle, and many people think it the best.

Stop-cocks are an essential part of any spraying outfit as they prevent all waste of material and labor. We manufacture them in two styles, one screws into the pump and is under control of the man at the pump; this is the one to use in connection with our "Universal" cotton, grape and small fruit outfit. The other is smaller, and is placed at the nozzle or extension rod and is controlled by the man at the nozzle.

### Extension Rod.

This is made of either brass or iron pipe in four foot sections with stop-cock at lower end. No outfit is complete without one, as with two sections of it you carry the nozzle eight feet higher and can thrust it into tree tops where you could not otherwise reach, at the same time holding the fine spray that is the most effective. If you do not need eight feet take off one section and use four feet only.

Men who have been in the habit of using the cheap, leaky, nasty pumps and appliances in such common use can hardly imagine that it is possible to do much more work in the same time, use less material and hardly soil the hands in place of being drenched to the skin, as in the past, but it is a fact, and the expense is very small.

### Spraying.

The question as to the value of spraying is no longer a debatable one. It is conceded by every intelligent farmer that without it he can neither expect good fruit or any profit from his orchards. Still, there is a very small amount of good spraying done even in the states where it has been longest practical. There is much yet to learn. Where failure to get good results has occurred it is easily traced to one of the following four mistakes:

First—It was not commenced early enough.

Second—Mixtures not properly prepared.

Third—Work not repeated properly.

Fourth—Work not thoroughly done.

To guard against these mistakes we furnish each of our customers with the latest and best information in all the details of the work. This hand-book alone is worth the cost of a pump and outfit to any man who has an orchard.

On the following pages will be found a spraying calendar, copied from special spraying bulletins issued by Prof. Taft, of the Michigan Agricultural College. It is the neatest and most complete arrangement of spraying information we have ever seen and should be preserved for reference.

## REMEMBER

If our pumps do not prove to be the best you ever saw, you can return it and your money will be refunded.

We guarantee everything that we claim.

## DON'T YOU FORGET

That we take no back seat, but guarantee our Eclipse No. 3 to be the best and most durable spray pump ever invented.

We furnish each buyer with the best hand book published on spraying matters.

## PLEASE BEAR IN MIND

That there is not a particle of leather, rubber, or other destructible material used in our pumps. Neither do we use any cheap makeshifts like thin brass linings, porcelain, etc. All working parts are **SOLID BRASS IN ALL OUR PUMPS**, and should last a life-time.

## ANNOYANCES

When the weather and other conditions are just right and you are trying to push things, how provoking it is to have the leather plungers or valves give out, requiring a trip to the nearest plumbing shop for repairs; or in case the part is rubber you certainly have to send to the factory for a new part, and your opportunity for effective work is gone. This can never occur with the Eclipse or Eureka. They do not get out of order, and you do not even have to prime them.

## IN MAKING AN ORDER

We make a price on each article needed to make up a spraying outfit. It is the best plan, as you then get just what you want. The plan of putting six or seven feet of hose and a nozzle on a pump and calling it an outfit, does not satisfy those who have had any experience. Longer lines of hose are necessary for convenience; extension pipes and stop-cocks are economical of material and convenient; they will pay for themselves in one or two days work. We would consider it a favor if you will order hose in multiples of five feet.

# SPRAYING

PLANT.	First Application.	Second Application.
APPLE <i>(Scab, codling moth, owl moth, canker worm, tent caterpillar, aphis.)</i>	Spray before buds start, using copper sulphate solution. For aphid use kerosene emulsion.	<i>After the blossoms have formed, but before they open, Bordeaux.*</i>
CABBAGE <i>(Worms, aphid.)</i>	<i>When worms are first seen, Paris green or kerosene emulsion.</i>	<i>If worms re-appear, repeat if plants are not heading.</i>
CHERRY <i>(Rot, aphid, curculio, slug, leaf blight.)</i>	<i>As flower buds appear, but before they open, Bordeaux; for aphid use kerosene emulsion.</i>	<i>When fruit has set use Bordeaux and Paris green.*</i>
CURRENT <i>(Mildew, worms.)</i>	<i>As soon as worms are found on lower and inner leaves, Paris green.</i>	<i>If they re-appear, repeat, adding Bordeaux for mildew.†</i>
GOOSEBERRY <i>(Mildew, worms.)</i>	<i>As leaves open, Bordeaux and Paris green.</i>	<i>In 10-14 days repeat with both.</i>
GRAPE <i>(Rot, mildew, anthracnose.)</i>	Before buds burst spray with copper or iron sulphate solution.	<i>When first leaves are half grown, Bordeaux and Paris green.</i>
PEACH, APRICOT <i>(Rot, curculio, leaf curl, mildew.)</i>	Before buds swell, iron or copper sulphate solution and Paris green.	<i>Before blossoms open, Bordeaux.</i>
PEAR <i>(Leaf blight, scab, psylla, codling moth.)</i>	As buds start, iron or copper sulphate solution.	<i>Just before blossoms open, Bordeaux.*</i>
PLUM <i>(Curculio, rot, shot-hole fungus.)</i>	As buds open Bordeaux and Paris green.	<i>Within a week after blossoms have fallen, repeat.*</i>
POTATO <i>(Blight, beetles, scab.)</i>	<i>Soak seed for scab in corrosive sublimate [2 oz. to 16 gallons of water], for 90 minutes.</i>	<i>When beetles or their larvae appear, Paris green.</i>
QUINCE <i>(Leaf and fruit spots.)</i>	When blossom buds appear, but before they open, Bordeaux.	<i>When fruit has set, Bordeaux and Paris green.*</i>
RASPBERRY, BLACKBERRY <i>(Anthracnose, rust.)</i>	<i>Cut out canes badly diseased with anthracnose. Before buds open spray with copper sulphate solution.</i>	<i>When new canes appear, Bordeaux and arsenites.</i>
STRAWBERRY <i>(Rust.)</i>	Before growth starts, Bordeaux.	<i>Just before the blossoms open, Bordeaux and Paris green.*</i>
TOMATO <i>(Rot, blight.)</i>	<i>If rot or blight appears, Bordeaux.</i>	<i>Repeat, if disease continues.</i>



# CALENDAR

Third Application.	Fourth Application.	Fifth Application.	Sixth Application.
<i>Within a week after blossoms fall, Bordeaux and Paris green.</i>	10-14 days later, Bordeaux and Paris green.	10-14 days later, Bordeaux.	10-14 days later, Bordeaux.
After heads form use salt peter, [a teaspoonful to gallon of water.]	Repeat, if worms reappear.		
10-14 days later if signs of rot appear, repeat.	10-14 days later, ammoniacal carbonate of copper.		
If worms still trouble, pyrethrum or hellebore. †	After fruit is picked, Bordeaux.		
10-14 days later, sulphide of potassium on English varieties.	10-14 days later, repeat.	If mildew persists after crop is gathered Bordeaux.	
As soon as fruit has set, repeat.*	10-14 days later, repeat.	10-14 days later, if disease is present, apply Bordeaux.	If necessary, use eau celeste or ammoniacal copper carbonate. †
Within a week after fruit has set, Bordeaux and Paris green*	7-12 days later, repeat.	7-12 days later, repeat.	If rot persists use eau celeste or ammoniacal copper carbonate ev'y 5-7 da. †
Within a week after blossoms fall, Bordeaux and Paris green.	8-12 days later, repeat.	10-16 days later, Bordeaux.	10-16 days later, Bordeaux if necessary. †
10-12 days later, repeat.	10-20 days later, Bordeaux.	10-20 days later, use eau celeste or ammoniacal carbonate of copper.	10-20 days later, repeat if necessary †
Repeat whenever it is necessary.	When blight of leaves is accompanied by rot of the tubers, Bordeaux.	Repeat in ten days if necessary.	(NOTE—If black knots are found on plum or cherry trees they should at once be cut off and burned.)
10-12 days later, repeat.	10-20 days later, Bordeaux.	10-20 days later, Bordeaux, if necessary.	
10-14 days later, repeat. †	After crop is gathered remove old canes; thin new ones, and spray with Bordeaux if necessary.	(NOTE—If red rust appears the entire stool affected should be grubbed out and burned.)	
After fruit has set, ammoniacal carbonate of copper. †	As soon as berries are harvested, Bordeaux [if to be kept longer.]	(NOTE—Young plantations should receive Bordeaux at the time of the 2d and 4th applications to bearing plants.)	
Repeat if necessary.			

## ....Formulas....

### Bordeaux Mixture.

Copper Sulphate	-	4 pounds.
Fresh Lime (unslaked)		3 pounds.
Water		32 gallons.

Place 6 gallons of water in a tub or barrel and hang in it 4 pounds of pulverized copper sulphate, in a burlap or other coarse sack. Slake the lime, adding water only as fast as it takes it up, and pour together. Before using, dilute to 32 gallons. Enough lime should be added to neutralize the free acid, as, if this is not done, it will injure the foliage. To test this, get five cents worth of ferro-cyanide of potassium (yellow prussiate of potash) at a drug store, and place in a small bottle of water. Add a few drops of this solution to the Bordeaux, before it is diluted, and if it turns it brown, the lime is deficient and more lime should be added until the ferro-cyanide has no effect. When much Bordeaux is used it is an excellent plan to make up a stock solution, which can be diluted as used, proceeding as follows: Dissolve 40 pounds of copper sulphate in 40 gallons of water, and in a box slack 40 or 50 pounds of lime. This can be kept as long as one desires. When needed, measure out 4 gallons of the copper sulphate solution and add some of the slacked lime until no change in color can be produced by the test given above. The mixture will then be ready for use when diluted. The strength of Bordeaux can be varied to a considerable degree. The above formula is about as strong as we care to use at any time, and, after the second application, it is our custom to reduce it by using 40, 50 and even 60 gallons of water for the four pounds of copper sulphate and three of lime. This can be done, with no apparent loss in the efficacy of the Bordeaux, when the fungi are not particularly troublesome, and when several applications are to be made at frequent intervals. If the lime is fresh and a proper amount is added after it has been carefully slaked, there is no danger of burning the foliage with Bordeaux mixture. It

is, moreover, one of the least expensive of the fungicides, and if strained through two thicknesses of burlap before being placed in the barrel from which it is pumped, it will not clog the nozzle. It is generally conceded to be the most effectual of all the fungicides, its efficiency being due in part, no doubt, to the fact that the lime sticks it quite securely to the foliage, so that it is not readily washed off. Another desirable feature about this fungicide is that Paris green can be used with it, thus saving one application, and that the lime also neutralizes any free arsenious acid in the Paris green and greatly lessens its caustic effect. For all fungous diseases of plants, such as mildews, rusts, rots and blights, in which either the spores, or the body of the fungus itself, is exposed to its action.

### Ammoniacal Copper Carbonate.

Copper Carbonate,	-	1 ounce.
Ammonia,	Enough to dissolve the copper.	
Water,	-	12 gallons.

Dissolve the copper carbonate in the ammonia and dilute before using. The undiluted solution can be kept in glass-stoppered bottles for some time. The strength of ammonia water generally found at drug stores is 20 degrees Baume. This will answer as well as the 22 or 26 degrees which are generally recommended, but more of it will be required to dissolve the copper, about one pint being necessary for each ounce of the carbonate.

### Modified Eau Celeste.

From the fact that copper carbonate as sold on the market is rather costly, it will be better to manufacture it, if much is to be used. For this take

Copper Sulphate,	2 pounds.
Soda Carbonate (sal-soda)	2½ pounds.

Dissolve these separately in about two gallons of water, pour together and stir thoroughly. A precipitate of copper carbonate will form and sulphate of soda will remain in solution. The water can be poured off and the precipitate dried and kept indefinitely. From the above quantity of copper sulphate and soda carbonate about one pound of dried carbonate of copper will be obtained. It is often used without drying, however, by adding enough ammonia water to dissolve the copper carbonate and diluting to forty gallons. It is then known as modified eau celeste.

### Potassium Sulphide.

Potassium Sulphide (liver of sulphur)	3 ounces.
Water	10 gallons.

This solution is valuable to use for gooseberry mildew, as it in no way discolors the fruit and it is quite harmless.

### Copper Sulphate Solution.

Copper Sulphate,	1 pound.
Water,	25 gallons.

For use before the buds open, the above solution is easy to prepare and to apply. It should not be applied to any plant after the leaves burst, as it will burn the foliage. Its action is equal to Bordeaux mixture, but it does not seem as lasting. Like Bordeaux mixture, the last four preparations are for the destruction of fungous diseases, and they should not be relied upon to destroy insects.

### Paris Green.

Paris Green,	1 pound.
Water,	250 gallons.

Upon most plants this can be used without injury to the foliage up to July 1. Late in the season, or if the spraying is repeated frequently, one pound of lime should be added to neutralize the free acid. Lime should always be used when Paris green is applied to peaches, and it is safer to use it when plums, cherries, grapes, pears and, in fact, all kinds of plants are sprayed. It is best to combine the Paris green, whenever practicable, with Bordeaux mixture, as all caustic action will be prevented, and the effect of neither material will be lessened, but on the contrary increased, while the two applications can be made at once without extra labor. If this combination is made, add one ounce of Paris green to each fifteen gallons of Bordeaux mixture. Paris green is less likely to burn the foliage than London purple and hence is preferable. Either may be applied in a powder form combined with plaster at the rate of one pound to one hundred pounds of plaster. It is also of some value as a fungicide, but it is used to destroy insects that bite and chew the foliage or fruit.

**Hellebore.**

Fresh white hellebore,	-	-	-	1 ounce.
Water,	-	-	-	5 gallons.

Dissolve and apply for insects that chew, particularly the currant worm and the cabbage worm.

**Pyrethrum or Bubach.**

Pure fresh pyrethrum,	-	-	-	1 ounce.
Water,	-	-	-	5 gallons.

Apply the same as hellebore. It can also be applied dry with a bellows, and is efficient against many sucking insects, such as plant lice.

**Kerosene Emulsion.**

Soft soap,	-	-	-	1 quart.
Kerosene,	-	-	-	1 pint.
Water,	-	-	-	6 quarts.

Warm the soap until it becomes liquified, remove from near the fire, add the kerosene and agitate rapidly with a force pump for five to ten minutes, until it becomes a homogeneous creamy mass, from which the kerosene will not separate on standing. Dilute with water so that the kerosene will be one-fifteenth of the entire mixture. If properly prepared it can be used with safety upon nearly all plants, except squashes; melons, cucumbers and others of the squash family. A remedy for all sucking insects, and for others with soft bodies with which it can be brought in contact. A hard soap emulsion can be made by dissolving two ounces of hard soap in boiling water and using it instead of the soft soap.

**Cautions.**

Do not mix the copper preparations in iron or tin; always use wood, brass or earthen vessels. The valves, cylinder, piston, etc., of the pumps should also be of brass.

Do not add Paris green to ammonia containing compounds, or sulphate of copper solution; always use lime or Bordeaux.

Never spray with arsenites while the trees are in blossom, as the bees will be poisoned; they are necessary to fertilize the flowers.

Never leave any of the poisons where children or animals of any kind can get hold of them. Label them distinctly and put them away carefully as soon as through using them.

Study carefully the nature of the insect or disease and select the remedy that is most likely to destroy it without danger of injuring the plants.

Do not spray with arsenites or copper compounds within three weeks of the time the sprayed portions are to be eaten. While there would be no danger of fatal effects resulting, it is not best to run any risk. Bordeaux mixture and other lime compounds should not be used upon rough or full grown fruits even as late as that time. Not only does the lime disfigure the fruit but the copper is large.

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We do not think any other pump will compress air just as it leaves the shop.

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Did you ever see a pump working air tight without friction? The Eclipse does.

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## SPECIAL OFFER.

In order to get our pumps introduced we will give a special discount on the first outfit ordered from any post office in the United States or Canada where we have no agent or dealer, provided the order is not received during the months of March or April. These are busy months—order early—it is best always.

## A GOOD CASH JOB.

If you own a team and want a good job that will pay, get a No. 5 Eureka and seven-barrel spraying tank and do neighborhood spraying. Learn how—then do it honestly, intelligently and thoroughly—then you can hold the job. It will pay better than a threshing outfit, and does not cost one-twentieth as much. We furnish complete instructions for all the work without charge.

## A WORD TO AGENTS.

We are willing to give all the discount we can afford to any man who buys in quantity, but we believe it costs nearly double to manufacture our pumps what it does to make others that sell at same prices, consequently we cannot give same discounts; still, we believe that more money can be made selling our pumps, as their manifest advantages make them easy sellers.

## DO YOU WANT A DISCOUNT ?

If so, make up a club of three, write us and we will quote you a liberal discount. This can easily be done in any fruit growing neighborhood during the winter months. Try this at a Grange or Horticultural meeting.

## DO YOU KNOW

That the most frequent cause of disappointment in spraying comes from beginning too late? For fungi, one spraying in March is worth more than three in May and June. If you wait until you need a rig before buying you will be likely to make a failure of it for that season. Get everything in readiness early.

## IT IS A FACT

That most of the large buyers of apples now say that they will not, knowingly, buy orchards that have not been thoroughly sprayed. They find that apples will not hang on the tree, owing to the work of fungi, also that unsprayed fruit rots almost as soon as it is barreled, while fruit well sprayed is as clean, hangs as well and keeps as well as it ever did. A word to the wise should be sufficient.

## SPRAYING LEGISLATION.

Some States have passed laws compelling people to spray, and others will follow. There is no more reason why we should allow our careless neighbors to breed canker worm, codlin moth or other insects, or fungi, to devastate our orchards than we should allow them to breed yellows or black knot, with the same results.

## **WE HAVE**

Expert designers and pattern makers who can and will keep up with the demands of fruit growers. If there is any important idea that has been overlooked we would be glad to have our attention called to it. No doubt, the science of spraying economically and pleasantly is in its infancy.

## **IF YOU**

Have a small orchard, spray it well in the spring and it will pay your taxes in the fall. If it is a large one it will lift the mortgage or make your family comfortable for the winter. Neglect it and you will regret it.

## **DON'T DO IT.**

Don't send us an order to send you goods without enclosing price, unless you are well known to us. We are perfectly responsible and can furnish you all the proof you need, and we propose to return your money when you return any pump that does not do perfect work. This should be a sufficient guarantee for any man.

## **REMEMBER**

That we have at last a perfect knapsack pump. You will not have to wear a rubber coat to keep your back dry, as you do with others.

Other knapsacks have ten to fifteen soldered joints in the pump; we have none. Ours is solid brass, only five joints put together with finest lathe threaded joints. No rubber ball or glass marble valves, but finest brass, self-grinding, air-tight valves. This means reliability and durability.

## **DON'T GET LEFT.**

If you need a spraying pump of any description don't wait until the time of need arrives before ordering. "You may get left." Thousands of farmers got left in this way last spring. It takes four to five weeks to get out a batch of our pumps, and it costs a small fortune to carry a large stock, so don't delay your orders. Send your order immediately. If you cannot spare all the money now, enclose 25 per cent. of the order, naming the date when you will want pump, then send balance at that date and you will find the outfit all ready for you.



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## From the Land of Peaches and Plenty.

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MICHIGAN STATE HORTICULTURAL SOCIETY.

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LOWELL, MICH., Dec. 27, 1894.

Your committee would report that they find on exhibition by Morrill & Morley, of Benton Harbor, the Eclipse Spray Pump, both complete and in its separate parts. This pump embodies principles of construction, aiming at securing greater efficiency and durability, which make it worthy of the most careful examination of anyone who contemplates using such an implement.

They also show a nozzle outfit which seems to be valuable as a labor-saving device ; and lastly, they show a full line of spraying nozzles.

We think that the thanks of this Society are due these gentlemen for making such a full and complete exhibit, particularly as we feel certain that often so-called spraying proves valueless through the insufficiency of the apparatus used.

WILL W. TRACY, }  
THOS. WILDE, } Committee.  
C. J. MONROE, }

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NOTE—The above testimonial was received by us after the others, which appear in this catalogue were in print, and we beg leave to herewith submit it for consideration.





## WIDE-AWAKE FARMERS

Prosper through the neglect of their sleepy neighbors. The man who depends on Providence to care for his crops builds upon the sands—while he who depends upon himself, builds upon a rock.







Descriptive Catalogue of the Eclipse  
Spray Pumps Eureka

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