Smith, who was so proud of its success at New Orleans; plant it in rememberance of our late secretary, B. S. Hoxie, who was always enthusiastic over Wisconsin seedling apples; plant it for good will because ex-secretary, A. J. Philips, wants our Wisconsin apples exploited wherever horticulturists meet, and lastly, plant it for the glory of our beloved state that with its sister apple, the McMahant, with others like the N. W. Greening and the Newell, it may show an invincible front at every exposition where size and beauty is admired.

[The photograph was taken from specimens on exhibition at the Pan American Exposition. This variety did much to attract those passing the Wisconsin exhibit. The large size and highly colored specimens of Wolf Rivers, placed amongst the other varieties, caught the eyes of all and did much to help get the awards our exhibit was given.—Editor.]

THE SPRAYING OF PLANTS.

BY F. H. WEBSTER, WOOSTER, OHIO.

[Continued from April Number.]

In a week or ten days, spray again with the same mixture, and then for the last application you can omit the paris green as you then apray for the plum rot. The different species of Aphides, green and brown lice that are often so numerous on apple, plum and cherry trees are only to be killed by contact with some insecticide that kills in that manner. The plant bugs and squash bug are of this kind. For these, kerosene emulsion, or a whale oil soap suds will be found most effective, applied as soon as the insects are observed. The squash bug does not yield to even these measures readily, except while very young, and the pest should be fought at this time.

With horticulturists in most of the states, scale insects are attracting the greatest attention, and especially is this true of San Jose scale. I do not know to what extent it interests you, but with us it is the all absorbing question as to the best methods of treatment. At present we are relying on spraying with whale oil soap or crude petroleum, with neither entirely satisfactory.

Whale oil soap applied during winter or early spring, two pounds dissolved in each gallon of water, is as effective as anything that we have found, if carefully and thoroughly applied. This soap is a fe
ilizer, cleans up the trees and prevents leaf curl of the peach. It is not injurious to the most tender trees and shrubs, except to living fruit buds of the peach, and not to these if applied as they are opening in spring. The only objection to its use is that it is expensive, and offers no protection from immediate reinfestation by the scale. The cost is five or six times that of crude petroleum in treating orchard trees.

Crude petroleum is effective and will kill every scale that it touches, and protect from reinfestation for a greater or less period. It is comparatively inexpensive, and with us, usually easily obtainable. It is not a fertilizer and will not prevent peach leaf curl or other fungus diseases so far as known. It is dangerous, and should never be used without careful experimentation in any and every locality. In fact, it requires two or three years experimenting in order to find just what can be done and what cannot be done with it in the orchard. To the peach and other tender trees and shrubs it is particularly dangerous and especially to old and weakened trees. In prescribing treatment for San Jose scale, under the present laws of Ohio, I prescribe the whale oil soap, but explain the dangerous nature of crude petroleum and allow it to be used at the risk of those making the application. In treatment done under my direction I use the soap, for the reason that I am often obliged to employ inexperienced men, in localities where the crude petroleum has never been tested, and on all kinds of vegetation, hence, must use some mixture that will not injure the trees, etc., to which it is applied. If I had an apple orchard of my own, and wished to treat it for San Jose scale, I should use a mechanical mixture of crude petroleum, in early spring, and apply it carefully. If I had a peach, plum or cherry orchard to treat for this pest, I should use whale oil soap in spring, just as the buds were opening. I should also use a dilute soap mixture or dilute kerosene emulsion, in late summer or early fall, to kill the young scale and relieve the trees of as much drain on their vitality before going into winter as possible. I will say, however, that if I had an orchard infested by San Jose scale, and it was the only one in the neighborhood, and I could get rid of this pest by destroying half of my trees, I would save time, money and worry by burning them as quickly as possible; if the neighborhood was infested by the pest, I might take a different course.
Now, before leaving this subject of what to spray for and what to spray with, let me advise you, once and for all, first find out just what you want to do. If you want to overcome fungus diseases, use fungicides, and do not expect to kill insects with them either. If you want to kill insects, or do this and prevent fungus diseases at the same time, find out what kind of a mouth the insects have, whether biting or sucking. If they have biting mouths combine poisons with your Bordeaux mixture or other fungicide and apply by one and the same treatment. If the insects have sucking mouths you must treat separately, the insects and diseases, using for the insects something that kills by contact. If you will only learn these things before you begin, find out what you want to do, you will save time, money and disappointment. If you go into spraying blindly, and expect to derive any profit therefrom, you might as well stop before you invest your money. You will come out of your experience about as well off as you will to start out loaning your money to whoever wants to borrow, without security.

When and How to Spray.

Of one hundred points in success, ninety of them will be contained within this division of my subject. That is to say, if our insecticides and fungicides were without fault and our spraying machines were perfect, neither of which is true, with the spraying that is ordinarily done the results would be only partly satisfactory. Spraying done at the proper time, in a proper manner and with the right materials should pay a return of from $5.00 to $10.00 for every $1.00 invested. If it is done blindly, at most any convenient time; and in a happy go lucky manner, you may expect from 5 cents to 50 cents return for each $1.00 invested. You must remember that you are doing business with nature, and under laws that are as exact and unvarying as any others that govern the universe, and these do not wait on the pleasure of anybody or anything. An insect may be easily reached and overcome to-day, and to-morrow or the next day, be beyond our reach and no way left us to prevent its destructive influences. Do these things when you are ready. Why, you might just as well talk about living as long as you please and dying when you get ready.
When the petals fall from the apple, the codlin moth is on hand to lay her eggs; the calyx is then wide open, and the young caterpillars will seek the calyx for their first meal; later this calyx will close up tightly and if poison can be introduced before this closing it will be better retained. The whole object of a lifetime with these moths is to deposit their eggs, and they will do this, largely at least, as soon as the bloom falls. Then is the time to spray, and not after the other work is over and the eggs laid and hatched and the young worms making their way into the young apples, and the calyx of those not affected so closed over as to prevent the free admission of the spray. The young canker worms are minute and very hungry, easily killed by poisons about this time, but, let them alone until they are one-half to two-thirds grown, and they seem to thrive on poisons. The potatoes are just coming out of the ground; there are a few beetles only and but little plant to treat. Get an old fruit can punch fine holes in one end and fix a broom handle to the other so as to hold the can vertically over the young plants, and tapping it lightly with a light stick, sift a mixture of one pound of paris green and ten pounds of a low grade of flour directly on to the surface where it is needed and where it will adhere to the leaves. This is not spraying, but it will kill off the old beetles that first appear, or at least many of them, before they lay their eggs. Later, when the plants get larger they may be sprayed with paris green, or with the disparine or arsenate of lead. It is the usual custom to let the few beetles that appear in the spring entirely alone, until the young develop and go into the ground to transform. As these continue and as they begin to transform and appear above ground, we hear the complaint that spraying is of no avail, as, though all are killed off one day, there are as many more the next. This is of course true and will continue through the season, because you have let the first ones get away into the ground, when poison applied at the right time would have prevented this. The time to begin is when the beetles begin, and spray as soon as there is a good growth of tops.

(TO BE CONTINUED.)