

THE WINGED PHYLLOXERA.

J. S. Hyde, of Santa Rosa, California, a few days since, while examining some grape-vine roots infested with the *phylloxera* remarked to some friends present that there was little danger of a rapid spread of this pest, as the insect, in its winged form, had not yet appeared. The words had scarcely passed from his lips when one of the gentlemen cried out: "I see one with wings now!" On a more careful examination eight full-winged specimens were found; the next day four other specimens were discovered. Several of these insects were sent to Dr. Hilgard of the State University for examination.

The above announcement by Dr. Hyde is very interesting, and not the less so from the fact that the insects he sent to Prof. Hilgard, although truly a winged form, were sterile, and not capable of spreading the destruction which our vine-growers fear. In order to

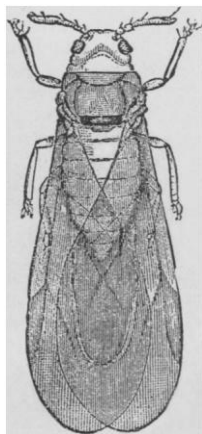


FIG. 1.

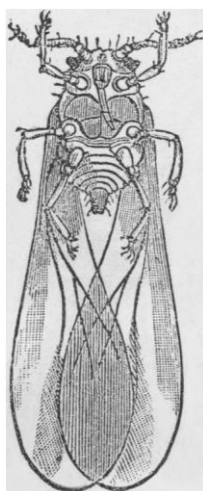


FIG. 2.

show the difference between the fertile and infertile winged-forms, we have reproduced engravings from Prof. Riley's drawings of the *phylloxera* which show clearly the distinction between the two. Fig. 1 is the fertile winged female, which thus far has not been observed in this State, unless some of the insects retained by Dr. Hyde are of this form. Fig. 2 shows the outline of each of the five specimens received by Prof. Hilgard. It will be observed that in the fertile winged female the abdomen is prolonged and that the body is about half as long as the whole insect, wings included, and is of a tapering, rounded form. In the sterile, the body is rarely one-third the length of the whole insect, and the abdomen is abruptly contracted, as shown in the engraving.

Concerning the finding of the sterile winged form by Dr. Hyde, Prof. Hilgard spoke at the meeting of the Horticultural Society as follows: "After all the matter still rests pretty much as we conjectured two years ago. I then stated that either the winged *phylloxera* was not here at all, or in very small numbers. There are five or six varieties of the insect non-winged, which live on the roots, and which produce a winged form towards autumn, which, like the wingless form, is simply a female which

lays eggs without any connection on the part of the male. The winged female is simply an egg-layer, like the others. She lays a few eggs only. Some of these eggs produce males and others females. It seems to be necessary that there should be a kind of renovation of the race in that way. The winged insect is dangerous, of course, because it is capable of flying to some extent. In Europe the winged form has been known to traverse a distance of 30 or 40 miles at one jump, leaving districts between unaffected. In Sonoma the progress of the pest has been slow, and it has been thought that the winged insect was absent. The winged forms produce only two varieties—one fertile, the other infertile. I understand that in other countries the proportion of infertile insects is small. Of the eight specimens sent me by Dr. Hyde, I find that five are of the infertile kind. I infer, therefore, from the evidence thus far produced, that the spread of the pest will still be comparatively slow, depending upon the kinds that crawl instead of those that fly."

The announcement of Dr. Hyde, which was made to the *Rural Press*, will doubtless induce a still wider search for the winged insect. We shall be pleased to receive any specimens which may come to the eyes of our readers to determine their exact standing.

INSTANTANEOUS PHOTOGRAPHY IN A BALLOON.

PAUL DEMARETS.

Since the memorable day when the bold Pilâtre de Rozier and the Marquis d'Arlandes left the earth for the first time, up to the present, all aerial travelers have been struck with the clearness with which the celestial landscapes have opened up to their view. The idea of employing photography to fix these admirable contours is contemporaneous, so to speak, with the invention of Niepce and Daguerre.

To M. Nadar belongs the credit of making the first attempts, and to M. Dagon the merit of remarkable execution in bringing the ascensions under control. But in spite of these successes, thanks to the generous aerial hospitality of M. Henry Giffard, one would think that the fixation, at a distance, of celestial landscapes upon a sensitized plate in a balloon, was a mere chimera. In fact the rapidity of the motion of the aerostatic globe, and the rotation about its axis, would seem insurmountable obstacles.

Attention has been recently directed to the rapidity of impression which may be attained, and which I believe I have increased by the aid of certain re-agents; but one difficulty still to be surmounted was the want of some means by which the operculum could be closed with such rapidity that the operation would take only a fraction of a second.

The readers of *L'Electricité* know how M. Stein, the able experimentalist of Frankfurt, sought for a solution of this problem. It has also described the ingenious apparatus which M. Janssen has made use of in his observatory at Mendon, by which he has secured great rapidity of action on burning a thread of silk which held the mechanism in position. But it was impossible to use this apparatus in an aerostat, although admirably adapted to observation from a fixed position. I should, therefore, have been unable to employ this method if the idea had not occurred to me of using electricity by the aid of the mechanism I am about to describe.

I take a ring, in the centre of which my objective is fixed, normally and solidly, and for the sake of illustration, we shall suppose it to be horizontal. A spring, attached to an arc, situated at the centre and parallel with the objective, presses a horizontal plate, parallel with the ring of the base. This plate bears a shoulder which rests upon a vertical piece of iron. This has a vertical