aside for the consideration of nitrogen, potash and phosphoric acid. The matter was referred to the executive committee.

Dr. F. C. Dorment, of St. Petersburg, was called on for his paper on "Playing with Citrus Fruits," but was not present.

MISCELLANEOUS RESULTS OBTAINED BY THE FRUIT INSECT INVESTIGATIONS DIVISION OF THE BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE ORLANDO, FLORIDA

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RESULTS FROM ONE SPRAY APPLICATION FOR RUST MITE CONTROL ON PARSON BROWNS

As may be generally remembered, the rust mites were not very abundant last season until in June. This was especially the case in the little grove of Parson Brown oranges where these experiments were conducted. However, on June 8 there were enough mites present to demand attention, and an application of lime-sulfur, 1 to 50, to which was added varying amounts of wettable sulfur ranging from 5 to 10 pounds, was made. The spray was thoroughly applied.

The single application on all plots prevented practically all rust-mite injury until November 14-21 when the fruit was harvested. The fruit reached a state of legal maturity October 15, and at that time there were quite a number of rust mites present, and these had increased greatly by November 15. If the fruit had remained on the trees two weeks longer it would have been necessary to spray again to prevent the entire crop from being turned into a golden grade.

This experiment, although carried on during a year when the rust mite was not a very serious problem, indicates that perhaps citrus growers can produce a crop of early oranges, free from rust mite attack, with only one application of spray.

CONTROL OF CITRUS PESTS WHEN BORDEAUX IS USED FOR THE PREVENTION OF PLANT DISEASES

It is generally known to citrus growers in Florida that practically all pests attacking citrus trees (scale insects, whiteflies, mealybugs, red spiders, and rust mites) are attacked by several species of entomogenous fungi. These species attacking scale insects and whiteflies are so effective that spraying with oil emulsion or the sulfur sprays is resorted to only occasionally, when, due to adverse weather conditions, the fungi do not bring about commercial control. When Bordeaux is used to prevent melanoscel and other citrus diseases, it not only controls the plant disease but likewise prevents the activity of the beneficial fungi. The insects, without these natural checks, increase at an alarming rate.

In the past much experimental work has been done to control insect pests when normal activity of the beneficial fungi has been interfered with by Bordeaux. This past season we carried on some additional work, using Bordeaux combined with wettable sulfur. On March 22 a block of large sweet-seedlings were sprayed with Bordeaux, 3-4-50, to which was added 10 pounds of wettable sulfur. There was the usual infestation of purple scales present at the time of the spraying. By July 5 there was only a slight increase in purple scale population, and this was most effectively controlled at that time by a most thor-
ough application of lime-sulfur, 1 to 50, to which was added 5 pounds of wettable sulfur. This application was given at the time when the second hatch of the purple scale eggs was taking place, and therefore when the greatest number of the crawling young and first larval stage were present. Up to the present time no unusual abundance of scale insects had developed. While the above results have been obtained in only one season, we believe they are so promising that those growers who are experimentally inclined would do well to try the Bordeaux-wettable sulfur combination. In case this is done, we would suggest using only 5 to 6 pounds of wettable sulfur per 50 gallons.*

Orlando, Florida, March 8, 1935.

* "The extensive use of half-strength Bordeaux combined with several wettable Sulphurs has given most satisfactory results during the Spring of 1935. Melanose, in every instance, has been prevented almost entirely. Rust mites have not come back for nearly three months after the use of the combination and the scale insects have not increased much more than where no spraying has been given."

USE OF AIRPLANES IN AGRICULTURE

J. D. Reed, Tallulah, La.

After sitting here listening to the very splendidly prepared and very enjoyable and instructive papers, I feel hesitant to appear before this audience to give an extemporaneous talk on the subject of the use of airplanes in agriculture.

We have always looked upon the airplane as an instrument of warfare and of course, following the war, there were a great many boys who turned to flying.

Back in 1922, near Dayton, Ohio, a number of catalpa groves were infested with catalpa worms and someone conceived the idea of combating it with airplanes. They proceeded to try to fly over these groves with sprays, but they could not get near enough to the trees and when they put out the poison it went into the next fields and the worms went on and ate up the catalpas. But it was the birth of an idea and Dr. Coad of Tallulah, La., started to work with airplanes for spreading calcium arsenate for boll weevil control and he made great progress in determining the exact amount per acre and how to distribute it so there would not be an overcharge in one place and shortage in another. Geo. Post had a forced landing at Tallulah and found out what was being done. He came out the following year with two engineers working with Dr. Coad and in 1924 we had our first commercial operations and in 1925 there were a fleet of 18 airplanes in the south.

Of course, using airplanes to farm with is an idea which most people are inclined to look at in astonishment, but it is logical that in their use we double the power of a man with horsepower. We do our dusting with 250 H. P. engines and distribute it at the rate of 100 miles an hour. We were wondering why we were able to get greater adhesion dusting in the airplane than with ground equipment dusting which was almost equivalent to throwing the poison away. Dr. Coad found that the dust particles were magnetized, so that there was electrical attraction between the particles and the surface of the cotton plants, but that this did not occur in the dust spread by the ground machines.

It seems like a good theory and has worked out in practice as demonstrated by the better results obtained from using the method over the ground methods. The speed, of course, is more rapid than any other means of making the application. The distribution is controlled by the pilot, just under his gas throttle and he flies low about 100 miles an hour opening the throttle just as he passes the border line of trees.

He can control the distribution just as he wants to. It demands a good deal of skill, but flying is just an instance in this operation. We have put out three, four or five pounds to an acre accurately. Sometimes when the dusting is being