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from their appearance. Both front feet should be together, and one of the hind feet slightly ahead of the other, with the back straight and head held so that the neck carries out the line of the top. Bulls look well with the head very slightly elevated, as it accentuates that masculinity which all bulls should show. One reason for having cows in milk stand with one hind foot slightly ahead of the other is that the udder is shown to better advantage. Care must be taken that the animal does not stretch out or hump up. The feet should assume a natural supporting position directly

under the body. Posture means a great deal in the show ring, and training will avoid many unfortunate missteps at the wrong moment.

Never trust a bull. Use a strong ring—because rings break easily when a bull begins to tear around—and a stout staff, preferably one with which pressure can be brought to bear on the bull's nose by twisting the staff. Handle the bull as gently as possible, but teach him that respect for the person handling him is his most important commandment. Get him accustomed to being handled and to standing in the correct position.

Spraying Methods and Mixtures in the Annapolis Valley.

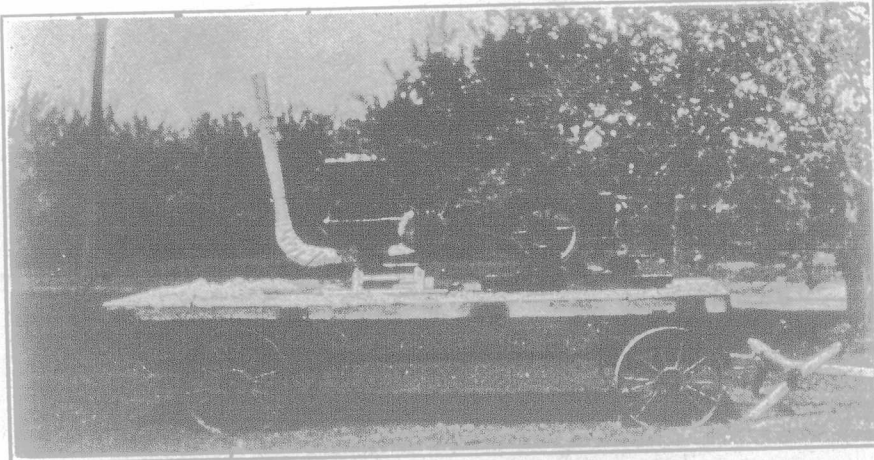
LIME-SULPHUR ABANDONED—BORDEAUX RETURNED TO FAVOR—DUSTING BECOMING POPULAR.

Approximately one thousand tons of dust and spray materials will this year be applied to the apple orchards of the Annapolis Valley, Nova Scotia, in an effort to control the insect pests and fungous diseases that lie in wait to attack the fruit. Last year in the neighborhood of 240 tons only were employed, so it is easy to comprehend the spirit of the people in regard to this one operation connected with the apple-growing business. The Valley is now one huge experimental orchard, where numerous formulas are being investigated and divers methods are under experimentation. Growers are adopting methods that appeal most to them under their own peculiar circumstances. They are giving some thought to efficiency, but expediency is receiving due consideration. There are so many factors to be considered that one is not safe in jumping at conclusions based on one grower's experience, or the experience of a dozen, but the grouping of one hundred or five hundred orchards gives pretty valuable information—in fact, quite as reliable information as a single experiment conducted with unerring accuracy, but under peculiar seasonal and soil conditions. There are sprayed orchards and dusted orchards; orchards sprayed with lime-sulphur, and orchards sprayed with Bordeaux mixture. There are orchards sprayed with varying strengths of the material mentioned, but the sentiment among growers seems to be in favor of dusting. In a few hours one can visit growers who advance arguments in favor of all the methods and mixtures we have mentioned, but throughout the Valley the consensus of opinion is that Bordeaux mixture in a modified form, perhaps, is superior to lime-sulphur as a fungicide, and that dusting is, at least, preferable to spraying. Growers in the Annapolis Valley are massed, so to speak. They see each other frequently, and they take time to talk things over. Under such circumstances the dusting practice naturally made converts very rapidly. Growers were anxious to find something a little more pleasant to apply than Bordeaux, or the still more objectionable lime-sulphur, and when the dust was found to be, at least, fairly efficient it was adopted just as speedily as dusters could be obtained. Throughout the month of June, when a representative of "The Farmer's Advocate" visited the Annapolis Valley, engines could be heard throbbing in the orchards before the cock crew in the morning, and in the calm of the evening thin clouds of dust hanging over numerous orchards revealed the fact that dusters were again at work. Dusting is more contagious than any other method of scab or insect control yet devised. This, coupled with the fact that large orchards can be treated speedily and at the proper time, has resulted in a great many dusters being brought into the Valley, and a large demand that cannot be satisfied.

THE EVOLUTION OF SPRAYING.

The first material to be used in the Annapolis Valley was the old 4-4-40 Bordeaux, with Paris green added as an insecticide. This gave good results in the control of scab, but as its use increased the apple crop showed considerable injury in the form of "russeting" or "netting." Bordeaux was adopted slowly at first because

growers were not sufficiently convinced that it paid to spray. Old prejudices had to be broken down; new methods had to be established. After the missionary work had been done lime-sulphur was introduced. It was not a pleasant mixture to apply, but it gave very good results as a fungicide, and a clean finish to the fruit which has not yet been surpassed by any other material. Then came power sprayers and the spray gun. In order to do a thorough job, growers drenched their trees with materials put on under great pressure, and the opinion gained ground that the apple crop of the Valley was being sprayed off with lime-sulphur. This induced a swing back to Bordeaux mixture, and almost concurrently with this came the duster. By 1918, the Thompson-Bordeaux, which was a modified mixture used for several years by Mr. Thompson and Mr.



One Type of Duster in Use in the Annapolis Valley.

Buchanan, near Berwick, came into favor. It was composed of 2 or 3 pounds blue stone to 10 pounds of lime and 40 gallons of water. It could be used on any variety, in all weather conditions, and at any time without fear of crop reduction. By this time orchards had grown in size with many growers handling all the way from twenty-five to fifty or seventy-five acres of orchard. Even if the duster was not so efficient as the power spraying outfit, it was believed that far better results could be obtained from the use of dust, because the orchards could be covered at the proper time and the work speedily executed. Probably one-half of the apples produced in the Valley this year will be on dusted trees. Growers have been co-operating in the use of dusters for two reasons; one was to save or keep down initial cost, and the other was that sufficient dusters could not be obtained to go around. One duster would do four or five properties, but this system has not been found satisfactory. Many who had an interest in a duster have purchased outright for themselves, and there are many growers now spraying who will obtain dusters as soon as they can get delivery. The nature and amount of material brought in and distributed

HORTICULTURE.

The Second Fruit Crop Report, issued by the Dominion Fruit Commissioner, says that the consensus of opinion in British Columbia is that the apple crop will not exceed 65 per cent. of last year's harvest. The present indications in Nova Scotia, says the report, would lead one to estimate the forthcoming crop at around one million barrels, or 60 per cent of last year's crop.

this year will give readers some idea of what is going on in the Valley. The following is a list of materials handled by United Fruit Companies: Hydrated lime, 450 tons; copper sulphate, (bluestone) 44 tons; arsenate of lime, 31 tons; dry arsenate of lead, 29 tons; paste arsenate of lead, 8½ tons; sulphur dust, 100 tons; Sanders' dust, 290 tons; soluble sulphur, 4,000 lbs.; tree tanglefoot, 2,400 lbs.; Black Leaf 40, 2,104 lbs.; lime-sulphur, 31 barrels; dusters, 53; dust mixers, 1. There will probably be in the neighborhood of 100 tons of material and many dusters distributed by agencies other than the United Fruit Companies. The 31 barrels of lime-sulphur and 4,000 lbs. of soluble sulphur, in comparison with the total quantity of spray materials, indicates the popularity of the lime-sulphur spray at present in the Annapolis Valley.

THE LIME-SULPHUR CONTROVERSY.

As previously mentioned, growers have entertained the opinion that they were spraying their apples off with lime-sulphur. This is not the unanimous opinion, however, for it is claimed by some that the pressure under which the lime-sulphur was applied was responsible. George E. Sanders, in charge of the Dominion Entomological Laboratory at Annapolis Royal, stands ready to condemn lime-sulphur unequivocally. He argues that lime-sulphur has at least been partially responsible for the short crops between the years 1911 and 1919. Prior to 1919 the Bordeaux mixture was in general use, and by 1919 the pendulum had swung back in the direction of Bordeaux. He furthermore declares that lime-sulphur injury usually carries over and injures one or more succeeding crops. Experiments conducted by Mr. Sanders lead him to believe that the lime-sulphur injury is not so much a direct damage to the apple as to the proper functioning of the leaves. Experiments have shown him that when lime-sulphur is applied to the leaf that chlorophyll is precipitated, and ability of the leaf to function properly is impaired. The information Mr. Sanders gets from New York State also leads him to believe that lime-sulphur will eventually go out of use in that extensive apple-growing district.

Professor W. S. Blair, Superintendent of the Dominion Experimental Farm at Kentville, has not found in his experiments that the crops sprayed or subsequent crops are influenced as to yield by the application of lime-sulphur when it is properly applied. He does concede, however, that a danger exists of spraying apples off with almost any material when the trees are drenched under heavy pressure. Lime-sulphur must be used with a reasonable amount of care, and while



An Annapolis Valley Apple Orchard in Bloom.