How to Arrange a Cheap and Practicable Spray-pump for Spraying accurately dilute Kerosene and dilute Crude Petroleum.

While conducting the series of spraying experiments in orchards infested with the San José Scale in January and February of the present year, I experienced great difficulty at first in spraying *accurately* the 20 per cent. kerosene and the 25, 33 and 40 per cent. of crude petroleum. Many hundreds of tests were made at various times and places with each of the above percentages, but in no case did the pumps perform their work with any degree of accuracy. For example, when spraying with 20 per cent. kerosene it was found that the percentage of oil put on the tree varied from 15 to 30 per cent.; when spraying with the 25 per cent. crude petroleum, the percentage varied from 15 to 35 per cent., and so on with the 33 and the 40 per cent. crude petroleum.



A desirable pump for spraying oil and water.

Experiments revealed the fact that the oil and water tended to separate readily in the hose. When the tip of the rod was elevated a larger percentage of oil issued from the nozzle than was the case when the tip of the rod was horizontal or depressed.

After many attempts to arrange a suitable pump, Mr. G. E. Fisher, my assistant in the experiments, contrived a simple way of overcoming the difficulty. Two good spray pumps and their barrels were placed side by side, and their handles were fastened together by a bar so as to act as a single handle, working on an upright bar fastened to one of the barrels. One pumped water, the other kerosene or crude petroleum. By a simple adjustment the stroke of the two pumps was made to vary to any extent

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