

Mr. Marlatt said that from the description Mr. Southwick undoubtedly had in mind the Gillmore nozzle (to which Mr. Southwick assented), and said that Mr. Gillmore was at the Department, and some very careful tests were made with this nozzle with various insecticide agents. The character of the nozzle and the practical objections to its use were then pointed out.

Mr. Forbush said he knew of a similar principle at one time employed by a fire apparatus company to mix a fire extinguisher with water at the moment of spraying.

Mr. Smith said it was very encouraging to see such decided interest taken in the manufacture and improvement of machinery for the application of insecticide mixtures. He was of the opinion that the origination of new devices and the work of perfecting old ones or overcoming mechanical difficulties may be safely left to manufacturers, whom he had always found very ready to adopt suggestions in the matter of the betterment of apparatus. In this connection he referred also to the adoption by the Climax Pump Company of an improvement in the kerosene knapsack sprayer suggested by Mr. Goff. His experience with the improved knapsack sprayer, he said, corresponded very closely with that detailed by Mr. Marlatt.

Mr. Marlatt, referring again to the device suggested by Mr. C. M. Weed, pointed out that while the arrangement of the kerosene and oil reservoirs suggested by this author would probably obviate several of the difficulties, still an important objection, arising from the oil escaping into the water chamber during the action of the pump or immediately thereafter, was not corrected by this means, although possibly rectified by the combination suggested by Mr. Goff in a communication in Garden and Forest of April 10, 1895.

Dr. John B. Smith read the following paper :

#### "RAUPENLEIM" AND "DENDROLENE."

"Raupenleim" and "dendrolene" are both crude petroleum products of a butter-like consistency at ordinary temperatures and becoming only slightly softer at high temperatures. The raupenleim is a German product, very dark in colour, with a tarry odour and probably mixed with some tar preparation. The American product is brown in colour, almost without odour, and without foreign admixture to disguise its character or give it a specific smell. Raupenleim is largely used in Germany to protect trees from the attacks of certain insects and to prevent their being injured by stock or deer during the winter. The materials were tested comparatively for the purpose of preventing borers from attacking fruit trees, and if possible to prevent their issuance when already under the bark. Both materials can be readily applied with a paddle or trowel and distributed by means of a stiff brush so as to make a tolerably even coating. Experiments showed that it did not injure even young shoots where applied to the bark only; but where buds or growing tissue were covered it killed the buds and shoots by choking the stomata. A young tree set out in 1894 was covered from the surface of the ground to the buds without detracting from its vigour during the balance of the season. It was applied upon an orchard of pear trees infested by the sinuate pear borer and both materials prevented oviposition. The raupenleim absolutely prevented the issuance of all the beetles maturing under the bark. The dendrolene did the same where thoroughly applied. The raupenleim has a tendency to harden on the surface. This is a good thing where it is intended to prevent beetles from issuing from the trees, but a bad thing where it is intended to prevent insects from crawling up the trunk. The dendrolene becomes very soft at high temperatures without running. This prevents insects from crossing it; but where it is applied thin it does not always form a barrier to insects emerging through the bark. Its application is recommended as against the fruit bark-beetle (*Scolytus rugulosus*), which can not emerge through it when already in the tree, and can not enter the bark protected by a coating. It was also tested against peach borers, and both materials proved effective.

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