

Mr. Wallace: Yes, it kills by contact, it is not a poison.

The President: This other question as to comfort in handling, is it fully as disagreeable to handle as the ordinary Bordeaux mixture?

Mr. Wallace: I did not mind it at all. It is a little uncomfortable if you get some of it in your eyes, makes them smart, but you can see more clearly after they get over smarting.

---

### NOTES ON THE LIME-SULPHUR MIXTURE.

By A. L. HATCH, Sturgeon Bay, Wis.

Perhaps the most salient feature of lime-sulphur as a summer spray will be the probability of its serving as a plant stimulus. If with its use foliage is made more vigorous instead of being depressed or absolutely injured as is so often the case in the use of Bordeaux mixture, its use will mark a great step in advance. If also it will of itself have an insecticide effect upon aphids, thrips and young scale lice it will have a marked advantage over Bordeaux mixture. Both of these are well within the known effects of sulphur and worthy of careful experiments.

In order to be acceptable to fruit growers the spray must be capable of carrying an insecticide so the operation will not need to be duplicated to prevent fungus and insect injury. While chemistry shows the effective part of lime-sulphur spray to be a delicate combination it is not probably much more so than that of Bordeaux mixture. There is probably some form of arsenate that will coalesce in such a way as to be fully efficient, even if arsenate of lead can not be used.

The new form of arsenate brought out by French scientists recently possesses some apparently great advantages over any other form now known and if it will combine with lime-sulphur without discord promises to be the acme of spraying mixtures. For this arsenate it is contended that by substituting iron sulphate for lead acetate in the making of arsenate it is expected to remedy the toxic effect of cumulative sprayings. If by the use of lime-sulphur we eliminate copper from our fungicide and by the use of iron sulphate eliminate the lead from the insecticide a further step is taken toward what is desired.

The general use of kerosene barrels in spraying has established the spraying barrel at 50 gal. This is what we may now regard as the liquid spray unit. Recently I made examination of several bulletins and found that the arsenical units for 50 gal. varied from one and 2-5 oz. to 7 2-10 oz. In other words there were five different quantities mentioned for the same purpose. Surely so wide a variation shows error somewhere. One professor in discussing lime-sulphur wash as a summer spray suggests that the stock solution be measured by Beaume's scale—28 degrees being a strength to require a dilution of 18 to 1. Here again we should meet with difficulties. It is not easy for common fruit growers to obtain hydrometers with Beaume's scale and it is not desirable that it should be used. The specific gravity can be better determined by weighing. Since, however, authorities differ in the amount of lime desirable to use in dissolving the sulphur it is evident the specific gravity of the resulting solution wash must vary with the amount of lime used. As the dominant force is sulphur and not lime it is evident that here too we need a definite sulphur unit. With the amount varying from 3-4 lb. to 1 1-2 lbs. of lime for one of sulphur there can be little uniformity of results. Unless shown to be better otherwise equal weights of lime and sulphur and so made as to have a specific gravity of 1.25 would give a definite sulphur unit. Whoever establishes definite spray units will confer a benefit on horticulture.

---

### HOW TO MAKE BORDEAUX MIXTURE.

M. W. RICHARDS.

You undoubtedly thought it queer when you glanced over your program and again saw there the subject of Bordeaux mixture. This subject, however, is like numerous other horticultural subjects, it never grows old and we never know all about it. Formulae for Bordeaux Mixture and descriptions for making it have been published so often that the subject ought to be well understood; yet many inquiries are made regarding it every year and very much trouble results from an improperly made mixture.

In making Bordeaux Mixture the first thing to take into con-