

*Standardization not yet practicable.—Fungicides.*

Now, from time to time questions are asked with all seriousness and increasing frequency—more often than not in the nature of a complaint—as to why the number of sprays cannot be reduced to one selected specific for each purpose, and why cannot a more definite recommendation be given with regard to a strength that can be relied upon to do the work required of each without injury to the fruit or foliage. The reply to this, of course, is because we have not yet reached perfection in the science of spraying. No one mixture we have yet at our disposal can be relied upon to give the best results in all circumstances.

Take bordeaux, for instance. This mixture is recognized to be the very best fungicide we have, but it is very destructive on the skin of most fruits when used in the summer. Burgundy mixture is the same or worse as far as scorching is concerned, and popular opinion is against it being equal as a fungicide to the lime bordeaux; but, as well as being a good spray for potatoes, it does not clog the pump. Its main use, however, is when suitable lime or other ready-for-use fungicide is not available. Professor Pickering's bordeaux, in which copper sulphate and lime-water is used, is no doubt from a chemical point of view the ideal bordeaux, and as the percentage of copper sulphate is very much less than in ordinary bordeaux it is of special interest just now owing to the high cost of bluestone. Although it is being tested, not sufficient is yet known of it from a practical point of view to warrant its use being advocated.

Sulphate-of-copper solution is a good quick-acting fungicide for winter use, but the majority of those who have tested it are not quite satisfied that it is equal to bordeaux mixture.

Cooper's Improved bordeaux is a patent preparation introduced with the idea of providing a reliable fungicide ready for use. Lawes Anti-blight is on practically the same lines. Both are useful preparations, particularly to the owners of small orchards, as they save the trouble necessary in preparing bordeaux.

Lime-sulphur and atomic sulphur, besides being fungicides, are also insecticides. As fungicides they are superior to bordeaux for such fungus diseases as powdery mildew, but fall considerably short of bordeaux for all-round purposes. For the combined purpose of fungus and insect control they fill a very useful place, particularly if the season is not too favourable for black-spot. This applies to lime-sulphur particularly in connection with the latter disease. Bordeaux, owing to its tendency to blemish the fruit, should not be used in the orchard in the summer unless it is absolutely necessary, but lime-sulphur, if used with care, provides a good substitute under normal conditions as a preventive for black-spot, besides being useful, as previously stated, for other fungus diseases as well as insect pests.

The foregoing, therefore, explains to a certain extent the difficulty that exists in reducing the number of spraying-compounds to one formula. All the fungicides mentioned, although the whole of them are never included in any spraying advice given, have their uses under certain conditions. Nor is it possible throughout to definitely standardize the strengths. Every fruitgrower who has taken an interest in spray-testing will, I am sure, agree that it is very difficult