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Attention is called to the "Wants" column. All are invited to use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

APPLE AND PEAR SCAB.

THE microscope has revealed the fact that the brown scab which has become so prevalent on certain varieties of apples and pears during recent years is itself a plant, reproducing itself by spores, which are borne upon the wind and find their congenial soil in the leaves, tender twigs, and fruit of the apple and pear.

When the nature of the pest was ascertained a remedy was suggested in the treatment which has recently been discovered to be so effective in the case of other fungoid diseases of plants, namely, the spraying of the affected trees with a solution of copper sulphate. This treatment has been recommended by the national Department of Agriculture for several years; but, as heretofore practiced, it has often injured the foliage of the trees to such an extent that the remedy was almost as bad as the disease.

The Ohio Experiment Station has this season conducted an extensive series of experiments, some on its own grounds, some in a large orchard in the neighborhood leased for the purpose, some in the fruit region of the lake shore, and some in orchards along the Ohio River. In these experiments several preventive solutions have been tried, but especial attention has been given to the question whether the strength of the copper sulphate and lime solution (known as the Bordeaux mixture) might not be reduced so as not to injure the foliage and yet accomplish the object of preventing disease. The results of this work were shown in a striking exhibit, made at the State fair and other places, in which sprayed fruit was shown to be almost absolutely free from disease, while that from neighboring trees left unsprayed was almost worthless.

The spraying not only reduces the injury to the fruit, but it largely increases the total crop. This is because the foliage on the sprayed trees remains healthy, while on the unsprayed trees it is diseased and unable to perform its functions. Furthermore, the scabby fruits fail to develop to their normal size, because of the scab that is on them. The sprayed apples are fully twenty-five per cent larger than the unsprayed, and are more highly colored. As might be expected, the sprayed apples sell for more than the unsprayed, there being a difference of more than twenty-five per cent in favor of the former. This was found to be the case by an actual test in the market, the sprayed apples selling more rapidly at fifty cents per bushel than the unsprayed at forty cents. This makes a total gain in favor of spraying of fully fifty per cent. The cost per tree for the season does not exceed twenty-five cents, while there is often a gain of one dollar or more, depending largely upon the variety, as some are much more subject to scab than others. Spraying also prevents the premature falling of the leaves, which is one of the results of the scab, for it affects the leaf as well as the fruit.

Following are the formulæ used in these experiments: No. 1—copper sulphate, 4 pounds; lime, 4 pounds; water, 1 barrel. No. 2—copper sulphate, 4 pounds; lime, 4 pounds; Paris green, 4 ounces; water, 1 barrel.

No. 1 is used for apple and pear scab, and to prevent the leaves of plum and pear trees from dropping prematurely; also, for raspberry cane scab, or anthracnose. Apply once before the leaves open and about three times thereafter. It should not be used on plums and early fruits later than July 1, and it is not necessary to use it on any fruit later than Aug. 1. It should not be used on raspberries after the blossoms open, and care should be taken to direct the spray to the young growth and avoid the old canes after the first application.

No. 2 is used on pear, apple, plum, and cherry trees after the blossoms fall, for the purpose of destroying insects. On plum and cherry trees the applications should be made once in two weeks, and oftener if the weather is rainy, up to within six weeks of the time of ripening. For the last application on these fruits, it would be well to dilute the mixture one half, or more, so as to avoid lime coating; or the following may be substituted: Paris green, 2 ounces; copper carbonate, 2 ounces; dissolve in three pints of ammonia; add half a pound of lime and one barrel of water.

LETTERS TO THE EDITOR.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

The Man of the Future.

DOCTOR LANGDON'S remarks in a recent issue of *Science* (No. 452) on the probable further evolution of man is one full of interest to every speculative anthropologist. To the present writer it is evident that man has by no means arrived at the acme of his development, either mentally, morally, or physically; indeed, I conceive the entire genus *homo* to be but little more than just started upon its career of evolutionary growth.

In the first place there are many species and sub-species of men upon the face of the globe of very low type that will either have to be, or will be, exterminated in time by some branch of what ultimately will persist as the dominant race. As examples, we may point to the pygmies of Africa, many of our North American Indians, and similar ferine tribes. Some of these, however, will undoubtedly to a certain extent fuse with the root-stocks of the dominant race; some may be assimilated entirely,—a fate that seems to await the negroes of the United States, and perhaps later the Japanese and others. In short, I am inclined to think that, in the ages to come, the human species of this world will eventually tend to form one homogeneous race, and that race will speak but the one language. When that epoch has fully arrived, then indeed will the human species be fairly on the road towards its perfection. Multifarious tongues now stand as a prime factor in the way of man's more rapid evolvement. All this will require an enormous lapse of time, and when it arrives the face of the earth will be greatly changed. Man will have subordinated all things to his will,—and nearly all other forms now existing, with the exception of the very few that may prove useful to man, will have been completely exterminated.

Many of these changes are now slowly advancing under our very eyes. Take the ideal man of the present day,—one of the most perfectly organized ones as they now exist, and what do we find? In the vast majority of cases, as Clevenger has shown, he is still subject to a variety of diseases which arise from the fact that within a comparatively recent time of the world's history he has assumed the erect attitude; has passed from quadrupedal to bipedal locomotion. Often these diseases prove to be fatal,—as prolapsus uteri, the hernias, and others: is there to be no improvement along this line? Again, he has still clinging to his organization many of the structural vestiges that link him with the