

CHATS WITH THE WEATHER MAN.

Friday, July 25, 1920.

ANNOUNCEMENT: We told our old friend, Ob Server, we would let him give his usual "chat with the weather man" if he would promise not to say anything about how hot it has been. He agreed to give us something cool to think about.— Here he is, fresh from his talk with the experts of the United States Weather Bureau. Well, Mr. Ob. Server-----

Let's stay cool about this.

We might start off this weather talk, with a tall frosty glass of fruit ade.

If you could talk, as I did, with Mr. Floyd D. Young, of the Fruit Frost Service, of the United States Weather Bureau, you'd realize that the supply of citrus and other fruits we have for use in the summertime may be fixed by the frost.

Mr. Young, of the Frost Warning Service, has his headquarters in the fall and winter at Pomona, California, in the orange and lemon growing region. In the spring, he shifts North to help take care of the pears, and peaches, and apples, and apricots of northern California, Oregon, and Washington. Recently, the Weather Bureau has set up a station at Mobile, Alabama, to test out the possibilities of a similar frost warning service for our Gulf Coast.

This frost service of the U. S. Weather Bureau, Mr. Young points out, affects others of us beside those who grow the fruit. When you know that one big freeze a few years back took over half the citrus crop in California, you begin to understand how important this matter of frost may be to all consumers of oranges and lemons, for instance. It may not only cause a loss of at least fifty million dollars to the growers, but may cut the supply and raise the prices to all of us.

As Mr. Young says, frost hits everybody sooner or later and sometimes causes an actual catastrophe. The horticulturist is worst hit. Other farmers may make a new crop, when one is killed; or, they may move out and leave the land until time for the next crop. When the orchard crop is killed off, the orchardist still has his orchard to take care of. For that reason, horticulturists have been keener about fighting frost than most other farmers.

Old Pliny, way back in 77 A. D. advised the grape growers around Rome to build straw fires in their vineyards to keep off the frost. His idea was that the smoke would protect the vineyards from frost. The temperature doesn't fall in a fog. The fog prevents loss of heat from the ground. That old Roman naturalist figured that smoke would do the same thing.

In fact, that smoky-orchard idea rolled right on down the ages. It arose amid the orchards of southern California, after several bad freezes, some forty years ago. Those orchardists burned coal in heavy wire baskets between the trees and got fair results.

About 1912 they began to raise a real smoke. They started using oil in open pans and water pails and tin cans. In fact, Mr. Young says, they pretty well smudged up the whole countryside. In the freezes of 1913, they did save a good deal of the crop and that stimulated interest in frost protection. Better types oil heaters were made with a closed bowl and a small stack. The idea was still to raise a big smoke. The oil they used was just as it came from the well. It had asphaltum in it and that clogged up the stoves in a little while. It had water in it, and that caused explosions and other troubles. In the face of all the troubles, the use of orchard heaters declined steadily after 1913. In 1917, however, in cooperation with the growers' associations, the U. S. Weather Bureau planned to solve this frost protection problem on a business basis and find some way to give more accurate warnings when frost would occur.

The first thing the investigators did, Mr. Young recalls, was to get the growers to bring in their thermometers for testing. They brought them; all sizes and shapes of them. Many of them were from two to fifteen degrees off. It was plain that such thermometers would prevent growers knowing when to light their heaters for protection.

Through the farmers' cooperatives and the manufacturers, a standard orchard thermometer, accurate within half a degree, and easy to read with poor eyesight, was developed.

A second line of investigation was started to find just what gave the protection. Very careful measurements were made of heat losses from groves under smoke cover. It was found that extra dense smoke does have some effect; but very little. Natural gas was then piped into an orchard. It was heated without smoke, and checked with an orchard heated by smoky oil heaters. It was found that heat and not the smoke did the work. The discovery was revolutionary. The orchardists lost in the fog of their own smoke were put on the right trail.

Knowing that they wanted heaters not smokers, new heaters and a new type of orchard heater oil was developed from refuse oil after all the kerosene and gasoline, had been taken out. The new by-product heater-oil wasted no highly valuable natural resources. It contained no asphalt and no water, so did not clog the stoves or cause other troubles as had been the case in using crude oil.

While the better thermometers, and better oil for better heaters were being developed in these cooperative investigations, Mr. Young says the weather experts were also working all the time to make accurate forecasts as to what the lowest temperature in the orchards would be. That was so the orchardists would know just when to light up their heaters so as not to waste fuel and yet not wait until the fruit was damaged.

Before that, the forecasts had been made in general terms, such as "Heavy frost on exposed places." The growers could get no real idea as

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to just how serious the frost might be. However, key points were selected in the fruit districts and methods were developed by intensive investigation of local weather peculiarities, by which definite forecasts could be made, in exact figures, as to the lowest temperature which would be reached in the next eighteen to twenty-four hours.

Frost warning and frost prevention was put on a practical basis. That started an increase in the heated acreage. The orchards using heaters have increased steadily for ten years, until now Mr. Young estimates that, in the case of citrus fruits, nearly one-third of the total acreage is equipped for orchard heating.

If all the oil heaters in California orchards were burned one night and burned dry, it would take 1750 car loads of oil to refill them. That gives you a little idea of the size of this orchard heating business, built up on the frost warning service of the U. S. Weather Bureau, and the fruit growers associations, which have gone fifty-fifty with the government on the expenses of these special frost investigations.

ANNOUNCEMENT: The United States Weather Bureau certainly cleared away a lot of the smoke from frost protection. Just another of those Weather Bureau services! --- And even if old Ob. Server has had something to say about heaters, I guess the thoughts of those cool drinks and frosty weather have refreshed us a bit.---- Wonder what he will tell us about next time ----

National Oceanic and Atmospheric Administration

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