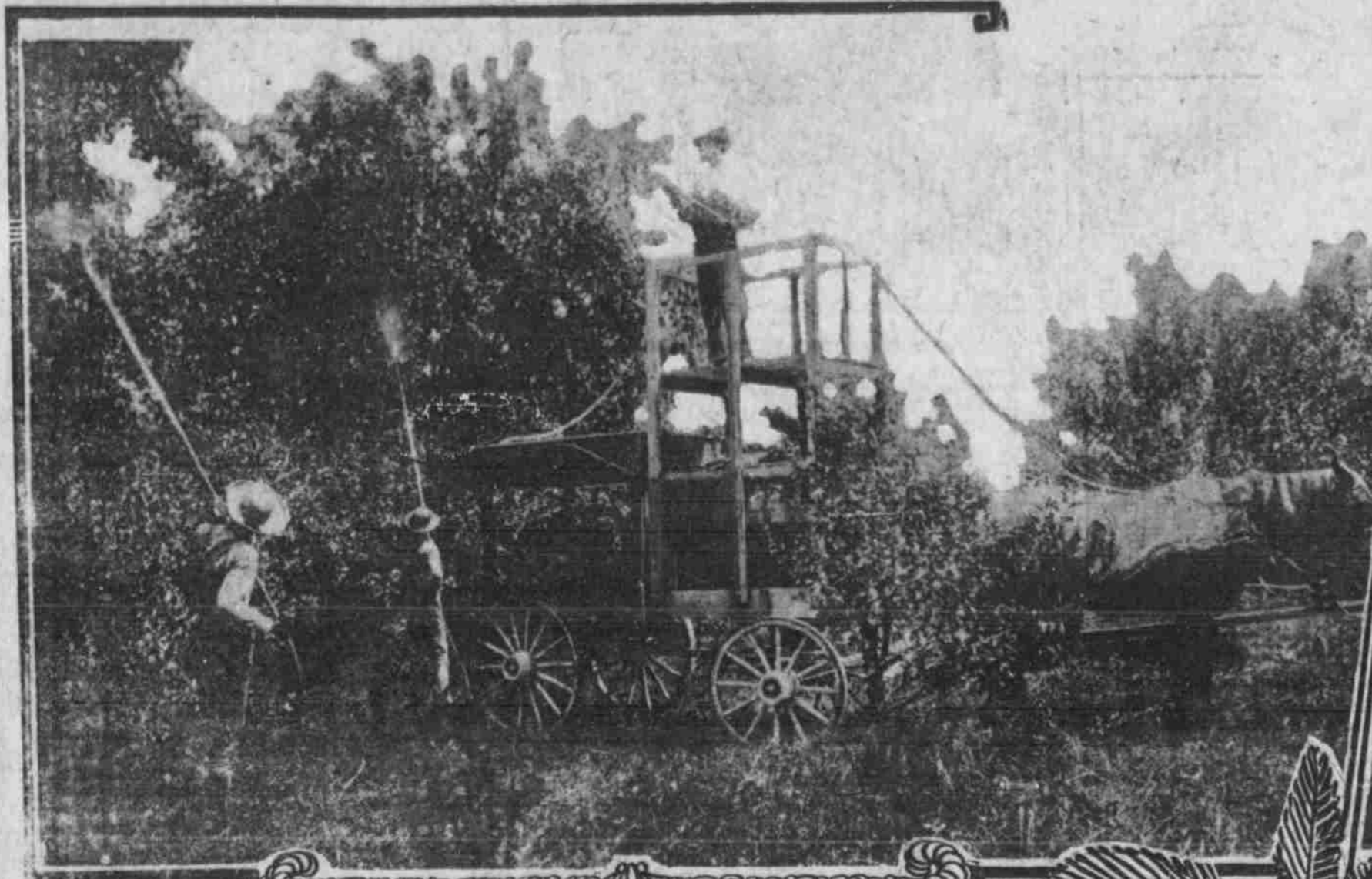
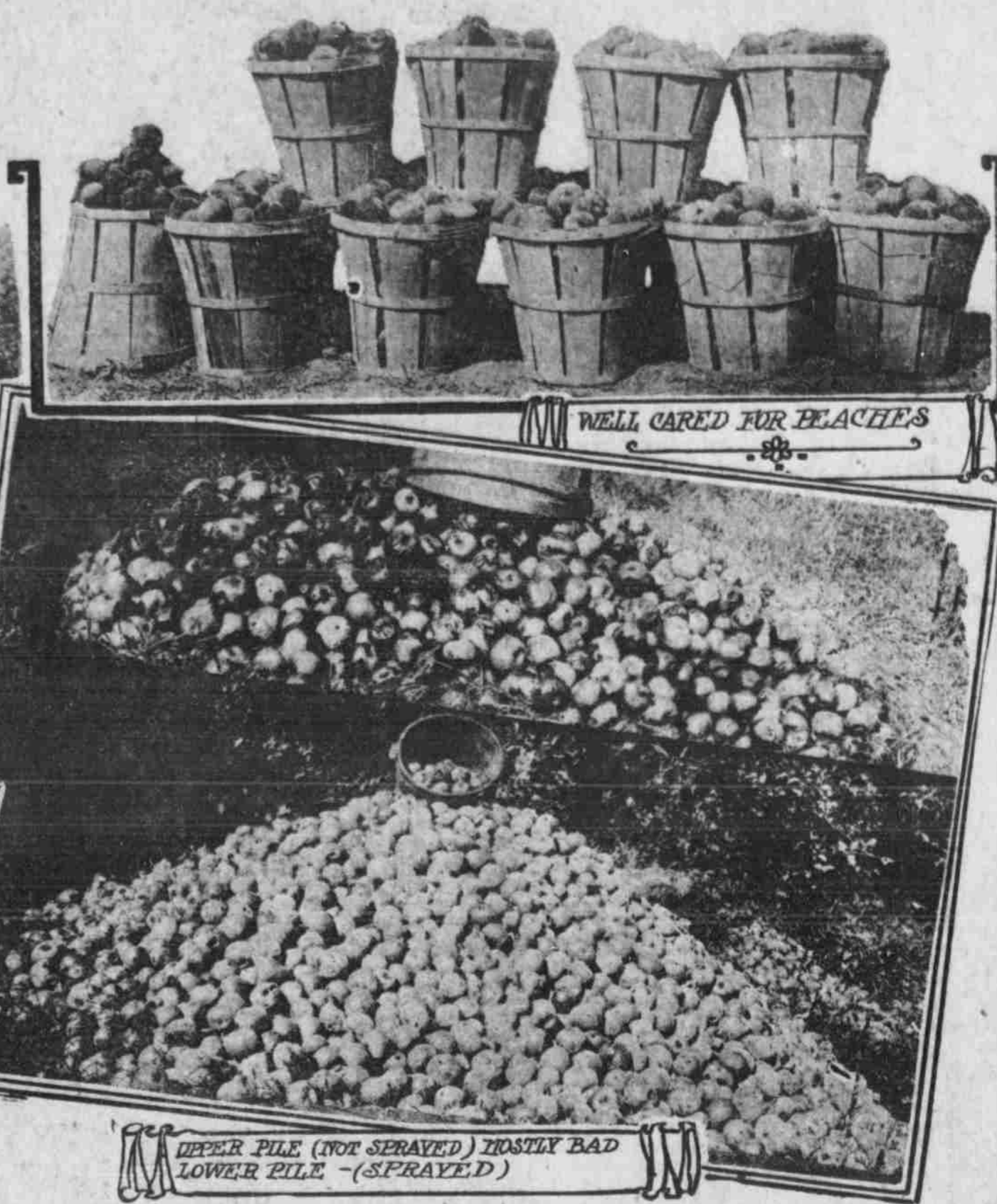


How Uncle Sam Fights the Bugs and Bacteria in Orchards



GASOLINE ENGINE SPRAY MACHINE AT WORK IN ORCHARD



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WASHINGTON, June 17.—(Special Correspondence of The Bee.)—Come with me to the Agricultural department and see how Uncle Sam is waging war on the flies, bugs and bacteria which are injuring the farmer. He is finding them by the millions and he has scores of scientists who are rearing them, studying their habits and practicing how to destroy them. I went today through a number of laboratories where these little beings are cultivated. Some are so small that a billion or so can be crowded into a thimble, and they breed so rapidly that a single family will produce more than sixteen hundred million children and grandchildren in a season, many generations being crowded into that time.

Take for instance the San Jose scale, which has cost our fruit growers something like \$200,000,000 and for which they are now spending millions to fight. I looked at it through the microscope in the pomological bureau today. The one I examined was among those on a peach limb which covered it as closely as the pores of your skin. Each scale is a waxylike body not as big as the head of a pin, and the insect itself lies under this, using it as a shield while it sucks the lifeblood of the tree.

The little being is male and female and the sexes are married and have children not unlike human beings. The single female, however, will have 400 young in a season, and the young reach maturity so quickly that one little wife may produce 400 babies a year, while the offspring of one parent during a single season has been estimated at more than sixteen hundred million females. When it is remembered that there are colonies of this insect scattered throughout every orchard region of the United States from northern Michigan to the Everglades of Florida, and from Los Angeles to Delaware, you may appreciate what a job it is to control them.

Chinese Invasion.

Talk about the Yellow Peril! This little animal came from across the Pacific. It was brought in on some peach stock imported from China and was ruining the orchards of southern California when one of the farmers of that region gave his trees a wash of soap dip. The dip was composed of a lime, salt and sulphur solution, which had come from Australia. He was surprised to find that this liquid wiped out the scale. The fact was reported to the Agricultural department, and then, as a result of its experiments, began the wholesale spraying which now goes on all over the country. Every winter or spring the commercial orchards of the United States are sprayed with this mixture. The concentrated spray is too strong to use after the leaves have come out, but it does not injure the trees while vegetation is dormant, and if applied to every bit of the bark above ground it wipes out the scale.

Moreover, the San Jose scale has no wings to fly from tree to tree, although the young can climb about from their little homes over the branches, and can be carried on the feet of birds to the other trees of the orchard or to other orchards, which may be many miles off. It may also be blown by the wind a short distance.

The insect has so spread that there is scarcely a locality in the United States which is free from it, and the only salvation of an orchard is regular spraying from year to year. The scientists tell me the spraying should begin as soon as the trees are planted, for the scale may exist on the nursery stock, and a single family which may start with a space as big as the finger nail of a baby will soon populate not only your orchard, but also those of your neighbors. The insects live on the trees of the forests, so that the only safe method is a wholesale slaughter each year.

Other Parasites.

I spent some time with Prof. Waite, who is now studying the prevention of the rot which develops in oranges, apples, peaches and other fruits on their way to the markets. He took me into his laboratories, where a number of microscopists and other scientists were working, and where there were long tables filled with glass jars. These were so covered as to prevent the invasion of bacteria, and they contained oranges which had been inoculated with fungus and given the right conditions for its development. I saw a large number of glass tubes, the mouths of which were plugged with cotton. Each tube contained a species of fungus, which, by the way, is one of the lower forms of vegetable life.

Fungus is a sort of plant which feeds on other plants. It is a plant cannibal or parasite, as it were. It is so small that you have to have a microscope to examine it, but it develops so rapidly that it soon eats up and destroys any fruit to which it attaches itself. I was shown a glass cage, something like a telephone booth, which was made by Mr. Waite that it might be bacteria proof. This is in order that the men may work safely within it and that the fungus

they are studying may not be affected by the other little pests flying around. This booth has a draft which forces the air in through sheets of cotton wool, so wadded together that the bacteria cannot go through them. It is this air that is breathed by the operator at work in the booth.

In other places they were working on forms of fungus which affect the leaves and in others upon those which eat at the bark and heart of the tree. It was, in fact, a great medical laboratory devoted to tree diseases and their prevention.

I found some similar things in the laboratories of Prof. Quaintance, who is fighting all sorts of insects and worms, which attack our orchards, and also in the rooms of Prof. Scott, who is one of the most famous of our scientific doctors as to the treatment of fungus diseases.

Insects Which Eat Millions.

It is impossible to estimate the damage done to our orchards by bugs and rot. There are from fifteen to twenty insect pests which cost this country from \$60,000,000 to \$75,000,000 a year. The control of the San Jose scale costs us many millions, and then there are the codling moth, the plum curculion, plant lice and the apple and peach borers, which fatten on the roots of the trees.

Take the peach. We have east of the Rockies something like 140,000,000 such trees, and they are yielding a crop worth \$15,000,000 a year. In some seasons the brown rot takes away fully half of the profits of the south, and the plum curculion often eats down our peach income to the amount of \$3,000,000 or \$4,000,000. By the recent discoveries of Profs. Scott and Quaintance we are able to control certain peach pests, and this means an annual saving of millions. The material used is a self-boiled lime and sulphur wash mixed with arsenate of lead. It is applied several times during the season.

Our Big Peach Crop.

Now that the people are going crazy over the money in apples they seem to have forgotten the profits which have been and are being made in peaches. I am told that the peach is one of the biggest gambles in the great lottery of fruit raising. It often fails, but a single good crop covers many past losses, and two or three make the orchardist rich. Take the Miller brothers of West Virginia. They have an orchard which has yielded dividends of \$500 per acre, and out of which they have been making from 40 to 60 per cent per annum. We have altogether more than 100,000,000 peach trees. There are 8,000,000 in Michigan and almost an equal number in Georgia, Texas and California. Kansas is a great peach state, and so are Maryland and Delaware. Along the eastern shores of Lake Michigan there is a peach

Big Manufactory Operated on a Country Farm

FRANK NELSON DOUBLEDAY, the magazine publisher, is now working out a unique experiment in establishing a big manufacturing plant on a forty-acre farm twenty miles from New York.

"I am a professional exponent of country life," said Mr. Doubleday. "Until recently, however, my business was all done in New York, some here and some there, because I couldn't concentrate it economically at one spot. I could have bought a site 100 feet wide and 100 feet long for a lot of money, but the building would have had to be twelve stories high. Raw material moved up from floor to floor, and the finished product moved down, would mean a waste of time and steam. It is being done, I know in every large city in the United States, but it is not scientific and is contrary to the first principles of common sense."

"To save money, and, likewise to be consistent, I decided to carry out a plan that I was positive would work. I came here, bought forty acres of land, and put up a fire-proof building that is solid as a rock. Manufacturers said I was making a mistake. City men, they declared, would not move into the country among the crickets and katydids. I would have a labor problem right off, and would be unable to hire or coax any one to start the works. Well, almost before the roof was on 500 clerks and 1,200 mechanics applied for jobs."

"But what are you going to do with the land?" was asked.

"Cultivate it. I have already set out 5,000 strawberry plants. I mean to grow fruits, flowers and vegetables and make them pay. There is to be a green and flourishing object lesson for the pilgrims who come our way."

"Indeed our forty acres must be actually profitable, otherwise the scheme will be a failure. The farmers near our factory haul their produce to New York, twenty miles away. They haul it in wagons at a heavy cost in time and labor. A large hotel in the

country which runs from five to ten miles back from the lake, extending north and south for a distance of 150 miles. Georgia has a number of orchardists who are cultivating more than 100,000 trees, and there is a druggist in that state who owns 160,000 trees. The peach trees of the south have been recently greatly injured by rot and other diseases, but the new spray solutions of the department have proved the salvation of the crop, and there promises to be big money in it.

How One Boy Made Good.

In connection with peach growing, it is interesting to tell how one boy made a fortune in peaches, and by his own exertions and study, lifted not only his own family but many others to affluence. I refer to Hale, the Peach King of Georgia, the man who is now at the head of a syndicate which owns orchards capitalized at \$1,000,000 or more, and which has shown profits of \$50,000 and upward a year. I don't know how many hundred thousand peach trees Mr. Hale owns, but he has built up a great peach-growing industry in southwestern Georgia, and his fruit is sent in refrigerator cars all over the north. He sometimes harvests 1,000,000 peaches a day, each peach being handled three times in sorting, picking and packing, and he has the most improved methods of cultivating his trees and marketing the crop.

I have just talked with a man who knows Hale very well. Said he:

"Hale was born near a little town in Connecticut. His father lived on a farm upon which nothing could be raised, not even the mortgage. His father was in debt and he died, leaving the farm incumbered to the amount of \$2,000, with only two little boys, Hale and his brother, to meet the interest and support the family. They found they had to hire themselves out to keep the farm going, and at 12 years of age young Hale was cutting corn for his neighbors at a few cents a day.

One day during the noon recess, when he was tired of handling cornstalks, he sat down under a

seedling peach tree and munched the fruit, while he wondered whether he should ever be able to pay off the debt and make a man of himself. As he did so he looked up at the peaches and thought how fine it would be to have a few thousand such trees and make a fortune in fruit. The thought grew upon him, and he decided to try. In one way and another he scraped and saved until he had \$100 in cash. He earned more during the winter, and in the spring was able to buy 3,000 peach trees and plant them out on the home farm. They grew, and through his excellent care soon surpassed all the trees of the neighborhood. He raised crops between the rows, and finally brought the orchard into bearing.

Before the fruit was ripe, however, the mortgage came due, and the elders of the church which held it notified him he must come in and pay. He put them off for a few weeks, and rushed his fruit to the markets, handling it so that he got the highest prices. He advertised in the Hartford papers, and hired storekeepers there for the display of his peaches. His profits were such that he soon had more than enough money in the bank to pay off the mortgage and leave him a big sum for the future.

Ten-Thousand-Dollar Crop.

"Hale's first peach harvest, in short, netted him about \$10,000. This was not known to the churchmen until he came in and said:

"Well, gentlemen, I have come to arrange about that note."

"But, young man, we don't know that we can extend it," said one of the deacons. "You boys have been very extravagant in selling your peaches, and we can't afford to lose this money."

"But," said young Hale, "you don't need to lose the money. I have come in to pay the note."

"Oh!" returned the elders, "if you have the money to pay we would just as lief let it run. We will have to put the money elsewhere. You had better keep it. All we want is our interest."

"No, indeed," replied Hale. "I have the money and I am going to get rid of that mortgage." And he thereupon paid the note.

"The next year," continued this man, "Hale set out more peaches. He cultivated and fertilized his orchard and he proved that fruit could be made profitable in Connecticut. In 1889 he made \$24,000 out of one crop from thirty-five acres, and he gave such a stimulus to peach growing in New England that there are now something like 3,000,000 trees in Connecticut, while there are many in the adjoining states of Massachusetts and Rhode Island.

"A little later on Mr. Hale got the idea that Georgia would raise peaches. He traveled all over that state and picked out his present locality. Since then he has raised enormous crops, and has shown what could be done by careful cultivation, intelligent marketing, modern machinery and good business management. He is always on the lookout for frosts and pests of one kind and another, and his foresight has several times saved him his crop, when those of his neighbors were ruined."

Word of Warning.

As I write this, one of the many stories of the successes which are now being made in farming, the thought comes to me of the multitude who are rushing into such enterprises and investments without consideration. As Prof. Waite said to me today the machinery of fruit growing and farming is more wonderful than that of the largest gun factory or electrical industry. Its success requires the most careful selection of soil, a knowledge of the crops one is attempting to raise, a study of fertilizers and diseases and also the being "Johnny on the spot" throughout all or a greater part of the year. Notwithstanding this, men who would not buy a lot without the most careful searching of title or go into any business without having thoroughly investigated the markets, the machinery and the past profits and losses, will risk the savings of a lifetime in a gold mine of which they personally know nothing, or in an orchard scheme the information concerning which is presented only on paper.

Take, for instance, the case of a government employe who called the other day to ask the advice of the fruit men as to an investment in a new orange region which is being exploited in various parts of the south. This orange is of a Japanese variety which will grow much farther north than the sweet oranges of Florida or California. The locality proposed was somewhere in Alabama. The scheme is managed by a syndicate which is selling its lands at \$300 per acre, with the understanding that the trees are to be planted at once and are to be cared for five years, at which time they will come into bearing. The prospectus has figures which show that a tract of five acres so treated will give a man a profitable income. Said the pomologist who told me this story:

"That man was a proofer who has to do with government printing. His work is such that the miscalculating of a comma might cost Uncle Sam millions, and a mistake would lose him his job. This, he told me, had so worn upon his nerves, that he felt he must arrange for his leaving the service at some time in the near future. He said he thought this would be a good place to invest his savings, and that he would eventually retire to his orchard. He said he intended to put in all he had and to pay the balance on installments of \$15 a month. I asked him if he had gone down to Alabama to see the land and investigate the proposition. He replied that he had not, but that the prospectus gave all the figures and showed just what the profits would be. I asked if he knew the managers. He said he did not. I thereupon strongly advised him to make no such investment without further knowledge. He said, however, that he thought he would risk it, and so went away. His mind was made up before he came in, and my advice was worth nothing."

The agricultural department has many such schemes brought daily before it. Some of them are good and will pan out all right, but a great number are questionable, to say the least, and those who invest should make the most careful inquiries into locations, markets and the individuals who are managing before they risk that which has cost them years of privation to save. **FRANK G. CARPENTER.**

Sleeping in Church

Formerly in the churches of England a most curious and laughable custom was that of using the "rousing staff." This was a long stick or pole in the hands of the deacon, who walked softly up and down the aisles of the church during the religious service of a Sunday, his eyes scanning the members of the congregation. If perchance a worshiper was discovered napping, out went the rousing staff, the farther end of which "bobbed" the offender in the ribs or on the shoulder. The sleepy one would not close his eyes in church again that day.

An amusing story is told of a woman who acted as "sluggish waker" in Holy Trinity church, Warrington, about the year 1820. It is given here:

"In the early years of the nineteenth century, at Holy Trinity church, Warrington, a masculine bit of womanhood named Betty Finch held the office of sluggish waker, which was there known as the 'bobber.' She is described as walking majestically along the aisles during the service armed with a long stick like a fishing rod, which had a 'bob' fastened to the end of it, and when she caught any one speaking or napping she gave him a nudge with the stick. Her son was engaged in the belfry, and often truthfully sang:

"My father's a clerk,
My sister's a singer,
My mother's the bobber
And I am the ringer."