seed bed, and how often is it cultivated?

Mr. Phelps—There are no two people that cultivate lettuce alike. The majority of people make a seed bed and raise it about two inches high; put on the seed and brush over very lightly, and in about three weeks time from the time it is sowed it is ready to prick out. Some work it daily, others work it but once; and my experience is that those who have well fertilized with chemical fertilizer make as good lettuce from working it once as from working it many times. And my experience is, to work it with a wheel hoe, run it through once and then stop. I think it is the best method. However, where the land has been under cultivation a couple of years, I would sow it in the check, and not have the trouble of transplanting. Last year we realized about $1,000 to an acre. The early lettuce did not bring as large a price. The midseason lettuce brought from four to five dollars a basket. In the first shipment, perhaps of twenty crates, I got $3 per crate. I think $1,000 gross per crate was what was generally realized, but it was an extraordinary season as to prices.

Pineapples and Other Tropical Fruits.

BY CYRUS W. BUTLER, OF ST. PETERSBURG.

Mr. President, Ladies and Gentlemen:

As our gathering here naturally constitutes an experience meeting, and my experience with pineapples is confined to the Pinellas peninsula, I will try to give a short synopsis of the industry as it exists there, without making any pretentions of adding to the knowledge of informed growers, and with apologies to them for repeating that which they already know, which, however, is not the case with the majority of those who read the Report of our Proceedings.

Until 1890 no pineapples were grown upon the Pinellas peninsula, excepting a few small patches of Red Spanish, which were grown in open fields.

About that time a few small sheds were erected over Abbakas, Porto Ricos, and the various Queens, but without financial success.

In 1895, S. N. Perkins & Company erected a two-acre shed and planted it out to Smooth Cayenne and a few Abbakas. At that time it cost $2500 per acre to put out Cayennes under shed, but the first crop of fruit and suckers paid for the pinery and left a good profit besides. The financial success, aided by an appeal to the eye of great beds of "living green," each plant topped with its beautiful fruit, was an example that needed only to be set, and during the last four years about fifty acres of sheds have been erected within two miles of St. Petersburg, and the industry is rapidly increasing.

The sheds are those known to most
The land chosen varies all the way from low pine, through pine and willow oak, to rosemary and sprucepine scrub. Probably the growing tendency is toward the lower land.

The preparation of the land is as thorough as if intended for a onion bed. When practical to do so, stable manure, cow manure, tobacco stems or even oak leaves are plowed under and allowed to rot before planting. Cowpenning is also a good preparation, but in the majority of cases from one to three tons of blood and bone is harrowed in after plowing.

While planting may be done at any time of the year, it is seldom advisable to do so between September and March, and probably seventy-five per cent. of the sheds are planted during the rainy season.

After being stripped of their small basal leaves, the plants are set out eighteen inches east and west by twenty-five or thirty inches north and south, in beds nine feet in width, leaving a five-foot walk between the beds. The usual distance of 18x30, with walks, will give 8205 plants per acre, while 18x25 inches gives nearly 10,000 plants per acre. Before the roots get near the surface of the earth, wheel hand hoes and rakes can be used to an advantage, but after the shoots get up the scuffle hoe only is used. With young plants, the more cultivation, the more growth; but by the time the plants have got their growth, cultivation is almost if not entirely stopped, both because it is difficult and of doubtful utility.

FERTILIZERS.

After mixing and using twenty-four different formulas, I now use blood and bone and potash, with an occasional application of hardwood ashes. On new ground we usually apply blood and bone only for the first application and increase the potash with each application until by the time that the plant is about grown, when equal parts of low-grade potash and blood and bone are used (1-2 potash, 1-2 blood and bone). One successful grower uses high-grade potash and thereby gets twenty-five per cent. of actual potash.

Nitrogenous fertilizers should be used with caution, if at all, during the growth of the fruit; for at last when the fruit is well advanced, it has a tendency to cause it to crack open at the base. An average application would be four ounces per plant, with three or four applications per year.

DISEASES.

Blight is perhaps the only disease affecting our pineapples, but it seems to visit almost every pinery. In some cases the percentage is as low as one plant out of 2,000, but again as high as fifty out of 1,000 plants. So far, we have discovered no cure for a plain case of blight, though if taken up, stripped and planted in a new place, the plants usually throw out a new
root system, and, after fruiting, nice-looking suckers. But I think that such suckers should not be used, for although they may not inherit the disease, they may inherit the tendency to contract it. Unless some blighted plants are wanted to experiment with, it is best to pull them up and throw them away. Plants on low ground are less subject to blight than those upon higher ground.

This year five of our pineries have been affected by what is known as curl, which is a condition of the plant in which the bud turns over until it has assumed a horizontal instead of an upright position. During the winter it looked quite serious, as from five to fifteen per cent. of the plants of those pineries were affected, but now they seem to be outgrowing the conditions.

A committee from our local Pineapple Growers' Association was appointed to examine into the cause of this defect. While we came to no conclusions as to the cause, it was found that pineries fertilized with blood and bone and potash only were free from this trouble, while it did occur in pineries where nitrate of soda or nitrate of soda and sulphate of ammonia were used. I would suggest that possibly it was caused by those strong forms of ammonia getting into the plant.

INSECTS.

Under this heading, only the mealy bug and pineapple scale come to trouble us, and they are seldom sufficiently numerous to justify a combat; and when they are they die easily when fought with any good insecticide, at one-half of the usual strength used for citrus scale.

Ground tobacco used freely upon the plants has a strong tendency to keep them down, and it is worth from fifty to seventy-five per cent of its cost as a fertilizer. But few growers have paid any attention to either of these pests.

As to the different kinds of plants, I can see no difference between the results from rattoons, suckers, slips, stool plants and crowns; provided that they are all equally good of their kind. Am inclined to think that crowns produce a slightly larger apple than the other plants, but they are somewhat subject to rot when planted.

EFFECTS OF COLD.

While it would perhaps not be desirable to have the temperature go below 35 or 40 degrees Fahrenheit, the plants, even when blooming, have stood a temperature of 28 degrees Fahr. for some hours with a loss of the tips of the taller leaves only. I have never known of pineapple plants being killed in the neighborhood of St. Petersburg, when under a walled shed, but since 1895 I do not go to bed on cold nights.

As to varieties with us the Smooth Cayenne has taken the place of all others.

COSTS AND PROFITS.

At present prices, it costs about $1600 to plant out an acre shed of Cayennes, and nearly $2,000 to bring the same to bearing, but regardless of this high cost, all pineries of one-quarter acre or more that I know of have paid all expenses with the first crop of fruit and suckers, and usually a good profit besides. The best returns that I have heard of for a single crop of fruit only was $700 from
2300 plants, which was little more than one-quarter of an acre. The best returns for both fruit and suckers that I have met with was from a pinery 1 1-15 acres in extent, four-fifths of which was in Smooth Cayenne and the remainder in Abbakas. This pinery was planted three years ago last August, and up to this date $7,602 has been received from the sale of fruit and suckers, and these figures will easily reach $8,000 during the next three months. This is an exceptionally profitable pinery, but I hear of another said to be more so.

More money has been realized from the sale of plants than for fruit, and while it would be natural to expect the price of suckers to decline, they sell for more to-day than they did three years ago.

Winter fruit sells higher than summer fruit, and early spring higher than winter, but the fruit grown during the dry spring months is best in quality.

Taken as a whole, the pineapple business ranks with orange growing, the two being the most profitable industries of our locality.

OTHER TROPICAL FRUITS OF THE SUB-PENINSULA.

Prior to 1895, mangoes, avocado pears and guava trees shaded almost every door yard, while an occasional tamarind, sugar apple, soursop, sapodilla or-papaya was thrown in for variety sake. The three first named were the most important, and of these the mango and avocado pear were highly profitable until our mango crop overstocked our local market, when we found that the only cities where this fruit could be sold were those containing people from the tropics.

The palate of the North has not learned to understand the language of Miss Mango and therefore were dumb to her sweet accents, but to most of our local residents either the mango, avocado pear or guava was considered of more value for local use, during their season, than the citrus fruits at any season.

I would say that mangoes and avocado pears were greatly superior to the same species as brought from Cuba. The Cuban fruit being picked green may possibly account for the difference in part.

The freeze of 1894 destroyed not only our tropical trees, but also our courage to care for them, so that to-day we have only an occasional small mango tree and about enough avocado pear trees and guava bushes to furnish fruit for our local use. Not that we could not have had them in abundance by this time, had we planted during the spring of 1895, but we lacked faith, and without faith man eats but the fruit of neglect.

DISCUSSION.

Mr. Porcher—I have no report to make. I am not a pineapple grower nor a grower of tropical fruits. I don’t think I could add anything to Mr. Butler’s excellent paper. One or two have suggested that I should be on the committee because I am the agent of the pineapple growers; but that is entirely a question of marketing, and one I don’t think should be considered here. The point is that this is the season when it may be a little inopportune for me to speak on the subject of marketing, as we have in our section quite a little opposition on
that very question this year. In fact, the new movement there claims a large percentage of the fruit, and while the old Association is going on with its business there has been quite a little comment by the press on this subject. In our plan of marketing the design was simply to have an agent at the most effective point for receiving and forwarding the shipments to the proper markets, with a system of local agents in the markets we would need who would be our agents. That is to say, that they should handle no other pineapples during our season. On those lines we appointed agents in sixty-one markets which have been reduced to thirty-nine. Starting in with the crop of 1896, we have gradually increased the net result, until last season, with 132,000 crates of pineapples in the territory in which we operate, we marketed 51,248 crates, and our net result, including culls, ripes, etc., was $1.73 a crate. We have stated in print that we are proud of that net result; that it is the highest that has been made. In addition to that, there were f.o.b. sales of about 35,000 crates; the prices ranged for a few as low as $1.50, for most of them $1.75, and as high as $2.25. Now, when you consider that the Red Spanish pine yielded as high as 600 crates to the acre, with that net result, it is one that is worthy of the attention of anyone, and in fact our growers to-day are assured that despite the conditions against them, we have made conditions that insure a good net result for good Red Spanish pines.

The conditions have been such from our section that this season a large part of the fruit will be sold, and with the two organizations working, there is practically no fruit that will not go through an organization. The new party has so far endorsed our plan, with the exception that they contemplate selling more fruit on orders.

I would state that when we first took hold of this system we used the large barrel crate. We now use the standard crate. With that crate we can wrap and pack the Red Spanish pines and we can have those pines transported to the most distant markets, with practically none of the fruit spoiled. In addition to that, we organized a close intercourse with the markets and with the transportation men. We watched those cars in Jacksonville on the transit. We could send a car to Cincinnati and have fruit cut out and sent on to Columbus and delivered, and we even put fruit in less than carload lots through on car-lot time. The West was always opened to us for car-lot shipments, and we were in position to make those lots. With a simple system of marketing any of the products that go out of this State, be they what they may, with a local agent and a system of agents appointed and understood to be solely representing that Association, success can be assured in any direction, whether it be pineapples or oranges. Any other system will certainly meet with failure. Where auction is the system, there is bound to be loss between the buyer and the man who grows the fruit, whereas we have withdrawn from markets where our fruit would be lowered through competition against itself. Under our conditions and with this watchfulness, the proper markets can be found, all fruit can be used, and those who had never heard of pines on the plant rushed in to see fruit on plants we exhibited until the policemen had to separate the crowd. This was in Cleveland, Ohio. In Buf-
falof we started off with five carloads and we have gotten up to thirty. Therefore for the Red Spanish pine the field is open and is increasing. Our only necessity is to grow a marketable fruit. Of course, if we will grow 48 to the crate, instead of 24, the one selling at $1.50 gross and the other at $3, the one taking 48 pines, the other 24 to the crate, the man who grows the 24s and 30s is the man who will win.

The use of ice is deadly to any pine. It will cause it, if green, not to ripen; if ripe, to decay. We load those cars with crates well spaced, well ventilated, so that if you place small pieces of paper at one end they will be carried right through the car to the other end by the draft; there is a strong current of air, and the fruit is kept in perfect condition. The only time we have any difficulty is after July; from this on toward the end of the season we have our trouble. Up to that date we can strike an average, and it is surprising to know how it stands. Late in season local fruits are coming in plentifully. Peaches will sell 12 1-2 cents to 25 cents per basket. People have been eating pines since the first of April. The canning has been done and even the men to make the juice for medicinal purposes and soda fountains have stopped, and at that date we have the most difficult time. We have to urge our agents and this is the time we have to fight hardest for the success of our work. This is when returns will come in sometimes very poor and unjust growers will be dissatisfied. We cannot fail to have these difficulties every season and we cannot do more than do our best. But all we aim for and ask is to make the net result on the whole for the good of the grower.

Protection, Cold Weather Cycles, Etc.

A DISCUSSION.

Mr. Porcher—I think we all recall cases where the reading of the thermometer has been given in various sections. I have always thought that many times a man was right where he was accused of being wrong; that there are big dips of cold that there is no accounting for. I have known on the East Coast on one occasion where the fruit was injured by a southwest cold wind. On another, West Palm Beach and Lemon City were struck, and no harm done elsewhere. Dr. J. W. Plummer had his pines absolutely frozen and ruined and those at the north and south of him were uninjured. Last winter when the lowest reading of the thermometer in Rockledge was 30 degrees, we recorded 18 degrees at my grove on Merritt's Island for a short time. Some young trees were killed; we have not a guava this year. Two miles south of us there was no injury done. The same north. It did not cross the river. When we made fires