Methods of Packing and Shipping Citrus Fruits

H. B. Stevens

Mr. Stevens: Mr. President, Ladies and Gentlemen: I think it is rather out of order to call on this committee after hearing such an address as we have had on the same subject. It seems as though we can add nothing, and what we may have to say will fall rather flat after listening to such a fine talk as that was.

I presume I was given this subject so that I might offer such suggestions as I thought would help the grower to get his fruit to market in the best condition. In order to do that one must begin earlier than the packing house. The grower must know his fruit.

If he has some that he knows are delicate, and likely not to carry well, then he should so fertilize that part of his grove as to make the skin a little tougher. If he has a variety that does not carry well late in the season, then he should ship that earlier.

Then the greatest care should be taken in the picking and handling of the fruit, from the tree to the car, all along the line.

First. Have such clippers as will give the best results in cutting the stem close, and not injure the orange.

Second. Have baskets lined with cloth, so that the fruit will not get bruised in being placed in the basket, nor jammed by coming in contact with tree or ladder.

Third. Do not allow the picker to empty his own basket, but have a special force to do that work, so he will not be tempted to pour his fruit out of his basket, when the boss is not around.

Fourth. Have your wagon so constructed that you can haul your grove boxes without putting one box on top of another.

Fifth. Have springs of some kind to take the jar off your fruit.

Sixth. Have no ventilator cracks in your field boxes except at the bottom corners, so your fruit will not get pressed into them, and so receive injury enough to permit the rot germ to find lodgment, but not enough injury to attract the attention of the grader.

Great care should be taken in feeding the fruit to the washer or sizer. I visited a packing house this winter and saw them grading tangerines; two men were emptying filled boxes into the hopper that supplied the grader. They piled the fruit so high that finally they had to put a full box on top of the pile to empty it. I thought, what is the use of putting tangerines in trays to make them carry well if they would stand all that. All fruit should be shipped as soon as possible after it is picked, for the fresher you can get it to the market, the better your trade will like it.

Fruit may be picked even when the
trees are wet from rain or dew, if care is taken not to allow them to stand long in the field boxes, while damp. If they are washed and dried right away, no harm will be done by their being picked when damp.

I think more attention should be paid to the grading of the fruit, as it is very difficult to correct a mistake after it has passed the grader. There should be some system by which a check could be kept on the grader, so that you could prove that he is the one who made the mistake; then he will be more careful than he will if it cannot be traced to him. The grading is much more important than the packing, as it requires closer observation and attention to business, while packing is more mechanical.

If the boss picker does his duty in seeing that the stems are cut as they should be, and the fruit handled right from the tree to the house, and the grader does his work as it should be, and the fruit is loaded properly in the car, there will be little complaint at the other end. But the best packer in the world can not overcome the damage done in the grove, nor discover all that has slipped by a careless grader.

L. B. Skinner

Mr. Skinner: I had intended making a short history of the packing house methods that I have seen since I went into the orange business, nearly thirty years ago. There has been a great evolution (or should I say revolution?), undoubtedly. But I have had so much to do that I could not prepare a paper, and relied on my friend Mr. Stevens to give you the written report.

However, I want to emphasize one or two things in regard to this question of packing fruit by up-to-date methods. Dr. Sadler has struck the keynote. Dr. Sadler’s remarks, in my opinion, go to the root of the question. I do not entirely agree with the cooking of the orange, and the conditions caused thereby are entirely different from what we have to deal with, and I do not think that goes to prove much that will help us, because the antisepctic conditions caused by the intense heat cannot be applied to our packed oranges. But I do think that it is absolutely necessary to get the fruit thoroughly dry—absolutely essential. I don’t think I quite agree with him that pre-cooling the fruit is a mistake, because I think the scientific experiments in Washington far outweigh the single car they shipped under refrigeration. Their statistics are accurate, and the list of them, added up and a balance struck, tell the story.

The professors say that the remarks made about the grapefruit developing a little more sugar after the fruit is picked, will not do for us to state as a fact, but I tell you it is mighty pleasing to feel that probably it is true.

I think that the injury is in the field—largely in the field. Mr. McKay has been at my packing house a number of times, and Mr. Ramsey, too, and Mr. McKay and Mr. Ramsey have been in the field. They have become acquainted with my foreman and my inspector and gotten them interested. They have gotten
them to feel that their part of the work is absolutely essential, and when the inspector brings in his report to me, as he goes over each man's boxes he can give me a report of the number of clipper cuts, or long stems, for each man. He is interested, and interested in the results, and if you can get your foreman and your inspector and your men interested, you are going to win, and if you do not get them interested, you are going to lose.

Mr. Temple has been a great disciple of this careful handling, and I have not the slightest doubt that he gave orders to the foremen in his groves that every care should be taken this year, and if their fruit was decayed, there was bad handling in the field. That is the whole secret—get your men interested, get them to realize that careful handling on their part is the secret of the whole thing.

I remember one experiment in a washing machine at Largo here the department made an experiment. The washer rolled the tangerines until the pulp inside was separated from the outside rind. You would think they would rot, but those tangerines kept a wonderfully long time. They were thoroughly dried after they were washed, and I think that was the whole secret.

Sometimes we do not know how things are going to turn out; something happens we don't look for, but we do know that if we handle the fruit carefully, and exercise care through every process, we have every chance to win; but if we handle it roughly, we have every chance to lose.

One or two experiments have been made this year, I think the first time accidentally, in pre-cooling fruit in this State; that is, there was a car, iced, placed during the decay period; I mean, there was a good deal of ice remaining in it that came down from the North; not especially placed as an ice car, but a refrigerator vent. The gentleman I speak of made up his mind to try an experiment, and put all the ice in the front bunker of that car and shipped it under ventilation, and he told me the best results came from the fruit carrying in that pre-cooled car. I think if we pre-cool fruit in this State and get it out of the State in twenty-four hours, they generally by that time reach a temperature that would keep it cool enough. Of course, this past season it was as warm in Washington as in Florida, almost, and the same conditions prevailed in both places. I was in Washington during the decay period in January. I was present when fruit was taken from the cars apparently perfectly sound. In twenty-four hours over half of that fruit had decayed, and in three days hardly any of it was left. Professor Ramsey told me he had gone to a store and bought a dozen oranges, and before they could be eaten half of them were gone. I asked Professor Ramsey to come and look over with me the oranges which were arriving. We looked them over and found blue mold decay.

That comes back again to the fact that the fruit must be injured or mistreated; if not by us, by the people who open up the boxes in the North.

I have made a good many experiments with this matter of drying, and have felt
that the result of those experiments is that we have to raise the temperature of the air in order to get this fruit dry enough to prevent decay. There are others who feel that if we reduce the temperature of the air and cool the fruit, it would be better. The results obtained this year at our packing house have been fine, and were gained by heating the fruit probably eight or ten degrees higher than when it came under the fans, and getting it absolutely dry.

If you take a glass and look at an orange as ordinarily dried, you will be more than likely to find infinitesimal spots of moisture in the pores of the rind, even though it seems perfectly dry. This is far from being dry.

As I said before, I think Dr. Sadler has struck the keynote. The point is to get your fruit dry, if you have to wash it.

DISCUSSION.

Dr. Sadler: I am very glad, Mr. Skinner, that you have been able to reach the same conclusion as mine. I have been sure for some time that I was right on principle. I would like to know if this is of value, especially to the Experiment Station, that it may be taken up in a scientific way and worked out to a conclusion. If we can only prove it, prove that fruit thoroughly dry will go through to the market, think what we can save on ice bills!

Here in Florida it is impossible to dry the fruit on some days. I have seen days when the air was absolutely saturated. You might blow all the air in Florida over that fruit, and you couldn't dry it. The temperature must be raised and our packing houses equipped so that we can dry it under all conditions.

Mr. Skinner: The question of refrigeration has been brought up, and the expense of it. I suppose some of you are aware that we are paying about twice as much for refrigeration as we ought to pay. Refrigeration charges are in the neighborhood of $50.00 to $75.00 per car. Refrigeration on vegetables is a good deal less. There is an effort being made to get this refrigeration charge reduced. At the Tampa meeting of the Orange and Vegetable Growers, this league was formed. One of its purposes is to help growers get the money out of their stuff whenever it is possible. You see, I am advertising right now. I am advertising the League. We are trying to get together a number of shippers to make this thing a success. The cost is not much: Only $1.00 for each member and an assessment of 25 cents on each car for all of the product shipped. It looks like a little amount of money, but if everybody would come in and do their part, we will probably be able to do our part and save $25.00 or $30.00 a car on every car shipped. It is time for everyone to help. It is not my business, nor any one person's business, but the business of all of us. You ought to help organize the League, because with your earnest support it can save you lots of money.

Take the Florida Shippers' Association; it is a very small Association; just a few men, and yet they have saved this
State over a million dollars since it was formed. There is no telling what this League can do if supported by the growers of this State.

Mr. J. H. Sadler: I know men who ship out oranges under refrigeration who believe it is the cure for all evils. They handle their fruit in a more or less careless way in their groves, but think that by shipping it in an ice car it will get through in good shape. Now, to my way of thinking, that is a mistake.

We are trying to settle that difficulty in my neighborhood and my Association—if I may call it that. We are trying to get at the point by careful handling. During the months there was the worst decay, we reduced our decay down to 2 3-4 per cent. We did that by careful handling in the field. We worked every scheme possible to get it properly picked; we washed it and got it dry. When we first started out to do this washing and drying proposition, we made an absolute failure. Our machine did great mechanical injury, so we tried drying it in the sun. If the sun shone, the fruit was dried, and if it didn’t shine the fruit did not get dry. Yet we got good results on account of the careful handling of the fruit. Now, we have machinery and appliances that give us the results I have mentioned.

Away back in the early history of the country, we had a cheaper freight rate than we have now. The point of the whole matter is that our commodities cost so much more to market now. I think the icing business is a mistake, in some ways.

I remember the time when tomatoes were shipped in a plain pine box, sawed out right there, and our stuff went into the market, not very attractive, but it brought the top of the market. Some smart, progressive man came down and brought in a car of crates, the kind that has since become the standard. I think the price was about 40 cents apiece, as against 7 cents for the other kind we had been using. They were fixed up mighty nice, and when they were shipped they brought about $1.00 ahead of the market. People went crazy over it, and every fellow was going to be a little smarter than his neighbor, and everybody had to use them. It just about trebled the cost to get our product put up.

So far, we seem to think that we can solve all our difficulties by simply spending money. Mr. Temple is a great advocate of careful handling; Mr. Temple is correct, too, but I think if our business is to stay alive and be a success we have got to come down to consider the matter from an economical standpoint. It seems to be customary to settle everything in some expensive way. The extravagance is alarming, and we have no way to stop it, it seems. I have had to settle the greater part of my difficulties economically. Now, if we can only prove that if we handle our fruit carefully and pack it carefully, and save that icing expense of $60.00 or $70.00, think how much it will save us. As I said before, I believe the icing question is a mistake. I am, of course, strongly inclined to think what Mr. Temple says is all right, but when he advocated this icing so earnestly, it was all I could do to keep from going
into the question in print. The whole question can be solved in some other way, and it should be done.

Mr. Carlton: There is no doubt but that refrigeration is practically prohibitive. Since a good many of us have to depend on ventilators, I would like to ask if in your opinion the ventilated cars are adequate. It is my experience that there is nothing that can remove the moisture better than thorough ventilation.

I think a good deal of criticism could be brought to bear on our packing houses, too. In many instances our packing houses are kept closed almost air tight, from twelve to fifteen hours every day, the doors being opened only when the fruit is being packed. We should have ventilators that are arranged to keep currents of air moving over our fruit as much as possible. That will remove moisture more than anything else.

Mr. Thompson: I just want to say one word in regard to refrigeration. We have had a little experience at Florence Villa along the line of refrigeration, in that we felt that was the panacea for our troubles, and from an experimental standpoint. We put some cars under refrigeration and shipped them at the same time we shipped other cars without refrigeration. The result in the market was not in favor of refrigeration any more than the other. That has been our experience and so far as our packing and ventilating the cars; we always strip our cars; that is, a space of six inches is left between the boxes for the air to circulate freely over them. We washed all of our fruit and dried it with a mechanical dryer. It would be impossible to do it in any other way. We find our fruit more attractive if it is clean, and while it is not absolutely dry, yet we shipped last week an average of five cars a day, and we fixed it up in that way.

It is rather a difficult proposition to dry in the sun. It cannot be done at all times successfully.

We have had not over 1 per cent. decay. I think that is a pretty fair record.

Mr. Ley: I would like to go back a few years from where this gentleman, Mr. Skinner, started a few moments ago. I think he said he had been shipping a period of thirty years. My shipping ended almost at that time, and I had quite a little experience in gathering and shipping according to the old way. In those days, such things as poor carriage was unheard of.

Our method of gathering fruit was that followed by three boys. An orange tree of that time was no more thornless than they are today; notwithstanding that, one boy would get into the tree and throw the fruit to the one below, who would drop it on the sand. We didn't have only about 200 or 300 barrels in those days (the square box was unknown), and we had no wraps, and I believe the secret of its keeping qualities was in the drying process. The sand where the fruit was dropped was hot; so hot that it would almost blister our bare feet, and there was no moisture left on the rind of an orange that had lain there a few minutes.

Of course, we did not gather oranges
when it was raining; always when it was dry, and when it was dry weather at Micanopy it was maybe raining at Ocala or Gainesville, so they could not gather them there, and we would have an open market for the Micanopy fruit.

Then the barrels were carried into the groves and little holes were jabbed out for ventilation, and we put the oranges in those barrels absolutely dry; those small pores even were dry, and we put them in the barrels, without sizing, of course, for we knew nothing about sizing, either, in those days, and shipped them all from the size of a hickory nut on up. We hauled the fruit into town in a wagon without springs, and got a pretty fair price, too.

I merely want to emphasize the point that the fruit left our groves absolutely dry, in good condition; it carried well, and sold at satisfactory prices. I firmly believe, sir, the main point in the shipping fruit question is to see that it is dry. I have always had my doubts about the benefits of wrapping the fruit, for I should think it would prevent the contact of air with the surface of the orange.

Mr. H. B. Stevens: I want to emphasize the point of handling fruit under the check system. We keep a check on it from the time it is gathered until it gets in the car. I find it well for each man to lose his identity and be known by a number. A record is kept of each man's faults, not known except by number, by the men who have charge of the picking, and if it escapes them it comes to the carrier wagon, which can carry thirteen boxes without putting one box on top of another. It comes to the washer, and if he sees anything wrong he immediately marks the number on the box. A copy of the list is kept for me. The next morning I take this list and look it over. I don't know who the man is, but there is the full record: "Number So-and-So has picked so many hours, so many boxes, so many complaints lodged against him." If his faults are bad and he cannot or will not correct them, we tell him he must look for another job. If the complaints grow less I commend the men for it before the whole crew, and they very much appreciate the compliment.

We pay by the day—not by the box.

This year we have not shipped a single car under ice, and we have not stripped a single car, although I do not object to it, but I so loaded my car that it can be thoroughly ventilated. It is loaded so that the heated air which rises to the top is carried off by the motion of the train. We have had complaints about one or two cars which showed a little decay.

Up to January 1st, we had only one refrigerator car. We could not get refrigerator cars. After January 1st we had the common refrigerator and, as I say, we have had but little complaint the whole season through.

Mr. Pierce: Fifty years ago, when I was a young man, the orange crop in Polk County had to be hauled to Tampa by team, sometimes as much as forty-five miles. We could not get empty barrels in those times, and so we would use pine straw, if we could not get hay,
and put it six or eight inches thick in the bottom of a wagon and dump the oranges in and haul them to Tampa, then dump them into the hull of a boat, and they went to market that way. Some of us got results from it, and some of us didn't. We carried them to market that way, rain or shine. A few freight teams were pretty well fixed up; some had covers, and some didn't.

I am glad to see you people are leading in the discussions we are having, and you are going to have success, but you have to consider natural circumstances. You cannot do away with them; you cannot avoid them. Natural conditions are going to prevail. I am a Cracker, I know, but I have had fifty years of experience, and I am willing, climatic conditions being the same, to take a piece of land side by side with the scientific men, and go into any kind of a test with them. I can do just as well as they can when it comes to getting things out of the ground. Experience and science are good things, and it is a good thing to mix them. Each works better with the other than it does alone.

There have been some big things to happen in the last few years in the orange industry. The last few years have seen the big commercial enterprises, and then people are beginning to see the relation between consumption and production. Then we are beginning to see the relation between producer and consumer. Gentlemen, we all know the fluctuation of a market when some man in New York or Washington, sitting behind millions of dollars controls it, and we know there is something else at work besides consumption and production.

Mr. ————: Did you pull those oranges, or did you gather them?

Mr. Pierce: We pulled them. If they came off easily when it was pulled, it came off.

Mr. Hume: I will have to call time, I think, and ask if there is any further discussion before we go on to the next subject.

Mr. Pierce: Well, maybe I will get another chance before the meeting ends.

Mr. Bartlett: I have shipped oranges out of this State since 1883 to the time of the freeze of '94 and '95. Like the gentleman on my right here, I, too, have had a little experience along that line. We had the same trouble then with the rot that we have now. I myself went to Cleveland, Ohio, in 1885 and 1886 and bought oranges. I went to the warehouse and sorted them over. I sorted out four or five boxes before I got two boxes.

On the other hand, I have seen oranges shipped in bulk to Cleveland that went in sound condition. I endorse most emphatically all that has been said by Mr. Skinner and other gentlemen in regard to having your fruit dry. My experience bears out theirs.

I picked oranges this last year in the rain, but they got dry. Some of them reached the market all right, and some did not get there. They were put through a washing machine.

I used to make orange boxes myself with a saw, and I think I have the honor of bringing the first veneer mill into this
State that made orange boxes out of pine logs.

I think we cannot put too much emphasis on the point of having the fruit dry. In those days we did not wrap, but sometimes they go all right one way and sometimes another. Sometimes we get a big price, and sometimes we don't. When our doctors disagree, what are we poor laymen going to do? We must use our own judgment.