tion, insect and disease controls, pruning, wind breaks, soil amendments, cold protection, and, in fact, about everything we could think of and get someone to discuss.

We have never collected dues or fees and the only list of members is our mailing list. Those who attend with some regularity are notified the week prior to the meeting and our local press has been liberal in announcing meetings, programs and speakers.

We expect to continue these meetings, but believe we will no longer have summer meetings. We believe a few months abstinence during the summer will be good for the enthusiasm of our audience and, certainly, will be restful to those of us who are responsible for these programs.

MARKETING FRESH LYCHEES

DEWITT EATON
Sarasota

That a paper covering the marketing of fresh Lychees is written at this time is quite remarkable from the entirely different points of view. First, it is surprising that it is being written at so late a date, since the first Lychee tree now living was planted in Florida, according to record, in 1907 or forty-three years ago. That is a long time between original planting and commercial marketing. On the other hand considering that the first small commercial planting of this delicious fruit made at Laurel, Florida, was established in 1940, only ten years ago, it is indeed interesting that in so short a time a discussion of marketing this product could take place. However, the astonishingly rapid expansion of plantings lends validity to the problem.

To Wm. R. Grove of Laurel, E. L. Wirt of Babson Park and Judge C. E. Ware of Clearwater credit must be given for first visualizing the Lychee as the basis for a profitable agricultural enterprise. Under the leadership of these men and with their enthusiasm, the industry has grown in a few short years to a point where the problem of marketing the fresh fruit must be considered and the future planned for. From this time forward, the available quantities of fresh fruit will make the industry important enough to warrant our seeking sound and progressive marketing methods. During the past few months many unsolicited articles about the Lychee have appeared in newspapers and periodicals. At least three references have been noted in motion pictures. The fruit this summer received wide national distribution through the medium of a "Fruit of the Month Club" and many retail stores quickly sold their supply of fresh Lychees to enthusiastic customers who found them being offered for the first time.

Probably most people in this country are familiar with the dried Lychee or Lychee nut or at least have heard of them. Chinese restaurants have been serving them for years and the better retail grocers stock them regularly. Thus, the American people are already acquainted with the name Lychee indicating that the publicity given to the fresh fruit will become immediately effective and the demand will more than keep ahead of supply.

And speaking of supply it is interesting to note that within the past two years approximately sixty new Lychee orchards have been established and more are being planted almost every

day or as rapidly as young trees become available. These trees will commence bearing during the fourth or fifth year. Now, while the annual production from any agricultural product cannot be predicted with certainty, we do have a ten-year record of experience with which to approximate the future. On the basis of this experience it is believed that the estimate of average production of three to five pounds of fruit per tree the fifth year, sixty to eighty pounds the tenth year and so on, can be accomplished when the trees are planted in good, suitable soil and well watered, fertilized and generally well cared for. It is obvious, therefore, that in the not too distant future a substantial quantity of fresh fruit will be ready for the market.

It is not too early to organize and put into operation an association of Lychee growers having as its two-fold purpose the establishment of good growing practices and sound marketing methods. And such an association is now being launched. Its members will derive profit from the numerous mistakes made by the citrus industry in this state. Early organization will help growers to avoid the pitfalls of wide price variances, confused advertising, uncertain markets, substandard quality and wasteful growing practices. The by-laws and operating methods of other growers and marketing associations are being studied with a view toward incorporating the best features of each into the plan to be put forth by the Lychee growers' association.

One of the first problems to be considered in the marketing program is, of course, that of packaging. Now, while it is true that the Lychee is definitely a perishable fruit, nevertheless it is not as fragile as one might think. The tough, pliant outer skin affords excellent protection against bruising and damage in handling and serves to keep the fruit in good condition for a rather long time.

In the past, two methods of packing Lychees have been used. For bulk shipment to wholesalers and retailers, the fruit has been placed in mango type lugs with adequate packing material such as paper or wood excelsior. The mango lug affords proper ventilation and protection for about 8 pounds of fruit. Individual packages of one pound net each have been used with good success. This specially designed, simply constructed, perforated, 200 lb. test, brown corrugated cardboard box, 7" x 3½" x 2" has been used by "fruit-of-the-month" clubs and for direct shipments to individuals. Excelsior packing material is used here also. In the Union of South Africa where the cultivation of the Lychee is a very important industry, shipments of fresh fruit are made in trays similar to mango lugs with good success.

Practically all shipments in the past have gone forward via Parcel Post. As more fruit becomes available, undoubtedly Railway Express, Air transport and eventually car and truck load shipments will be used. Inasmuch as refrigeration prolongs the goodness of the Lychee, the future will bring refrigerated shipments of the fruit and a greatly extended period of availability to the consumer. The study of local cold storage and cold room handling of the fruit is of immediate importance.

The fresh Lychee is properly picked, that is clipped from the tree, and handled with reasonable care, will remain in good, edible condition for approximately ten days to two weeks without refrigeration. Under refrigeration this time is extended to three to four weeks and often longer. Speaking of refrigeration, it is of great importance to everyone interested in this coming industry to know that the Lychee can

be quick-frozen so successfully that the frozen and the fresh fruits are very nearly identical. The fact opens up vast possibilities that cannot be discussed here but that will be studied and planned for by the above mentioned association.

During the season just passed approximately five thousand pounds of Lychees were shipped by one concern from this state. For the most part these shipments may be divided into three categories; bulk packages to regular wholesalers and retailers, bulk and individual packages to the Chinese markets and individual packages to direct customers and "fruit-of-the-month" purchasers. At least three-fourths of the total shipments went to New York City where the demand for the fruit far exceeds the supply and where the only attempt at selling the product has been made. There, a few of the better class of retail stores have offered the Lychee to their customers and found enthusiastic response and the profit more than satisfactory. This same situation will obtain elsewhere when the supply warrants expansion. From all indications, the Chinese population of this country would take all the Lychees produced for many years to come. However, with a view toward the future, the shippers have deliberately refrained from supplying the Chinese only, even though much higher prices could be obtained from this group.

The fresh Lychee at the present time is distinctly a luxury fruit and will remain so for a considerable number of years. The transition from a luxury item to a more generally purchased commodity will gradually take place as more trees are planted and more fruit becomes available. It is imperative that this transition be orderly.

The 1950 season brought a firm price to the shippers of $1.25 per pound FOB shipping point. This price applies to both bulk and individual packages. One shipper who purchased most of the fruit in the state, paid the growers seventy-five cents per pound on the tree. This difference of fifty cents per pound paid the shipper for the cost of picking and packing and his profit. The average retail price was $3.00 per pound. These prices may increase somewhat due to rapidly expanding demands with which supply is not now keeping pace.

Now then, let us look at costs for a moment. Since the Lychee thrives best in what we may term good citrus soil we may figure the cost of suitable land and clearing to be about $200.00 to $250.00 per acre and the total cost per acre for the first year, including well, to about $500.00 to $550.00. The annual cost of orchard care is about $100.00 to $150.00 per acre until the production stage which should be four to five years. Thus, the total cost to bring a ten-acre Lychee orchard to bearing should be about $10,000.00.

Based on these figures which are the result of actual experience, of course, it is estimated that an average cost of producing a pound of Lychees should not exceed ten cents per pound. Relating this cost to the present wholesale selling price of $1.25 per pound FOB Florida, it is rather obvious that the profit is mighty good, possibly too good. However, this will change as more fruit becomes available. But let us assume that the price falls to twenty-five cents per pound wholesale, which for reasons I will state in a moment probably could not happen, this would still leave an excellent profit for the grower. There are not many agricultural products that will net the producer 2½ times his cost. It must be remembered that production costs will remain fairly constant.

There are several reasons why the wholesale price of fresh Lychees will probably never fall to 25 cents per pound. In the first place the fruit is generally conceded to be one of the world's finest and almost universally liked. Secondly, the area in which the trees will bear fruit is extremely limited: in North America it is confined to a small section of Florida, in the world to small parts of China, India and South Africa, and in the United States land in the Lychee producing area is certainly not plentiful. Based on well known factors it is predicted that an oversupply of the fruit is practically impossible. And, of course, it is oversupply that brings ruinous prices. In the third place, all estimates and ratios have been based on the production and sale of fresh fruit only. Nothing has been said and no consideration has been taken of the frozen, canned, preserved, spiced, dried or fermented fruit. It is also interesting to note that fresh Lychees are ready for the market from about the middle of June to the last of July during which time fresh northern fruits have not yet matured and Southern fruits have reached the point of declining availability.

In summary it may be said that the Lychee promises to be an exceedingly important agricultural venture for this state. It grows well here, it ships well, the demand is established and expanding rapidly, production costs are favorable and profits exceptional. It remains now for the growers to take advantage of this market and do it with planning and cooperation.

A SURVEY OF DISEASES LETHAL TO TAHITI (PERSIAN) LIMES IN DADE COUNTY

C. M. GATES AND M. J. SOULE, JR.
University of Miami
Coral Gables

In recent years considerable concern has been felt by growers over the failure of groves of the common Tahiti and the Idemor variety of limes. The Idemor is variety in the Tahiti group but the two will be treated here as distinct varieties. Many of the groves in the Redlands district of Dade County have had as high as 50% of the trees die out in the last few years.

In 1934 Tisdale (2) described a bark disease of Tahiti limes caused by *Diplodia natalensis* Pole-Evans and *Diaporthe citri* Wolf. He described the disease as a yellowing of the foliage followed by the death of all or part of the tree. The bark of the trunk or the larger branches was found to be dead. The diseased bark was dark in color and, occasionally, cracked longitudinally. There may or may not be gumming in the affected area. In 1936 (3) he recommended that trees affected with the disease be treated by cutting away the dead and diseased portion and treating the cut surface with a fungicide and then with a safe wound dressing. In 1943 Ruehle (1) described the symptoms of a disease believed to have a virus as its causal agent. The disease was characterized as causing a yellow to brown sectorial streaking of the fruit together with a breakdown of the oil cells and some of the albedo under the streaks, a mottled leaf chlorosis, and bark constrictions on the trunks of young infected trees. Longitudinal sections of young trunks showed gum soaked areas and gum pockets in the bark and wood under the constrictions.

The present survey was made to determine the amounts of lime bark dis-