Citrus By-Products Utilization

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In discussing the topic that was suggested to me, I had first thought of preparing a long, thick paper on the subject of what has been accomplished with citrus by-products in the research laboratories of California, mainly. This was before I learned that Dr. Church was to be with us. Most fortunately, you have gotten it first hand from Dr. Church. Now I shall confine myself mostly to a few points on the utilization of those citrus products which are most interesting and most important, from a nutritional standpoint, to the women in the home.

Magnificent opportunities exist for women in the state, in establishing and developing self sustaining, original industries that could make Florida famous for her canned goods, preserves, marmalades, and quality crystallized products. Although some women and girls have already made splendid utilization of our citrus fruits, the surface of the industry has scarcely been scratched. We have a varied and wonderfully attractive group of citrus fruits that combine into jellies, marmalades, spreads, crushes, juices, relishes, syrups, preserves, spiced and crystallized products that are not only beautiful, but better yet—both toothsome and healthful. Among the many interesting forms that can be used in citrus by-products are products that are unsurpassed in flavor and of a marvelous color and transparency—kumquat, limequat, orangequat, tangelo, pomolo, and pink shaddock.

I realize, of course, that it would only be in our big, main crop of surplus round oranges and grapefruit that the citrus grower, right now, is concerned in utilizing, but I say again, these other members, perhaps now in the novelty class, are of tremendous interest to our women and some day that interest will be taken into the commercial field. At the present time only a few of these products are known to the consuming public.

The kumquat, the smallest member of the citrus family, is fairly well known, and because of its hardy characteristics, may be found growing over the northern section of Florida. Their dense, branching habit of growth, attractive dark green leaves and golden yellow fruit, make them objects of beauty in any shrubbery planting, and we recommend them to be used for that purpose. Kumquats enjoy the distinction of being the only citrus fruit that is eaten whole. As you know, probably, the skin is spicy and aromatic, and the pulp delightfully acid. They make excellent preserves, marmalades, jellies,
and are an ideal fruit for crystallizing when used at the right stage of growth. This is very important for the best flavor and a good texture.

Of the lime group, may be mentioned several varieties of much interest and value to the preserve maker. Of these, the limequats, originating in the Citrus Experiment Station in Lake County, are, as the name indicates, a cross between the lime and the kumquat, with the color but none of the bitterness of the lime and all the piquant flavor of the kumquat. These limes work into delightfully "lemony" jellies, marmalades and preserves. If you were to work with the limequats, you would almost be inclined to think there was something mysterious or miraculous about their intensive, jellying properties. These jellied limequats, like sour orange preserves, are excellent to a degree that doesn't admit of any improvement—hardly—and will not until Mother Nature or Mr. Savage or Mr. Swingle produces a super-limequat.

But I don't believe they are thinking of any such probability and will be quite satisfied to take the limequat as it is, and not ask for anything finer. For in jellied limequats and sour orange preserves, we have just about reached the maximum of high-grade goodness. Only, I am sorry that Mr. Savage handed out the limequat and the seeds together—an oversight on his part, I am sure.

Another beautiful ornamental, also a member of the lime group, bearing a small tangerine-like, acid fruit of fine quality, is the calamondin. It is very hardy too, ranking with the Satsuma and the kumquat in this respect. There is also the Rangpur lime, well flavored and of a deep, orange color and of a better size than the Calamondin. These may all be used in the same way as lemons in the ades and for seasoning food. In fact, many think they are better than the lemon and more interesting, because of their high color.

But of all the lemons found in Florida—and they are many—the one that most delights the preserve-maker is the Ponderosa, a door-yard planting usually advertised by northern nurserymen for pot culture. They resemble a grapefruit in size and color, and the whole fruit, with its thick, clean-cut, lemon flavored peel, will cook beautifully clear and translucent under the skillful hands of the women who strive for quality and characteristic flavor.

While we reach out with one hand for these newer citrus relations, we certainly hold on tightly with the other, to the old and known favorites. For better far than all the newer generations together, is that member of the citrus family that was brought to Florida during the days of the early Spanish explorers, namely, the so-called Seville, or sour orange. As you know, this fine Old World Adventurer still furnishes the best root stock upon which to bud and graft; 75% of the world's output of citrus fruit being from trees on sour orange root stock. In addition to this, it is the only citrus fruit from which is manufactured the orange marmalade with such a "tang" and aftertaste as to have made England and Scotland famous in every corner of the globe.
If you will pardon a personal reference—may I say—I grew up in what was part of an unusually beautiful, wild grove, and one of the earliest recollections of the food of my childhood is that of the Dun-dee marmalade, served in my home in that orange grove on the St. Johns. Today, with sour oranges found growing very nearly all over the state (we have them growing in Tallahassee even), it is a sad pity that this delightful tonic, appetize and digestion-awakening marmalade is not served at breakfast in every Florida home. Sorry to say, however, such is not true.

As you probably know, the marmalade industry was first started in 1797 by a woman, Mrs. James Keiller, in the heart of Dundee, Scotland. This appetizing product immediately became a very popular table delicacy, and the demand was so stimulated, that Mrs. Keiller’s husband went to London to superintend the selling of the product, which was then placed upon the market in that city. (This from the report of Consul M. K. Moorhead of Dundee, Scotland.) This incident in the early history of citrus by-products is very interesting. For people to have discovered and insisted, for nearly a century and a half, that sour orange marmalade may be both desirable and delicious. And the patient citrus fanciers are not through yet! Sour orange marmalade became so universally popular, back in the seventeenth century, that it enlarged into an industry of great proportion. Today there are some hundreds of manufacturers. But the place of its origin, Dundee, is still regarded as the home and center of the industry. The production from the various factories is estimated to amount to three thousand tons annually, and a considerable proportion of this amount is exported to the United States and Canada, Canada being the largest consumer. Even Florida promotes the use of the Dundee marmalade, rather than a product of her own make.

The product is put up in glass and in stone jars and also in tins. The largest factory in Dundee make their own tins in a modern tin shop, on their own premises, but most of the factory equipment is obtained from England and Germany. I am rather in favor of a greater use of tin. For, if people are going to have marmalades and “spreads,” they should have none but the very best and they should have as much as they can get for their money. It is ridiculous to think that a high class marmalade cannot come out of a tin just the same as from a glass container. Glassware is so heavy that it costs more money to ship the glassware than the marmalade that is in it. When it gets to its destination people discover that they cannot eat glassware anyway, and it goes to the dump. That’s why, instead of getting a twelve-ounce jar of marmalade for 50c or 60c, you should get fourteen to twenty ounces in tin for less. The only justification for charging more money would spring from the conviction that money is easy to get because the public is ready to turn it over to those who know how to go after it.

May I repeat this: sour orange marmalade from Dundee is sent to every corner of the globe. Florida could fur-
nish just as fine a product. Is not Florida asleep? Just when will she awaken to her opportunities and to the privilege of contributing products to the world's food supply that are not only delicious to the taste, but which, according to present-day research, abound in substances that are indispensable to the best nutrition. We would need to take a firm stand, however, to make it impossible for anyone to pack sub-standard stuff. For, when a housewife buys a jar of poor quality of marmalade, she is rightfully dissatisfied and is apt to condemn all citrus marmalades. The success of any business is founded upon the confidence of the consumer in that business, and many a glass of hodge-podge has been sent out under a fancy label that was not worth the price of the transparent shell in which it was shipped. That was a few years ago, we are not doing that in Florida any more, I think.

Candied or crystallized citrus fruit or peel is a product that deserves more attention than it has received—not only as a fancy confection, such as our women are interested in making, but as a wholesale product for the use of bakeries and the ice cream trade. It would seem as if this product should be carried along in connection with our grapefruit canners to take care of the extravagant waste of good peel there.

This preservation of fruits, also vegetables, by saturating them with sugar and then covering them with a coat of sugar crystals, is one of the oldest methods of fruit preservation known. Candied fruits have been used as a sweet-meat probably from the time that sugar became a common ingredient in a preparation of food for the table. It is well known that candied vegetables have been used for many centuries in the culinary preparations of Oriental people, notably the Chinese.

Because of the lengthy process in preparing the fruit, the excessive amount of sugar utilized, such a product must of necessity command a high price. In crystallizing, just as in other processes, the sugar mixtures, sugar concentration and temperature found best, must be maintained, if a uniform quality is to be secured. Of course, the quality of the fruit in the first place, determines the quality of the candied peel. It must be well ripened and full flavored, with all blemishes removed, never of green or prematurely colored fruit for a high-grade product.

There is considerable case-hardened, tough, dry crystallized fruit found in our markets, due principally, I think, to the fact that the process is not carried over a sufficient length of time. Far too much poor flavored, amateurish stuff is on the market, which tends to mitigate against building up a popular high-class industry. The slogan should always be “quality first.”

The discovery of the existence of those little things which are called vitamins (the word vitamin means “life preserver,” it means essential to life), was the work of several scientists, but they were christened by that warning name by a celebrated scientist by the name of Funk. Scientists have agreed that Funk did not
overestimate their importance when he called them by that name. It was time we were finding out something about them, for the health of the American people was, and is undoubtedly suffering from the fact that they were not and are not, being utilized in the diet as Mother Nature intended. We do not know exactly what vitamins are, or how to make them. But we do know that we must obtain them as we do our calories, from the grocer, not the druggist, and that we must prepare our food so as to conserve these vitamins, for some of them are delicate and easily destroyed. The Florida homemaker, throughout the year, finds the home demonstration forces all over the state constantly working towards the creation of an adequate conception of the importance of the vitamin content of the foods she serves in relation to the physical welfare of her family.

Among the most valuable constituents of citrus juices are the vitamins, so called vitamin A, B and C. For it is now known that vitamin A is found also in cold-pressed orange and in lemon oil, obtained by extraction with ether. It has also been recently shown that the outer oil-bearing portion of lemon peel and the alcoholic extract, made therefrom, contain vitamin B in such quantities as to make it comparable with yeast as a source of vitamin B. Work along these lines, however, has not yet been as thoroughly developed as the work in vitamin C, whose presence in the juice of oranges and lemons has been thoroughly demonstrated by many research workers for sometime. Because of its peculiar potency and indeed its indispensability in the cure and prevention of scurvy, vitamin C is known as the anti-scurvy, or anti-scrobutic vitamin.

While scurvy is frequently spoken of, and the expression anti-scrobutic vitamin is frequently used in discussing vitamin C, there seems to be no definite idea in the minds of many people as to just what scurvy is and how it affects the individual who contracts it. I shall not here enter into a discussion of the prevalence, effects and cause of scurvy, sufficient to say that there are still vast numbers of cases in the world today, with the most repulsive and distressing symptoms.

Priston, in his article in the Journal of the Royal Naval Medical Service, recommends a concentrated orange juice (manufactured in California), for adoption as the official anti-scrobutic for the British Navy. It being estimated that 50 gallons of the concentrate contain sufficient vitamin C to supplement the supply available in the British tropical war diet of 1200 men for three months, and that there would be a considerable saving annually by substituting the concentrated orange juice for the lime juice now issued.

There is a great need for concentrated citrus juices, preserved so as to retain their full vitamin content. It has been proven by a number of separate and entirely independent investigations that orange juice products can be highly concentrated or reduced to a dry powder form without appreciable loss of vitamin C. Copies of the research work on this particular problem are obtainable
from the University of California. This work should be of interest to the citrus growers of Florida.

We should be concerned, at least, in the milder forms of scurvy—incipient cases. Doctors tell us these are practically impossible of accurate diagnosis.

Minor pains, general inefficiency, greatly impaired vitality and usefulness, with increased susceptibility to all sorts of infections, are symptoms. These cases cause great loss of working ability and should warn each and all of us to include an anti-scorbutic of known value in the daily diet. There is no more reliable source of the anti-scorbutic vitamin than orange juice.

I would like to see an advertising campaign “Buy a Box” put on. Oranges and grapefruit, purchased by the dozen or less, forces the dealer to ask a price for them that frequently exceeds eight, ten and more dollars a box. Such prices discourage consumption and the only way to overcome such obstacles is to urge that they be bought in larger quantities. Tell the housewife and mother that intelligent buying will reduce the cost and that citrus fruit is so crammed with wonders, so blest with benevolence towards the human family, that the pantry in which they are seldom visitors, is not a pantry at all, but a branch office of the undertaker's.

Many states, the State of Florida included, as everyone knows, are flooded with soft drinks, masquerading under misleading labels. By far the majority of them are concocted of various chemicals, made up to have flavors resembling fruit juices, artificially colored, and some containing habit-forming drugs. These synthetic drinks have none of the virtues of the refreshing, healthful fruit drinks which they strive to imitate, and even if not actually poisonous, they are neither digestible nor very good, and they undoubtedly affect the health just to the extent that they are used.

A great many food errors do not always show up their effects immediately, but it is possible for these errors to store up trouble for a later day. With our growing population, consuming daily quantities of all kinds of fake fruit drinks, made synthetically, I think it is hardly the fault of the masses, that citrus fruit juices and other fruit juices do not enjoy many thousand times the present demand. The true fruit drinks have never been made known to them. Even those that desire them can rarely find them and, therefore, the consumption cannot make any headway. It would not take much originality to push these true fruit juices to the front, for it would only be necessary, in a way, to copy the successful methods of the manufacturers of scores of fake beverages, marketed today with striking success.

One enterprising state in the Middle West kept tally on the synthetic drinks sold in one week at their State Fair. They claim $50,000 from the visitors to the Fair from an average of two bottles to the person. Based on 5c per bottle the average annual expenditure per person for soft drinks may be estimated at $6.00 per person. There are one hundred and twenty-five million persons in
the United States and 125,000,000 times $6.00 makes $750,000,000.

Think of it, Citrus Fruit Growers! $750,000,000 for soft drinks, 90% synthetic, right here in a country where fresh fruit is grown year after year, and, at the same time, while the fresh fruit is sent to the dump in appalling amounts. $750,000,000 for soft drinks of little food value and few healthful qualities. $750,000,000 that these people, I believe, would rather spend for a real fruit drink if they could get it. Instead of coal tar dyes, synthetic flavors and chemical preservatives, let us substitute the golden fruit juices, that Florida can so abundantly supply.

Any captain of industry would tell us that the largest profits in his business accrue from the complete utilization of the waste products. The industrial chiefs would have nothing undone until ways and means were found to turn loss into profit. Florida should get behind her waste and make use of all her varied and interesting products.

We have already been shown many ways and means—and modern methods of utilizing sound, undergraduate fruit. In a study of citrus by-products, you will be startled, perhaps, by the realization of the difference between the advanced ideas which come to us from the Pacific coast, as compared with the almost total lack of activity on the part of the balance of the country, including Florida.

Let us visualize, briefly, by-products other than citrus: pineapple canned fruits, walnuts, prunes, raisins, olives, lima beans, asparagus, salmon, tuna, and many in addition. Do you realize that on every one of these products, concerted action has been and is now being taken? On each of these articles, the brains behind the guns, have not trailed along, but on the contrary, are out at the head of the procession. All honor to—and most certainly may credit be given to California!

Gradings have been changed out there and are changing. To change is not a weakness—in California.

I am told that gradings of so base a food product as lima beans in the dry state is constantly being improved. The gradings of walnuts were entirely changed and they have brought the industry to a point where they are branding every walnut, and almost inconceivable detail. Fruit gradings were changed a short time ago. Raisin gradings were all changed recently. One must keep in step with these changes or be left behind.

In California, internationally famous research work has been done and still is being done in an effort to make canned goods free from harmful bacteria, thus preventing heavy losses. Many important canning problems have been met and solved, not only problems of value and interest to the big, commercial packers, but the problems of the women in the home have received equal attention. New outlets are constantly being sought for the always increasing surplus as the acreage in the fruit industry in California has been rapidly growing larger, just as in Florida hundreds of thousands of idle acres must be made productive.
In other states and other colleges, if both small and large canning organizations have found it profitable to maintain canning and research departments, would it not also be profitable for Florida, already with her various trucking centers, her interesting tropical and sub-tropical fruits, to do the same? Has not Florida her own problems of equal importance with those of other states to be solved? One of Florida's greatest needs just now is canning and conservation establishments. The future for canned grapefruit, an industry that is only in its infancy, is already bright with promise, but old processes need to be perfected, new processes discovered for making marmalades, crushes and spreads, juices and concentrates for ice-cream making as well as for household use.

In conclusion, may I say that never was the importance of eating and utilizing citrus fruits so marked as now, but before we supply New York and other markets with our fruit, let us remember that the best is none too good for the people within the state. First supply the home market with the juiciest, sweetest and best flavored fruit that Florida can produce.