

Actinidia Chinensis, the Kiwi Fruit

Specialty food stores and supermarkets with imagination have recently been featuring something called Kiwi fruit. Food columnists — perhaps in desperation for a story — have tried it, been agreeably surprised by its taste and texture, and written glowing reports; it seems to be catching on. Kiwi fruits have made occasional appearances in gourmet shops for several years as Chinese gooseberries, Cape gooseberries, and sometimes — perish the thought — under their correct botanical name, *Actinidia chinensis*, but it took a fetching epithet like Kiwi fruits to take the housewife's fancy. So far as we know, New Zealand's ambulatory *Apteryx* with hairy feathers and the fruit named after him have nothing to do with each other.

The Arnold Arboretum has a sentimental attachment to *Actinidia chinensis* by virtue of the plant's association with the late Ernest Henry Wilson. A climbing shrub in the family Actinidiaceae, *Actinidia chinensis* is, as its specific name suggests, a native of China and does not, as the commercial name could lead one to believe, originate down under. The earliest record for collection of the species belongs to the Jesuit priest, Father d'Incarville, a pupil of the French botanist, Bernard de Jussieu. Around 1741, d'Incarville sent de Jussieu a specimen of *A. chinensis* which he found in the vicinity of Macao. The latter, however, either did not know what to make of it or somehow overlooked it, because the species was not described until more than a hundred years later when Jules Planchon wrote a brief diagnosis of it based on a collection by Robert Fortune from the Chinese mainland. Fortune's specimen had flowers but no fruit, and Planchon did not say anything about the fruit being edible nor did Fortune remark at all upon this fact in his accounts of his Chinese adventures. This omission is surprising, for Fortune was a keen observer and reporter of strange fruits and flowers. One can only surmise that, in fact, he never saw the fruits either in the marketplace or on the dinner table.

The Chinese, however, knew and used *Actinidia chinensis* fruit as food, and there are references to it in ancient herbals as



refreshing and thirst quenching. Wilson, on his first expedition for the Veitch nurseries at the turn of the century, was — if not the first westerner to taste the fruit — the first to record its edibility; its delicate flavor enchanted him.^{1,2,3}

“A climber called ‘Yang-tao’ in Hupeh and ‘Mao-erh-tao’ in Szechuan (*Actinidia chinensis*) is very abundant from 2500 to 6000 feet altitude. It produces excellent fruit of a roundish or oval shape, 1 inch to 2½ inches long, with a thin, brown, often hairy skin, covering a luscious green flesh. This is an excellent dessert fruit, and makes a fine preserve. In 1900 I had the pleasure of introducing this fruit to the foreign residents of Ichang, with whom it found immediate favour, and is now known throughout the Yangtze Valley as the ‘Ichang Gooseberry.’ . . . It is a good garden plant; the only drawback is that the flowers are polygamous, and it is necessary to secure the hermaphrodite form to ensure fruit.”

Wilson sent seeds back to the Veitch nurseries in England, and the seeds germinated. *A. chinensis* thrived in its new environment, and in 1906 the Veitches described it enthusiastically as “a rapid grower, valuable for very handsome foliage, covered with bright red hairs in a young state. The flowers, not yet seen in cultivation, are bright yellow, very handsome, and followed by edible fruits about the size of walnuts with a flavour resembling ripe gooseberries.” (“Bright yellow” seems a bit of an overstatement but, after all, the Veitches had not seen flowers yet.) One remarks that the nursery emphasized the plant as an ornamental rather than as a fruit producer.

As far as we can tell from our old accession records, the Arnold Arboretum first received shipments of *A. chinensis* from the Veitch nurseries in 1905; Wilson subsequently sent a batch of seeds in 1908 during his first expedition under Arboretum auspices. In 1904, however, the U.S. Department of Agriculture Bureau of Plant Industry, which publishes very thorough records, listed the receipt of seeds of an *Actinidia* sp. called Yang-taw by the Chinese, with a “fruit said to be very fine, has flavor of gooseberry, fig, and citron”; this was obviously *A. chinensis*. Wilson shipped it to the USDA through the American Consul-General in Hankow, and the Bureau of Plant Industry forwarded it to the Plant Introduction Garden in Chico, California, for trial.

The practice at the Arboretum was to distribute a portion of seeds or cuttings to selected nurseries and individuals, and one may safely assume this happened with Wilson's 1908 shipment. Hopefully, *Actinidia chinensis* fared better in other milder areas — or in nursery greenhouses — than it did outdoors at Jamaica Plain. The material which Veitch sent in 1905 died by 1912; the 1908 seed lot expired in 1914. *A. chinensis* simply could not take New England winters, though other *Actinidia* species survive them. Meanwhile, the USDA lot at Chico came along very nicely, producing fruit in 1910. The Arnold Arboretum still makes an occasional attempt to cultivate *A. chinensis*. Last fall Mr. Al Fordham, the propagator, remarked on some growing along the greenhouse fence, but pessimistically predicted it would winter-kill. It did.

There is an interesting footnote to the introduction of the plant into Western horticulture. Both Veitch and Sargent measured the species from an ornamental viewpoint. Like crab-apples, its fruit production was simply an agreeable factor complimenting its decorative possibilities. Though far from being a

spectacular species, *A. chinensis* has many desirable qualities. In a favorable climate it grows vigorously and produces a handsome foliage with creamy white flowers, one and a half to two inches in diameter, rapidly fading to buff yellow. (At no time are they the bright yellow advertised by Veitch.) Due to its lusty growth, the English and Europeans plant it frequently, and it is available in American nurseries. Naturally, the selection of ornamental plants for the home garden is, to a large extent, a question of personal taste. Alfred Rehder thought *A. chinensis* "the most beautiful of the Actinidias" and a good garden plant. By contrast, Dr. Donald Wyman does not get very enthusiastic about it, and he recommends it for someone in a rush for a large climber, perhaps to cover some unsightly object.

While the Arnold Arboretum by tradition, and Sargent as its first Director, evaluated *A. chinensis* as an ornamental, the USDA eyed it as a potential source of fruit. This attitude once led Sargent to make the withering and somewhat unjust remark that Department of Agriculture officials were only interested in what they could eat. Personally, Sargent took a dim view of introducing new food products to the American dinner table and recognized the reluctance of the average person to experiment with exotic tastes. But people may be more adventurous in their dining habits now. For example, after half a century as an abused curiosity, (a situation which one author blames on the use of the old uncomplimentary name, alligator pear) the avocado has come into its own. Kiwi fruits may be gaining popularity and, unlike other food products, their price is descending.

Actinidia chinensis fruits, or berries, are ovoid and about the size of an egg. While not particularly appetizing on the exterior, peeled or in section their color is a clear jade green. Many tiny, purple seeds surround the inner core, and they are small enough so that one need not remove them. The fruits resemble melon in texture; in taste, they are sweet and succulent, not at all like the gooseberry, and have been compared to strawberries, blackberries, melons, rhubarb, bananas, and so on, without any general agreement except that most people who have tried them, like them. They are reported to be richer in Vitamin C than oranges.

The fruit on the market today is not American-grown but comes from New Zealand. (Hence, one presumes, the name Kiwi fruit.) Although the USDA began its trials of *A. chinensis* about two years earlier than the probable date of introduction of the species into New Zealand, for some reason it caught on as a crop plant there while it never got out of trial gardens in

the United States. Despite efforts to convince independent growers of its potential, the Department of Agriculture has failed to stimulate commercial interest. Yet there is ample evidence that *A. chinensis* grows well in California, north Florida, and the Gulf states. Meanwhile, New Zealand raises and sells several thousand tons of fruit annually.

New Zealanders did not begin commercial cultivation of the species until about 1940, many years after it had been introduced. By 1964 they were producing 840 tons of fruit in a single year at the rate of four tons per acre. Out of this crop, 80 tons went as exports to Britain, Australia, Canada, and the United States. Picked before they ripen, the fruits keep very well: eight weeks in common storage and more than four months in cold storage (31–32 degrees F. at 90 per cent relative humidity). The New Zealand growers have been enterprising in developing improved cultivars of *A. chinensis* with bigger and better fruits. An extra large fruited cultivar with superior flavor, Hayward is used exclusively for export to the United States. This, then, is what we see in the markets.

If the American public displays any sign of real interest in the fruits, domestic growers may be encouraged to raise *Actinidia chinensis*. But, thus far, no one has been that adventurous.

For further reference see:

- Schroeder, C. A. and W. A. Fletcher, "The Chinese Gooseberry (*Actinidia chinensis*) in New Zealand," *Economic Botany*: Vol. 21, No. 1, 81–92. January–March 1963.
- Menninger, Edwin A., "Actinidia chinensis; A Promising Fruit and Some Related Species," *The American Horticultural Magazine*, Vol. 45, No. 2, 252–256. April 1966.
- Smith, Robert L., "Kiwi — A Potential New Crop for California," *Lasca Leaves*, Vol. 20, No. 1, 8–10. March 1970.

STEPHANNE SUTTON

1. *Jade Jewel* (supplied by The New Zealand Fruit Growers Federation Limited)

12 oz tin pineapple

¼ cup quick cooking tapioca

¼ teaspoon salt

1 cup water

¾ cup sugar

3 tablespoons lemon juice

3 kiwi fruit

Drain the pineapple and reserve both juice and fruit. In a saucepan, put the tapioca, salt, water, and pineapple juice. Cook over low heat with regular stirring until the tapioca is clear. Add sugar. Remove from the

heat and add the lemon juice, stirring it in well. Leave to cool. Peel the kiwi fruit and cut into large chunks. When the tapioca mixture is cold, fold the pineapple pieces and kiwi fruit through it. Spoon into dessert glasses and chill. (Serves 6)

2. *Greenstone Pie*

1 cooked 7- to 8-inch sweet short pastry pie shell

4 to 6 kiwi fruit

2 egg whites

4 tablespoons sugar

Peel the kiwi fruit and cut into quarter-inch rings. Whip the egg whites until stiff, then beat in the sugar gradually to form a thick meringue. Immediately before serving, pile the sliced fruit into the cooked pie shell and cover with the meringue. Place in 400° oven and cook for about 5 minutes to brown the meringue. Serve at once. (Serves 6)

3. *Kiwi Fruit Upside Down Cake*

2 oz butter

$\frac{1}{3}$ cup sugar

1 teaspoon grated lemon rind

3 or 4 kiwi fruit

$1\frac{1}{4}$ cups flour

2 teaspoons baking powder

$\frac{1}{4}$ teaspoon salt

$\frac{1}{2}$ cup sugar

1 egg

$\frac{1}{2}$ cup milk

2 oz. butter, melted

Select an 8-inch round cake tin and in it melt the first measure of butter. Sprinkle with the first measure of sugar and spread over the bottom of the tin so an even layer is formed. Sprinkle with lemon rind. Peel the kiwi fruit and cut in rings $\frac{1}{4}$ inch thick. Place these in a pattern over the bottom of the tin. Sift the flour, baking powder, and salt into a bowl and add the sugar. Beat the egg and blend in the milk, then tip all the liquid into the dry ingredients and stir until completely blended. Pour in the melted butter and mix well. Carefully pour the batter over the fruit and topping in the tin. Bake at 350° for about 45 minutes or until cooked. Remove from the oven and allow cake to stand in the tin for 5 minutes before inverting on a plate. Serve warm or cold with cream. (Serves 6 to 8)