

The Strawberry, Past and Present*

27

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Historically speaking, the garden strawberry is a newcomer among fruits. Its ancestors were native Americans. They travelled to Europe, stayed a while, and finally returned home, a thoroughly cultivated fruit.

The first strawberry was probably cultivated in France in the 14th century. This plant was a small, wood strawberry of Europe, *Fragaria vesca*. It was the only strawberry cultivated for the first 200 years. Seed of an ever-bearing variety of this species under the name of Baron Solemacher, sometimes called the Alpine or perpetual strawberry, can still be obtained. A notable feature of *F. vesca* is that it has only 7 pairs of chromosomes. All present day cultivated varieties have 28 chromosome pairs. Along with this they have much larger plants, leaves and fruits. There is no evidence that the wood strawberry was involved in the origin of modern kinds. This species is extremely sensitive to virus and is today used as a test plant to spot the presence of the disease in commercial varieties by grafting to them.

The Hautbois, *F. moschata*, was the second European species to be grown. It has 21 chromosome pairs, three times as many as *F. vesca*. The plant is larger but the fruits are small, dull purple, and have a distinct musky flavor.

The common wild meadow strawberry of eastern North America, *F. virginiana*, was the third species to be grown in Europe. It was introduced in the early 17th century and is mentioned in Parkinson's herbal in 1629.

This species—as those of you who have picked our wild strawberries know—is characterized by small, bright scarlet fruits that are rather sharply acid and have a pleasant strawberry fragrance. The leaves are rather thin and light green compared to the western beach species.

Our eastern strawberry has 28 pairs of chromosomes. The popularity of this species grew slowly in Europe but during the early 1800's over 20 varieties were developed in England, all with small fruits. One variety, Little Scarlet, is still favored by preservers for its flavor, aroma, bright color, and shape-retention when processed.

In 1714, Frezier, a French officer, returned from a trip to Chile bringing five plants of *F. chiloensis*, the beach strawberry of the western Americas. Like the eastern meadow strawberry it has 28 chromosome pairs but is otherwise distinct, as might be expected of two geographically, widely separated species. The plant is large with thick leaves. Flowers are large, unisexual and often have more than five petals. Fruit is larger and sweeter than in *F. virginiana* but color is poorer. The beach strawberry did not meet with favor, in Europe, despite its superior size, and only a few varieties were developed during the century following its introduction. It is of interest to note that South American Indians had selected large-fruited strains before Columbus arrival and one of these was perfect-flowered. Darrow states that this variety is still grown in several countries of South America.

The modern cultivated strawberry

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has 56 chromosomes. The same is true of our eastern and western wild species. *F. vesca*, on the other hand has only 14 chromosomes and *F. moschata*, 42. Research by cytologists has shown that the 56-chromosome strawberries will hybridize freely among themselves but not with the lower chromosome groups. This, together with the mixture of parental characteristics, shows that garden strawberry varieties have arisen from hybridizations between the meadow strawberry and the beach strawberry, which occurred when these two widely separated species were introduced to European breeders. In later work intervarietal crossing has given rise to nearly all of the newer kinds that we grow today.

In England, Thomas Knight was one of the first to cross strawberries.

Elton Pine, perhaps his most successful variety originated around 1820. Keen's Seedling appeared about the same time and is said to have approached modern varieties in many respects. Myatt developed British Queen in 1840, Paxton in 1862 and Dr. Hogg in 1866. These were all notable creations. The world famous Royal Sovereign was introduced by Thomas Laxton in 1892. It resulted from a cross of two of his earlier productions, Noble and King of the Earlies. Royal Sovereign is still widely grown.

In France, the varieties Princess Royale (1844) and Dr. Morere (1871) were among the most popular to be bred; and in Germany, Deutch Evern (1902) became a favorite.

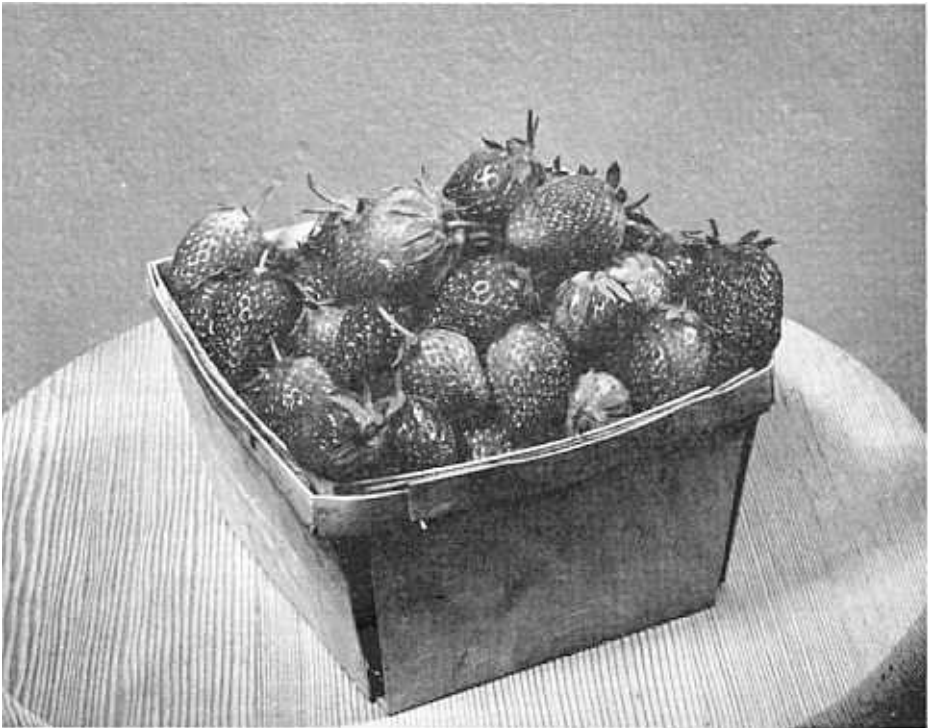


Fig. 1. A quart of berries of the variety Tennessean, latest introduction of the Tennessee Agricultural Experiment Station.

Some of the most important varieties developed in the United States, in chronological order, were: Hovey (1834), Wilson (1851), Crescent (1870), Sharpless (1872), Warfield (1882), Gandy (1885), Dunlap (1890), Marshall (1890), Klondike (1896), Missionary (1900), Ettersburg 121 (1907), Howard 17 (1909), Aberdeen (1923), Beaver (1925), Blakemore (1929), Bellmar (1931), Fairfax (1932), and Cat-skill (1933). These varieties have arisen from deliberate crossing of other garden varieties, from selecting accidental hybrids or occasionally, from crossing a garden variety with a wild species.

Other recent introductions have been Shasta and Lassen, which dominate in California; and the variety Northwest, which is outyielding the old standby Marshall in Oregon and Washington. In Michigan, Robinson, is the chief variety together with the standard Howard 17. In the northeast Sparkle, Robinson, and Howard 17 are favored. In red stele areas Fairland and Temple are liked. Tennessee Beauty is favored in the mid-south and some central states areas.

Among the latest introductions the most promising are: Pocohontas, Albritton, Dixieland, Armore, Empire and Stelemaster. The first four of these are worthy of small trial plantings along with the standard, proven varieties in Tennessee.

The Tennessee breeding program has contributed substantially to modern strawberry improvement. Tennessee Supreme is a high yielding berry of excellent freezing quality, but is too soft for shipping. Tennessee Beauty is one of the most prolific berries in its area of adaptation. A leading Maryland nurseryman states that "Tennessee Beauty for several years has been the most profitable variety of strawberry for us" and "if this section were limited to one variety it would have to be Tennessee

Beauty". The variety needs adequate moisture to size up its heavy crop and should respond well to irrigation.

Tennessee Shipper, one of the firmest strawberries available, is already contributing heavily to breeding programs. It is a parent of both Pocohontas and Dixieland and will doubtless be widely used to incorporate firmness into new varieties. It, too, yields well and has excellent vigor where moisture is adequate.

Tennessean, our last introduction, is the earliest of our varieties (See Fig. 1). It does not appear that it will supplant Blakemore. All Tennessee varieties are characterized by regular shape and attractive appearance.

When making a cross between two strawberry lines practically every one of the resulting offspring is different in one or more of its characteristics. The breeder expects this situation because the hereditary constitution of our cultivated strawberries is extremely complex. The wild wood strawberry of Europe has only two basic sets of chromosomes or hereditary units, but our cultivated strawberries have eight sets. Since each parent involved in a cross is itself usually a hybrid, we get all sorts of complicated recombinations of characters in the progeny and no two of the seedlings are exactly alike.

Among the characters considered in evaluating seedlings are plant-making ability, vigor, leaf area, leaf color, petiole length, disease tendencies, flower type, fruit size, shape, uniformity and yield, season of ripening, calyx size and color, cropping qualities, seed position, seed color, toughness of skin, external color and gloss, internal color, texture of flesh, solidity, core size, flavor, aroma and acidity.

Strawberries are notorious for their rather limited regional adaptation. In the breeding of modern varieties it is rather startling to note the recurrence

of relatively few varieties in the parentage. For our area the outstanding parents have been Howard 17, Missionary, Blakemore, and more recently, Tennessee Shipper and Midland. In red stele resistant varieties Aberdeen has been the recurrent parent. For quality introduction Fairfax has been important.

As time passes, demands on varieties become more exacting. The shipper,

freezer, and preserve maker each wants his own particular needs met as precisely as possible. At the same time the grower is interested in supplying all outlets from the same patch. In other words he is looking for an all-purpose berry to give him the strongest possible position in the market. This ideal all-purpose berry is the ultimate aim in commercial berries. Blakemore comes closest at present.



More on Howard 17 and (or) Premier Strawberries

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The name of the Alton, Illinois man who sent the seedling strawberry to R. M. Kellogg in 1912 from which the Premier was allegedly developed, almost certainly was not "E. H. Riche", (as printed in Mr. H. K. Bell's article, page 57, in the winter, 1955 issue of *Fruit Varieties and Horticultural Digest*).** I find no one of that name listed among Illinois growers, but Edwin H. Riehl was superintendent of Experiment Station No. 8 of the Illinois State Horticultural Society at Alton in 1912 and for a number of years. He belonged to a family long prominent in growing, breeding, and propagating fruits and nuts in that area, and had tested small fruit varieties. According to his reports, published in the *Transactions of the Society*, Riehl had fruited the "Howard's No. 17" strawberry at least by 1911, in which year he ranked it

second only to Early Ozark among June bearing varieties at his station. I think it likely, although Riehl appears to have been a strawberry breeder himself, that he would have included the Howard selection among promising new varieties if he sent any of them to the Michigan nurseryman the next year. So if Kellogg did indeed get his start of "Premier" from a horticulturist at Alton, what he got was very probably the Howard 17 from its Massachusetts originator, and not one of Riehl's own seedlings or an "unknown". The possibility exists that it could have arrived at Kellogg's as a mixture with some other variety or selection, or as a bundle on which the label was lost, so that the subsequent renaming as "Premier" may not have been a deliberate deception.

In his 1912 report, Riehl listed "Howard No. 17" among nine "newer

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**Editor's Note: Our apologies to the reader for the typographical error which caused this misunderstanding.