Contents

217  The Decline of the Apple
     FRED LAPE

228  Some Afterthoughts on Apples
     JEANNE S. WADLEY

231  The Ralph F. Perry Wood Collection
     HARMONY C. SPONGBERG

235  Struggle for Survival
     ALFRED J. FORDHAM

239  The Arboretum's Labels: A Valuable Teaching Aid
     JACK LINK

245  News from the Arnold Arboretum

248  Arnoldia Reviews

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The Decline of the Apple

The development of the apple in this century has been partially a retrogression. Its breeding program has been geared almost completely to the commercial interests. The criteria for selection of new varieties have been an apple that will keep well under refrigeration, an apple that will ship without bruising, an apple of a luscious color that will attract the housewife to buy it from the supermarket bins. That the taste of this selected apple is inferior has been ignored. As a result, sharpness of flavor and variety of flavor are disappearing. The apple is becoming as standardized to mediocrity as the average manufactured product. And as small farms with their own orchards dwindle and the average person is forced to eat only apples bought from commercial growers, the coming generations will scarcely know how a good apple tastes.

This is not to say that all of the old varieties were good. Many of them were as inferior as a Rome Beauty or a Stark’s Delicious. But the best ones were of an excellence that has almost disappeared.

As a standard of excellence by which to judge, I would set the Northern Spy as the best apple ever grown in the United States. To bite into the tender flesh of a well-ripened Spy and have its juice ooze around the teeth and its rich tart flavor fill the mouth and its aroma rise up into the nostrils is one of the outstanding experiences of all fruit eating. More than this, the Spy is just as good when cooked as when eaten raw. Baked, in pies, in applesauce, it holds its firmness and its flavor.

I speak of the Northern Spy in the present because it is still being sold, usually at top prices, at the older orchards in the northeast. One can even buy it occasionally in the larger cities, at exorbitant prices. But I doubt that it is being planted much, if at all, in the newer commercial orchards. There is a reason for this. The Northern Spy tree is large, and difficult to keep in shape for picking. It is sometimes an erratic bearer, and the fruit is very susceptible to a wire worm, which writes tiny scrolls of brown through the flesh and gives it a bitter taste.

The Northern Spy is purely an American apple. It originated
as a chance seedling at East Bloomfield, N.Y., about 1800. By
1840 it had begun to attract general attention throughout the
northeast. No one seems to know what ancestry lies behind it.

It is typical of the breeding programs of this century that
in some orchards the Northern Spy has been replaced by the
Red Northern Spy, which has a more brilliant red skin than the
Northern Spy and is therefore more likely to attract attention
for sale. But in taste the Red Northern Spy is only a shadow of
the old Northern Spy.

My other standard of excellence has almost disappeared. It
is the Spitzenburg, originally known as the Esopus Spitzenburg
because it originated at Esopus, in Ulster County, N.Y. Its date
of origin is not known, but by 1900 throughout New York State
it was considered an old apple. In my childhood no farm orchard
would be without one Spitzenburg tree, as beautiful in fruit in
October as when in blossom in May.

The fruit is of medium size, semi-conic in shape but not long,
and somewhat ribbed. The skin is a deep, rich yellow verging
into bright red; at its best, completely flaming red marked by
pale yellow dots. The flesh is tinged with yellow, firm, crisp,
tender, aromatic, not quite as juicy as the Northern Spy. But
the taste is unique, as good in its way as the Spy. And like the
Spy it is as good cooked as when eaten raw. It was always con-
sidered the supreme apple for baking.

A few commercial orchards still have an old tree or two
tucked away in a corner. Some twenty years ago, when I was in
my fifties, I went to one of these orchards to get some Spitzen-
burg scions for grafting. The owner of the orchard turned me
over to his father, whom I judged to be in his eighties, to show
me the tree. On the way I tried to make conversation by saying
I thought the Spitzenburg a pretty good apple. Whereupon the
old gentlemen stopped, turned in his tracks, looked at me
severely, and said, “Young man, the Spitzenburg is the best
apple God ever invented.”

In recent years I have heard of no new plantings. One seedling
of the Spitzenburg, the Jonathan, not as inferior to the Spitzen-
burg as the Red Spy is to the Northern Spy, is still being planted
in at least one orchard for use in commercial applesauce. But
the Spitzenburg itself is too good to be lost. Its gene source
should be used for breeding.

One variety, older than either the Spy or the Spitzenburg,
has managed to hold a small place in commercial orchards. It
is the Rhode Island Greening, more commonly called the Green-
ing. It originated in the 1700’s in Rhode Island, near Newport,
Jonathan

Esopus Spitzenburg

Rhode Island Greening
at a place known as Green's End, where a Mr. Green kept a
tavern and raised apple trees from seed. The fruit of the original
tree was occasionally given to visitors at the tavern, and the
visitors who came back in succeeding springs asking for grafts
from the tree started the Greening on its two centuries of
success. Its fame soon spread throughout the northeast. It
is a long-lived and sturdy, wide-spreading tree. One tree cut
down in 1903 was known to be nearly 200 years old.

The fruit is large; the skin, grass green varying to dull yellow,
sometimes with a cinnamon blush on the sun side. It is an in-
ferior apple to eat raw, but in many households in the northeast
it still reigns supreme as a cooking apple. Less tart than either
the Spy or the Spitzenburg, it has a unique mellow flavor that
any apple fancier can detect at once in a pie or in applesauce.

Other old varieties have disappeared completely. I doubt that
one can now find a Russet, except in an arboretum of old
varieties of apples. Yet the Russet was once one of the com-
onest varieties. A smaller apple, dull green with russet flak-
ing on its skin, rock hard until midwinter, it was actually a
mediocre apple both for eating raw and for cooking. Its virtue
lay in its keeping ability. In the days before refrigeration it was
one of the apples that could be shipped long distances. With
modern shipping under refrigeration that quality was no longer
as important, and the Russet disappeared.

The Red Astrachan is another important apple that has al-
most disappeared with the demise of the home orchard and the
reliance upon commercial plantings. Once again, no farm
orchard of my childhood would have been without a Red Astra-
chan tree. It is a Russian apple, imported first to Sweden, thence
to England, and thence before 1835 into the United States by the
Massachusetts Horticultural Society from the London Horti-
cultural Society. It is one of the early ripening apples known as
“harvest apples”, and the most important of this group. In
central New York State it ripens about the middle of August,
sometimes earlier. It has no keeping ability. Two days after it
is ripe it begins to deteriorate unless put under refrigeration. A
medium-sized apple with a fiery red skin and much too tart
for eating raw, it vies with the Spitzenburg and the Greening
for cooking. Of all apples, it makes the best jelly or marmalade.
Both in jelly and in applesauce made by cooking with the skin
and straining, the red color of the skin comes through as a
bright pink in the finished product. Its flavor both in pies and in
applesauce is as good as one can find. Its lack of keeping ability
makes it a complete loss for the modern commercial markets,
but it remains a most valuable variety for anybody with a home orchard. It can be kept under refrigeration over the winter, but it must be used immediately when brought into warmth. I know one home owner who puts a couple of bushels in refrigeration each summer simply for the joy of having Red Astrachan pie and applesauce the next spring; its freshly made applesauce, when canned, will hold its taste for a year with little deterioration.

The tree is unfortunately a biennial bearer, but there are two varieties extant, completely similar except for the fact that their bearing years alternate with each other so that with sufficient room one can have a tree of each and have Red Astrachans every summer.

All of the harvest apples are disappearing as home orchards disappear. Commercially they are valueless, since once ripe they will not keep long enough to be displayed anywhere except on an orchard's roadside stand. But in the days before refrigeration, when the winter apples had gone by the next May, they were an important summer delight. And even now their loss means the loss of the flavor of a fresh apple in midsummer, for the refrigerated apples now sold in midsummer are flat to the taste.

The earliest of the harvest apples was the Yellow Transparent, which sometimes began to ripen by the Fourth of July. It was another Russian apple, this one imported directly from Russia by the USDA in 1870. It is a medium-sized, butter yellow apple, juicy and pleasant to the taste, but quickly becoming mushy and dry. For cooking it is not sufficiently tart and holds no form. The tree, however, is an annual and heavy bearer. It is still available at some fruit nurseries.

A better variety in our area was a slightly larger and whiter apple known locally as White Transparent. I have been unable to trace this, unless it is the variety called Early Harvest in Beach's Apples of New York. If so it was an American apple, and was in 1903 already over 100 years old. Its liability was that it was a biennial bearer.

One of the common harvest apples, the Sweet Bough, belonged also to that group known as "sweet apples". The sweet apples are all, as the name implies, without tartness, and though many of them are fine for eating raw, they are valueless for applesauce or pies. They were cooked, however, by quartering, coring, and then boiling them with plenty of sugar, either with or without the skins, for an hour or two over a low flame. Cooked so, they made a fine, sweet dessert.
I have not seen a Sweet Bough for years, though I think I have seen a listing of it in a nursery catalogue. It was, as I remember it, a good-sized green apple with a golden tint, and probably its main distinction was in being a sweet apple that ripened so early. It was an American variety, on the scene before 1817.

Two other sweet apples used to be common. The Pound Sweet, listed officially as the Pumpkin Sweet, vied among apples for size with the Tompkins King. It is a good eating apple, but it has the unfortunate habit of waterlogging. The flesh of the sections around the core, and sometimes of almost the whole apple, are transformed into a translucent golden green, which however does not seem to change its taste.

The other common sweet apple was the Tolman Sweet, which was a small, butter yellow apple with faint russet dots. Being small it was used not only for boiling but for pickling. And since the tree is very hardy, it was at one time used extensively as a grafting stock.

The Tompkins King, which I have mentioned, is not a sweet apple, but it is the largest apple I have ever seen, specimens often being as big around as the largest grapefruit. It is a showy apple, its skin red with sunlight yellow shining through. Eaten raw it has a pleasant tart taste, not distinctive, and it is not sufficiently tart to be a good cooking apple. As a tree it was considered desirable because its limbs grew out horizontally and needed little pruning, also it is a good annual bearer. It originated as a seedling in northern New Jersey, but a graft of it was given to one Jacob Wycoff of Tompkins County, N.Y., who gave it the name of King.

The rise and fall in popularity of certain strains of apples is curious. I have said that the Spitzenburg was considered indispensable for the home orchard of the turn of the century. Another apple of the same strain, the Baldwin, was in 1903 the leading variety in commercial orchards in New York, New England, southern Canada, Michigan, and northern Ohio. It originated shortly after 1740 as a chance seedling on the farm of John Ball, at Wilmington, Mass., near Lowell. It was by no means as good an apple as the Spitzenburg, but it was a larger apple, an easier tree to grow, and as a keeper sufficiently good that it was used for export trade along with the Russet, even before refrigeration.

The fruit is large to very large, the skin tough, light yellow blushed with bright red, with conspicuous gray dots. The prevailing effect is bright red, but darker than the Spitzenburg.
Sweet Bough
Yellow Transparent
Tompkins King
Tolman Sweet
The flesh is yellowish, firm, crisp, and juicy. Though neither raw nor cooked is it as good an apple as the Spitzenburg, it is nevertheless an all around good usable apple. But I think that no variety has disappeared so rapidly and so completely as the Baldwin.

The strain that supplanted it was the Fameuse strain, which had dawdled for 200 years without much success. The Fameuse, more commonly known in the United States as the Snow, was a French apple, of which either a plant or seed was brought to the United States from France in the late 1600's. The Snow is a very small apple; red, with glistening white flesh filled with juice; delicious to eat but of little value for cooking. It was sparingly planted in home orchards. Then sometime before 1870 the strain yielded a chance seedling on the McIntosh homestead in Dundas County, Ontario, and that chance seedling, the McIntosh, was destined to change the commercial production of all the northeastern United States. Its popularity grew slowly at first, and then with a rush. In my childhood there was not a single McIntosh apple tree in the Schoharie Valley of New York, then a high producing apple section. It was, I think, about 1915 that the McIntosh apple first began to appear in the city markets, and once there it became the apple that everybody wanted. Part of its immediate success may have been its novelty to its public, which had not known so beautiful a red apple; one so tender and with so much juice, so good to the taste. It had, and has, its liabilities. In spite of being an apple beautiful to look at and delicious to bite into, its skin is annoyingly tough; it keeps very poorly; and when cooked it goes to complete mush, although good tasting mush. It has managed to hold its own all during the middle of the century. Its place is now being superseded by an apple of the same strain, the Cortland, which keeps and ships better than the McIntosh, but unfortunately has lost the edge of sharp taste which kept the Fameuse strain alive those 200 years.

One variety that as far as I know never reached commercial importance and yet was fairly common in home orchards was the Yellow Bellflower. Locally in central New York it was known as the White Spitzenburg, perhaps because it had the same ribbed semi-conic shape of the Spitzenburg. It may have had an origin from French seed, since the name was sometimes given as Bellefleur, but the original tree, large and old, was in 1817 still standing on a farm in Burlington County, N.J.

The tree is large and vigorous. The fruit, lemon to butter yellow, russet-dotted, sometimes with a pinking cheek, ripens
late, in October; but even then it is not at its best. Of all the old apples, like the Russet it is one of the best keepers, but unlike the Russet, its flavor improves during the keeping, and is at its best after being stored in the cellar until March or April of the next spring. It is then a delicious eating apple, with a mellow taste equal in quality to the taste of a cooked Greening. Neither taste has ever, as far as I know, been duplicated in other apples.

But I speak actually from little knowledge. The 1845 catalogue of the Prince Nursery on Long Island offered 350 varieties of apples, including already the Baldwin. Three hundred and fifty varieties: Think of the different tastes one will never know, the fascinating names of apples never to be tasted; the Fallawater, whose only claim to distinction seems to have been its size, the Black Gilliflower, a long red apple with a pointed nose. Perhaps the Black Gilliflower is the apple I knew as the Sheep's Nose, though our Sheep's Nose was more green than red, with dull reddish streaks, and a solid somewhat mealy flesh. It was probably an ancestor of the modern Red Delicious, for it was as dry to the lips and as insipid to the tongue; its only distinction being its strange shape.

One variety that I have never been able to identify surely was the apple called locally the Pomeroy, though I assume that this was the anglicized version of Pomme Roy, an apple long thought to be French but later believed to have originated in Rhode Island before the Revolution. I remember it only as a pale yellow apple, mild, delicious to eat raw, but the last tree I knew disappeared 60 years ago.

One wonders why certain varieties ever became popular. The Hubbardston, originating in Hubbardston, Mass., before 1832, was never more than a mediocre apple, yet it still lingers in a few orchards. Perhaps the low mark of the old varieties that were once much planted was the Ben Davis; a beautiful apple to look at, brilliant red and shining, but inside dry, coarse, and tasteless. A great many of small commercial orchards got stuck with the Ben Davis, having planted good stands of the new and much touted variety, and brought them to production only to find that buyers bought the fruit one year and never again. There was nothing then to do but tear the trees out and replace with another variety. On the other hand there are, I am sure, many local varieties that still remain popular in their own localities. The Smokehouse is one of these, named from an original tree that grew near a smokehouse on the farm of William Gibbons, Lancaster County, Penna. It is still a popular
Yellow Bellflower

Baldwin

Black Gilliflower

Hubbardston
apple throughout the Pennsylvania Dutch section, but never seems to have been good enough to extend its range.

The sad fact we must face is that, as in pears, we have let the gene pool grow limited. Intensive breeding primarily for commercial purposes, and the disappearance of home orchards may already have limited the possibilities for future development. Unless the apple is going to become a standardized mediocre fruit, the main emphasis on future development should be toward taste. What we need now are apples that will bear annually, keep well, ship well, look beautiful in a supermarket bin, and at the same time taste as good as a Northern Spy or a Spitzenburg. If we cannot do that, then we have failed.

And I must confess that I am equally worried over the modern practices of culture, once again geared only to commerce. Because labor is expensive and an apple grower wants to make money, he keeps down weeds with chemicals, kills the pests with chemicals, thins the fruit with chemicals. All of these go into the soil, thousands of tons of them annually. Who has studied the effect this may have on the soil of the future, on the drainage water of the future, on the water springs of the future, on the health of men in the future? Perhaps the apple growers and the university agronomists had better pay more attention to Rachel Carson

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Esperance, New York

Notes

The best source of information on old varieties of apples is The Apples of New York by S. A. Beach, published in Albany, N.Y., in 1905, as Part II of the Annual Report of the New York Agricultural Experimental Station for 1903.

The illustrations in this article are reproduced from Volumes I and II of the above.
Some Afterthoughts on Apples

Apples were grown almost exclusively for cider making until the advent of the temperance movement in the 1830's. Consumed by rich and poor alike, the refreshing beverage also served as currency and from earliest colonial days provided a principal item of export to the southern colonies and the West Indies.

According to U. P. Hedrick, author of *A History of Horticulture in America to 1860*, the product sold as 'cider' was always hard cider; freshly extracted juice was offered as 'sweet apple juice'. Many bought the latter to age according to their individual tastes.

Although the commercial demand for cider declined as a result of the temperance reformation and many orchards were destroyed, interest in home production continued unabated, judging from the lively correspondence to be found on the subject in various early gardeners' journals. Advocates of abstinence branded the golden liquid unsafe, unwholesome, and nonnutritious, while health faddists attributed laudable properties to it in the treatment of such disorders as dyspepsia, biliousness, and even alcoholism.
W. F. Heins of Paterson, N. J., writing in *The Horticulturist* in 1868, had these directions to offer the home brewer:

A good and pure article of cider requires but little labor in its manufacture. The apples are gathered before they are fully mature, and placed in a cool, dark room... for about a week... then take two thirds tart and one third sweet apples, rejecting carefully any that have appearance of decay; put them in a tub of water, to free them from dirt... then grind to pulp. To avoid particles of fruit getting into the juice, a clean, coarse bag is put into the press to receive the pulp. Fill the receiver with pulp, close the bag, and apply the screw gradually until the juice ceases to run freely. After waiting five minutes, apply strong pressure, and press all out. For barrels, those used for whisky or alcohol answer well... The barrels should be placed in an airy and cool cellar, on skids, and are then ready for the juice as fast as it comes from the press. When full, the holes are closed with corks, in which are inserted glass tubes of an inch in diameter, made air-tight at their insertion by sealing-wax. A cup, or other vessel, filled with water, is placed under the free end of the tube, which should be covered by the water at least one and a half inches. Fermentation will soon begin, and violently at first. The water in the cup must be replaced as evaporation takes place... to prevent air coming in contact with the liquor in the cask. The tubes are not removed from the casks until the bubbling in the water cups entirely ceases... The nearly clear liquor is then drawn off — carefully avoiding shaking the casks — into new ones... filling the casks full. To have a supply, to keep the barrels continually full to the bung, which is a matter of the first importance, some of the cider is put into small casks, turned over, that the contents may cover the bung, to prevent acidity. During the following autumn, about the end of October, the cider is again drawn off into prepared barrels kept always full, and in the following spring it is ready for bottling, and will keep for years.

By contrast, this entry in a late 19th century cook book offers a simple receipt for unfermented cider:

Cider should be made from ripe apples only, and for this reason, and to prevent fermentation, it is better to make it late in the season. Use only the best-flavored grafted fruit, rejecting all that are decayed or wormy. The best mills crush, not grind, the apples... Press and strain juice as it comes from the press through a woollen cloth into a perfectly clean barrel; let stand two or three days if cool, if warm not more than a day, rack once a week for four weeks, put in bottles and cork tightly. Do not put any thing in it to preserve it, as all so-called preservatives are humbugs. Lay the bottles away on their sides in sawdust.

Home cider making is enjoying a modest revival, accompanied by a volume of disparate directions. In the interest of
quality control, one might be well-advised to first consult the USDA Farmers' Bulletin No. 2125 (revised 1972), "Making and Preserving Apple Cider".

Through the joint efforts of the Worcester County Horticultural Society and Old Sturbridge Village, selected old varieties of apples are to be perpetuated in a preservation orchard at the Village. A tract of land has been cleared for the project which was launched officially at dedication ceremonies this spring. Presently about 90 varieties have been planted of stock moved from the Society's North Grafton experimental orchard established 20 years ago by S. Lothrop Davenport, former Secretary of the organization.

The search continues for additional old varieties to expand the collection at Sturbridge. As the trees mature, scion wood and bud sticks from them will be available through the Society to supplement that which they sell from their original orchard. The fruit from the preservation orchard will be sold at Old Sturbridge Village.

For a list of nurseries specializing in under stock of old varieties of apples, consult the Society (30 Elm Street, Worcester, Massachusetts 01608).

Jeanne S. Wadleigh
A solitary cabinet stands against the east wall of the lecture room in the Arnold Arboretum’s administration building in Jamaica Plain. The one hundred-plus drawers comprising this cabinet are each 1½ inches high, 6½ inches wide, and 13½ inches deep. The drawer fronts attract the eye because each has a distinctive wood pattern, and the total effect of the patterns creates a pleasing design. It also arouses one’s curiosity.

In late October of 1972 a group of sixth graders from Quincy visited the Aboretum to do bark rubbings of some trees on the grounds. Each student was equipped with five or six grades of paper and fists full of crayons. Before beginning their endeavors on the grounds, the students were brought by their teacher into the building where they assembled in the lecture room to look at the photographs on the walls, the slide display cases, and, perhaps most importantly, to discover the wooden cabinet.

I happened to be in the room at the time solely to observe the children’s discoveries. Investigating the cabinet, they were surprised and pleased to find bark and wood specimens in the drawers. Obviously old enough to have acquired some knowledge about plant names, the youngsters attempted to locate, let us say, an oak, a birch, and a maple specimen.

After the Quincy questers left for the grounds, I sat down in front of the cabinet and selected some of the drawers at random. I studied the wood specimens and the information in each of the drawers I examined. Before I realized it, I was knee deep in drawers and records.
The Ralph F. Perry Wood Collection cabinet is arranged alphabetically by genera; a generic index, common name index (both in lists and charts), and a card catalogue allow for locating particular drawers. The sheer amount of research entailed and the information compiled, let alone the labor and craftsmanship required to organize such a collection, motivated me to learn more about Mr. Perry.

Ralph F. Perry lived in Watertown and was an electrical draftsman for the Cambridge Gas and Electric Company. His job kept him outdoors a good deal as he was present during tree removal at construction sites where he collected specimens of the felled trees.

In the early 1950's after his retirement, Mr. Perry worked constantly on further collections for, and construction of, his wood cabinet and the preparations of the specimens and the information to be contained in each drawer. His hobby demanded long hours, determination, and devotion. His efforts and meticulous work gained him a goodly amount of recognition. He lectured, appeared on television, and established a wood exchange program with people in foreign countries. One arrival, from a contact in Africa, was a shipment of small wooden blocks. Unfortunately, Mr. Perry's health was on the decline at the time, and he was unable to do any extensive research on these blocks. His great-grandchildren use them as toys today.

Even with sorely failing health, Mr. Perry was a perfectionist. By reading a portion of the printed explanation that accompanies the collection, one gains a better understanding of his personality and his execution of the project.

"Let us answer a few questions before you ask them. No dye, stain, filler, or other coloring material of any sort has been used on any of these wood specimens. After careful examination of wood specimens in a dozen of the best museums in the East and consultations with the curator staffs, the method of treatment that leaves them in the most nearly natural color and texture and still assures the least change thru what is called ageing over the passage of years has been chosen.

"After very careful and thoro (sic) sanding to produce a smooth and flat surface all of the specimens in the wood trays have been treated with two coats of the finest quality of clear white shellac, each coat very carefully sanded. That is all. This is the process used by the Furniture Museum, Grand Rapids, Michigan.

"The FRONTS of the trays and the Veneer Panels have re-
ceived the same treatment as above, then three coats of the highest grade, clearest varnish has been applied, the first two carefully rubbed down with very fine sandpaper, the final coat rubbed with pumice stone and water, then with rotten stone and oil, approximating the finish of fine furniture.

"The NAME at the top of the card is the common name most generally accepted; the second line is the botanical or scientific name. Following that is the original home of the tree, the weight of a cubic foot of the wood and its specific gravity, and finally a very short condensed story, giving a description or interesting facts.

"The WEIGHTS and specific gravities, so far as the trays are concerned, are for these individual specimens, computed very accurately by laboratory methods. While they follow fairly well those given by authorities, there are differences; many of them being a little heavier. Every piece of wood here has been seasoned, aged, or cured, whichever you desire to call it, for twelve months or more from the time of cutting, in (a) dry, warm storeroom, before being finished up as specimens. In reweighing it has been found that some of the specimens will gain or lose as much as two per cent in weight with the variations in prevailing humidity. The weights and specific gravities of the Veneers are those credited by the best authorities, because they could not be derived from these very thin pieces.

"The PIECE in the lower left corner of the tray is 'quarter-sawed' and shows the wood perpendicular to the grain; the piece in the lower right is 'slab-sawed' showing the wood parallel to the grain or nearly so. The square immediately below the label is a cross-section; the upper right is the bark, showing that part of the tree that we all may see as it is growing . . ."

Upon examining the collection at the Arboretum, one will discover that each drawer front is a piece of wood of the same type as is found in the tray. This explains the varied tonal pattern of the whole cabinet front. The visitor also can absorb a great deal of information from the cards in the drawers. Each drawer has a portion or all of a 3 x 5 index card glued to the bottom, while all the wood specimens are rivetted to the bottoms of the drawers. Mr. Perry clearly intended his collection to survive any mishandling!

Someone browsing through the cabinet can locate a grass that is used for water pipes, wood that is used for shuttles in textile mills and golf club heads, and note drastic differences between the wood and bark of a street grown Ash (Fraxinus) and a park grown Ash. Further looking will reveal a sample of a
tree that grows in salt water, wood that is most prized for musical instruments, and (without opening a drawer!) the foulest smelling wood in the collection.

Other information on the cards includes interesting historical facts. Some, relating to plant names, tell us that Magnolia, Halesia, and Wisteria were named for the 17th century botanical professor, Pierre Magnol, the English botanist, Stephen Hales, and the 18th century physician and anatomist of Philadelphia, Caspar Wistar, respectively. In addition there are references to trees with significant associations in religious history, those that serve as state trees, and a dozen other items of interest.

Donated by Mr. Perry’s family in 1968, the collection of cabinet specimens and the separate collection of wood veneers, are a comprehensive source of historical, sociological, and economic information illustrating the importance of the plant world. Above and beyond that, the cabinet is impressive to look at and a skillful and thorough creation. The Arboretum is most fortunate to have received this gift.

HARMONY C. SPONGBERG
Struggle for Survival

In nature's scheme of things many remarkable designs have been evolved for the dispersal of seeds as they ripen. Fleshy fruits containing seeds which are dependent on birds and animals for dispersal change to a wide range of colors enticing to those responsible for their distribution. The pulp provides food to the vector which in turn carries the seeds about in its digestive system until they are expelled in its droppings. In this way the seeds are scattered about the countryside.

Fruits with seeds which rely on the wind for dispersal undergo changes that prepare them for this manner of dissemination. Weight is reduced and the seed coats and wings harden as water is decreased in their structures. Such fruits are functional in design and illustrate nature's way of getting the seeds away from the parent plant.

Large trees which have produced prodigious numbers of seeds throughout their lives may never reproduce themselves, however. Competition for space in nature is uncompromising and fierce, and existing sites are frequently inhospitable.

In 1954, a south-bound off ramp was cut through a granite mass at the intersection of Routes 128 and 109 in Westwood, Massachusetts. This led to a roadway running between two ledges about 25 feet tall. The following list* shows nine species of woody plants that have germinated and continued to grow in the fissures and on the small shelves of this forbidding location. (Figure #1) Four are subjects whose seeds are normally dispersed by wind, while five are carried by birds.

<table>
<thead>
<tr>
<th>Wind Dispersal</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acer rubrum</em> (Red Maple)</td>
</tr>
<tr>
<td><em>Betula lenta</em> (Cherry Birch)</td>
</tr>
<tr>
<td><em>Betula populifolia</em> (Gray Birch)</td>
</tr>
<tr>
<td><em>Populus tremuloides</em> (Quaking Aspen)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bird Dispersal</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Juniperus virginiana</em> (Red Cedar)</td>
</tr>
<tr>
<td><em>Malus species</em> (Apple)</td>
</tr>
</tbody>
</table>
Fig. 1 top left
Fig. 2 bottom left
Fig. 3 above
Sambucus canadensis  
Sassafras albidum (Sassafras)  
Vaccinium angustifolium (Lowbush blueberry)

Figure #2 — shows birch trees growing in seams of the rock, apparently in the absence of soil. Moisture and nutrients reach the roots by seeping down through the fissures.

Figure #3 — shows a birch tree growing in a small pocket. Decayed vegetable matter has accumulated at its base in sufficient amount to form a growing medium capable of supporting a fruiting plant of lowbush blueberry (Vaccinium angustifolium).

The plants on the ledge demonstrate the wide range of temperatures which their roots can tolerate. Stone is a dense medium and one that conducts heat readily. This ledge faces south-east and is of a color that absorbs heat from the sun; during a sunny summer day temperatures in the root areas might well be many degrees above 100° F. Conversely, during periods of cold in winter temperatures in the root zones would approximate those of the surrounding atmosphere and could be many degrees below zero.

ALFRED J. FORDHAM

* Determination verified by Miss Ida Hay of the Arnold Arboretum staff.
The Arboretum's Labels: A Valuable Teaching Aid

The living collections of the Arnold Arboretum are used by visitors for diverse purposes which range from sheer enjoyment to serious study. An understanding of the labeling system can greatly increase the pleasures and benefits to be derived, for we try to keep every shrub and tree accurately identified, and to include such other information as may be pertinent. Sometimes this additional data recalls a tale of adventure harking back to the earliest plant explorations, or attests to a nearly extinct species.

Starting down the meadow road, one is immediately aware of the large metal trunk labels found on most mature trees. These labels provide us with the scientific name (Latin name), common name, and native land of the specimen. The metal stand labels used in the shrub collection, on low shrubs, and in many specialized plantings give the same information.

To understand the Latin nomenclature one must have an idea of how the system of plant classification works. The entire plant kingdom has been divided into distinct groups called families; each of these, in turn is divided into subgroups called genera. A genus often contains many species, and a species may be further differentiated by varietal or cultivar names. A family has some characteristic (or characteristics) which allow it to be separated from all other families. Likewise all genera within a family (and all species within each genus) are differentiated from each other by distinguishing traits.

The working of this step-down classification system is similar to the relationship between the following pairs of words: Tool, saw, and keyhole saw. The general denomination tool refers to a large number of items; in order to be more exact, we refer to a certain type of tools as saws, having a more restricted definition. Finally, we have a keyhole saw, referring to a specific type of saw (or perhaps we will have to be even more exact — a red keyhole saw).

In the same way, the more completely a plant is named, the
more exacting are the characteristics by which it is defined. It is useful to note here the differences between a cultivar and a variety. A variety is a population of plants which occurs naturally in the wild, which is slightly different from the rest of the species but not enough so to be considered a species itself. Cultivars, on the other hand, are plants which come from an individual variant of a species that has been propagated, generally to maintain a particular characteristic. A cultivar name is always enclosed in single quotation marks.

A common name also is often noted on the labels but this is a very inaccurate index since the same plant may have many different names in different countries throughout the world. Paradoxically, the same common name is sometimes given to several different plants. Common names are provided primarily for public interest and play no real part in the Arboretum's work.

If a plant originates from one particular area of the world, occurring naturally in the wild, we try to note this on the label also. For example it is fascinating to observe all the kinds that have come from the Orient and which do so well in our New England climate.

Wooden labels which hang from a branch or limb are placed on smaller trees and most shrubs. There also are plastic engraved labels in several specialized collections. These generally provide the same information as the trunk labels but also may carry additional notations which will help us in knowing a plant more completely. The lilac collection often has notes as 'One of the best early magenta varieties', and the tree peony collection has all the Japanese names translated into English ('Tatioshi' means 'Lion with a Standing Tail' for example).

In addition to the various display labels which I have just mentioned, small metal labels are placed on every specimen. These hold the key to understanding the Arboretum's living collection in depth. In the three lines of print that the typewriter-like machine (called an addressograph) can emboss on the zinc tape, we concentrate the accession number and year of accession, scientific name, propagation technique, and source from whence the plant came. Except in the case of large mass plantings of one type of plant, each tree and shrub should have one of these tags; unfortunately this is not always possible what with the ravages of Mother Nature and the increasing amount of vandalism.

In the collection we do not limit ourselves just to the name of the plant for identification, but have a numbering system.
so each can be treated as an individual. Upon arrival at the Arboretum every plant (or seed, cutting, etc.) is given a number which is known as its accession number. For the first 45 years plants were numbered sequentially from 1 (the first plant) to 23000; in 1917 the accessioning system was changed to a number-year unit. Thus the number 443-26 would be the 443rd plant (or group of plants) received in 1926. If more than one plant is covered by the accession number, then the individual plants are designated by letters which come after the number. In the case of the Stewartia in the illustration we find that plant 11440-A is located in a specific spot on the map 11a, whereas its brother plant 11440-B is found elsewhere on the grounds.

Following the scientific name is an abbreviation which tells how the specimen was received, and from this we can tell how it was propagated. The following abbreviations are the most commonly used:

- sd: germinated from seeds
- sdlg: plants collected or received as seedlings
- ct or rc: a rooted cutting
- gr or sc: a grafted plant
- rtc or rp: plants propagated from root cuttings
- lyr: plants propagated by layering
- bd: plants propagated by budding (a type of grafting)
These notations are important for our field work. The pruners must know if a plant has been grafted, for they need to remove any suckers from below the graft union so that the understock does not take over the named plant. Also any plants that are grown from seeds or seedlings must be checked before they are put on the grounds. This is necessary because a seed may be a hybrid and one often cannot tell until the plant is a good size if it is true to its parent.

Always of interest is the plant's source which also is noted on the tag. The Arboretum receives plants, seeds, and cuttings from other arboreta, nurseries, botanical gardens, and individuals from all over the world, and from expeditions into remote areas by famous explorers like Wilson and Rock. The metal labels shown above, for example, identify plants which were found in the Orient by the Arboretum sponsored expeditions and were the first of their variety in the United States. If a plant is derived from another plant already in the collection, the parent plant's accession number is given. If a plant comes from outside of the U.S., the country of origin is noted on the label.

The entire Arboretum is mapped in detail and when a tree or shrub is planted it is immediately added to the maps. This is not only important for quickly locating a given plant, but also to expedite relabeling when a tag is lost or removed. Since most plants of one family or genus are grouped together on the Arboretum grounds, the laborious job of scientifically identifying the specimen in question is thus eliminated.

One of the most important functions of the Arboretum over
the last century has been the introduction of new plants into cultivation in the United States. Many of the most popular and interesting items in the commercial trade were either discovered on plant expeditions or introduced from European or Oriental sources, first into the Arboretum’s collections and then to the public. The grounds have many living specimens which were the first of their name to be grown in the United States. The Paperbark Maple, Dove tree, and Silk tree on Bussey Hill are examples of just such individuals. These plants (and all plants that represent Arboretum introductions) are marked with yellow tags that read ‘Introduced into the U.S. by the Arnold Arboretum’.

Those students of plant history will be especially interested in any plants with a metal tag that simply says ‘Type’. In horticulture and taxonomy the process of designating a plant as a new and distinct entity requires publication of a complete description in the literature (as in Arnoldia for example). The individual tree or shrub on which this description is based is called the ‘Type Plant’. The Arboretum has many of these specimens and also many accessions that are cuttings from ‘Type’ plants and therefore carry the same characteristics. Around the Administration Building are located Magnolia ‘Merrill’, Hamamelis ‘Arnold Promise’, Magnolia stellata ‘Centennial’, and Hamamelis vernalis, all of which are original ‘Type plants’.

After one has obtained all the information from the tags that seems to suit his needs, it also would be wise to step back three or four paces and take a look at the sort of micro-climate in which the specimen has been planted. When plants are moved from the nurseries to the permanent collections they are always placed with an eye toward creating a beautiful display; but at the same time each plant is put in a spot where the horticulturists think it will find positive growing conditions.

An understanding of the Arboretum’s labeling system permits a self-guided tour of the living collections, preferably with notebook as well as camera in hand. Each visitor then has the opportunity to increase his knowledge as fully as his interests lead him, for the library, herbarium, and staff members also are available as further resources.

JACK LINK

Aquilegia Photo: P. Bruns
As of January 1, 1974, contributions for regular membership in the Friends of the Arnold Arboretum will be increased to $15.00; other categories of membership will remain the same.

The three issues of Arnoldia containing addresses and papers presented during the Centennial Week, May 21–28, 1972 have been assembled in a special commemorative volume just off the press. It is available to Friends of the Arnold Arboretum at $3.00, to others, $3.50.
Curatorial assistant Marilyn Gilmore gathers blossoms of Rhododendron Schlippenbachi for preservation by pickling. Photo: P. Bruns
Harry B. Hill planting young trees in the east nursery at the Dana Greenhouses. Photo. P. Bruns
Arnoldia Reviews


"Man-plant interdependency has existed since his advent. The interest in useful plants has shaped man and his civilization." With such a preface statement Dr. Schery has increased and modernized the coverage of the first edition to encyclopedic proportions and has proven his thesis. Several chapters are small essays on man's relationship with plants as well as his interest in and his use of plants and their parts and products. Material is presented under three primary headings: Products from the Plant Cell Wall, i.e. fibers and wood per se and cellulose compounds; Cell Exudates and Extractions, i.e. latex, tannins, oils and carbohydrates; and Plants and Plant parts used primarily for food and beverages.

Data are given on the origin of many cultivated plants, the varieties that are now cultivated, the areas of cultivation, methods of harvest and the extraction or preparation of the marketed product. Scientific as well as common names are given and the appropriate plant family is indicated. Maps and charts, the latter often flow diagrams of commercial processes, are useful and the illustrations are abundant. A few plates from commercial sources were originally used as colored advertisements and these do not reproduce well and seem out of place in this book. The topics to be covered are so numerous that often lists with abbreviated commentary are used to supplement the data presented on the principal plants of economic importance. A bibliography of additional titles supplements each chapter and references to scientific papers adapted as illustrations or tables accompany the text material permitting further reading or checking.

Plants for Man certainly can be recommended as a text for a course in economic botany and it also should have an appeal as a handy source book for the frequent questions concerning the products of a grocery store. It is indeed the best reference volume with up-to-date coverage now available.

R. A. H.

Although the proceeds from the sale of this book are to be used for a worthy cause — the development of the Botanic Garden at the University of Georgia — I can hardly recommend it. Though meant to be an identification guide to the flora of the Sea Islands of Georgia, the drawings are stylized and hardy diagnostic, and a beginner would have a hard time recognizing many of the plants. In addition, the paper is of poor quality and the drawings show through from one side of the leaves to the other. This book is neither beautiful nor useful — a great pity, since the flora it supposedly depicts is an exciting one.

R. E. W.


This is the first really comprehensive taxonomic coverage of the plant life of the Galápagos. No algae, fungi, bacteria, liverworts or mosses are included; but the flora includes every vascular plant, whether native or introduced, known to occur in these islands. Apparently what does not grow there is as startling as what does. It may not seem too strange that there are no native conifers or members of the rose family but it is odd that native members of the lily or arum families are missing. Perhaps the most puzzling fact is that despite hundreds of miles of tropical shore lines there are no native palms. In fact, there are very few native monocots.

Endemism is very high. About one-third of the species on these islands has originated there. One endemic genus, Scalesia, a relative of our sunflowers, holds a position botanically somewhat equivalent to Darwin’s finches in the animal world. The several species scattered about most of the islands are of particular interest to students of evolution. Yet the story of Scalesia helleri is unfortunately all too familiar. Less than 70 years ago, a visitor noted it “all over the Island”. Now the species is confined on the same island to a few plants clinging to crevices on vertical cliffs where goats, these islands’ worst enemies, cannot get to them.

It will be unfortunate if this volume is confined to use by only the professional botanist. Anyone, just interested in these “Enchanted Islands”, or planning a brief visit will find a very informative introduction in the book. It deals with the history, population changes, economy, physiography, geology, climate, soil zones, vegetation zones, and the history of botanical collections there. In addition to a nine page bibliography, an index to every taxonomic name and a glossary of all technical terms used in the book are included. Most of the excellent drawings are the work of Jeanne R. Janish and the senior author. Each genus represented in the archipelago is illustrated by a line drawing showing all parts of the plant, often accompanied by detailed drawings of one or more parts important in differentiating taxa.

These infinitely strange, unforgettable islands have several things in common. They are all volcanic, isolated, and usually very dry. Most of them suffer from the introduction of once tame domestic animals that have now gone wild. There is little lush and beautiful here. Even Charles Darwin after collecting
plants on several of the islands stated, "All the plants have a wretched, weedy appearance, and I did not see one beautiful flower." *Cordia lutea* with its abundant bright yellow flowers, at least one species of wild cotton, and a morning glory or two could be considered exceptions.

The authors are fully justified in stating that "Darwin found much in the Islands to stimulate theoretical bent. We would hope that this account of the plant life of the Islands will, in some similar fashion, be found challenging beyond its basic purpose."

G. H. P.


The title of this book is misleading. The author hails from Wisconsin, works in Wisconsin, vacations in Wisconsin, and writes about his most favorite topic — Wisconsin. Conservation efforts to save the earth from gasping to death are world wide. Ecological problems are not unique to Wisconsin.

Mr. Schoenfeld tells the reader of some of his outdoor adventures that are strangely akin to something one might read in *Field and Stream*. He writes with vivid nostalgia about his favorite boating lake. There is a decided those-were-the-good old-days tone in all these accounts. Pages 210–273 constitute a report from Sammy Squirrel, whom the reader discovers is the "legislative representative" for the Southern Wisconsin (where else!) Alliance of Fur, Fin, and Feathers (SWAFFF).

Despite the above, Mr. Schoenfeld is genuinely concerned about the world and its protection. *Everybody's Ecology* is not a handbook of formulas, answers, and theories; it is a volume of reminiscences, hopes, and fears. Feelings and attitudes are expressed in a bitter, wry, wistful, amusing, and perturbing way.

H. C. S.
Claytonia megarhiza, *alpine spring beauty.* From Rocky Mountain Flora.


This guide to the flora of the Colorado Front Range is essentially a reprint of the 1967 edition but in a smaller format (so as to be more conveniently used in the field), with the addition of a few colored plates. According to the author, the book is designed to be used by both specialists and amateurs, but I would expect that only quite a serious amateur would find it very effective. The keys, including the one to family, are relatively simple with a minimum of technical terminology and the glossary is well illustrated (although the illustration of a spicate inflorescence in both this and the 1967 edition is drawn with pedicellate flowers). However, since there are no figures of grass inflorescences and their parts, a beginner could not hope to do well in this large group of plants using this guide alone. The line drawings appear to be diagnostic, but there could be more of them, and it is a shame that the plants illustrated by means of colored photographs are duplicated in the drawings.

R. E. W.

In America few plants are better known and loved than the "Hens and Chicks" and various sedums. So it is strange that this is the first book both to be written and published in the United States dealing exclusively with them. Once the gardener discovers that there is more than one kind of sempervivum and more than two or three kinds of sedums the desire to know more about these easily grown, tough plants is great. Helen Payne's book goes a long way in satisfying this wish.

The taxonomic botanist can criticize this book from several standpoints. For example only a few authorities are given for the scientific names that are used. But Mrs. Payne points out that the book is not written for the botanist but for the gardener-grower. The author has been fortunate in being able to rely heavily on Dr. R. T. Clausen of Cornell University for help with sedums. Others are given credit for their assistance.

With an approach that some may find a bit too homey, the author discusses these plants from the standpoints of mythology, supposed curative properties, culture, propagation, hybridization, pests, diseases, and their great variety of uses in gardens. At the end of the book a listing of seven "Public Collections of Sedums and Sempervivums" is given. The Arnold Arboretum collection is the only one listed for New England. This collection is not located in Jamaica Plain however, but is in the small rock garden in a part of the Arboretum known as the Case Estates in the town of Weston. The sizeable collection here of both sempervivums and sedums is mainly the result of extremely generous gifts from Mrs. Payne.

Included in the book are a short bibliography, sources of plant material, 111 color plates, mostly of excellent quality, and descriptions of 187 species, sub-species, varieties and hybrids.

The sempervivum clone 'Elene' is very special to Mrs. Payne. She modestly says, "This sempervivum I named for myself, having neither chick (forgive the pun) nor child to carry on my name . . . This is my one link with posterity." Certainly Mrs. Payne now has a second link — the book, Plant Jewels of the High Country.

G. H. P.

Those who sought Gardening With Herbs For Flavor and Fragrance when it was out of print will rejoice in its republication. When Mrs. Fox wrote this book in 1933 the "available literature on growing herbs in America consisted of a slender volume and some government pamphlets". To correct this sad situation Mrs. Fox engaged in intelligent, intensive research, and three years of propagation, cultivation and harvesting. Her acknowledgments and bibliography indicate the dedication with which she embraced her work.
Her selection of 68 herbs is explained. Botanical and common names are given. A concise description, history, legend, use and culture of the herbs is recorded. Suggestions are made for the planning and planting of a herb garden. Fifty-six interesting recipes are presented, and Mrs. Fox describes the exacting care with which they were tested, and finally tasted at her own dining table. A chapter on herb teas suggests combinations not generally known, and a section is devoted to recipes for potpourri, sachets and toilet preparations.

For the beginner this book is a wonderful point of departure for herb adventures. For those who must garden vicariously it is a book for refreshment and dreaming.

M. P.

As stated in the preface to the first edition, "It was thought that a single publication limited to herbicides and dessicants, but containing detailed physical, chemical and toxicological properties, would be of value to researchers, teachers and extension workers in the field of weed research"; also, "information on herbicidal use is kept to a minimum." Thus the practical information as to which material to use, at what strength and when and how to apply it to control specific weeds must be garnered from other sources.

This book is a must for one requiring technical information on weed killers; but I would not recommend it even for the advanced amateur gardener.

R. G. W.


This guide is inexpensive and quite comprehensive. All the species included are illustrated by means of line drawings, and these are sensibly arranged according to leaf form. Unfortunately, few flowers and fruits are illustrated, and when they are, the drawings are generally poor. The major problem, however, is that the author has included too many species in the difficult groups, and the illustrations are just not adequate to permit identification. Trying to identify species of elms and lindens, for example, from leaf drawings is difficult to say the least, and yet nine of the former and eight of the latter are included. Even consulting the descriptions provided for each species at the back of the book is of little help in these cases. Besides being confusing, this is a waste of space.

R. E. W.

Neither sufficiently sturdy nor of suitable format, this book is not meant for use in the field. Rather, it is an inexpensive, attractive book to be enjoyed in the home. A total of 101 species is illustrated by means of color photographs which often are both beautiful and diagnostic, although the color is too vibrant in a few cases. The text is interesting and informative. I would recommend this book to anyone who enjoys wildflowers, even if he never intends to visit the Canyon Country.

R. E. W.
Brunnera macrophylla at the Case Estates. Photo: P. Bruns
Aquilegia at the Case Estates. Photo: P. Bruns

Pulmonaria saccharata at the Case Estates. Photo: P. Bruns
Lilies at the Case Estates. Photo: P. Bruns
ARNOLDIA is a publication of the Arnold Arboretum of Harvard University, Jamaica Plain, Massachusetts, U.S.A.