THE LANGUAGE OF *trees*

On a Walk with Rutherford Platt

BY MICHAEL WOJTECH

IN THE WINTER OF 1929, RUTHERFORD PLATT WENT FOR A WALK in the Brooklyn Botanic Garden with noted botanist, Dr. Arthur Graves. As his mentor began pointing out the buds along the leafless tree branches, Platt was astonished — he had always supposed that buds appeared in spring, just before they bloomed. When he studied the buds more closely, he discovered that the buds "were not standardized ovals, covered with overlapping scales. They were as varied as jewelry, in all sorts of exquisite shapes and bright colors. Some were covered with fur, some with glue, others were varnished."

Clockwise from top left: Soft, pubescent leaves of black birch (*Betula lenta*) emerging from a bud; The soft, silvery hairs of newly bloomed catkins (flowers) of a willow (*Salix sp.*) , often referred to as a "pussy willow," trap heat from the sun, which aids the development of reproductive structures; The small, vibrant female flower of a hazelnut (*Corylus sp.*); A flower bud opening on spicebush (*Lindera benzoin*), a woody shrub

On that winter day, 35-year-old Platt was a latent bud himself. Platt was an experienced editor and writer who often sought to bring his readers practical inspiration. He had worked for *The World's Work* magazine, which celebrated the American way of life; he authored "The Book of Opportunities, What 3000 American Occupations Have to Offer" and "You Can't Fail: A Quick, Sure Way to Find the Best Job For Every Man and Woman."

Platt evoked the personal discovery of trees as a way to foster public opinion against expansive deforestation, to stretch the mind and spirit and counterbalance the growing focus on speed and progress.

In the mid-1930s, Platt co-founded a New York-based advertising agency and promoted the offerings of a wide range of clients. But with the economic depression and world events, the lives of Americans grew more ominous, and Platt looked increasingly to the natural world for a source of inspiration. Over time, with no formal academic training in botany, he established himself as a respected natural history writer and photographer. His book, "This Green World," was awarded the 1945 John Burroughs Medal Award as the "foremost literary work" in the field of natural science, the first time in its 24-year history that the award was presented to a non-professional naturalist. Platt inspired readers with his photographs, specializing in close-up views of buds, flowers and other botanical details that required advanced equipment along with great skill and patience. His words and images were widely published in *National Geographic*, *Scientific American* and other venues. He served as botanist on two arctic voyages with the explorer Admiral Donald B. MacMillan and was a consultant to Walt Disney on a series of nature films. All this flowed from one serendipitous walk in the park.

In "Pilgrim at Tinker Creek," author Annie Dillard describes Platt's book, "The Great American Forest," as "[O]ne of the most interesting books ever written." After following her recommendation, I fully agreed and was soon equally captivated by Platt's other books and articles. It was more than just his mastery of facts, and the way he made them easy to follow, that drew me in. Take the way he describes the movement of water through a tree in "This Green World." Many scientists explain this process according to the "tension-cohesion theory" or the "compensating pressure theory," but Platt refers to "the world's greatest water works" and likens the tree to an upside-down river system. Ground water, the source of this river, is collected by root hairs, then flows through roots of increasing size and ascends up through the trunk to the branches. The leafy canopy is the mouth of this river where water empties not into a lake or ocean, but by evaporating

Above right: Rutherford Platt on location in 1940 with a cart full of photography equipment

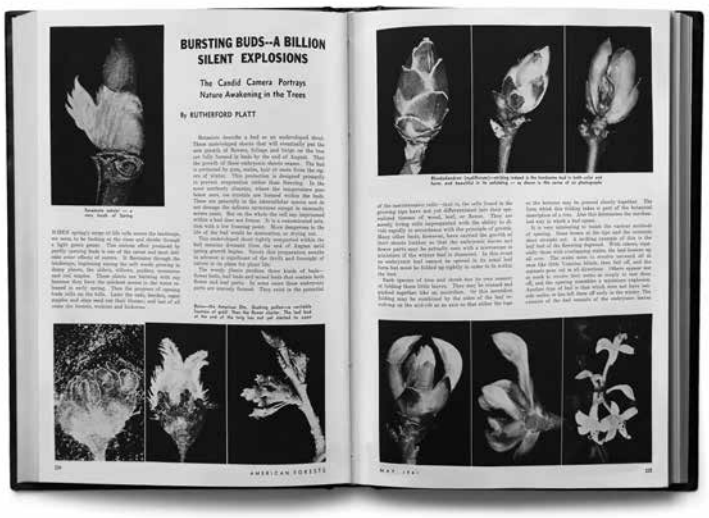
UNLESS OTHERWISE NOTED, ALL PHOTOS BY RUTHERFORD PLATT, COURTESY OF THE PLATT FAMILY

into the atmosphere. One reviewer remarked about Platt, "How is it possible to describe a tree's vascular system in a way that is not only understandable but thrilling as well? His curiosity is infectious, and he forces us not just to notice common plants but to study and glory in them."

TODAY, Rutherford Platt's work seems like a well-kept secret, yet it belongs on shelves alongside the classic volumes of other Burroughs Medal awardees such as Rachel Carson, Aldo Leopold, Barry Lopez and John McPhee — some formidable company. I set out to introduce him and his "Green World" to a new generation.

After reading Platt's 1941 article in *American Forests* magazine, "Bursting Buds — A Billion Silent Explosions," I imagined taking a series of late winter and spring walks with him. Platt would point out tree buds and explain that they began growing late the previous spring or summer, when energy produced by photosynthesis was at its peak. Each bud had been completely formed before the trees dropped their leaves in autumn and, depending on the species, might harbor flowers, leaves or both. A look inside these buds would reveal fully formed, miniature components that already showed characteristic species traits — perhaps the deep red petals of red maple flowers or the lobed leaves of an oak.

Flowers and leaves grow folded and packed inside buds according to patterns so intricate



BURSTING BUDS--A BILLION SILENT EXPLOSIONS

The Candid Camera Portrays Nature Awakening in the Trees

By RUTHERFORD PLATT

and specific that they warrant their own set of botanical terms. Individual beech leaves, for example, grow in a plicate pattern — folded into parallel pleats like a fan. Multiple leaves, flowers or a combination of the two are packed together to allow the greatest volume in the smallest space, a process referred to as vernation, which reminds me of a hiker trying to fit weeks' worth of gear into a backpack. One theory holds that the specific leaf shape of each tree species has evolved, at least in part, to facilitate efficient folding and packing patterns within the bud.

Over time, Platt and I would watch the buds swell until they seemed ready to burst open, like

Above: Platt's article published in *American Forests* in 1941; Below: There's much to observe and learn about trees in every season, as shown by this sugar maple in autumn, winter and summer

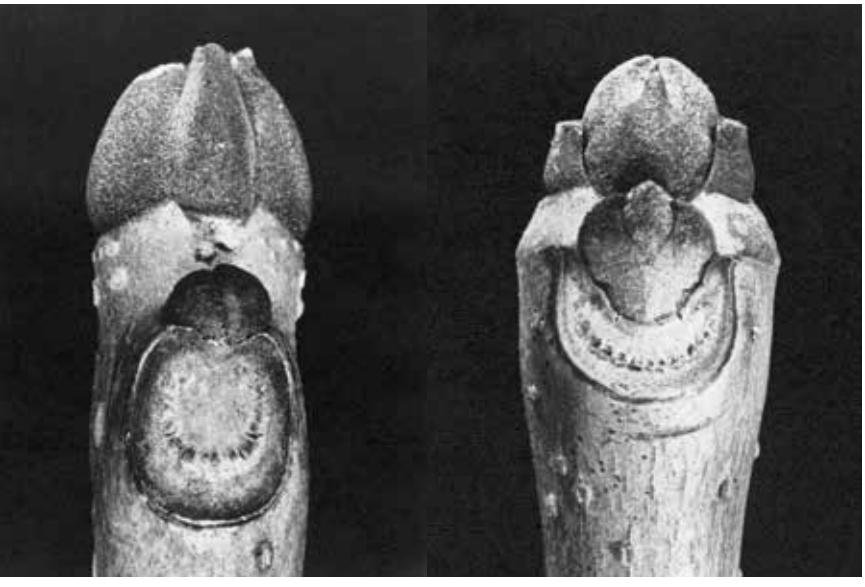
TOP RIGHT: AMERICAN FORESTS

racehorses at a starting gate. Buds, however, don't just bloom in response to a vagrant, unseasonably warm day or early season rain. They break dormancy only after exposure to cold temperatures for a cumulative, but not necessarily continuous, period of time, followed by adequate day length and an accumulation of warm weather. The specific criteria, which help keep buds from opening until after the danger of killing cold and frost has passed, are different for each species and vary according to genetic lineage and each bud's location on the tree. Timing also depends on the bud type. Flower buds on red maples bloom before the leaves — which could impede the flow of wind-born pollen between flowers — and bring a wash of red to the spring canopy. Oak flowers appear with the leaves, while the flowers of basswood do not show until after the leaves mature, when more pollinators are available.

As Platt came to realize, no single view of a tree is a simple snapshot in time. Buds, flowers, leaves and the other components of trees develop and grow along a continuum that blurs seasonal and annual boundaries.

As spring matures, tree buds open like slow motion jack-in-the-boxes. Stems elongate. Miniature leaves or flowers unfold. In his *American Forests* article, Platt revels in watching "spring's surge of life roll across the landscape," and his accompanying photographs grandly demonstrate the progression of individual buds. For many tree species, including American beech and white ash, an entire year's new leaves and new stems often originate from this single flourish, a process called determinate growth. Buds for the next year, at first smaller than the head of a pin, soon follow. Other species, such as paper birch, have indeterminate growth patterns, where new stems and leaves continue to grow until later in the growing season, when the following year's buds form.

With either pattern, buds for the next growing season appear before the leaves fall in autumn. In spring the number and vigor of flowers and leaves that grow, and the length of the shoots produced, are influenced by current circumstances, such as temperature and moisture levels, as well as by conditions from the previous year when the buds first developed. The terminal bud on the tip of an oak twig might contain a few or a dozen leaves; the stem could elongate less than an inch, 6 inches or more than a foot. As Platt came to realize, no single view of a tree is a simple snapshot in time. Buds, flowers, leaves and the other components of trees develop and grow along a continuum that blurs seasonal and annual boundaries.



Platt's close-up images show the winter buds and the differently shaped leaf scars on a white ash twig and a green ash twig

AS A CHILD, Platt knew the trees of his home landscape in Columbus, Ohio — the rough-barked trunk that frayed his sweater as he climbed; the heart-shaped leaves of the "home run tree" that stood behind center field; the hollowed trunk he could hide within. To him, these trees were functional objects, like the furniture in his home. Only as an adult could he connect the textures and colors of their bark, the structure of their branches and other details with their names: American elm, linden (basswood), black willow.

Reflecting back, Platt contrasted his childhood intimacy with trees with their beauty and drama, which seemed to awaken in him on that winter day in 1929. He wondered how he could have missed noticing buds for all those years, and why people, in general, seemed so indifferent to winter trees. "[T]hey receive no more attention than black dead sticks," Platt wrote.

Instead of blunt, cone-shaped buds covered by a single scale on sycamore trees, Platt saw "brown, conical hats, stocky, with a suggestion of a fold at the top, like the turned-over peak of a nightcap." The tapered, twisting buds of serviceberries appeared fluid, like a candle flame. He attributed the partial appearance of the yellowish, inner scales of black birch buds to their inability to contain themselves — their tendency to "push out and loosen up a bit, even in winter."

Mature catkins (flowers) of a willow (*Salix sp.*) with yellow pollen on the anthers

The spring flowers and leaves of this apple tree bloomed from sererate buds; some other species have flowers and leaves within the same buds

Like those black birch buds, Platt seemed to have his own restless energy. In trees he found and conveyed to others not just the satisfying knowledge of their form and function, but a sense of joyous entertainment. He asks readers to listen with their imaginations to "the wrenching of bark as it forms its patterns; the whir of a studded pollen grain through the air; the report of a bursting seed . . . the muffled sounds in roots expanding with the power of dynamite."

While Platt's descriptions of trees sometimes lean toward poetic, he cautioned about getting too carried away with enthusiasm. On the jacket of "American Trees: A Book of Discovery," Platt declares that his book resists sentimentality and offers practical descriptions of trees — their suitability as firewood, for construction and other uses. Yet on the first page, Platt imagines that every tree has a sign that declares, "Something Marvelous Is Going On Here!" Without official degrees or academic standing, I wonder if Platt was concerned that his awe and enthusiasm would keep him from being taken seriously as a scientist. Those fears, if they existed, proved unfounded; in 1960, Platt's peers elected him as a Fellow of The American Association for the Advancement of Science.

RUTHERFORD PLATT understood that our human connection to trees transcends their utility or the ecosystem services they provide, such as releasing oxygen, storing CO_2 and harboring a host of other organisms. He saw trees as an antidote to troubled times. During World War II, his book "This Green World," along with a series of excerpts of the text and photographs published in *LIFE* magazine, provided a much-needed diversion from the war coverage that dominated news sources at the time.

In "American Trees," published after the war, Platt counseled that trees provide "reassurance about life itself in a violent world." In a 1968 revision of the book, reacting to the post-war boom, he refers to the "confused, overcrowded world," where trees have been cleared seemingly everywhere for housing, shopping centers and "concrete carpets" for "his Supreme Majesty the Car." Platt evoked the personal discovery of trees as a way to foster public opinion against expansive deforestation, to stretch the mind and spirit and counterbalance the growing focus on speed and progress.

Platt had a gift for making connections. He found buds in the midst of winter, in the heart of New York City. He was a businessman turned naturalist — respected by his scientific peers, yet mostly self-taught; a man in love with the country that dwelled in the city; an adult that renewed and expanded his childhood perception of trees. He brought us the facts about trees in a lyrical voice that still resonates within us.

Perhaps most significant is the timelessness of Platt's words and images. He helps us recognize what is already present, often right before our eyes — what he referred to as "the showmanship of nature." He invites us on a path of discovery and connection that flows like the natural rhythms of trees, throughout the seasons and the years.

With Rutherford Platt as a kindred spirit, Michael Wojtech writes about, teaches, photographs and illustrates trees. He is the author of "Bark: A Field Guide to Trees of the Northeast" and science writer for "Drawing Trees and Leaves." Learn more at www.knowyourtrees.com.

American elm (*Ulmus americana*); In his youth, Platt knew this species by its rough bark