

The Tribbium



Piedmont Chapter
North American Rock Garden Society
Chapel Hill, Durham, Raleigh, NC

Plants of the Shale Barrens

by Martha Oliver

Natural rock gardens are hard to find in eastern USA. The special combination of well-drained soils, high light levels and scant rainfall that favors small, jewel-like indigenous plants doesn't occur often there.

East of the Appalachian Mountains, however, a natural rock garden occupies the area known as the shale barrens. From the south-central portion of Pennsylvania, heading south-southwest along the eastern slope through Maryland, West Virginia, and Virginia, and even farther south, an area in the rain shadow of the mountains has produced a set of plants in a sort of island, cut off from others like them by surrounding areas of higher rainfall and less severely vertical rock bedding.

Phlox enthusiast Edgar Wherry explored this area in the 1930s and others, like Don Humphrey of Green Spring Gardens Park in northern Virginia, have followed, making notes on the charming plants of this region. Maurice Brooks' book *The Appalachians* (1965) remarks on the large number of endemic species and, with the old-time naturalist's eye, ties the flora and fauna and geology and climate into a unified whole.

The plants of the Alleghenies live on the very old bases of worn down mountains on loose, crumbly shale that may be more than 400 million years old. The bedding of the rock is vertical and very well drained. From the Gulf of Mexico the rain clouds sweep up the western side of the ridges, dropping their rain as they rise. By the time the clouds pass over this ridge they are dry. Brooks discusses two West Virginia towns 25 miles apart; the one on the western flank receives 65" annual rainfall; the one on the eastern slope between 9 and 21". Thus the eastern slope location and sun stress due to southwest orientation of the barrens are factors in creating these barrens conditions.

What water there is (small streams) tends to undercut the slopes above it, making even drier areas where plants cling for their very lives. The erosion of the shale results in small, flat stones called channery which form a mulch.

Heat rides up those eastern slopes from the Ridge and Valley Province, so the area just west of Washington DC runs 4-5 degrees warmer than the western slope. The combination of higher heat, lower humidity and dry conditions has created a niche for a special set of plants that can be grown successfully in the northeast (where the delicate plants of the Rockies fade away in cultivation).

Many of these plants are remnants from prairies of the Midwest, isolated by climate and soil from the surrounding areas. A western genus like *Eriogonum* is represented by a single species, *E. allenii*, a large, silver leaved buckwheat which thrives where the smaller western ones fall prey to the summer mugs. The cactus, *Opuntia compressa*, growing from the shale barrens to Florida, seems out of place here but is a successful competitor in these harsh conditions. *Aster oblongifolius* is a predominantly western species which nevertheless has established itself here. Western clovers resemble Kate's Mountain Clover (*Trifolium virginicum*), which is a local endemic.

At times in the past many of these Midwestern and Western species must have been more widely spread over the eastern US, but as the climate has changed they have become isolated in this small area, out-competed by more vigorous, taller plants which thrived with higher moisture levels.

Some of these plants are already well known to rock gardeners. *Antennaria virginica* var. *argillicola* is the shale barrens pussytoes, shorter (to 3") and tougher than other varieties.



Photo by Martha Oliver

Antennaria virginica

Phlox subulata var. *brittonii*, the tiny moss phlox, comes in white, blue-gray and pale pink (except where bees have brought pollen from nearby gardens, resulting in brighter colors).

Penstemon hirsutus is short-lived but reseeds freely; it is widely distributed in northeastern US. The paler *P. canescens* is found in the characteristic places: dry, rocky wooded slopes and shale outcrops from PA to northern Alabama.

Cheilanthes lanosa dries to crisp, brown fronds in its native habitat during the summer, but it responds to abundant rainfall with pleasure, remaining green and flexible in the full sun it enjoys. The easternmost member of the genus, *C. lanosa* is just one of the 125 species in a genus of mostly arid subtropical to tropical taxa. It is found on rocky outcrops in limestone or shale.

Opuntia compressa surprises the uninitiated with the elegant way it avoids damage from freezing and thawing during the winter. Draining its liquid into the stout root, it lies down, resembling a balloon from which the air has slowly escaped. In the spring it rehydrates, standing up again in a matter of days, then blooming with disproportionately large, poppy-like flowers of bright yellow or pink atop the green, spiny pancake pads.

Paxistima canbyi is an evergreen shrublet, never taller than a foot and slowly spreading.

These are easy, reliable plants that thrive with normal amounts of water, rather than turning gray and moldy and then disappearing. Resistant to the summer mugs, they have the ability to fight off molds and diseases which are lethal to western alpinists.

There are other plants, however, that deserve wider use, and even though they are difficult to find they can be grown from seed and will make lovely additions to the rock garden. Cultural conditions are simple to mimic: a well-drained, gritty soil and low levels of humus will suit them well.

Clematis albicoma is an endemic herbaceous perennial with typical leather flowers, about 10" tall, and it blooms in Virginia in early April with pale yellow, hanging bells. The even rarer *C. coactilis* and *C. viticaulis* have fuzzy, urn-shaped flowers on a plant covered with silver fuzz. They form neat and persistent clumps.

The endemic *C. viorna* is a herbaceous vine that will climb to 10', with the same leather bells, but these are pink to brick brown with paler edges. The plant will romp through a shrub or small tree.

Celtis tenuifolia is a good support for this, since it is open enough for light to penetrate among the branches. It is a small tree of the dry, rocky foothills of southeastern US, producing sweet, edible fruits in the early fall as well as good fall color.

Rhus aromatica begins the year with clouds of small, fragrant yellow flowers, continues with small red fruits, and finishes the year with scarlet fall color. A dwarf selection, 'Grow-low' gets no taller than two feet.

Other indigenous plants include *Amsonia ciliata* which Wherry describes as "well-behaved, lovely pale blue stars in late spring." *Antennaria plantaginifolia* with broad, silvery leaves on a spreading plant, hails from open woods and shaly banks. *Asclepias quadrifolia* holds stunning pink whorls of milkweed flowers on an 8" plant in dry, upland woods.

Aster oblongifolius has light blue flowers in October; Wherry writes "it is too little known but suitable for the rock garden." I especially like the shorter cultivar 'October Skies,' discovered by us in our back field. It is the foliage which is aromatic; the plant will slowly spread to a wide mat and is easily divided.

A plant with perhaps too many named cultivars, *Chrysogonum virginianum* has good, long-blooming yellow flowers on short running plants. In open woods, on limestone, it blooms from April to June, and often beyond, on 8" stems. It is a delightful lawn weed.

Chrysopsis mariana prefers the poor, dry soil and full sun of the barrens, producing 1" clusters of golden, single daisies on silvery foliage in September and October. In rich soils it is too tall, but it will stay below 12" in the hot sun and lean soil of the barrens.



Photo by Martha Oliver

Draba ranossissima

Coreopsis auriculata produces bright orange-rayed flowers on stems 6-12" long over good green leaves in May and June.

Draba ramosissima is "not showy but curious" according to Wherry, who continues to describe its habit as "festoons of intertwining stems with profuse tiny white cress flowers in spring, then spiral seedpods." Don Humphrey remarks that it is "common throughout the barrens, but not strictly endemic." In loose shale the main stem is covered with sliding rock, so it is difficult to transplant and best grown from seed.

Heuchera pubescens has larger flowers than any of the taller species that have been used as parents in the plethora of hybrids of the past two decades. Found on dry limestone ledges in partial shade, this tough plant withstands dry, hot conditions and gives to all its progeny the same ability. At 18-24" it is smaller than most gardens can gracefully accommodate, but the leaves are as nice as those of *H. americana* and often marbled beautifully.

Awards for charm (read: small flowers) would go to *Houstonia longifolia*, a bluet with erect stems and tiny white or pale blue flowers. It blooms in June and July in dry, sandy fields and on wooded slopes.

Iris verna var. *smalliana*, another acid oak woodland species, has slender blue-purple flowers with a prominent orange blotch, flowering from April to May. The short rhizomes are easily divided, and the short stems make it suitable for the small garden.

The smaller, long-flowering *Oenothera perennis* is the best of this genus for the rock garden. Less than a foot tall, it produced bright yellow flowers from June to August. *O. argillicola*, which is the true endemic, is too tall and is a biennial.

Two other phloxes from this area are the elusive *Phlox buckleyi* which is sold in the trade but almost always not the right plant, and *P. ovata* (now *P. latifolia*), a mountain phlox from openings and edges of dry, sandy woods. This medium-tall (under 18") fragrant, pink-flowered phlox is mystifyingly neglected in gardens because it seems to have been ignored by British gardeners and thus still is relatively unknown.

Ruellia purshiana, almost certainly a form of *R. pedunculata* but found only in the Appalachian area, is very like *R. humilis*. At 5-8", it makes a great rock garden plant.

And of course there is a saxifrage found in dry rocks crevices and on gravelly slopes. The open clusters of white flowers on 8" stalks are held over rosettes of toothed green fleshy leaves. *Saxifraga virginiana* thrives in sun to shade, doesn't mind more water than it gets at home, and blooms in April.

Scutellaria leonardii, a tiny blue skullcap, spreads by underground stolons and will rapidly colonize an area; however its mat is open and will not smother neighbors in the garden. In April and May the blue carpet is lovely under other spring wildflowers in the dry upland woods it prefers. Only 4-8" tall, it will take care of itself.

The sedums from this area deserve to be better known. Although all of them are dry. Light shade plants, they will cope with part sun. *Sedum ternatum*, the one best known, has creeping blue-green rosettes of leaves, but a form from Mineral County, West Virginia, *S. 'Larenim Park'* is tiny in all its parts and is a better choice for the rock garden at 2".

The very blue-leaved *S. glaucophyllum* (*S. nevirii*) is found on rocks in Virginia and West Virginia, south to Georgia and Alabama. In April it is festooned with white flowers. The fleshy leaves are evergreen and propagation from cuttings is easy.

The jewel in the group, however, is *S. telephioides*, the Appalachian stonecrop, with glaucous bronze or pink-margined leaves and pale pink, flat heads of flowers in August and September. Found in dry rock ledges and cliffs in the mountains, it is lovely all season with just the leaves.

The special catchfly for this area is *Silene pensylvanica*; at 4-6", its relatively large pink flowers produce one of the best native displays. In sun or shade, as long as the soil is well-drained, this plant should persist for you. It is sometimes listed as *S. caroliniana* ssp. *pensylvanica*; the other species is *S. caroliniana* ssp. *wherryi*. Both are found in rocky woods.



Phloxes on roadcut

Photo by Martha Oliver

(Continued from page 3)

In the same family as garden annual portulaca, *Talinum teretifolium* is a fleshy-leaved, long-blooming plant also called “sunbright,” which gives an idea of its light preference. The plant seeds freely, producing tiny stars of green, needle-like leaves and thin, wiry stems which shoot up 8-10” before producing the bright pink flowers with yellow anthers.

The tiny *Tradescantia rosea* var. *graminea* is, at 8” tall, the smallest spiderwort. The bright pink flowers bloom best in sub-acid gravel, in sunny spots. This sandhill native grows wild as far north as Virginia but is hardy further north.

Kate’s Mountain clover (*Trifolium virginicum*) which is an endemic, was discovered along the trail just above White Sulfur Springs Hotel in West Virginia by John Small in 1892. The long, narrow leaves and the short, greenish-white blossoms are held close to the plant, making it the best choice for the rock garden.

Early April brings the dainty flowers of *Viola pedata* both in the bi-color form and the solid blue, all over the barrens. Seeding around if happy, this tiny, cutleaf bird’s foot violet is sometimes difficult to establish. Fall transplanting is recommended. The Peter’s Mountain form has white and purple petals.

Carex glaucoidea is unknown as a garden plant but has wide, silvery-blue leaves and needs some shade. Growing 10-12” tall, its silver leaves cool off any garden scheme.

The sun doesn’t stop the small ferns. In addition to *Cheilantes lanosa*, *Woodsia ilvensis* likes dry, sunny crevices and cliffs, ledges and talus slopes, in acidic to sub-acidic soils. *Woodsia appalachiana*, now merged with *W. scopulina*, is another full-sun treasure.

Pellea atropurpurea is likely to be found wedged into a tiny crack on a cliff or ledge in limestone, and *Asplenium ruta-muraria* will be found on shades calcareous ledges and talus.



Photo by Martha Oliver

Viola pedata



Photo by Martha Oliver

Woodsia scopulina

The oak fern (*Gymnocarpum appalachianum*) is relatively rare this far south, because it likes a cool summer. You will find it in the West and also around the cold air vents at the base of Ice Mountain in West Virginia.

The shale barrens are also home to *Juniperus virginiana*, as well as the small oak *Quercus ilicifolia*. These trees tolerate the dry conditions of their homeland by utilizing taproots to delve for water. These plants all share drought tolerance and resistance to the humid summers of the eastern US, which makes them suitable for rock gardeners there. ☞

Spine Freaks: Adventures in the Secret World of Agave Culture and Cuisine

By Scott Calhoun

In the winter of 2009, I took a trip with botanist and plant explorer, Bart Reeves. We slipped across the border at Del Rio, Texas and traveled 1500 miles south in Bart's 2000 Toyota Tacoma pickup. Our destination was a shaded rock wall deep in Huasteca canyon, a Yosemite-like wonder south of Monterrey, Mexico, where we hoped to find a new, little known, species of agave plant. We drove for several hours on a road that was little more than a river of rock, bushwhacked our way through dense thorn scrub, and scaled a steep 200-yard-talus-slope before coming face to face with a most peculiar century plant.

These agaves were intricate little hemispheres clinging to limestone cliff faces. Their pointed tips looked as though each one had been decorated with an electrocuted cotton ball. The botanical name of this new plant was *Agave albopilosa*, although some collectors had already nicknamed it "lalapilosa"—a play on the name of the alternative music festival called "lalapalooza". The white frazzled tufts at each terminal leaf tip were truly strange and unique among agaves. We had a seed-collecting permit and Bart very much wanted to bring some lalapilosa seeds back with us. But we could only see one plant high up on the rock face with a withered old bloom stalk. Without rock-climbing gear, we would be risking life and limb to get the seed. We settled for photos. Bart explained that if we got viable seed, the plants he could grow from it could fetch as much as \$1000 each on eBay.

Seeing the rarest of wild agave plants flipped a switch inside me. I'm not sure if it was being one of the first dozen humans to come face to face with these plants, the hope of windfall fortunes, or rather the realization that even in 2009, there were other undiscovered agaves in the depths of Mexican canyons awaiting discovery. What I did know was that the Fibonacci pattern those little tufted agaves had been tattooed on my brain with some kind of indelible ink. That brief encounter set me squarely on the agave trail.

I would not stop until I had grown the most beautiful specimens in my garden, eaten the sweet earthy flesh, sipped the snot-textured nectar of pulque, and taken the fire of rustic mezcals and refined tequilas into my belly.



Photo by Scott Calhoun

Agave albopilosa

.....

The easiest way to picture the morphology of the century plant is to think of a rose bud with thorns on the edges and tips of its petals. Like a rose bud, the agave's leaves are tightly and spirally overlapped around a central tapering cone. As the agave plant grows, the leaves unfold from the center and open wide. Agaves come in a huge range of sizes, from tiny 4 inch high plants to monsters taller than NBA centers. Most century plants are monocarpic, meaning they bloom once—sending up a massive phallic bloom stalk (in some species as wide as a telephone pole) into the sky—then die.

All wild agaves, also known as century plants, originated in the New World. There are approximately 250 different true species of agaves in the genus, with thousands of selections and flashy hybrids in the nursery trade. Mexico is home to more species than any other country, and there is no plant that embodies the spirit of Mexico more than the agave, or *maguey*, plant, as it is called there. So closely are the agave and its products associated with Mexico that when drinking a glass of real, undiluted 100 percent agave tequila or mezcal, one internalizes not only these peculiar New World spirits, but a hot-blooded dose of the Mexican culture itself.



The plant embodies a mythic radiance; in pre-Columbian art, the goddess of agave, Mayahuel, is depicted rising out the central rosette of the plant with ample breasts (400 of them in some depictions!) and hair full of pulque (a fermented beverage made from agave juice) foam. In one hand, Mayahuel holds a rope made from agave fiber, and in the other a vessel full of flowers that represent pulque. Before corn achieved agricultural dominance, back when it was just a large grass with oversized seedheads and big ambitions, the agave was the star of the pre-Columbian garden, and its roasted hearts were a primary source of starchy food energy for many ancient Americans.

In 1651, the Spanish explorer Francisco Hernandez drew a crude sketch of a century plant—which he called a “metl” plant—and created what might be the first illustration of the plant made by a European. The first agave imported to Europe, *Agave americana*, was described by Carl Linnaeus in 1753. By the 19th century, agaves were becoming popular as ornamental novelties on that continent. By 1883, agave plants were enough of a Mediterranean garden fixture to be featured front and center in a Claude Monet painting: *Villas at Bordighera*.

After my first Mexican agave hunting expedition with Bart Reeves, I returned to Tucson and my garden design practice. Outside my office window, a collection of several nursery flats of agaves with names like ‘Black Widow’, ‘666’, and ‘Doomsday’, had begun to accumulate and were awaiting planting. I was 42 years old, muddling through the usual complications of midlife, and—although I didn’t know it at the time—in serious need of a plant- and word-driven pursuit compelling enough to launch me into next chapter of my life. My brush with *lalapilosa* put me squarely on the trail of everything agave. I couldn’t get the stories of agave plants and their collectors out of my mind. I found myself dreaming of the succulent-covered limestone slopes of Mexico’s Sierra Madre Oriental and tacos “al pastor” (shepherd’s style) garnished with fresh pineapple and cilantro.

Even in the mainstream media, I began seeing agave plants everywhere. On television, Martha Stewart cringed as her guest, North Carolina nurseryman Tony Avent, showed her how to encourage a mother agave to make babies by decapitating it with an electric drill. Over on Oprah, I tuned in to find Dr. Oz and Oprah chatting about the glycemic benefits of agave syrup, with Oprah exclaiming, “I love agave.” On cable, Anthony Bourdain was in a Mexico City bar sucking down big mugs of pulque and wondering aloud if the manly agave-based drink, with its aphrodisiac reputation, would give him “a lonely boner.”

The further I delved into the bad-boy world of spiny plant collectors, the more astonished I became at their passion, persistence, and willingness to skirt the law when necessary—all of which were rubbing off on me. I was impressed with the global nature of the trade. For plants whose native range is primarily hot rocky slopes in Mexico and the southwestern United States, collections of century plants had ended up in some weird places: the Czech Republic, Germany, Holland, Japan, and Thailand to name a few.

It was a prickly trade, this business of agave exploring and collecting, but I aimed to immerse myself in it until I understood the better part of its history, lore, and thorny contradictions. ✨

Author’s note: Some of the names in this account have been changed in order to write candidly about aspects of the succulent plant trade that might be at odds with international trade regulations.

Piedmont Chapter NARGS 2010 Program—through April

Nov. 13, 2010

“Spine Freaks: Journeys into the Secret World of Agave Horticulture, Smuggling, and Spirits”
Scott Calhoun, Zona Gardens, L.L.C.
Tucson, AZ

Jan. 15, 2011

“Wildflowers of the Colorado Rockies”
Tim Alderton JC Raulston Arboretum
Raleigh, NC

Feb. 19, 2011

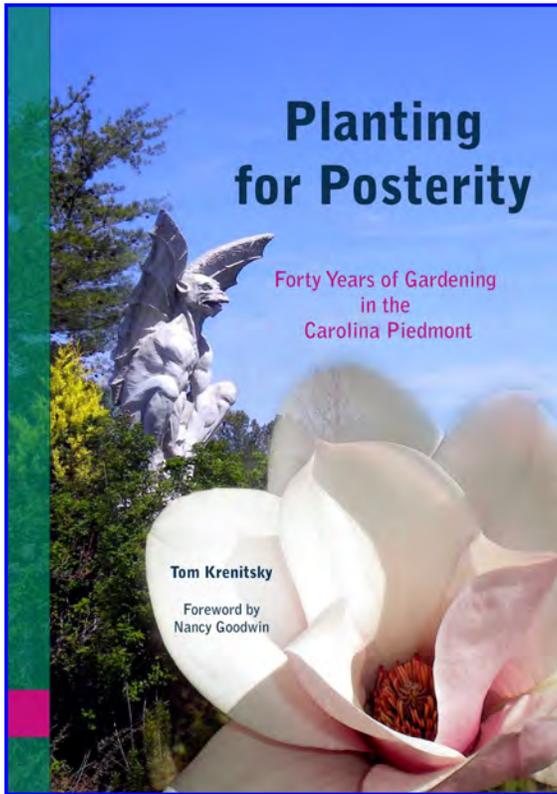
Suzanne Edney, Custom Landscapes
“Gardens in Woodlands”
Apex, NC

Mar. 19, 2011

“Our Virginia Garden”
Bill and Linda Pinkham
Carrollton, VA

Apr. 16, 2011

“Confessions of a Former Garden Writer of the Last Century”
Allen Lacy
Linwood, N.J. 08221



Book Review: *An Intimate Piedmont Tour*

by Pam Beck

As enjoyable and memorable as reading tales of lush English or Northeastern U.S. gardens can be, Southeastern gardeners hunger for local garden writers familiar with our fickle climate and challenging soils to share their own hard-won horticultural knowledge. In 1961, the late Elizabeth Lawrence insightfully wrote from her study desk facing a large window looking out over her landscape in Charlotte, “To be of any use, information about plants must be regional.” A new garden book which certainly fulfills this need is **Planting for Posterity, Forty Years of Gardening in the Carolina Piedmont**, written by local NARGS chapter member Tom Krenitsky, and recently published by The Fields Press.

Following in the footsteps of notable North Carolina piedmont garden writers such as Nancy Goodwin of Montrose in Hillsborough; the aforementioned Elizabeth Lawrence, who began her writing career in Raleigh; and, his late mentor and friend, Dr. J C Raulston of North Carolina State University, Tom Krenitsky has catalogued an impressive collection of plants that populate his private 83-acres near Chapel Hill, North Carolina.

What makes Krenitsky unique in his approach is that he deliberately narrowed the focus of his text to feature what he calls his “survivor plants”, those which should endure despite intense deer predation, increasingly variable Zone 7 weather, and torturous Carolina piedmont soils. A note

from his book’s epilogue states, “My intent is to help area gardeners choose those [plants] that are tolerant to the stresses most common to our region...If your choices are more informed than were mine, my purpose will have been achieved.”

And, he achieves much more by taking the reader on a leisurely private tour of his impressive garden, pausing at each worthy broadleaf or coniferous evergreen, deciduous woody plants, climbers, ferns, grasses, a few herbaceous perennials, and some bulbs to explain which species have thrived, and why. Krenitsky shares his insider tips on successful planting and propagation times, watering needs, site preference, and eventual height. In her intimate forward to this book, Nancy Goodwin marvels, “Tom knows every plant, where it comes from, how he acquired it, and whether he thinks it is really suitable for each site or worthy of its place in the garden.”

The reader will be encouraged by Krenitsky’s honest confession, “Since I like to experiment with the rare and exotic, over the last twenty-five years I have lost a great number of plants.” He admitted sawing down a disappointing Magnolia after twenty years; and, he mourned the worst losses among his conifers during drought years.

Plants often perished in his garden from deer grazing or horn rubbing; therefore, Krenitsky dedicated considerable space throughout the book discussing the challenges of gardening with deer, advising what strategies the local gardener can try in order to prevent damage. There is disappointment, yet empathy expressed in his writing about this kind of failure, “Deer will browse tsugas, especially young plants, but only when they are starving.”

On the other hand, he wasn’t shy about stating his opinions. He wrote, “The evergreen ligustrums (privet) are very resilient, but most are commonplace and dull.” To his credit, Krenitsky followed this veiled comment by admitting that Ligustrums are a “reasonable choice” if a gardener wants an evergreen that can handle a difficult space, then proceeded to list the best cultivars to try.

His enthusiasm for plants is addictive. Who can resist a description like, “The bottlebush buckeye, *Aesculus parviflora* var. *serotina* ‘Rogers’, is a great improvement on an already awesome native species. If you see this cultivar for sale, buy it, and you won’t be sorry. It produces white candles of bloom twice as large as the type on a large slowly-spreading shrub.”

Krenitsky’s prodigious familiarity with the Triangle-area’s major university botanical collections, notable local public and private gardens, and recent introductions from local plant breeders delightfully enhances his observations.

Horticultural name-dropping occurs in quite a few entries. Readers soon look forward to the reappearance of Tony Avent, Cliff and David Parks, Nancy Goodwin, Dr. Charles Keith and many others as they are applauded for the considerable help that local horticulturalists have given Krenitsky as he trialed rare and unusual plants for 40 years.

Planting for Posterity is truly an insider’s guide. Nancy Goodwin describes it best, “This book is a valuable asset for any gardener who appreciates the enormous variety of plants we can grow in central North Carolina. More than that, it is a testament to Tom’s vision, experimentation, and intelligent response to his own curiosity.” ❧

