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A TIME TO BLOOM

The wiles and flirtations of plants, the posturing and perfumery, the subtle enticements and outright bribes, the tender and not-so-tender traps (to say nothing of the many promiscuous ménage à trois arrangements regularly struck between two flowers and a wandering bee, beetle, butterfly, bird or bat), are all rather sweetly understated in the inoffensive horticultural term *pollination*, which is politely defined as *fertilization by the transfer of pollen from an anther to a stigma*.

Any of us who spend time outdoors will occasionally participate (and usually without our consent) in plant sex. Just this morning, I tried repeatedly to zip my sweatshirt against the chilly wind. I finally stopped to examine the mechanism more closely and discovered a grass seed lodged in the slider. Once I removed the opportunistic hitchhiker, the zipper happily cooperated. The grass embryo, as well, is even now enjoying its own brand of happiness at having been transported without effort to a new location in which propagation of its species might continue.



One of our most alluring prairie plants, showy tick trefoil (*Desmodium canadense*), a member of the bean family, offers a vivid example of sexual cunning. When an unsuspecting bee—attracted by the flashy pink or pale purple raiment and an offer of free drinks—stops by for a shot of nectar and a friendly conversation, *Desmodium*'s petals close on the unwary visitor as the anther lets loose a shower of pollen. The flower then relaxes (but, of course) and the pollen-coated bee is free to leave, hopefully for another tick trefoil flower whose sticky, receptive stigma awaits the precious genetic material essential to fertilization.

But, wait! The sexual drama isn't over yet. *Desmodium* eventually gives birth to fruit pods covered in tiny hooked hairs designed to readily cling to fur, feather or clothing. The plant begins to bend gracefully toward the ground to increase the likelihood of casual, but intimate encounters with passing strangers—coyote, deer, rabbit, wild turkey or human—who unwittingly participate in the critical step of dispersing hundreds of embryonic tick trefoils to various locales in which air, soil, water, sun, insects, worms, microscopic fungi and bacteria take over the final phase of a long, complicated and colorful process of plant reproduction. Try thinking about this the next time you set a vase of flowers in the middle of your dining room table. Is such a glaringly sexual centerpiece really appropriate as the focal point of a family meal?

Something very like what happens to a bee inside a showy tick trefoil flower has happened to me this year. Back in the spring of 2004, when I began learning the names of prairie plants, I mimicked a bee taking an exploratory aerial survey of the vast variety of prairie flora. The following year, I launched into the more demanding depths of attempting to identify species I found on the ranch, flying closer and noticing the unique individual characteristics and seasonal patterns of plants. This spring, I more or less stuck my proboscis right down in the flower. With my digital camera in one

hand and a wildflower field guide in the other, I began documenting plants in earnest. I developed a new level of intimacy with anthers and stigmas, bracts and corollas, ligules and stipules, spathes and inflorescences.

Poof! Poof! Poof! Over and over again the bee of my curiosity flew too close to a blossom and I became not just a literal carrier of actual pollen, but the figurative bearer of a great deal of sticky information.

Before long, my computer was jammed with hundreds of flower files, each image carefully labeled with its Latin name, the folder's contents reading like a High Mass at St. Thérèse Little Flower. Instead of *Gloria Patri, et Filio, et Spiritui Sancto* I had *Linum sulcatum, et Ruellia humilis, et Verbena hastata*. Glory be to the flowers, and to the sun, and to the lowly compost.

Information like this begs to be managed, never mind that I'm not altogether clear on why I was motivated to collect it in the first place. I began to arrange the flower photographs into a full-color presentation, ordering them by the time of year at which the flower begins to bloom. I labeled each illustration with Latin and common names, plant family and blooming period. Then, unable to help myself, I added a hyperlinked button to each page so a viewer could leap easily to deeper botanical information on a Kansas State University website. Next thing I knew, I was showing a draft of the presentation to a regional Girl Scout group while yammering on with all sincerity about the process for developing an entrepreneurial idea. The pollen had clearly begun to affect my brain.

Finally, completely helpless to leave well enough alone, I began to study ethnobotany books so I could add clever little popup boxes to the pictures of edible and medicinal plants, notes about pioneers making wood-sorrel-leaf pies and about showy tick trefoil sex and how the root of purple poppy mallow is purported to taste like sweet potato.

Take my advice: stay away from pollen. You may think this is no big deal, no serious aberration, but my computer informs me that I have been working on the presentation for four months, logged on for 128 separate revisions, and spent 306 hours on the file—all for a measly 175 slides of plants and butterflies. Oh, did I mention the butterflies? Back in the first part of June I became entranced with butterflies and moths nectaring on flowers, so naturally I started photographing and identifying them as well. Really, I can trace a lot of fascinating mental fertility back to June, for it was then that I first became fixated on chronobiology, in addition to botany and lepidopterology.



Yes, back in June, a member of the goat's beard family (*Tragopogon dubius*) successfully hoodwinked me. I'd seen several plants in full flower along the roadside in the morning, but when I came back later with my camera, they were nowhere to be found. Had I known the old-fashioned common names for goat's beard—*noon-flower* and *John-go-to-bed-at-noon*—I would not have spent so much time wandering up and down the road in the afternoon, castigating myself for an apparent failure of my middle-aged memory.

The blooming schedule of some plants is implicit in the names by which they are commonly known—morning glory, four o'clock, evening primrose and moonflower, for example—but these are by no means the only flowers to adhere to a reasonably predictable daily timetable. This will not be news to gardening or botanical enthusiasts, but I found the topic of plant

timekeeping increasingly surprising and engrossing as I launched ever deeper into research prompted by the goat's beard's confounding sleight-of-bloom. Poof!

Goat's Beard Club

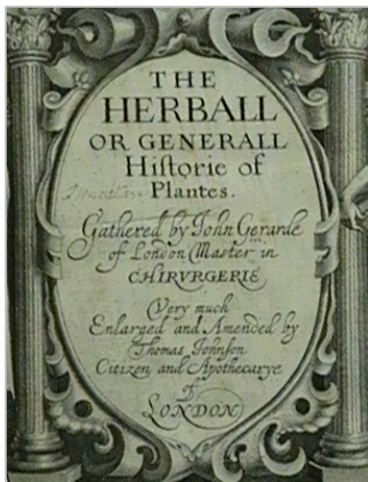
During my search for historical perspective, I discovered a thread linking six notable persons across 400 years. Each of them was fueled by an insatiable curiosity and all were inspired at one time or another by the internal timekeeping capabilities of plants. The membership of what I decided to dub the *Goat's Beard Club* includes British physician and botanist, John Gerard; British poet, essayist, physician and gardener, Abraham Cowley; French geophysicist, astronomer and mathematician, Jean-Jacques d'Ortous de Mairan; Swedish botanist, zoologist and physician, Carl Linnaeus; British naturalist, Charles Darwin; and French composer and pianist, Jean Françaix.

Goat's Beard Club



Favorite saying: If goat's beard has closed for the day, we are very likely late for luncheon.

Bumper Sticker: Don't ask me what time it is—ask a flower!



John Gerard (1545-1612), the oldest member of my imaginary Goat's Beard Club, was an avid gardener and plant collector whose interest in herb gardening was intimately tied to his profession as a physician. His botanical collections and studies culminated in one of the most exhaustive botany books of all times, full of personal reflections and vivid anecdotes from John's travels and research. For over two centuries, his ground-breaking 1597 *The Herball or Generall Historie of Plantes* endured as essential reading for budding botanists. A facsimile of the 1633 revised and expanded edition is still in print (\$100), with 2,850 plant descriptions and 2,705 illustrations. *The Herball* is described as "a book of great charm and literary appeal," written with "captivating vibrancy and enthusiasm."

John's membership in the club is sealed by this delightful description of goat's beard:

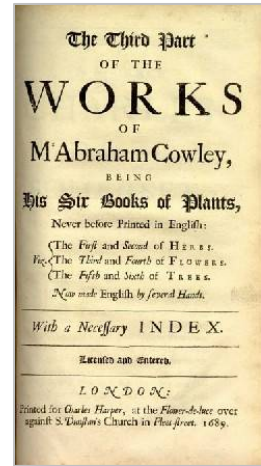
It shutteth itselfe at twelve of the clocke, and sheweth not his face open untill the next dayes Sun doth make it flower anew. Whereupon it was called go-to-bed-at-noone; when these flowers be come to their full maturitie and ripenesse they grow into a downy Blowball like those of Dandelion, which is carried away by the winde.

Unless you are an avid student of 17th century English literature, the name of the second oldest club member, Abraham Cowley (1618-1667), may ring no bells. Although he is buried in Westminster Abbey alongside Chaucer and Spenser, his fame and reputation as a metaphysical poet and essayist seem to have been buried with him. Nevertheless, I've exhumed enough information about Abraham to hail him as a kindred spirit, most particularly for having articulated a truth that would make a suitable Goat's Beard Club motto:

Curiosity does, no less than devotion, pilgrims make.

Cowley's *Six Books of Plants* is most likely the source of the lines that attracted my attention to him as a worthy club member:

The goat's beard, which each morn abroad doth peep
But shuts its flowers at noon and goes to sleep.



Cowley's *Six Books of Plants* (1689)

Although our third club member has a crater on the moon named after him, it is entirely possible that you have never heard of Jean-Jacques d'Ortous de Mairan (1668-1771). He was concerned with a broad field of geophysical investigations into no less than:

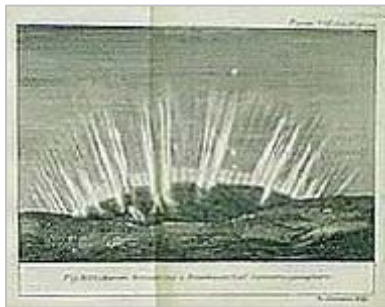
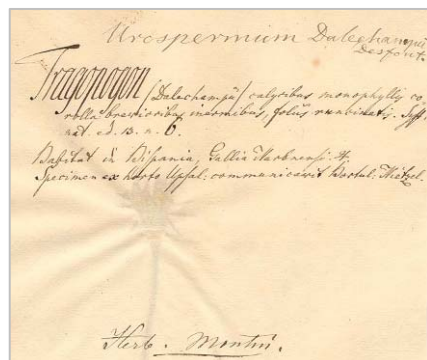


Illustration from de Mairan's *Traite Physique et Historique de l'Aurore Bore'ale* (1733)

...the aurora borealis, and the relation of a prism's rainbow colors to the musical scale, and the diurnal rotation of the earth, and the satellites of Venus, and the total eclipse of the sun... [Ward, 1971]

So heated was his curiosity-driven pace, that after Jean-Jacques devised an experiment in which he shut a *Mimosa* plant in his dark basement and observed that it still opened its leaves during the day and closed them at night, apparently on the basis of an intrinsic rhythm rather than in response to light and dark, he wrote up his notes on the theory of internal timekeeping in plants in 1729, but was too busy with other matters to bother publishing his results or pursuing them further. A friend took the time to publish de Mairan's findings, which have since been hailed as the first recorded "biological clock" experiment and the birth of a discipline that has come to be known as chronobiology. Ironically, Jean-Jacques' basement experiment, which he deemed secondary in importance to his investigations in astronomy, has garnered him the greater recognition over time.



Goat's beard notes from the Linnean Herbarium in Sweden

Carl Linnaeus, aka Carolus Linnaeus and Carl von Linné (1707-1778), is among the most well-known of the club's membership. As a child in Sweden, his love of botany earned him his own garden by the age of 5 and the school nickname of "little botanicus." As a young man, he foiled parental aspirations by proving far more passionate and astute about botanical matters than about the theology he was pressed into studying so that he might follow his father into the Lutheran priesthood. Today he is hailed instead as the father of the binomial nomenclature system used to identify plants and animals.



Linnaeus' Floral Clock from *Philosophia botanica* (1751)

After many years of observation and notation on plants that bloomed at specific times of day, Linnaeus devised a whimsical and artistic model for an *horologium florum*, a floral clock. The living timepiece was to be composed of plants according to whose opening and closing Carl was reportedly able to tell time accurately to within half an hour. Whether or not Linnaeus ever actually implemented his fanciful model in the garden is unknown, but there seems little doubt that he would have unhesitatingly trusted the goat's beard to give him the time of day.

Incidentally, Carl chose goat's beard (*Tragopogon*) as the subject of a daring 1757 investigation into whether or not plants reproduce sexually. At the time, the sexual proclivities of plants was still a rather risqué topic. In his own garden, Linnaeus removed the pollen of *T. pratensis* and replaced it with pollen from *T. parvifolius*. In the fullness of time, he harvested and planted the resultant seeds, which netted him a hotly-debated claim to "the first hybrid intentionally produced for scientific purposes."

If the Jeopardy answer is "he wrote *On the Origin of Species*," most Americans over the age of 15 would know (I hope) the correct question: "Who was Charles Darwin?"

The deeper answer to that question is most intriguing and certainly worthy of more attention than I can give it here. Although he is best known for his books on the theory of evolution by natural selection, Darwin (1809-1882) wrote prodigiously on a variety of natural science topics. In addition to keeping up a mind-boggling volume of correspondence, he published a total of nineteen books, as well as numerous essays and articles.



Creative chaos: Darwin's study in 1882

Contrary to what one might suppose about such a bold and innovative thinker, Charles was rather shy and reclusive. He never fit particularly well in the mainstream—which enhanced his out-of-the-box theorizing—nor did he do well in school. He attempted and subsequently dropped out of programs in both medicine and ministerial studies. Here's how he described himself in an intimate autobiography composed for his descendants:



Awake and asleep: an illustration from *Power of Movement in Plants*

Looking back as well as I can at my character during my school life, the only qualities which at this period promised well for the future were that I had strong and diversified tastes, much zeal for whatever interested me, and a keen pleasure in understanding any complex subject or thing. [*The Life and Letters of Charles Darwin*, 1905]

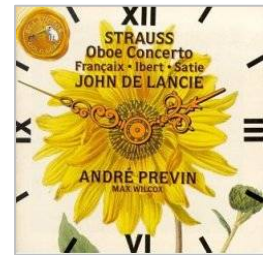
Darwin's curiosity and zeal impelled him far more than did any public acclaim, and in the last few years of his life he returned out of purely personal interest to a topic that had fascinated him since childhood—the mysterious habits of plants. In *The Power of Movement in Plants* [1880],

he described hundreds of experiments conducted with his son Francis, all having to do with the daily opening and closing of leaves and flowers, or what he dubbed "sleep of plants." His conclusions affirmed those of Goat's Beard Club member de Mairan 150 years earlier—that the periodic rhythms of plants were at least partially determined by internal mechanisms rather than solely by external cues like sunlight or temperature.

The Goat's Beard Club's members have over time provided the world with a scintillating blend of literature, art and science inspired by plants and fueled by curiosity. The final member chimes in with a missing element: music. Jean-René-Désiré Françaix (1912-1997), a prolific French neoclassical composer and virtuoso pianist, is known for his vibrant, optimistic and witty style, reflecting one of his musical goals to "give pleasure." He began composing when he was six years old.

Maurice Ravel is said to have told Jean's parents, "Among the child's gifts, I observe above all the most fruitful an artist can possess, that of curiosity: you must not stifle these precious gifts now or ever, or risk letting this young sensibility wither." Evidently his curiosity was never squelched—at the age of 70, Françaix described himself as "constantly composing," a passionate pace that he sustained until his death in Paris at the age of 85.

In 1959, Françaix undertook to compose *L'horloge de flore—The Flower Clock*—a suite for oboe and orchestra based on Linnaeus' invention of 200 years earlier. The composition's seven short movements are inspired by plants that flower at predictable times: day jessamine, Cupid's dart, night-blooming cereus, night-flowering jasmine, moonflower, geranium and night-flowering catchfly. The piece is played without pause for a short and sweet total time of about a quarter of an hour. Françaix was lauded for managing to capture "both the character of the flower and the atmosphere of the hour in a delicate, elegant manner, understated but with great charm." High praise, indeed.



The Long Road to Circadia

To be fair, there are others who belong on the club's rolls by virtue of their interest in the periodic cycles of plants. However, dating from Darwin's time, the gradual refinement and specialization of the sciences and the slow erosion of vital connections between and among the sciences, the arts, philosophy and religion significantly altered the character of investigations and the style of reporting them.

Gone were the poet-essayist-physician-gardeners such as Cowley and the botanist-zoologist-physician-professors like Linnaeus, replaced by practitioners of what Wendell Berry (a modern-day writer-poet-teacher-farmer) calls "fragmented, one-eyed specialties." Vanished, too, was the "captivating vibrancy and enthusiasm" that characterized the earlier scientific writing; books and articles became ever more dry, technical and inaccessible to readers outside of a specific discipline.

The better part of a century would pass between Darwin's discoveries and Franz Halberg's coining of the term "circadian rhythm" to describe daily rhythmic cycles (Latin *circa*, meaning "around," and *dies*, referring to "day") in plants and animals. Around the same time in 1960, Colin Pittendrigh earned himself the title of the "Father of Chronobiology" (*chrono* refers to time and *biology* to the study of living things) by publishing a paper in which he collected data from various specialties—plant physiology, animal behavior and human medicine—to launch a unified discipline for studying the

mechanism of biological clocks in all living things, from the humble unicellular cyanobacteria to the complex human body.

Gift of the Goat's Beard

The simple reward of the hunt upon which the goat's beard sent me back in June was the discovery that all living things have surprisingly sophisticated internal clocks that regulate various activities. This, in addition to the fact that all creatures on the planet are made of the same basic elements and require many of the same elements and conditions for survival, seems to indicate that we are all more fundamentally alike than we are different.

The companion revelation is perhaps less obvious: hundreds of years ago, the charming, curiosity-driven generalists—unfettered by the constraints of a formal discipline, puttering and dabbling, wondering and wandering in the great laboratory of the natural world—tuned their ears to the soft ticking of these invisible timepieces long before 20th century scientists published papers proving such clever clocks existed. Proof, of course, has come to be the heaviest burden of the specialist, which is part of why I love being a generalist who is liberated to search for patterns and connections across disciplines, and free to make risky intuitive leaps for the sheer joy of jumping.



While I'm on the topic of the joy of jumping, I'd like to nominate a modern-day member to the Goat's Beard Club, Dr. Fred Provenza, and not just because of his beard or because he's interested in goats (and cattle, sheep, plants, the history of Western science, quantum physics, philosophy and sustainability). Fred, as he insists on being called, is a generalist disguised as a specialist in animal behavior, a screaming example of holy curiosity cut loose from conventional scientific moorings.

I attended one of his presentations a couple years ago, the bold premise of which was that grazing animals have nutritional wisdom; that is, they learn and pass information on to each generation about which plants on the grassland buffet should be eaten in which order, in what quantity, and at particular times of day and year. By applying this wisdom, they are able to ingest plants that are potentially toxic, but also nutritious if eaten with restraint and/or in balance with other plants having different chemical properties. Fred also introduced the complementary idea that plants exhibit a similar wisdom in knowing what time of day to bloom, how to avoid dehydration, and how to protect themselves from the grazers by becoming less palatable as they enter the critical reproductive phase of development.

For me, this line of thinking was not a big leap, but for the roomful of traditional farmers, ranchers, USDA employees and county extension agents, Fred's introductory comments—on reductionism vs. holism, the unity of all things, and self-organizing systems (accompanied as they were by quotes from the Dalai Lama, Fritjof Capra, Buddha and Forrest Gump, to name a few)—made for some head-scratching and knee-jerking. At the morning coffee break I overheard one Wrangler-jeaned, cowboy-booted attendee say to another, "If he don't start talking sense by lunchtime, I'm going home." Judging by body language, facial expression and the key words I gleaned from conversations during the rest of the break,



Fred at the table with some ovine companions, whom he credits with having a unique society and culture.

I'd say that sentiment generally reflected the consensus of the seminar's forty or so bewildered-looking participants, but so far as I could tell, no one got up and left at noon. In fact, two days later, as Fred brought his presentation on "Plant-Herbivore Interactions" to a close with a sentimental slide that read, *the courage to love is the courage to transcend tradition*, the audience was practically ready to burst into the chorus of "All You Need is Love."

By dint of an inner magic, some force of personal magnetism, sheer passion for his topic, or a heaping helping of all three, Fred managed to leap across numerous historical and ideological chasms on a switchback-ridden trail and still have a string of former skeptics skipping along behind him like the newly-converted.

I was inspired, as I always am by passionate learners and connectors of improbable dots who have the grace to dispense information in such a way that it gently but irrevocably alters perspectives.

The Making of a Pilgrim

To take a final leap that I fully trust will bring me back to the beginning of this circuitous journey, I note that Goat's Beard Club member Abraham Cowley's 300-year-old epigram is the answer to questions I have been asking myself in recent months: *Why is someone who is not a botanist, lepidopterist, chronobiologist, historian, or photographer:*

- a) *Writing about plant pollination techniques?*
- b) *Studying the history of biological clocks in plants?*
- c) *Preparing a technical presentation about tallgrass prairie wildflowers and butterflies?*
- d) *Writing a rambling article about all of the above?*

Here's the answer: *Curiosity does, no less than devotion, pilgrims make.*

I'd be short-changing you if I left it at that, for I am perpetually intrigued with the nature of process—the synchronous way in which ideas emerge, collide, connect, converge, transmute and lead always to the next concept, transformation or action—and I've gleaned a few insights.

In looking back at my botanical pilgrimage to date, I observed that collecting plant photographs and identification data was simply a personal exercise in curiosity until I got gloriously bamboozled and side-tracked by *Tragopogon dubius* and met the Goat's Beard Club. Each club member converted his



curiosity into something tangible—books, articles, drawings, music—although composer and pianist Françaix was the only one who could have been considered a professional or a specialist. God bless the dabblers.

These musings must have been looping fairly far to the back of my brain when I began the loving and laborious process of assembling my flower presentation. I had no idea that John Gerard's *The Herball or Generall Historie of Plantes* and Abraham Cowley's *Six Books of Plants* had cultivated my courage. I didn't consciously know that I'd been pollinated by

de Mairan's inquisitiveness or Linnaeus' patience, and fertilized by Darwin's unquenchable zeal and Franaix's sustained intensity. In short, I think I spent so much time in the company of the fictional Goat's Beard Club membership back in June, I was somehow given the audacity to blossom in a field far outside my experience.

I can almost hear one of my grandmothers saying, *I see your curiosity got the best of you*. This familiar remark, on the face of it, is wryly disparaging; it implies a lack of restraint, a flight of fancy, a waste of time. There is, however, a veiled double entendre in the phrase; seen in another light, it could also mean that curiosity elicited the best I had to offer—passion, devotion, and resolve. This seems far closer to the truth.

The Last Blooming Word

For those of you who initially allowed yourselves to be drawn into this odyssey because of the scandalous tidbits about plant sex, and who have doggedly hung on in hopes of further revelations of a similar nature, I do not wish to disappoint.

Recently published research (*Nature* 439, 805-810, 16 February 2006) reveals that male and female components of flowers may engage in pillow talk of a sort. These intimate conversations take place at the molecular level between plant proteins: SLF (on the pollen, or male side) and S-RNase (representing the pistil or female side). The purpose of these discussions is to avoid self-mating or inbreeding that might weaken the vigor of a species. I imagine the dialogue going something like this:



Him: Darling, I want you. Do you want me, too?

Her: That depends, I guess. Are we related?

Him: Actually, yes, I believe we are—on my mother's side. But what of that, my darling? The sun is shining, the sky is blue, and here I am, potent golden dust on the feet of a bee poised at the cusp of your stigma.

Her: Oh, my! You certainly have a way with molecular-level sweet-talk, big boy. But I'm terribly sorry, the answer is "no."

Him: Don't be silly, my fickle little fleur. The moment is ripe.

Her: But think of our children! Think of the future of our species! I really must ask you and the bee to buzz off.

Him: But, baby...

Perhaps you scoff, but researchers at the University of Missouri at Columbia have spent nearly two decades gathering evidence to prove that surprisingly sophisticated, getting-to-know-you conversations take place inside flowers.

I love this kind of information and profoundly admire and appreciate the scientists who spend years and years in the laboratory investigating the mysteries. As for myself, if you want me, I'll likely be out wandering the pastures with the Goat's Beard Club, living on floral time, carting around my share of pollen and seeds, and hoping to overhear an intimate conversation or two.

COCK-A-DOODLE-DUDA

If you need a laugh, come out to the ranch during free-range time in the afternoon. Things have changed in the chicken yard, or Tiny Town, as I've taken to calling it.*

"How are things in Tiny Town?" I like to ask the chickens. Or sometimes I say, when Duda the White Polish rooster has just crowed in my face, "Well, if it isn't the sheriff of Tiny Town!"

You may recall that back in May I suspected that one of the two Polish Crested chicks I picked out on a last-minute impulse at Chick Days might be a rooster. One of the other things I mutter in the chicken yard these days is, "What are the odds?" because both of those Polish chicks turned out to be roosters. And so, as I said, things have changed.

Duda, the self-appointed sheriff of Tiny Town, was the first of the two to begin crowing, which is what earned him his name. *Duda* is a Polish surname that, according to Polish name expert Professor Kazimierz Rymut, means *bagpipes* or *a bad musician* (i.e., one who plays the pipes but isn't very good at it) or may also be reasonably construed to mean *one who goes around making a lot of pointless noise*. And there you have it, the perfect name. The final aptness of this choice is affirmed by Jane's habit of calling anyone or anything whose name she cannot recall, Doo-dah, which assures that even in the event of a memory lapse, she will always call this particular chicken by his rightful name.

Albert "I can't see a darn thing" Einstein is the default deputy sheriff of Tiny Town. Albert is a stunningly handsome White-Crested Black Polish rooster with an unfortunate chronic orthopedic infirmity that causes his toes to turn up like Aladdin's slippers, which in turn fosters his



From top to bottom: Duda, sheriff of Tiny Town; Albert and Duda five months ago; Albert "I can't see a darn thing" Einstein



* If you can't get out to the ranch for a laugh, rent the 1938 Western, *The Terror of Tiny Town*, a schlocky musical with an all-midget cast riding Shetland ponies and singing cowboy songs in German accents.

tendency to abruptly and frequently sit down whilst in the act of walking (as the preferred and slightly-more-dignified alternative to flat-out tipping over). He's had the problem since the early days, so I assume it is either a congenital defect or an injury sustained during shipping.

These two boys, who in recent months have revealed themselves as infiltrators in Girls' Town, are as unlike as black and white, night and day—and yet they exhibit a certain solidarity, bound as they are by breeding, biological imperative, gender and their freaky hair-dos.



The headgear has been a bit of a problem. For one thing, Albert can't see very well, which contributes to his air of unroosterlike reticence. We trimmed his bangs, but the head feathers responded with an emergency message to his follicles to grow back the finery with even greater density. For another thing, when the girls got bored, the novelty of the boys' feathery mops made them irresistible for idle plucking. Before long, both fellows had bald spots the size of a half-dollar on the backs of their heads. The good news is, the pine tar that got George Brett into trouble with the Yankees in 1983 got Duda and Allie out of trouble with the Yankers in 2006. Our friend Sherry, a nurse, who pinch-hit as the veterinarian for this procedure, highly recommends the use of rubber gloves. It's a wonder George was ever able to let loose of the bat before heading round the bases; pine tar is sticky, and—thank heavens—apparently bitter enough to discourage boredom-induced amateur chicken cosmetology.

In August we combined the youngsters of Company B with the older hens in Company A. Suddenly Duda—the bossy, strutting, crowing leader of his small flock—was faced with mature matrons nearly twice his size, all of whom were deeply unimpressed by his antics. Bless his heart, he has one courtly little dance in his limited romantic repertoire, and I find it extraordinarily touching, perhaps all the more so because the girls are so cruelly offhand in response to this overture. He stretches one wing down to the ground and dances in a circle around the hen, for all the world like a Kabuki dancer with a folding fan. At best, the hen just turns and walks away with a disdainful or bored look. At worst, she'll give him a dismissive peck on the head or simply shoulder him out of the way, or both. He soon learned to hop sideways at the slightest sign of rejection or aggression.



Albert, meanwhile, kept to the margins of the combined groups and sized up the odds. He has, after all, the same basic roosterly instincts as Duda, just not the alpha personality and all the macho posturing that goes with it. Sure, his Aladdin-slipper-toe-syndrome was a challenge, but I could just tell he had the wits and pluck to overcome the obstacle. Sure enough, he began strategically placing himself around corners and behind a screen of foliage, usually on a vantage point of some kind—a rock or concrete block—from which he would hurl himself atop the surprised object of his affection, which is what earned him the nickname, Stealth Lover.

Until recently, all mating rituals taking place in Tiny Town were a sham, just playacting for practice, like little boys using lathered-up bar soap and the back of a comb to emulate their fathers shaving. The roosters were as yet preadolescent. Then, on Labor Day weekend, it became evident that Duda

had achieved the fullness of his maturity; the sheriff had earned his spurs, and, Katie, bar the door! Within 48 hours, he was hobbling around the chicken yard like Festus from Gunsmoke or Walter Brennan playing Amos McCoy. Even then, despite the injury he'd sustained during the first two days of the Rooster Olympics, he was not to be deterred. If necessary, he'd hop on one leg to follow a hen to the moon. Almost two weeks later, after an enforced two-day rest in isolation (which distressed him terribly), he still runs across the yard with a pronounced limp, looking not unlike a child cantering on an invisible stick pony. As I mentioned earlier, if you need a laugh, come out to the ranch and watch the roosters.

Albert's maturation took about ten days longer, but I realized he'd reached the same milestone when he emerged from the fringes of the group and began harassing Duda at center stage. Albert has invented his own Rooster Olympics event, which bears some similarities to bowling, if you assume Duda and the hen of his current favor are the pins and Albert is the bowling ball. He advances himself across the yard at his best rollicking gait and hurls himself at the pair, knocking Duda unceremoniously off his mount, so to speak, and then attempts to take over the conquest of the hen. Perhaps I was wrong about the bowling; it could be a relay.

I can count on one hand the number of times I have heard Albert crow; he has a low and rusty voice. Duda, on the other hand, has a strident and piercing cry that he first flourishes each morning at about an hour before sunrise and reprises at unpredictable intervals until bedtime. Sometimes he even ululates after dark: the full moon may make him crow, and my coming to say goodnight to the chickens through their window is guaranteed to elicit a lusty final refrain.

Arabic	kookookoo-koo
Bulgarian	kukurigu
Catalan	co-co-ro-co
Chinese	goh-geh-goh-goh
Czech	kykyriki'
Dutch	kukeleku
English	cock-a-doodle-doo
French	cocorico
German	kikeriki
Greek	kikiriku
Gujarati	kuk-de-kuk
Hebrew	ku-ku-ri-ku
Indonesian	kukuruyuk
Italian	chicchirichi
Japanese	ko-ke kokkoh
Korean	k'ok' iyo
Lithuanian	ka-ka-rie-ku
Norwegian	kykkeliky
Polish	kukuryku
Portuguese	co'co'ro'co'co'
Romanian	cucurigu
Russian	ku-ka-rye-ku
Serbian	ku-ku-ri-ku
Slovak	kikiriki'
Spanish	qui-qui-ri-qui
Swahili	kokorikoo koo
Swedish	kuckeliku
Tamil	ko-ka-ra-ko
Thai	yeki-yeki-yek
Turkish	üü-ürü-üüü
Urdu	kuk-roo-koon

I blame cartoons and movies with perpetuating the myth that roosters crow only at dawn. In fact, a cockerel will crow when the light changes dramatically, when a hawk flies overhead, when the dog comes near the flock, when he feels the need to reiterate the boundaries of his territory, when a pretty hen takes his fancy, or pretty much whenever he darn well feels like singing. Duda does not have a five-syllable song, as implied by cock-a-doodle-doo, but then again, he's Polish, and therefore inclined to sing *kukuryku*. Of all the linguistic twists on the rooster's call, I think Turkish gets the closest with *üü-ürü-üüü*.



Duda's repertoire is broader than you might think. He has a number of short phrases for different occasions. When he finds a flavorful tidbit in the yard, say, a grasshopper, he'll let out a series of melodious bumbles and chortles to summon the girls, then he'll play with the insect until some of the hens arrive at the scene, at which point he'll step back and let them have the snack. This is what a good rooster is supposed to do, take care of his flock.

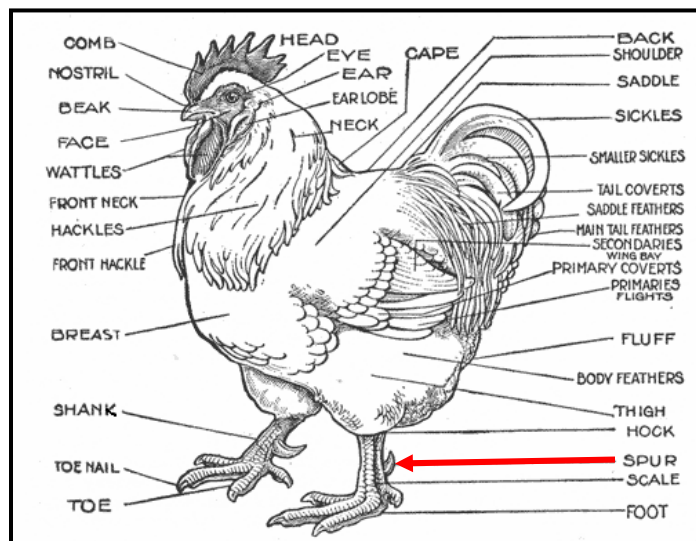
He's also learned another song, which requires a bit of an introduction. When I first looked into Polish names for him, I consulted with my friend Leon Goodhart, who grew up in Poland. He informed me that Duda might not be such a good name for a rooster, since in Polish the "a" ending is feminine. The proper masculine name would be Dudy. I scoffed at Leon's worries about the effect a feminine name would have on the rooster, and then one evening, the first night I isolated Duda in a separate pen after he injured his leg at the Olympics, he caught me entirely off guard. He refused to go into his solitary accommodations at dark. He perched on the outdoor roost and crowed without ceasing, loud and long. *How, oh how*, he seemed to be lamenting, *am I to watch over my girls from here?* Then—abruptly—he changed his tune and launched into a tortured, but clearly-recognizable version of the I-just-laid-an-egg anthem, which I think of as exclusively feminine territory. There are three ways of looking at this: (1) the feminine ending on his name has had a deleterious impact on his gender identification; (2) the traditional anthem of the egg-layer, which originates from pre-domestication days and really translates as *I'm here—where are you?* fit the situation better than *I am rooster, hear me roar*; or (3) he's smart enough to attempt disguising himself as a hen so I might take pity and put him back in the henhouse. What I did was bodily remove him from the roost, put him in his own little house and shut the door. Finally he shut up.

The second day of his recuperative isolation, I felt sorry for Duda, and decided to have Albert bunk with him for company, which would also serve the purpose of giving the girls a complete break from masculine company. Great idea, but Albert was a heck of a lot harder to capture out in the chicken yard than one might expect of a fellow whose vision is almost entirely obscured by feathers. I finally hauled out my fishing net, the one reserved for the lunker I haven't yet landed, and snagged him like a butterfly. At bedtime, like a good little boy, Albert marched straight into the auxiliary chicken house and went to bed. Stubbornly, Duda perched outdoors once again and commenced to wailing. Finally, perturbed, I stalked up to him in the dark and gave him an impassioned, hands-on-hips, motherly speech along the lines of *would you please quit singing the blues or you'll make yourself sick...and please go in to bed now so you'll be safe from the wild animals*. At this, believe it or not, he hopped down from the roost and walked straight indoors.

I'm afraid I have been a wee bit slow to recognize that one of the triggers for Duda's crowing is me. You'd think my runtiest chick, whose tiny toes I cleaned and whose behind I bathed, would be accustomed to my role, as the hens are, of Big Mama, No Feathers. This is what I expected, and so I was surprised—shocked, really—to finally confront the truth. The realization dawned one evening as I headed for the henhouse to gather eggs and realized that a creature the size and shape of a dust mop was persistently and aggressively dogging my every step, and if I slowed my pace, he ran in front of me as if to provoke a showdown. *Lordy me*, I thought to myself, *this goofy-looking bird with a Phyllis Diller wig and all of two pounds' body weight is challenging me for the position of alpha rooster!*

Funny as it may seem at first blush, this behavior can stealthily become a serious matter in the relatively short time it will take Duda to grow his spurs to fighting length. Roosters possess the capacity to create impressive scar tissue or make your mother's most dire prediction come true: *you'll poke your eye out with that thing*. There are two ways to keep your rooster in line, advises one backyard chicken fancier:

The first way is to develop a deep and sincere love for soup. I love soup. Chicken Noodle, Chicken Vegetable, Chicken and Dumplings, Chicken and Rice, doesn't matter. I love it all. The second way is to be the Alpha male of your flock.



There is a treasure trove of comical and serious guidance on this topic. Just hop on the Internet and use search terms like *managing roosters*, *taming roosters*, *aggressive roosters*, etc.

I go in the pen with a fly-swatter so at least I could fend him off.

This afternoon, I stood my ground with a spray bottle of water. At first, he just kept coming at me, but then stood down. He then ran about 50 feet and just started crowing non-stop!

You could run up to them real fast and flap your arms at them and act like a rooster yourself, ha-ha. I actually did this to ours and it worked.

I spent a lot of years working in the criminal justice system and a considerable part of that was in jails. We had a saying that "If you're sweating and the prisoners aren't, you're doing something wrong." You can apply that to a lot of situations, including roosters.

After sorting through voluminous advice, I've come up with my own short list of two commandments:

1. *Thou shalt honor thy rooster's roosterishness.* Protecting his hens is Duda's built-in prime directive. I try to avoid giving him cause to fret or feel threatened; I don't initiate confrontations or back him into a corner. I try to cultivate and communicate genuine respect.
2. *Thou shalt not sweat.* The criminal justice advice caught my attention, since the awful truth is, I sometimes feel vaguely intimidated by my fierce little rag-mop. Now, if he challenges me, I don't back down. I stomp my foot and shout, "HEY!" Yes, I even flap my wings and crow.

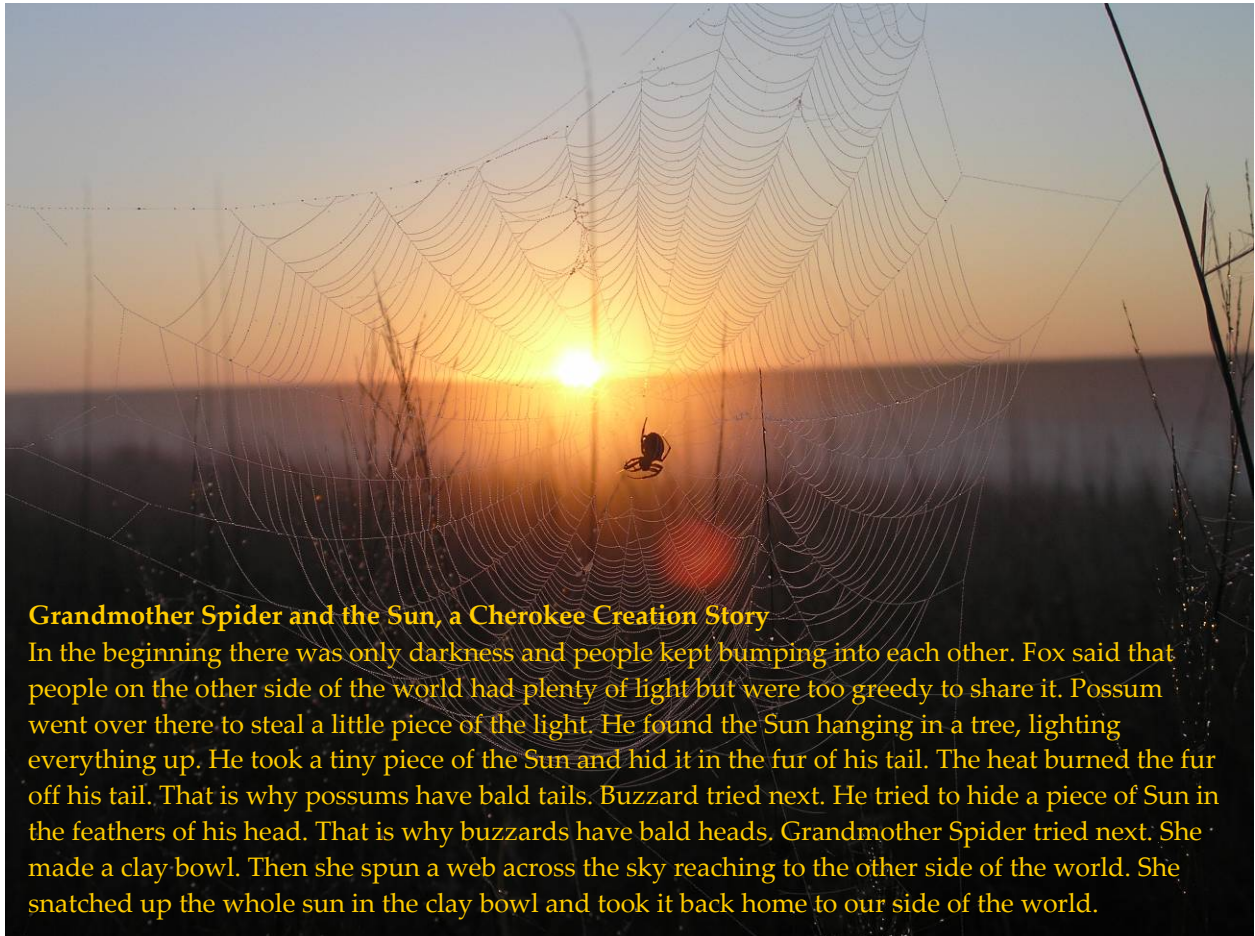
Perhaps some of you are wondering how the boys have affected the Happiest Chickens in Kansas. So far the older hens, who've grown up without a frame of reference for the concept of *rooster*, manage to be tolerant without compromising their long-standing matriarchal power structure. The overall Boss Chicken at the top of the pecking order is still, I think, one of the older hens. The newest chicks on the block, who just became mature enough to begin laying eggs in late August, have grown up with the boys in their social milieu and consequently adopted decidedly more patriarchal

social conventions, chief among which is *wives, submit to your husbands*. All in all, it's an intriguing culture to study.

We never, of course, needed those boys for the eggs; in fact, if they were hens instead of cockerels, I'd be getting two more eggs a day. What they offer us instead is another dimension—sort of like what the serpent and the Tree of Knowledge offered Eve. The promise of perfection in the Garden of Eden may have gone straight south with Eve's first bite of fruit, but boy, howdy! after that there was another side to the story. I guess that's what I'd say the boys bring us: the rest of the Chicken Story—the full-color, big-screen, live-action Chicken Reality Show. Don't read too much into the theme of good and evil in the metaphor, because that's not at all what I had in mind when evoking the Garden of Eden. I do, however, mean you to understand that the results of this spring's game of Rooster Roulette signaled the end of a near-idyllic age of innocence.

In the wake of this change, I am undergoing a bit of an identity crisis. The more I educated myself on how to be the alpha rooster, the stronger grew my sneaking suspicion that I had been suffering under a two-year-long delusion, not of grandeur, but of gender. I don't know how to sanitize, euphemize or disguise this revelation, so I'll serve it sunny side up. As it turns out, my chickens have always—even before the arrival of Duda and Albert—perceived me as Big Rooster, No Spurs, rather than Big Mama, No Feathers. This is why, as I walk through the flock on my way to collect eggs, many of the hens drop into a submissive squat and allow me to pet them, after which they ruffle up their feathers and give a little sigh of delight. This, I'm afraid, is exactly how the cooperative hens respond to the roosters. So there you have it, the unfeathered truth. If anyone knows a therapist who would not laugh me right out of the consulting room, I think a few sessions would be a boon.

But speaking of laughs, as I've already mentioned a time or two, if you need a good belly-wrenching hoot, come on out to the ranch some afternoon and watch the chickens for a couple hours. Or stay right where you are and picture me flapping my arms and crowing at Duda. That ought to be good for a chuckle or two.



Grandmother Spider and the Sun, a Cherokee Creation Story

In the beginning there was only darkness and people kept bumping into each other. Fox said that people on the other side of the world had plenty of light but were too greedy to share it. Possum went over there to steal a little piece of the light. He found the Sun hanging in a tree, lighting everything up. He took a tiny piece of the Sun and hid it in the fur of his tail. The heat burned the fur off his tail. That is why possums have bald tails. Buzzard tried next. He tried to hide a piece of Sun in the feathers of his head. That is why buzzards have bald heads. Grandmother Spider tried next. She made a clay bowl. Then she spun a web across the sky reaching to the other side of the world. She snatched up the whole sun in the clay bowl and took it back home to our side of the world.

Story taken from <http://solar-center.stanford.edu/folklore/spider-and-sun.html>

Photograph taken by Marva at sunrise on September 13, 2006