From the Desk of James A. Duke

By Helen Lowe Metzman

It is daunting to be sitting at the legendary Dr. James A. Duke's desk typing this tribute to him. It is even more disconcerting to be here in Jim's basement library/office without him hunting and pecking away with his index fingers. I am surrounded by Jim's wealth of books and his articles, poetry, and prose stuffed inside government-issued file cabinets that line the side wall.

How I wish I could hear just one more story, like the story of his dangerous flight over Jamaica searching for ganja (Cannabis spp., Cannabaceae) fields, or the story of going to Iran seeking Persian poppies (Papaver bracteatum, Papaveraceae) to replace opium poppies, or going down the Shenandoah and discovering Sweet Annie (Artemisia annua, Asteraceae) at pit stop number two, or the tale of traveling to China to find the Chinese fountain of youth. books, as well as many of his own publications are currently shelved, neat and tidy, even though just a few months ago they were strewn into collapsing piles when he worked tirelessly at his desk in this faded blue computer chair that I am presently occupying.

Jim did not care about the decorative properties of this basement grotto, where he spent so much time as a compiling troglodyte. He did not care one bit about aesthetics. He

"Ginseng"

Searching for the Holy Grail On the Appalachian trail, When I found the herb they call ginseng. Growing deep down in the woods, That's where I got the goods, That the Chinese call renshen.

—From Herbalbum: An Anthology of Varicose Verse (1985) by Jim Duke

This otherwise outdated office comes alive with Jim's artifacts. Vibrant red colorful fabric *molas* on the walls depicting cats, fish, demons, and the Mexican musician Antonio Aguilar are a reminder of his early beginnings as an enthobotanist.

Watercolors of voluptuous Panamanian Chocó (now called Embera-Wounaan) women opposite his desk are lovely to gaze at but also a reminder of what a charmer this man was.

Over the never-used brick fireplace in the corner is a highly textured expressionist painting of Jim playing a bass that grows out of tree roots.

Photos on the wall of his band, The Howard County Dump, conjure images of Jim working steadily on his computer while listening to classical, jazz, and bluegrass on his static radio and when he religiously listened to *G-Strings* on WPFW every Sunday morning.

The complete volume set of *The Wealth* of *India*, botanical references that span the globe, pharmacognosy books, nutritional books, edible plant and mushroom



Jim Duke teaches at ABC's Pharmacy from the Rainforest ecotour in 1995. Photo @2018 Steven Foster

was a man of the mind. Words mattered. Information mattered. Music mattered. Plants mattered. Family and friends mattered. Teaching and telling stories mattered, as did trying repeatedly to get the US Food and Drug Administration (FDA) to get fair, comparable trials of North American and all medicinal plants, alongside "Big Pharma" and placebos.

Walks in the woods identifying local flora mattered. Saving the Amazonian rainforest mattered. Getting folks outdoors and promoting healthy food "farmacy" mattered.

He was a tome, a walking encyclopedia with a genteel southern drawl that fluctuated between refined and redneck. Women would peel off their shirts down to their undies in our classes for him to urticate, or flagellate, their arthritic backs with stinging nettles (*Urtica dioica*, Urticaceae). He dined on cicadas spiced with Old Bay seasoning. He ate live palm beetle larvae called

suri grubs from the Amazon and coined the word "suriculture." He would stuff creeping charlie (*Glechoma hederacea*, Lamiaceae) up his nose to demonstrate how to ward off anthrax.

Jim wore necklaces of the bulbs of garlic (*Allium sativum*, Amaryllidaceae), the "stinking rose," to keep away the flu. He cooked

Duke's soup du jour for the garden crew every day for years. He made mānuka honey antibacterial salves and concocted pomegranate (*Punica granatum*, Lythraceae) juice-based styptics to stop bleeding.

Jim's idea of a research study in the garden was to rub mountain mint (*Pycnanthemum muticum*, Lamiaceae) on only one of his legs for its pulegone phytochemical, walk through the woods, and see which leg ticks preferred. Jim taught us about the explosive seed dispersal of the jewelweed (*Impatiens capensis*, Balsaminaceae), as well as the uses of horny goat weed (*Epimedium grandiflorum*, Berberidaceae). I'm not even going to discuss what he had to say about fava beans (*Vicia faba*, Fabaceae).

Jim dyed his hippie beard yellow with turmeric (*Curcuma longa*, Zingiberaceae) and chanted shamanic chants, *icaros*, "mucarita, mucarita," as he reflected on his experience with *La Soga* and the ayahuasca (*Banisteriopsis caapi*, Malpighiaceae) ceremony.

He formulated medicinal living liqueurs with clever labels like "Alzheimeretto," "Crème de'mentia," and "Hot-Bloodied Mary." He was always hot on the trail

The beautiful botanical illustrations featured to the left and throughout the proceeding James A. Duke articles were done by Peggy Duke, Jim's wife, for the ABC Clinical Guide to Herbs. Peggy generously gave permission for them to be featured. of the latest health issue or herbal discovery and would spend days crawling through PubMed data to either support or disclaim the information. He would, in his folksy yet scientific fashion, write plant rants suffused with long lists of phytochemicals of each species and continually update his USDA database to report his findings. Day after day, he broadcasted his rants via his enormous email contact list, interviews on radio shows, newspapers, videos, and to garden tours.

With his humble yet eloquent teaching style, Jim had a unique gift to make phytochemicals, traditional plant knowledge, and scientific research palatable to all, no matter their background. Universities, government organizations, garden clubs, homeschoolers, refined researchers, botanists, herbalists, hippies, and connoisseurs of wild edibles made their way to the garden not just to learn about plant medicine but primarily to meet Jim. He was often asked at the tours: "How did you get your interest in plants as food and medicine?"

Jim repeatedly said that he had a charmed life. He was born on April 4, 1929, in Birmingham, Alabama, just prior to the stock market crash. At age five, Jim was

With his humble yet eloquent teaching style, Jim had a unique gift to make phytochemicals, traditional plant knowledge, and scientific research palatable to all, no matter their background. introduced to watercress (*Nasturtium officinale*, Brassicaceae) and chestnuts (*Castanea* spp., Fagaceae) after befriending the lonely old man across the street "who only had his rabbits to talk to." During the Great Depression, when he was eight, his family moved to Durham, North Carolina, where Jim became inter-

ested in wildflowers and enjoyed going to the woods so much that he worked at a state park in his teens as a junior park ranger. Music also filled his high school years. The guitar was his first interest as he learned to play hillbilly chords and then moved on to bass fiddle in Raleigh. He played with Homer A. Briarhopper and His Dixie Dudes and cut a record called the "Briarhopper Boogie" in Nashville. A singer-songwriter himself, Jim's songs were cut into a vinyl LP, *HerbAlbum*, in the 1980s. He played jazz, big band, blues, and bluegrass, and maintained his love of music with jam sessions at the house until his final days of ordering Amazon's "Alexa" to play his favorite tunes.

After abandoning a music major his first semester at the University of North Carolina (UNC) at Chapel Hill, Jim eventually received three "academically inbred" degrees at UNC, including his PhD in botany. It was during his master's studies at UNC that he fell in love with Peggy-Ann Wetmore Kessler, who was also pursuing her master's degree in botany. Together, they shared botany and music and eventually married in 1961.

During his military service, Jim worked on culturing fungi and later understood his projects were for the purpose of developing biological agents with the potential of destroying enemy crops. Because of his time in the military, he received benefits from the GI Bill, and Jim returned to UNC, where he completed his PhD in 1961, and traveled to Mexico, Guatemala, and Costa Rica on plant-gathering expeditions. It was during this time that his infatuation with Latin America began. Jim moved to St. Louis to be at the Missouri Botanical Garden and Washington University for his postdoctoral work as a taxonomist identifying dried herbarium specimens from Peru. Jim then traveled to Panama to identify and describe the best vegetation to support "vehicular traffic" before starting his career at the USDA in 1963.

Jim admitted that although he loved his work with plants, he did not always feel comfortable with the reason behind his work. For instance, early on in his career with the USDA, he studied plant succession in Puerto Rico, but it was for the purpose of learning how defoliants or herbicides alter that succession.

While at the USDA, Jim was offered a consultant job with the Battelle Memorial Institute in conjunction with the Atomic Energy Commission to work in Panama for two and half years. He accepted, left the USDA, and moved there with his young family including his "botanical illustrator par excellence" wife Peggy, their two-and-a-half-year-old son, John, and their six-monthold daughter, Celia.

Jim's assignment was to go off into the bush of Darién province to investigate and thoroughly document the flora and fauna as well as observe the Chocó (Embera-Wounaan) and Cuna (Guna) populations for what they were eating. There was a proposal to excavate a sea-level canal using nuclear weapons, but there were questions about whether radioactive materials would settle into the soil and how these materials might affect the indigenous populations and the local food chain. Ultimately, the project was tabled, and it was determined that it was not feasible to use nuclear weapons to excavate a canal.

The experiences of being in the Panamanian jungle impressed on Jim how deeply tied the indigenous populations were to their environment. Jim became a "Panamaniac," studying the food and medicine of the indigenous Chocó population. Jim often told groups of students that his time spent in Panama was the time when he metamorphosed from a taxonomic botanist to an "ethnobotanist" — a term he did not know at the time. From his observations, he noted the contrast of how indigenous people used herbs versus how his own family used conventional medicine. Jim concluded that there was better living through phytochemistry, not "pharmachemistry."

Back from Panama, Jim returned to Battelle in Columbus, Ohio, to document his findings, which led to a compilation of articles that resulted in one of his first selfpublished titles, *Isthmian Ethnobotanical Dictionary*, in 1972.

In 1971, Jim returned to the USDA, where he continued to work as an economic botanist and received assignments such as crop diversification and the challenging position of seeking alternative cash crops for cultivated narcotic plants, including coca (*Erythroxylum* spp., Erythroxylaceae), poppies (*Papaver* spp., Papaveraceae), and marijuana. He was appointed chief of the Medicinal Plant Resources Laboratory (1977), whose mission was to work with the National Cancer Institute (NCI) to collect plants that had potential antitumor activities. This position took him around the globe as he documented not only toxic plants but also traditional plant knowledge.

"Mayapple Lemonade"

Penobscot Indians up in Maine Had a very pithy sayin' Rub the root most every day and it'll take the warts away.

Farther south the Cherokee echoing Menominee Made a tea out of the roots to keep the bugs off potato shoot.

Mayapple lemonade, wildest thing my momma made, Coolest thing there in the shade, fruits of amber, leaves of jade.

> They couldn't know etoposide, nor of its aid to homicide Nor could they know the course it charts, for cancer of the private parts.

> > I'll venture to prognosticate before my song is sung This herb will help alleviate cancer of the lung.

Mayapple lemonade, wildest thing my momma made, Coolest herb in the summer shade, swing your partner'n promenade.

-From Herbalbum: An Anthology of Varicose Verse (1985)

Jim's medicinal plant compilation led to the development of his USDA database that he continued to work on meticulously for decades. After the Reagan administration shut down his program with the NCI, Jim returned to specializing in alternative crops for narcotics. He continued work with this program while he simultaneously began teaching "Pharmacy from the Rainforest" ecotours in the Amazon, where he went at least 50 to 60 times. He lost count.

Jim retired one year early from the USDA in 1995 to write his Rodale bestseller The Green Pharmacy. The sales of his book enabled him to realize his dream and create the "Green Farmacy Garden" in his backyard. In 1998, Jim and Peggy converted a portion of their six-acre "Herbal Vineyard" farmette in Fulton, Maryland, into a teaching garden designed by John Snitzer and Kerry Kyde. The Green Farmacy Garden, with its 80 plots, represents the chapters of his book. These plots are designed to highlight plants associated with the treatment of conditions and ailments like Alzheimer's disease, prostate disorders, osteoporosis, high blood pressure, diabetes, yeast infections, constipation, and bacterial infections. In the garden, Jim taught about traditional uses of plants across our planet, botanical medicine research, and herbal alternatives to pharmaceuticals. He did so with credibility and debunked anything that he believed was a charlatan claim.

Jim was a reductionist botanist who believed in the synergistic healing of the whole plant with its thousands of phytochemicals. Jim believed that our DNA has been commingling with plant constituents for thousands of years. Jim believed that when given herbs, our bodies will mine what constituents it needs. He fervently believed in the healing power of plants.

"Hushpuppy: The Sad Sage of St. John"

I remember that sad day In the year 2002 When I heard the TV say St. John ain't good for you. I reckon they forgot What you really oughta know 2 billion bucks of Zoloft Placed second to placebo.

—From Herbalbum: An Anthology of Varicose Verse, 3rd edition (2010)

Jim was famous for walking barefoot in his cut-off shorts that exposed his bowed legs. He had a disdain for cumbersome shoes, and if he did wear any, they were slip-ons with soft soles. This "barefoot doctor" led groups to the "Gout" plot and recalled how he used celery (*Apium graveolens*, Apiaceae) seed for his condition, and that the pharmaceutical colchicine was originally extracted from the autumn crocus (*Colchicum autumnale*, Colchicaceae).

He walked barefoot in the Amazon, too, while all of the rest of us on my trip in 2003 sported hiking boots, quickdry safari pants and shirts, and gear to repel mosquitoes and avoid the venomous bite of the fer-de-lance. I'll never forget one afternoon when Jim called me into his open-air lodge room to show me blue morpho butterflies puddling or drinking minerals from mud right outside his window where he had dumped the contents of his nighttime chamber pot.

In the Amazon, Jim, along with the Peruvian guides, played not only the typical folk songs *de Colores* and *El Cóndor Pasa*, but also John Denver's *Take Me Home, Country Roads*. Jim wrote a parody to the tune of John Prine's *Paradise* with a dire warning that the state of the Amazon rainforest would be *Paradise Lost*.

"Paraside Lost"

Daddy won't you take me to the Primary Forest By the Amazon River where paradise lies? I'm sorry my son, but the forest is gone! I'll show you some slides, that will have to suffice!

In addition to the ecotours to the Peruvian Amazon, Jim's work as an ethnobotanist offered him the opportunity to travel the world in search of medicinal plants while touching the hearts and minds of many, young and old. I was fortunate to have met Jim in my early thirties around 1991 and again in 1997, just after his *Green Pharmacy* was published and before the garden was installed in 1998. After the garden was built, I volunteered for several years under the guidance of the previous garden director, Holly Vogel. I am forever grateful that Holly asked me to work at the garden, as I got to know Jim and his plants as they aged with the garden.

I accompanied Jim to the Amazon, the United Plant Savers Sanctuary in Rutland, Ohio, Finca Luna Nueva Lodge in Costa Rica, Eagle Hill Institute in Maine, Black Mountain and Brevard in North Carolina, Wintergreen Resort in Virginia, and finally, to the country he always wanted to visit, Cuba. From watching Jim traipse muddy paths barefoot in the Amazon basin, to skinny-dipping with our Tai Sophia class in Ohio, to assisting him with his rollator on cobblestone streets in Cuba, Jim became not only my mentor but also my dear friend.

Jim, a proclaimed altar-boy-turned-atheist, claimed he did not believe in spirits. He did, however, talk about plantto-plant communication from the aromatic spirits, methyl salicylates, of wintergreen (*Gaultheria procumbens*, Ericaceae). His tales were sprinkled with his ayahuasca vision of watching three women dressed in white taking notes in his garden, as well as a fellow participant, who in her vision, saw her brother die of a heart attack. Although he would never admit it, I have a hunch that Jim, the skeptic, became a believer of shamanic powers when, at the end of the tour, his student got back to the dock in Iquitos, Peru, and was handed a note to inform her that her brother had passed.

Jim was a reductionist botanist who believed in the synergistic healing of the whole plant with its thousands of phytochemicals. Jim believed that our DNA has been commingling with plant constituents for thousands of years. Jim believed that when given herbs, our bodies will mine what constituents it needs. He fervently believed in the healing power of plants.

After a bout with neuropathy in his legs, Jim started losing his ambulatory abilities and went from compiling away on his computer to a holding pattern, wanting to go. Jim was, in his own words, "waiting for the reaper to come and harvest me." An apropos metaphor for a botanist. Portending the inevitable, the garden's ayahuasca, La Soga, The Vine, which had looked healthy just a couple days before Thanksgiving, died a week before Jim. Could it be that "celestial connections" intertwined these two? He would say no; it was just coincidence. The last words he told me were that he "hates winter." Two days later the weather abruptly changed from a balmy late autumn to cold and snow. The reaper came, and Jim peacefully passed in his home on Sunday, December 10, 2017, eleven days before the winter solstice.

As I sit here at his desk, I must confess that I find solace imagining Jim in green pastures of a tropical paradise perpetually playing parodies, plucking plants, and waxing poetic varicose verse.

May his words, wisdom, and spirit continue to educate and inspire for decades, if not centuries, to come. HG

JANES A. DUKE A Diverse Life of Botanical Bounty By Steven Foster

Alabama-Born

James Alan Duke, PhD, was born in Birmingham, Alabama, on April 4, 1929, delivered at home by an African-American midwife. He was raised in the red clay hills outside of Birmingham, where one could find a Duke living on nearly every hill. "I come from the cotton-pickin' Dukes, rather than tobacco Dukes,"* he recalled with his always-present humor, accented by a softspoken cadence reflecting his Alabama roots. In his first six years, he spent time between his grandmother's home on Second Avenue in south Birmingham and a farm along the Coosa (Koosa) River about 40 miles outside the city with his parents and two brothers. His father was a cotton farmer, who later dabbled in the nursery and horticulture business.

Duke recalled that his family was "plain ol' poor" and they would eat what they could find or grow most of the time, usually homegrown and canned food shared by the extended Duke family in rural Alabama. In a February 1999 issue of *People* magazine, he mused that his family was "so poor we were *The Grapes of Wrath* and didn't know it."¹

A favorite early culinary memory of Duke's was of scuppernong grapes, a native southern

* James B. Duke, 1856-1925, best known as the father of the modern cigarette, created "The Duke Endowment," a trust that would result in renaming Trinity College to Duke University. James A. Duke is not related to James B. Duke.

Jim Duke teaches at ABC's Pharmacy from the Rainforest workshop in 1995. Photo ©2018 Steven Foster variety of the muscadine grape (*Vitis rotundifolia*, Vitaceae), which originates along the Scuppernong River of North Carolina. "It's a redneck grape like I'm a redneck person," Duke laughed. "They grew behind my grandmother's house and from late August until frost you could eat them off the vine." His grandmother often made scuppernong marmalade and jelly, but his favorite treat was the "treasure" his grandmother called "scuppernong juice."²

Across the street from his grandmother's Birmingham home lived Mr. Brooks, a lonely old man who kept rabbits. Duke, then five years old, believed that Mr. Brooks and the rabbits were his best friends. Old Mr. Brooks had a great love for nature and would take Duke to the hills along East Lake in Birmingham, where he learned about watercress (*Nasturtium officinale*, Brassicaceae) and chestnuts (*Castanea* spp., Fagaceae). By the time Duke started grade school, he had developed a love for biology and the music he heard in the Alabama countryside.

North Carolina Upbringing

Duke lived in Alabama until he was eight, and the Great Depression years forced the family to move to Durham, North Carolina, with Duke and his two brothers in the "rumble seat of a very broken-down car."³ His family lived in Durham for a year or two and then moved to Raleigh. His father became an insurance salesman, and the family prospered. His dad started playing golf, and the family ate meat and potatoes instead of the high-fiber, mostly vegetable-based diet that they had survived on in Alabama.

Years later, Duke recalled: "This is a story that's important to me. Both my father and his two brothers who died of cancer graduated from the rural high-fiber diet to the meatand-potato diet of the newly affluent, and I really think that their cancers of the colon were due to this change in diet. I think that they would have lived many more years had they not achieved this level of affluence. I can't prove it. But I am what is called a high-fiber nut trying to avoid the same chain of circumstances."³

In a letter, dated April 15, 1993, to then-first lady Hillary Rodham Clinton, he repeated his position. "You asked for advice on your health reform program," Duke wrote. "Let me recommend one Jeffersonian health tidbit. If you must use meat, use it as a spice, not as a main entry. That could save thousands of lives and millions, if not billions of dollars."⁴

In Raleigh, Duke joined the Boy Scouts and became keenly interested in the outdoors and natural sciences, especially botany and biology.³ Some of his teachers and mentors encouraged his obvious interest in the subject, including his mother, who got him a job watering plants at a greenhouse and enlisted his help in her flower garden. During the same time period, he had a magazine delivery route, and would sometimes trade magazines with musicians in exchange for a performance. His interest in southern folk music and plants grew in tandem.

From the age of 12 on, Duke spent long hours outside, taking hikes that were sometimes 10 miles or more. At age 15, a Mr. Jim Kessler got him a job as a "junior ranger" (really a glorified maintenance man, as Duke described it)

He was a brilliant, dedicated, funny, and humble man, who earned the admiration, respect, and love of thousands of scientists and herbal enthusiasts.

Mark Blumenthal
Founder & Executive Director,
American Botanical Council

Jim Duke patiently waits while Mark Blumenthal introduces him to present the 2006 James A. Duke Excellence in Botanical Literature Award at the ABC Celebration during Expo West in Anaheim, California. Photo ©2018 Steven Foster

at what was then known as Crabtree Creek State Park and is now known as William B. Umstead State Park, a 5,088-acre park in the Raleigh-Durham area. The park was established in 1943 as one of the many Recreational Demonstration Area parks created by the National Park Service through the Works Progress Administration and the Civilian Conservation Corps.

The year 1944 was a formative one. By then, he had his own guitar, and, for three months, he lived in a one-room cabin with no water, electricity, or toilet in the middle of a broomstraw field at the park. It was here that he penned one of his first songs, inspired by observing the daughter of one of his bosses, whom he saw swinging on a porch with her blonde hair flowing with the swing's motion. That inspired the first verse of his "Chamomile" song, recorded on his 1986 vinyl LP *HerbAlbum*: "Golden hair up in a bun, smiling shyly in the sun." He never met the young lady.⁵

Briars to Bands — From Bassist to Botanist

Duke married his first wife, a fellow musician, at a relatively young age. After reading Gene Stratton-Porter's *The Harvester* (Grosset and Dunlap), a 1911 novel featuring an herb wildcrafter, Duke dreamed of a Thoreau-like existence in the North Carolina mountains harvesting ginseng (*Panax* spp., Araliaceae). That fantasy meshed with his love of music, and Duke played bass fiddle with his wife's band (a trio featuring two sisters and their mother) on the thencountry music station WBT radio in Raleigh that featured live country music and bluegrass programming. As a teenager he also played bass as a back-up musician with the trio at the Grand Ole Opry in Nashville, Tennessee.

While a student at E. Morrison High School in Raleigh, he played with another band. That gig took him to the WBT radio studio every morning at 6 a.m. to play bass fiddle for a 15-minute live music segment with Homer A. Briarhopper and His Dixie Dudes. In 1947, the young Jim Duke also went to Nashville with the group to record a 78-rpm record featuring the instrumental piece "The Briarhopper Boogie," in which Jim Duke played a bass solo.³ Homer Drye's Briarhoppers and His Dixie Dudes with teenage bassist Jim Duke were mentioned in *Billboard Magazine* the same year.⁶ The band, which formed in 1934, continues to perform as the WBT Briarhoppers, now in its ninth decade; the longest-lived bluegrass band of all time.⁷

After high school, Duke enrolled at North Carolina State University in a wildlife conservation program, but he soon dropped out. A year of working odd jobs, such as a carpenter's helper, sharpened his desire to return to school.⁸

His musical interests would lead to him to his career as a botanist. In the late 1940s, student musicians from the University of North Carolina (UNC) at Chapel Hill heard Duke playing bass and invited him to play with a big band jazz group at the university. In 1948, he enrolled in UNC as a music major and became the second bass player in the 20-piece jazz band. Since he didn't read music well, even though he had been practicing for five years, the first bassist played the notated music, while Duke was given the role of playing improvisational bass solos in the band for almost a decade.⁸

Down the Botanical Garden Path

Duke's path to becoming a classical bassist went astray in his first semester at UNC. He took botany courses with H.R. Totten, PhD (1892-1974), and later with C. Ritchie Bell, PhD (1921-2013), and fell in love with field botany.⁸ The experience compelled him to switch from a music major to a botany major with a focus on taxonomy and a minor in zoology. He earned his undergraduate degree at UNC in 1952. He continued on with a master's degree program in botany at UNC, where he met fellow botany student, Peggy-Ann Wetmore Kessler. They fell in love and married. Peggy K. Duke, a talented botanical illustrator, provided artwork for many of his publications.

Jim Duke attained his master's degree on December 7, 1955. The next day, on December 8, he was drafted into the US Army. He was sent to Fort Jackson in Columbia, South Carolina, for basic training, and then was stationed at Fort Sam Houston in San Antonio, Texas, located a few hours from the Mexican border. He recalled that on one of his three-day pass weekends he ventured across the Mexican border and got his first glimpse of Latin America, and fell in love with it. For the rest of his life, Duke would return to Latin America whenever he could.

The Army moved Duke to Fort Benning in Georgia and assigned him to the infantry.⁸ Duke, of course, would have preferred to have been around plants, and he drafted a letter for his father to send to his Army officers explaining that he had a botany degree, and couldn't they put that to use? Not long after, he was transferred to Fort Detrick in Maryland, where he trained other soldiers about edible, useful, and poisonous plants and mushrooms.

After completing his two-and-a-half years of military service, he used the GI Bill to enroll in a doctoral program in plant taxonomy at UNC, and became the first graduate student of noted North Carolina botanist Albert E. Radford, PhD (1918-2006).8 Radford, director of the UNC Herbarium from 1946-1983, co-authored the classic Manual of the Vascular Flora of the Carolinas with Harry E. Ahles and C. Ritchie Bell, published in 1968 by the University of North Carolina Press. Nearly every weekend during his PhD program, Jim and Peggy Duke were assigned to take Radford, Ahles, or Bell into the field to collect specimens for the Manual. The Dukes are honored in the "Acknowledgments" section of the book for their contributions, including their field collections.⁹ The book was the first and only mid-20th-century technical flora guide for the South, is still a reliable reference, and remains in print today.

Duke enrolled in a PhD program in botany at UNC in 1959 and finished his PhD work in 1961, after which C. Ritchie Bell took him on the first of many botanicalcollecting trips to Latin America.¹⁰ The three-month excursion split time among Mexico, Guatemala, and Costa Rica, where they collected with Rafael Lucas Rodríguez Caballero (1915-1981), the iconic Costa Rican biologist, botanist, and artist known for his wildlife paintings, and for whom a wildlife sanctuary is named (*Refugio de Vida Silvestre Dr. Rafael Lucas Rodríguez Caballero*, Costa Rica).

Generous with his knowledge, time, space, presence and creative spirit, how he lived illustrated how not to lose your soul along the way while working within institutional systems. I'm very grateful to have known him as a teacher.

Eagle Hill

– Holli Richey

Jim Duke explains the scientific basis of ayahuasca ingredients at ABC's 1995 Pharmacy from the Rainforest workshop in the Amazon. Photo ©2018 Steven Foster

"It was extremely interesting, learning how closely these people were tied to the environment."



Above photo: Duke and Ramón at the end of the Chiriquí Trail in Caldera-Quito, April 1968. Photo ©2018 Joseph H. Kirkbride, Jr.

Below photo: Duke in Río Teribe, Bocas del Toro, Panama, April 1968. Photo ©2018 Joseph H. Kirkbride, Jr.



Distinguished Ecologist and Student of the Flora of Panama

After Duke completed all the botany courses and degrees offered at UNC in 1961, his professors suggested that he pursue postgraduate work with Robert E. Woodson, PhD (1904-1963), curator of the Herbarium at the Missouri Botanical Garden in St. Louis, Missouri. Woodson was working on a longterm publication project on the flora of Panama, and Duke put his taxonomic skills to work, writing treatments on Panamanian plant families. These include Amaranthaceae (amaranth family), Berberidaceae (barberry family), Caryophyllaceae (pink family), Ceratophyllaceae (hornwort family), Chenopodiaceae (goosefoot family), Monimiaceae (lemonwood family), Myristicaceae (nutmeg family), Nymphaeaceae (waterlily family), Polygonaceae (buckwheat family), and Ranunculaceae (buttercup family).

Duke's two years as a taxonomist and assistant curator at the Missouri Botanical Garden focused on identifying plant specimens collected in Panama and elsewhere in Latin America, including Peru.¹⁰ During this period, Woodson served as a consultant for Ciba Pharmaceuticals, and they were collecting plants from Peru. Duke had the challenging job of trying to assign names to the Peruvian plant specimens. Although this was his first experience working specifically with medicinal plants, it was limited to the herbarium. It would also mark the end of his professional work as a taxonomist.[†]

In honor of Duke's taxonomic work on the Panamanian flora in the early 1960s, several species were named for him, including Grias dukei (now a synonym of G. cauliflora, Lecythidaceae),¹¹ Koanophyllon dukei (Asteraceae),¹² Psychotria dukei (now a synonym of Notopleura dukei, Rubiaceae),13 and Rondeletia dukei (now a synonym of Wittmackanthus stanleyanus, Rubiaceae).14 In 1966, John Duncan Dwyer, PhD (1915-2005), named a new genus in the Rubiaceae (madder) family Dukea, which included six species: Dukea chariantha, D. panamensis, D. victoriae, D. blumii, D. darienensis, and D. euryphylla, four of which were new to science. Dwyer named them "in honor of Dr. James Duke, distinguished ecologist and student of the flora of Panama."15 Unfortunately, at least for those who would like to see Duke's name live on in botanical taxonomy, these species have since been relegated to synonymy in the genus Raritebe.

Puerto Rican Plants

In 1963, Duke was approached by the Crops Research Division, a part of the US Department of Agriculture's (USDA's) Agricultural Research Service, for an assignment in Puerto Rico that piqued his interest. He took the assignment and traveled to Puerto Rico to study tropical tree

[†] Jim Duke's family treatments on the flora of Panama are published as 10 separate papers in various issues, volumes 47-49 (1961-1963), in the Annals of the Missouri Botanical Garden.



Duke with a local native, Loro, and his family in Manene, Darién, Panama, April 1968. Photo ©2018 Joseph H. Kirkbride, Jr.

seedlings. Specifically, the job involved experimental work and documenting how herbicides affected the succession of tropical vegetation. He became proficient at identifying tropical woody plants in the seedling stage.

One publication from this period proved useful in helping to identify tropical tree seedlings in Puerto Rico following the devastation caused by Hurricane Maria in September 2017. The comprehensive paper, "Keys for the identification of seedlings of some prominent woody species in eight forest types in Puerto Rico," also included 182 technical illustrations of seedlings by Peggy Duke.¹⁶ The research was contracted by the USDA and sponsored by the Defense Advanced Research Projects Agency (DARPA) of the US Department of Defense. Peggy Duke's illustrations were prepared and subsidized by the Rain Forest Project of the Puerto Rico Nuclear Center in El Verde, Puerto Rico, and supported by the Division of Biology and Medicine of the US Atomic Energy Commission.¹⁰

Panamanian Ethnobotanical Passion

After two years of successful research in Puerto Rico, Duke was offered a position as a research ecologist with the Columbus Laboratories of the Battelle Memorial Institute in Columbus, Ohio.¹⁰ His assignment was to conduct bioenvironmental and radiological safety feasibility studies in remote regions of Panama. President John F. Kennedy had initiated a feasibility study to assess the practicality of widening the Panama Canal, or perhaps excavating a new canal, to accommodate supertankers. The project was called the Atlantic-Pacific Interoceanic Canal Study Commission. The United States had a tool that would easily accomplish the excavation work: nuclear devices. The idea was to detonate nuclear devices on the Central American isthmus to create a new canal from the Atlantic to the Pacific. Sponsored by the Atomic Energy Commission, Battelle was tasked with determining what radionuclides might get into the food chain if a new sea-level Panama Canal were to be excavated with nuclear devices.

"The dietary studies in Panama and Colombia were designed to quantify per-capita food consumption so that it could be determined what quantity of radionuclides would be ingested by natives following nuclear excavations of a sea-level canal, assuming that natives are allowed to return after a selected period of time," Duke explained.¹⁷

Duke's research took on an ethnobotanical and ethnozoological focus.¹⁰ For nearly three years, his job was to document what the local and indigenous people ate, drank, and used as medicine from the environment. He took his young family, including Peggy, their two-and-a-halfyear-old son John, and sixmonth-old daughter Celia, with him to Panama.

"It was extremely interesting, learning how closely these people were tied to the environment," Duke recalled.10 He traveled by dugout canoe, and much of his work was conducted in the Darién province of Panama, a wilderness region that is considered to be one of the most dangerous in the world. (The Darién Gap is an approximately 60-mile stretch of wilderness that forms the only break in the 19,000-mile Pan-American Highway.) On one field trip

Duke recognized the cultural and environmental problems that often occurred when developing countries clashed with developed countries. In 1970, still at Battelle Memorial Institute, he responded to a series of 10 articles alerting the scientific community that the Vietnam defoliation program (using Agent Orange) was having serious side effects in Vietnam.

in 1968, Duke and his colleague Joseph H. Kirkbride, Jr., PhD (now with the Smithsonian Institution's Department of Botany) hiked across Panama from Bocas del Toro province on the Atlantic side to Chiriquí province on the Pacific side. On another field trip, they hiked from Darién province to the Colombian border.

In Panama, Duke became immersed in what became his overriding professional interest: neotropical ethnobotany. During a collective four years of field work (between 1963 and 1970) in Panama and Colombia, he collected more than 15,000 specimens of plants, as well as amphibians, arthropods, birds, fish, mammals, and reptiles that were part of the food chain, especially of the Chocó (now Embera-Wounaan) and Cuna (now Guna) tribes.^{18,19}

Pondering "Progress" in Panama

Following his field collections, Duke spent several years in Columbus, Ohio, producing reports of his findings. His close connections with the people and environment in Panama added perspective to the debate over the plans for the controversial sea-level canal. In a letter to the editor of *Biological Conservation* he asked: "Where does Panama intend to deposit its solid wastes, treated or untreated? ... Where does Panama intend to put its thermal [nuclear] effluents? ... Any one of them if added in sufficient quantity at the centre of a sea-level canal, would be repugnant, if not lethal, to interoceanic migrants, including tourists. However, the sea-level canal was not proposed to accommodate tourists, but instead large ocean-going tankers."²⁰

In another letter to the editor of *Science* he asked: "Does generosity of avarice dictate that the developed nations hinder the development of underdeveloped nations with environmental considerations? ... Progress is a magic word in Panama.... It is not politic to hinder progress; politicians usually decry pollution only when their constituents are crying pollution. Such is true in few, if any developing countries. Progress, *si*; pollution control, *mañana*."²¹

Duke's service was always to the people whose traditions he admired rather than the government entities or projects that employed him.

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letter to the editor of *Science* recommending and outlining a practical 10-point research program on tropical reforestation that could "contribute to a successful rehabilitation of Vietnam to correct some of the side effects of the war." As an accomplished musician, poet, and songwriter, subtle humor would often creep into his scientific writings. The letter was titled "Vietnam Refoliation."²²

With the completion of the voluminous feasibility studies on the proposed Atlantic-Pacific Interoceanic Canal, the five-member Canal Study Commission concluded, "Unfortunately, neither the technical feasibility nor the international acceptability of such an application of nuclear excavation technology has been established at this date."²³ And, surprising Duke, they also concluded that "The risk of adverse ecological consequences stemming from construction and operation of a sea-level Isthmian canal appears to be acceptable."

From Drug Plants to Databases

Reading those conclusions, Duke raised an eyebrow, rubbed his chin, and returned to the Agricultural Research Service at the USDA in 1971 as chief of the Plant Taxonomy Laboratory, part of the Plant Genetics and Germplasm Institute. After the reorganization of the USDA's Agricultural Research Service in 1972, Duke's new assignment with the USDA, in conjunction with the United Nations, was to come up with alternative crops for narcotic plants. Viewing marijuana (Cannabis spp., Cannabaceae), coca (Erythroxylum spp., Erythroxylaceae), and poppies (Papaver spp., Papaveraceae) as economic plants, despite their legal status, he began compiling massive amounts of data on economic plants of the world. The data would not only serve as the foundation for his assigned program at the time, but would also become the foundational database for other programs that Duke directed. The list of projects including work on alternative agricultural crops, oilseed crops, alternative energy-related crops, and underutilized food



Above photo: Duke and tonga de monte or I wua (Chocó), a plant in the genus Solanum used as a narcotic and painkiller. The shrub is 1-2 m tall and has white flowers, purplish anthers, and orange berries. Tres Bocas on the Río Coasi, Darién, Panama, May 1968. Photo ©2018 Joseph H. Kirkbride, Jr.

crops. One of the most significant outcomes was the largest compilation of data on medicinal plants ever amassed by an individual.

By 1981, the computerized list of medicinal plants produced by Duke and colleagues at the Economic Botany Laboratory (formerly known as the Medicinal Plant Resources Laboratory) would include more than 85,000 entries.²⁴ This would become the heart of his groundbreaking "Phytochemical and Ethnobotanical Databases," which he updated from the 1970s until his retirement in 1995. The database is now permanently archived, and it is still available through the National Agricultural Library and remains one of the most frequently accessed USDA databases.^{25‡}

Recognizing that a weed in one part of the world may be a food or fodder crop elsewhere, or that a medicinal plant in one country may be an illegal narcotic in another, Duke and his team generated a list of 1,000 lesser-known crop species and developed a matrix that included information about their "ecological amplitude" from one region to another. The data matrix included taxonomic, ecological, morphological, geographical, pathological, ethnobotanical, biochemical, and economic data that grew out of the crop diversification program. His "Crop Diversification Matrix" was published in 1974,²⁶ along with a paper on the ecological amplitudes of herbs, spices, and medicinal plants.²⁷

The comparative data were collected from correspondents at agricultural stations and botanical gardens from around the world who provided information about economic plants that were successfully grown in their regions (without irrigation). Duke and his team complied annual precipitation data from each region, along with temperature, pH, and soil data. Later publications would also include data about nutritional values.^{28,29}

The work also served the public interest. The Plant Genetics and Germplasm Institute held the largest taxonomic collection of seeds in the world, which served local, national, and international identification of seeds, and in several instances prevented deaths and solved the cause of

[‡] Until several months before his passing, Duke continued his activities as an avid compiler of voluminous medicinal plant information into the successor databases, known as "Father Nature's Farmacy."

fatalities. Duke's lab also became a primary source for identifying fragmentary narcotic and poisonous plant material. 30

Poppy Pursuits

Poppyseed rolls too hot or hardened The seed will not grow in the garden; But if the seeds are to germinate, Narcotic laws are violated; Poppy patches are not to be pardoned!

-From Herbalbum: An Anthology of Varicose Verse³¹

In the early 1970s, Duke turned his professional attention to poppies. This work took him to various parts of the world, including Iran to collect opium poppy (*P. somniferum*) germplasm from the plant's center of genetic diversity, as well as to document opium production practices. In 1971, he observed poppy production among Meo ethnic minority villages in Thailand and a Yao village in Vang Vieng, Laos.³²

Looking beyond the obvious abuse potential of opium poppy as a narcotic, Duke turned his attention to the plant group's broad economic potential. He wrote about poppy's potential as an ornamental and a source for poppy seed, poppy seed oil, high-protein poppy-cake, poppy flour, and poppy as a vegetable. He saw the potential for poppies to be used as a commercial ant feed, antimalarial, cough remedy, and salad vegetable, among other purposes.

He documented the adulteration of marijuana with opium, morphine, or codeine and speculated that this adulteration could have contributed to the perception of

marijuana as a gateway to opiate abuse. He observed that where both marijuana and opiates were illegal, they were often sold in the same illicit channels, associating one with the other. He became an early advocate for the legalization of marijuana, believing this was the best way to control its economics and availability. He observed that tribal herbalists in India had both marijuana and opium in their medicine kits. How, he asked, can one eliminate opium and marijuana in populations where 80% of the people are attended by Ayurvedic or Unani-Tibb practitioners?³³ His detailed observations and information on the genus Papaver could be revisited for leads on to how to deal with the modern opioid crisis. Clues might be found in the Annotated Bibliography on Opium and Oriental Poppies and Related Species, a 1973 book with Duke as lead author.34

Chief, USDA Medicinal Plant Resources Laboratory

In 1977, the USDA appointed Duke as chief of the Medicinal Plant Resources Laboratory, which was then renamed the Economic Botany Laboratory, apparently because of the controversies then emerging about herbal products in the early years of the natural food industry. From 1977 to 1981, Duke headed the USDA's collaboration with the National Cancer Institute (NCI) to collect plant specimens and promising biomass from all over the world that might have anticancer activities. This effort was inspired by the work of NCI scientist Jonathan L. Hartwell, PhD (1906-1991). Hartwell's pioneering work on the common mayapple (*Podophyllum peltatum*, Berberidaceae) resulted in the isolation of podophyllotoxin and several other compounds, which eventually led to the development of semisynthetic drugs used in chemotherapy for the treatment of testicular cancer and small cell lung cancer. In July 1960, a contract was established with NCI for the USDA to begin collections of plant materials for screening potential new anticancer compounds. Duke considered this his most important assignment during his service at the USDA, which took him to China, Egypt, South America, and elsewhere.

Between 1960 and 1980, the NCI screened approximately 35,000 species of higher (flowering) plants for activities against cancer. By 1977, approximately 3,000 of those had demonstrated reproducible activities. A small fraction of these, including mayapple, yew (*Taxus* spp., Taxaceae) derivatives, and others, were eventually chosen for clinical trials. Jonathan L. Hartwell's *Plants Used Against Cancer*, a compilation of 11 papers originally published in *Lloydia* (now the *Journal of Natural Products*) from 1967 to 1971 on folk cancer remedies worldwide, covered more than 3,000 species and includes more than 1,000 references.³⁵

In 1981, the first year of Ronald Reagan's presidency, the NCI Natural Products Screening Program was removed from the federal budget. "I got a phone call," Duke recalled, "that the 25-year-old program, that wow, came to an abrupt and painful end."³⁶ At the time, Duke was in the process of bringing back 900 pounds of plant material from China, and his colleague, Richard W. Spjut, was bringing in more than a half-ton of plant material from Australia.



In Duke's foreword to the reprint of Hartwell's *Plants* Used Against Cancer, he lamented: "I view the publication as one epitaph to the cancer-screening program involving the National Cancer Institute with the U.S. Department of Agriculture for nearly 25 years. In a blow to natural-products chemistry in the United States, the Board of Scientific Counselors, Division of Cancer Treatment, National Cancer Institute, voted on October 2, 1981, to abolish the NCI research program concerned with the development of antitumor agents from plants. I fear this signals the end of significant government-sponsored research in the United States on medicinal plants, leaving research to the pharmaceutical firms, who have shown relative disinterest in plant products."³⁷

After his appointment as chief of the USDA's Medicinal Plant Resources Laboratory in 1977, Duke garnered international notoriety for his work in economic botany and medicinal plants, as well as attention from the popular press. He was profiled in *People* magazine's April 4, 1977 issue, and became a fixture on the lecture circuit, speaking on medicinal plants and herbs at professional and public venues. He emerged as the public face of the federal government for all things herbal and carefully upheld a conservative approach to herb use as a government scientist. Jim Duke had to walk an uncomfortable tightrope between his personal beliefs advocating the use of herbs and at the same time emphasizing that he deferred "the prescribing of medicines" to medical professions, be they physicians or shamans.

Academic and Popular Author

Duke kept one foot in academia and the other in popular interpretation of the use of herbs. He produced roughly an equal number of technical books and popular books on herbal topics. He was quick to publish in newsletters

Selections of the collected professional and popular books by James A. Duke. Photo ©2018 Steven Foster

and magazines such as *Well-Being*, *Bu\$iness of Herbs*, *Colt's Foot*, *Prevention*, *Mother Earth News*, and, of course, in *HerbalGram*.

Duke also published books and booklets, some of which were directly related to his USDA career. In 1972, he self-published a dictionary of colloquial slang terms in various Latin American language variations and dialects, and this was intended for diplomats and scientists working in the region.³⁸ Based on his earlier field work in Panama, he also published the *Isthmian Ethnobotanical Dictionary* in 1972,³⁹ a booklet that was later revised and published as a hardcover title by a publisher in India.⁴⁰

With the end of USDA's contract with the NCI, a disappointed Duke became chief of the Germplasm Resources Laboratory at USDA, but he also pursued more of his own writings and activities.

In a 1988 interview, he mused: "Feeling sorry for me, USDA let me take the momentum I had gotten in medicinal plants to go off duty and publish what has been a best-seller for CRC Press (in CRC terms), *The Handbook of Medicinal Herbs*, and that one came out in 1985.³⁶





"The USDA has no medicinal plant program since that moment in 1981 when the cancer program was terminated," he recalled in the same interview.³⁶ "And I have a feeling this is appropriate. The USDA is into food, fiber, and fodder, and even our country is not much into medicinal plants. Why should an agency of our country be into medicinal plants? ... I'm not saying this is my philosophy. I believe in medicinal plants, but the USDA really should not have much involvement in medicinal plants. So, I sort of hung myself there, didn't I?" He laughed.

Duke looked ahead to "retirement" so he could get to work. In a letter to this author dated June 12, 1986, he predicted: "I may have to retire to the ginseng patch at 57. That'll give me 10 good but lean years of trying to turn the U.S. away from the synthetics to the natural. Quite an unholy and unlikely crusade."⁴¹ Retirement was not to come as quickly as he thought. Duke persisted at the USDA for another nine years before retiring at age 66.

Although his books started with massive USDA datacollection projects, he was allowed to continue to work with his USDA files to shape them into reference books. From 1981 until his retirement in 1995, the USDA permitted him to continue his medicinal plant research "off duty."³⁶

The majority of Duke's book-publishing activity occurred after the USDA's collection activities for the NCI ceased in 1981. His first professional title, *Handbook of Legumes* of World Economic Importance (Plenum Press, 1981), was based on data he collected about alternative crops and was a detailed survey of 140 species of legumes.⁴² In 1983, the first of three editions from three separate publishers of *Medicinal Plants of the Bible* was issued.⁴³⁻⁴⁵ In 1985, he co-authored (with Edward S. Ayensu) a two-volume work titled *Medicinal Plants of China* (Reference Publications), which featured an introductory chapter that compared North American and Chinese medicinal plants.⁴⁶

Duke's herbal publishing leaped from academia to literary humor with the self-published, staple-bound, rare *Herbalbum: An Anthology of Varicose Verse* (1985), which included more than 500 herbal poems — doggerels and limericks — along with a collection of bluegrass songs and their simplified notated melodies and chords. In 1986, the songs were cut into a LP vinyl record with studio bluegrass musicians, recorded in Nashville, and titled *Dr. James A. Duke Presents The HerbAlbum*.

In quick succession, he completed small press popular books, including a book on growing and using culinary herbs⁴⁷; the *Handbook of Northeastern Indian Medicinal Plants* (Quarterman Publications, 1986)⁴⁸; *Living Liqueurs* (Quarterman Publications, 1987), a practical approach to having your herb and drinking it too, with the aid of cheap vodka⁴⁹; and *Ginseng: A Concise Handbook* (Reference Publications, 1989).⁵⁰ In 1990, he coauthored *Peterson Field Guide to Medicinal Plants and Herbs of Eastern and Central America* (with this author, S. Foster) in Houghton Mifflin Harcourt's Peterson Field Guide series, with a second edition in 2000 and a third edition in 2014.



Academic Publishing Success

The success of his 1985 CRC Handbook of Medicinal Herbs, which included 365 herbs, or an herb a day, a constant Duke mantra, led to the publication of at least a dozen more CRC titles, including academically obscure tabular compilations such as the CRC Handbook of Proximate Analysis Tables of Higher Plants with A.A. Atchley (1986) and the four-volume CRC Handbook of Agricultural Energy Potential of Developing Countries with A.A. Atchley, K. Ackerson, and P. Duke. Technically rich but readable books for knowledgeable enthusiasts include the CRC Handbook of Nuts (1989), CRC Handbook of Edible Weeds (1992), CRC Handbook of Alternative Cash Crops with J.L. duCellier (1993), and Duke's Handbook of Medicinal Plants of Latin America with M.J. Bogenschutz-Godwin and A.R. Ottesen (2009). His CRC titles became an academic publishing franchise.

Birth of a Bestseller

In a letter dated June 26, 1995, Duke wrote to this author: "For better or worse, for me, for herbal industry, for Rodale, for USDA, I have signed a contract with Rodale to do, in one year, yet another book on herbal medicine. There are already too many. And I am not as optimistic about this one as they are. And the one year deadline forces me to retire on Sep. 30 [1995] to devote near full time to Rodale (except for an ecotour here and there, like joining you in the Amazon in October for example)."⁵¹

A year later, he was finishing the final draft of his book *The Green Pharmacy*, published by Rodale in 1997. It was to become a runaway bestseller with more than a million copies sold, and then spun-off into additional Rodale book titles including *Dr. Duke's Essential Herbs* (1999), *The Green Pharmacy: Anti-Aging Prescriptions* with Michael Castleman (2001), and *The Green Pharmacy: Guide to Healing Foods* (2008), among others. *The Green Pharmacy* was one of the best-selling herbal title franchises of all time.

The Dukes purchased a six-acre farmette in Fulton, Maryland, in 1971, about 16 miles from the USDA's Agricultural Research Service campus in Beltsville, Maryland. The Dukes christened the farm "Herbal Vineyard." It was here that Duke "retired" and created a four-acre herb garden with hundreds of plant species, in plots arranged by medical conditions, following the chapters in The Green Pharmacy. Thousands of people have visited and been inspired by the rural Maryland garden, and countless individuals were introduced to the botanical diversity of the tropics through Jim's leading more than 60 tours to the Amazon, Costa Rica, and elsewhere during his productive retirement years. Many of these tours happened via the American Botanical Council's "Pharmacy from the Rainforest" ethnobotany ecotours, which were continuing education approved for pharmacists and other health professionals.



Many times I had a research question while working in his basement library, to which Jim had the answer, not always on his computer, but by walking to a bookshelf and opening some tome or other to the precise page that held the information in question. His erudition and deep earthy wisdom was even more comprehensive than his library. He lived his love of plants. His enormous legacy includes his living gardens, to be cared for and maintained as a premier teaching classroom by Maryland University of Integrative Health. Beyond MUIH and around the planet we celebrate James A. Duke through song, stories of his humor, brilliance and inspiring humanity.

- Amanda McQuade Crawford

Remember This

Jane P. Gates, of the Alternative Farming Systems Information Center at the USDA National Agricultural Library, asked Duke in a 1988 interview, "What would you like to be remembered for?"⁵² Standing barefoot in his garden with his signature plaid shorts, Duke replied:

Something I haven't done yet. I would like to be remembered for turning around the trend to the natural medicine from the synthetic medicine. I think we made a mistake there, because through evolution, my genes and immune system have already experienced all of the poisons that are here in this garden, or many of them, because my grandparent's grandparents ate or used these things for one thing or another, such that my genes have already touched those poisons, my genes have not experienced tomorrow's synthetics. Two hundred years ago, all of our medicines were natural. Today, still, 25% of prescription drugs are based on higher plants and almost half of our prescription drugs are based on lower plants, higher plants, and animals, so even today 50%, or almost 50%, are natural. So, I would like to see that [we] go back to 100% natural. I really believe that natural is safer than the synthetics. HG

Steven Foster is an author, photographer, and herbalist, and he serves on the Board of Trustees of the American Botanical Council. His most recent book is the third edition of the Peterson Field Guide to Medicinal Plants and Herbs of Eastern and Central North America (Houghton Mifflin Harcourt, 2014), which he co-authored with James A. Duke, PhD.

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James A. Duke

1929 - 2017

Amanda McQuade Crawford and Jim Duke stroll back to camp at sunset along the Amazon in November 1995. Photo ©2018 Steven Foster