

The Revolutionary Genius Of Plants A New Understa

"In this thought-provoking, handsomely illustrated book, Italian neurobiologist Stefano Mancuso considers the fundamental differences between plants and animals and challenges our assumptions about which is the 'higher' form of life." –The Wall Street Journal "Fascinating...full of optimism...this quick, accessible read will appeal to anyone with interest in how plants continue to surprise us." –Library Journal Do plants have intelligence? Do they have memory? Are they better problem solvers than people? The Revolutionary Genius of Plants—a fascinating, paradigm-shifting work that upends everything you thought you knew about plants—makes a compelling scientific case that these and other astonishing ideas are all true. Plants make up eighty percent of the weight of all living things on earth, and yet it is easy to forget that these innocuous, beautiful organisms are responsible for not only the air that lets us survive, but for many of our modern comforts: our medicine, food supply, even our fossil fuels. On the forefront of uncovering the essential truths about plants, world-renowned scientist Stefano Mancuso reveals the surprisingly sophisticated ability of plants to innovate, to remember, and to learn, offering us creative solutions to the most vexing technological and ecological problems that face us today. Despite not having brains or central nervous systems, plants perceive their surroundings with an even greater sensitivity than animals. They efficiently explore and react promptly to potentially damaging external events thanks to their cooperative, shared systems; without any central command centers, they are able to remember prior catastrophic events and to actively adapt to new ones. Every page of The Revolutionary Genius of Plants bubbles over with Stefano Mancuso's infectious love for plants and for the eye-opening research that makes it more and more clear how remarkable our fellow inhabitants on this planet really are. In his hands, complicated science is wonderfully accessible, and he has loaded the book with gorgeous photographs that make for an unforgettable reading experience. The Revolutionary Genius of Plants opens the doors to a new understanding of life on earth. Intended as a text for upper-division undergraduates, graduate students and as a potential reference, this broad-scoped resource is extensive in its educational appeal by providing a new concept-based organization with end-of-chapter literature references, self-quizzes, and illustration interpretation. The concept-based, pedagogical approach, in contrast to the classic discipline-based approach, was specifically chosen to make the teaching and learning of plant anatomy more accessible for

students. In addition, for instructors whose backgrounds may not primarily be plant anatomy, the features noted above are designed to provide sufficient reference material for organization and class presentation. This text is unique in the extensive use of over 1150 high-resolution color micrographs, color diagrams and scanning electron micrographs. Another feature is frequent side-boxes that highlight the relationship of plant anatomy to specialized investigations in plant molecular biology, classical investigations, functional activities, and research in forestry, environmental studies and genetics, as well as other fields. Each of the 19 richly-illustrated chapters has an abstract, a list of keywords, an introduction, a text body consisting of 10 to 20 concept-based sections, and a list of references and additional readings. At the end of each chapter, the instructor and student will find a section-by-section concept review, concept connections, concept assessment (10 multiple-choice questions), and concept applications. Answers to the assessment material are found in an appendix. An index and a glossary with over 700 defined terms complete the volume.

In the tradition of *The Botany of Desire* and *Wicked Plants*, a witty and engaging history of the first botanists interwoven with stories of today's extraordinary plants found in the garden and the lab. In *Paradise Under Glass*, Ruth Kassinger recounted with grace and humor her journey from brown thumb to green, sharing lessons she learned from building a home conservatory in the wake of a devastating personal crisis. In *A Garden of Marvels*, she extends the story. Frustrated by plants that fail to thrive, she sets out to understand the basics of botany in order to become a better gardener. She retraces the progress of the first botanists who banished myths and misunderstandings and discovered that flowers have sex, leaves eat air, roots choose their food, and hormones make morning glories climb fence posts. She also visits modern gardens, farms, and labs to discover the science behind extraordinary plants like one-ton pumpkins, a truly black petunia, a biofuel grass that grows twelve feet tall, and the world's only photosynthesizing animal.

Transferring her insights to her own garden, she nurtures a "cocktail" tree that bears five kinds of fruit, cures a Buddha's Hand plant with beneficial fungi, and gets a tree to text her when it's thirsty. Intertwining personal anecdote, accessible science, and untold history, the ever-engaging author takes us on an eye-opening journey into her garden—and yours.

The Revolutionary Phenotype is a science book that brings us four billion years into the past, when the first living molecules showed up on Planet Earth. Unlike what was previously

thought, we learn that DNA-based life did not emerge from random events in a primordial soup. Indeed, the first molecules of DNA were fabricated by a previous life form. By describing the fascinating events referred to as Phenotypic Revolutions, this book provides a dire warning to humanity: if humans continue to play with their own genes, we will be the next life form to fall to our own creation.

The Secret Life of Plants

The Ethnobotany of Eden

The Wisdom of Trees

The International Bestseller

A Big History of Everything

A Garden of Marvels

A Concept-Based Approach to the Structure of Seed Plants

A treasury like no other Since the 1500s, scientists have documented the plants and fungi that grew around them, organizing the specimens into collections. Known as herbaria, these archives helped give rise to botany as its own scientific endeavor. Herbarium is a fascinating enquiry into this unique field of plant biology, exploring how herbaria emerged and have changed over time, who promoted and contributed to them, and why they remain such an important source of data for their new role: understanding how the world's flora is changing. Barbara Thiers, director of the William and Lynda Steere Herbarium at the New York Botanical Garden, also explains how recent innovations that allow us to see things at both the molecular level and on a global scale can be applied to herbaria specimens, helping us address some of the most critical problems facing the world today. At its heart, Herbarium is a compelling reminder of one of humanity's better impulses: to save things—not just for ourselves, but for generations to come. David Christian, creator of Big History ('My favourite course of all time' Bill Gates), brings us the epic story of the universe and our place in it, from 13.8 billion years ago to the remote future 'Nails home the point: Life is a miracle ... A compelling history of everything' Washington Post 'Spectacular' Carlo Rovelli How did we get from the Big Bang to today's staggering complexity, in which seven billion humans are connected into networks powerful enough to transform the planet? And why, in comparison, are our closest primate relatives reduced to near-extinction? Big History creator David Christian gives the answers in a mind-expanding cosmological detective story told on the grandest possible scale. He traces how, during eight key thresholds, the right conditions have allowed new forms of complexity to arise, from stars to galaxies, Earth to homo sapiens, agriculture to fossil fuels. This last mega-innovation gave us an energy bonanza that brought huge benefits to mankind, yet also threatens to shake apart everything we have created. 'Rather like the Big Bang, the book is awe-inspiring ... Superb' The Times 'With fascinating ideas on every page and the page-turning energy of a good thriller, this is a landmark work' Sir Ken Robinson, author of The Element

A biologist reveals the secret world hidden in a single square meter of old-growth forest—a finalist for the Pulitzer Prize and the Pen/E.O. Wilson Literary Science Writing Award Combining elegant writing with scientific expertise, The Forest Unseen "injects much-needed vibrancy into the stuffy world of nature writing" (Outside, "The Outdoor Books That Shaped the Last Decade") In this wholly original book, biologist David Haskell uses a one- square-meter patch of old-growth Tennessee forest as a window onto the entire natural world. Visiting it almost daily for one year to trace nature's path through the seasons, he brings the forest and its

inhabitants to vivid life. Each of this book's short chapters begins with a simple observation: a salamander scuttling across the leaf litter; the first blossom of spring wildflowers. From these, Haskell spins a brilliant web of biology and ecology, explaining the science that binds together the tiniest microbes and the largest mammals and describing the ecosystems that have cycled for thousands- sometimes millions-of years. Each visit to the forest presents a nature story in miniature as Haskell elegantly teases out the intricate relationships that order the creatures and plants that call it home. Written with remarkable grace and empathy, The Forest Unseen is a grand tour of nature in all its profundity. Haskell is a perfect guide into the world that exists beneath our feet and beyond our backyards.

In this richly illustrated volume, a leading neurobiologist presents fascinating stories of plant migration that reveal unexpected connections between nature and culture. When we talk about migrations, we should study plants to understand that these phenomena are unstoppable. In the many different ways plants move, we can see the incessant action and drive to spread life that has led plants to colonize every possible environment on earth. The history of this relentless expansion is unknown to most people, but we can begin our exploration with these surprising tales, engagingly told by Stefano Mancuso. Generation after generation, using spores, seeds, or any other means available, plants move in the world to conquer new spaces. They release huge quantities of spores that can be transported thousands of miles. The number and variety of tools through which seeds spread is astonishing: we have seeds dispersed by wind, by rolling on the ground, by animals, by water, or by a simple fall from the plant, which can happen thanks to propulsive mechanisms, the swaying of the mother plant, the drying of the fruit, and much more. In this accessible, absorbing overview, Mancuso considers how plants convince animals to transport them around the world, and how some plants need particular animals to spread; how they have been able to grow in places so inaccessible and inhospitable as to remain isolated; how they resisted the atomic bomb and the Chernobyl disaster; how they are able to bring life to sterile islands; how they can travel through the ages, as they sail around the world.

The Botany of Desire

A Field Guide to the Senses of Your Garden - and Beyond

Botany for Beginners

The Art and Practice of Leading Innovation

The Quest to Preserve and Classify the World's Plants

Science, Philosophy, Literature

The Incredible Journey of Plants

For many people, the story of Charles Darwin goes like this: he ventured to the Galapagos Islands on the Beagle, was inspired by the biodiversity of the birds he saw there, and immediately returned home to write his theory of evolution. But this simplified narrative is inaccurate and lacking: it leaves out a major part of Darwin's legacy. He published *On the Origin of Species* nearly thirty years after his voyages. And much of his life was spent experimenting with and observing plants. Darwin was a brilliant and revolutionary botanist whose observations and theories were far ahead of his time. With *Darwin's Most Wonderful Plants*, biologist and gardening expert Ken Thompson restores this important aspect of Darwin's biography while also delighting in the botanical world that captivated the famous

scientist. Thompson traces how well Darwin's discoveries have held up, revealing that many are remarkably long-lasting. Some findings are only now being confirmed and extended by high-tech modern research, while some have been corrected through recent analysis. We learn from Thompson how Darwin used plants to shape his most famous theory and then later how he used that theory to further push the boundaries of botanical knowledge. We also get to look over Darwin's shoulder as he labors, learning more about his approach to research and his astonishing capacity for hard work. Darwin's genius was to see the wonder and the significance in the ordinary and mundane, in the things that most people wouldn't look at twice. Both Thompson and Darwin share a love for our most wonderful plants and the remarkable secrets they can unlock. This book will instill that same joy in casual gardeners and botany aficionados alike.

We've all seen red roses, blue irises, and yellow daffodils. But when we really look closely at a flower, whole new worlds of beauty and intricacy emerge. Using a unique process that far surpasses conventional macro photography, Robert Llewellyn shows us details that few of us have ever seen: the amazing architecture of stamens and pistils; the subtle shadings on a petal; the secret recesses of nectar tubes. Complementing Llewellyn's stunning photographs are Teri Dunn Chace's lyrical, illuminating essays. By highlighting the features that distinguish twenty-eight of the most common families of flowering plants, Chace gives us fascinating insights into the natural history of flowers, such as the relationship between pollinators and floral form and color. At the same time she gives us a deeper appreciation of why and how flowers have become so deeply embedded in human culture. Whether you're a nature lover, a gardener, a photography buff, or someone who simply responds to the timeless beauty and variety of the floral world, *Seeing Flowers* will be a source of enduring delight.

"Fascinating...full of optimism...this quick, accessible read will appeal to anyone with interest in how plants continue to surprise us." —Library Journal

Do plants have intelligence? Do they have memory? Are they better problem solvers than people? *The Revolutionary Genius of Plants*—a fascinating, paradigm-shifting work that upends everything you thought you knew about plants—makes a compelling scientific case that these and other astonishing ideas are all true. Plants make up eighty percent of the weight of all living things on earth, and yet it is easy to forget that these innocuous, beautiful organisms are responsible for not only the air that lets us survive, but for many of our modern comforts: our medicine, food supply, even our fossil fuels. On the forefront of uncovering the essential truths about

plants, world-renowned scientist Stefano Mancuso reveals the surprisingly sophisticated ability of plants to innovate, to remember, and to learn, offering us creative solutions to the most vexing technological and ecological problems that face us today. Despite not having brains or central nervous systems, plants perceive their surroundings with an even greater sensitivity than animals. They efficiently explore and react promptly to potentially damaging external events thanks to their cooperative, shared systems; without any central command centers, they are able to remember prior catastrophic events and to actively adapt to new ones. Every page of *The Revolutionary Genius of Plants* bubbles over with Stefano Mancuso's infectious love for plants and for the eye-opening research that makes it more and more clear how remarkable our fellow inhabitants on this planet really are. In his hands, complicated science is wonderfully accessible, and he has loaded the book with gorgeous photographs that make for an unforgettable reading experience. *The Revolutionary Genius of Plants* opens the doors to a new understanding of life on earth.

From the bestselling author of *The Invention of Nature*, a fascinating look at the men who made Britain the center of the botanical world. Bringing to life the science and adventure of eighteenth-century plant collecting, *The Brother Gardeners* is the story of how six men created the modern garden and changed the horticultural world in the process. It is a story of a garden revolution that began in America. In 1733, colonial farmer John Bartram shipped two boxes of precious American plants and seeds to Peter Collinson in London. Around these men formed the nucleus of a botany movement, which included famous Swedish botanist Carl Linnaeus; Philip Miller, bestselling author of *The Gardeners Dictionary*; and Joseph Banks and David Solander, two botanist explorers, who scoured the globe for plant life aboard Captain Cook's *Endeavor*. As they cultivated exotic blooms from around the world, they helped make Britain an epicenter of horticultural and botanical expertise. *The Brother Gardeners* paints a vivid portrait of an emerging world of knowledge and gardening as we know it today.

Rethinking the Jungle Medicine Narrative

Ethical Vegetarianism and Veganism

Discover the Hidden Life of Flowers

Collective Genius

How We Discovered that Flowers Have Sex, Leaves Eat Air, and Other Secrets of Plants

Trees

A Year's Watch in Nature

The Study of Plants in a Whole New Light "Matt Candeias

succeeds in evoking the wonder of plants with wit and wisdom.”
—James T. Costa, PhD, executive director, Highlands Biological Station and author of *Darwin's Backyard* #1 New Release in Nature & Ecology, Plants, Botany, Horticulture, Trees, Biological Sciences, and Nature Writing & Essays In his debut book, internationally-recognized blogger and podcaster Matt Candeias celebrates the nature of plants and the extraordinary world of plant organisms. A botanist's defense. Since his early days of plant restoration, this amateur plant scientist has been enchanted with flora and the greater environmental ecology of the planet. Now, he looks at the study of plants through the lens of his ever-growing houseplant collection. Using gardening, houseplants, and examples of plants around you, *In Defense of Plants* changes your relationship with the world from the comfort of your windowsill. The ruthless, horny, and wonderful nature of plants. Understand how plants evolve and live on Earth with a never-before-seen look into their daily drama. Inside, Candeias explores the incredible ways plants live, fight, have sex, and conquer new territory. Whether a blossoming botanist or a professional plant scientist, *In Defense of Plants* is for anyone who sees plants as more than just static backdrops to more charismatic life forms. In this easily accessible introduction to the incredible world of plants, you'll find:

- Fantastic botanical histories and plant symbolism
- Passionate stories of flora diversity and scientific names of plant organisms
- Personal tales of plantsman discovery through the study of plants

If you enjoyed books like *The Botany of Desire*, *What a Plant Knows*, or *The Soul of an Octopus*, then you'll love *In Defense of Plants*.

What is life about? How are men and women different? How did the universe begin? We all ponder these questions from time to time but some scientists spend their lives investigating them. Are they anywhere near finding answers? In this exciting new book, leading scientific thinkers address twenty of the really big questions that people have been asking for hundreds of years. The contributors include: John Sulston, who led the British side of the Human Genome Project and who offers his views on whether we can ever end disease; Susan Greenfield, Oxford University professor of pharmacology, who describes what she thinks is a thought; John Barrow, Cambridge professor of mathematical sciences, who tells us what is time; and American psychologist David Buss, who suggests why we fall in and out of love. Their answers are each put into context

by more general commentaries discussing the differing views of other leading contemporary scientists and looking at how people have tackled the question in the past. The result is a breathtaking tour of scientific thought through the ages and a peek at some of the most cutting-edge and controversial research today. Packed with fascinating insights, it shows how science is investigating problems that affect us all on a large scale and suggests that we are closer to finding solutions to some of life's big questions than we might think.

The news that a flowering weed—mouseear cress (*Arabidopsis thaliana*)—can sense the particular chewing noise of its most common caterpillar predator and adjust its chemical defenses in response led to headlines announcing the discovery of the first “hearing” plant. As plants lack central nervous systems (and, indeed, ears), the mechanisms behind this “hearing” are unquestionably very different from those of our own acoustic sense, but the misleading headlines point to an overlooked truth: plants do in fact perceive environmental cues and respond rapidly to them by changing their chemical, morphological, and behavioral traits. In *Plant Sensing and Communication*, Richard Karban provides the first comprehensive overview of what is known about how plants perceive their environments, communicate those perceptions, and learn. Facing many of the same challenges as animals, plants have developed many similar capabilities: they sense light, chemicals, mechanical stimulation, temperature, electricity, and sound. Moreover, prior experiences have lasting impacts on sensitivity and response to cues; plants, in essence, have memory. Nor are their senses limited to the processes of an individual plant: plants eavesdrop on the cues and behaviors of neighbors and—for example, through flowers and fruits—exchange information with other types of organisms. Far from inanimate organisms limited by their stationary existence, plants, this book makes unquestionably clear, are in constant and lively discourse.

In its essence, science is a way of looking at and thinking about the world. In *The Life of a Leaf*, Steven Vogel illuminates this approach, using the humble leaf as a model. Whether plant or person, every organism must contend with its immediate physical environment, a world that both limits what organisms can do and offers innumerable opportunities for evolving fascinating ways of challenging those limits. Here, Vogel explains these interactions, examining through the example of

the leaf the extraordinary designs that enable life to adapt to its physical world. In Vogel's account, the leaf serves as a biological everyman, an ordinary and ubiquitous living thing that nonetheless speaks volumes about our environment as well as its own. Thus in exploring the leaf's world, Vogel simultaneously explores our own. A companion website with demonstrations and teaching tools can be found here:
<http://www.press.uchicago.edu/sites/vogel/index.html>

An Updated Approach

The Language of Plants

Brilliant Green

In Defense of Plants

Ten Drugs

A Fascinating Account of the Physical, Emotional, and Spiritual Relations Between Plants and Man

Measuring Roots

As plants see it, humans are not the masters of the Earth but only one of its most unpleasant and irksome residents. They have been on the planet for only about 300,000 years ago (nothing compared to the three billion years of plant evolution), yet have changed the conditions of the planet so drastically as to make it a dangerous place for their own survival. It's time for the plants to offer advice. In this playful, philosophical manifesto, Stefano Mancuso, expert on plant intelligence, presents a new constitution on which to build our future as beings respectful of the Earth and its inhabitants. These eight articles - the fundamental pillars on which plant life is based - must henceforth regulate all living beings.

In this book, a leading plant scientist offers a new understanding of the botanical world and a passionate argument for intelligent plant life. Are plants intelligent? Can they solve problems, communicate, and navigate their surroundings? For centuries, philosophers and scientists have argued that plants are unthinking and inert, yet discoveries over the past fifty years have challenged this idea, shedding new light on the complex interior lives of plants. In *Brilliant Green*, leading scientist Stefano Mancuso presents a new paradigm in our understanding of the vegetal world. He argues that plants process information, sleep, remember, and signal to one another—showing that, far from passive machines, plants are intelligent and aware. Part botany lesson, part manifesto, *Brilliant Green* is an engaging and passionate examination of the inner workings of the plant kingdom.--

The book that helped make Michael Pollan, the New York Times bestselling author of *Cooked* and *The Omnivore's Dilemma*, one of the most trusted food experts in America. In 1637, one Dutchman paid as much for a single tulip bulb as the going price of a town house in Amsterdam. Three and a half centuries later, Amsterdam is once again the mecca for people who care passionately about one particular plant—though this time the obsessions revolves around the intoxicating effects of marijuana rather than the visual beauty of the tulip. How could flowers, of all things, become such objects of desire that they can drive men to financial ruin? In *The Botany of Desire*, Michael Pollan argues that the answer lies at the heart of the intimately reciprocal relationship between people and plants. In telling the stories of four familiar plant species that are deeply woven into the fabric of our lives, Pollan illustrates how they evolved to satisfy humankind's most basic yearnings—and by doing so made themselves indispensable. For, just as we've benefited from these plants, the plants, in the grand co-evolutionary scheme that Pollan evokes so brilliantly, have done well by us. The sweetness of apples, for example, induced the early Americans to spread the species, giving the tree a whole new continent in which to blossom. So who is really domesticating whom? Weaving fascinating anecdotes and accessible science into gorgeous prose, Pollan takes us on an absorbing journey that will change the way we think about our place in nature.

In the mysterious and pristine forests of the tropics, a wealth of ethnobotanical panaceas and shamanic knowledge promises cures for everything from cancer and AIDS to the common cold. To access such miracles, we need only to discover and protect these medicinal treasures before they succumb to the corrosive forces of the modern world. A compelling biocultural story, certainly, and a popular perspective on the lands and peoples of equatorial latitudes—but true? Only in part. In *The Ethnobotany of Eden*, geographer Robert A. Voeks unravels the long lianas of history and occasional strands of truth that gave rise to this irresistible jungle medicine narrative. By exploring the interconnected worlds of anthropology, botany, and geography, Voeks shows that well-intentioned scientists and environmentalists originally crafted the jungle narrative with the primary goal of saving the world's tropical rainforests from destruction. It was a strategy deployed to address a pressing environmental problem, one that appeared at a propitious point in history just as the Western world was taking a more globalized view of environmental issues. And yet, although supported by science and its practitioners, the story was also underpinned by a persuasive mix of myth, sentimentality, and nostalgia for a long-lost tropical Eden. Resurrecting the fascinating history of plant prospecting in the tropics, from the colonial era to the present day, *The Ethnobotany of Eden* rewrites with modern science the degradation narrative we've built up around tropical forests, revealing the entangled origins of our fables of forest cures.

Seeing Flowers

A Metaphysics of Mixture

How Plants, Powders, and Pills Have Shaped the History of Medicine

Plant Sensing and Communication

Plant Anatomy

Theodore Roosevelt, J.P. Morgan, and the Improbable Partnership That Remade American Business

A Plant's-Eye View of the World

In this playful yet informative manifesto, a leading plant neurobiologist presents the eight fundamental pillars on which the life of plants—and by extension, humans—rests. Even if they as though they were, humans are not the masters of the Earth, but only one of its most irksome residents. From the moment of their arrival, about three hundred thousand years ago—nothing compared to the history of life on our planet—humans have succeeded in changing the condition of the planet so drastically as to make it a dangerous place for their own survival. The causes of our reckless behavior are in part inherent in their predatory nature, but they also depend on our total incomprehension of the rules that govern a community of living beings. We behave like children who wreak havoc, unaware of the significance of the things they are playing with. In *The Nation of Plants*, the most important, widespread, and powerful nation on Earth finally gets to speak. Like attentive parents, plants, after making it possible for us to live, have come to our aid once again, giving us their rules: the first Universal Declaration of Rights of Living Beings written by the plants. A short charter based on the general principles that regulate the common life of plants, it establishes norms applicable to all living beings. Compared to our constitutions, which place humans at the center of the entire juridical reality, in conformity with an anthropocentrism that reduces to nothing all that is not human, plants offer us a revolution.

We barely talk about them and seldom know their names. Philosophy has always overlooked them, and even biology considers them as mere decoration on the tree of life. And yet plants give life to the Earth: they produce the atmosphere that surrounds us, they are the origin of the oxygen that animates us. Plants embody the most direct, elementary connection that life can establish with the world. In this highly original book, Emanuele Coccia argues that, as the very creator of atmosphere, plants occupy the fundamental position from which we should analyze all elements of life. From this standpoint, we can no longer perceive the world as a simple collection of objects or as a universal space containing all things, but as the site of a veritable metaphysical mixture. Since our atmosphere is rendered possible through plants alone, life only perpetuates itself through the very circle of production and consumption undertaken by plants. In other words, life exists only insofar as it consumes other life, removing any moral or ethical considerations from the equation. In contrast to trends of thou

discuss nature and the cosmos in general terms, Coccia's account brings the infinitely small to
with the infinitely big, offering a radical redefinition of the place of humanity within the realm
A passionate and informative celebration of trees and of man's ingenuity in exploiting their
resources: the perfect gift for anyone who cares about the natural world. Trees are marvels of
still-standing giants of extraordinary longevity. In a beautifully written sequence of essays, an
and profiles of Britain's best-loved species (from yew to scots pine), Max Adams explores bot
amazing biology of trees and humanity's relationship with wood and forest across the centuri
Embellished with images from John Evelyn's classic SYLVA (1664), THE WISDOM OF TREES is a
gift book that will delight anyone who cares about the natural world and our interaction with
Plants play a critical role in how we experience our environment. They create calming green spaces,
provide oxygen for us to breathe, and nourish our senses. In The Nature of Plants, ecologist and
nursery owner Craig Huegel demystifies the complex lives of plants and provides readers with
elucidating journey into their inner and outer workings. Beginning with the importance of light,
water, and soil, Huegel describes photosynthesis, plant circadian rhythms, and how best to position
plants to receive optimal sunlight. He explains choosing artificial lights for landscaping, giving
bamboo its twisted shape, and tricking flowers like poinsettias to bloom at a specific time of year.
reveals how plants use water, what paths it takes to move nutrients and fuel growth, and what
much--or too little--can hurt. He also explains what essential elements plants need to flourish,
what friendly bacteria, fungi, and insects help make a healthy soil. Sections on plant structure
reproduction focus in detail on major plant organs--roots, stems, and leaves--and cover flower
pollination, fruit development, and seed germination. The intricacies behind how plants reproduce
are unraveled, including why not all flowering plants need pollinators, how it can take decades for
some plants to produce offspring, and whether parents recognize their kin. Huegel even delves into
the mysterious world of plant communication, exploring the messages and warnings conveyed to
animals or other plants through chemical scents and hormones. With color illustrations, photographs,
and real-life examples from his own gardening experiences, Huegel equips budding botanists,
ecologists, and even the most novice gardeners with knowledge that will help them understand
foster plants of all types.

The Revolutionary Genius of Plants

A Remarkable Journey of Groundbreaking Scientific Discoveries and Personal Encounters with
Plants

The Forest Unseen

A Plea for the Animals

An Unlikely Trust

Their History, Culture, Biology, and How They Change Our Lives

The Cow with Ear Tag #1389

Why can some organizations innovate time and again, while most cannot? You might think the key to innovation is attracting exceptional creative talent. Or making the right investments. Or breaking down organizational silos. All of these things may help—but there's only one way to ensure sustained innovation: you need to lead it—and with a special kind of leadership. Collective Genius shows you how.

Preeminent leadership scholar Linda Hill, along with former Pixar tech wizard Greg Brandeau, MIT researcher Emily Truelove, and Being the Boss coauthor Kent Lineback, found among leaders a widely shared, and mistaken, assumption: that a "good" leader in all other respects would also be an

effective leader of innovation. The truth is, leading innovation takes a distinctive kind of leadership, one that unleashes and harnesses the “collective genius” of the people in the organization. Using vivid stories of individual leaders at companies like Volkswagen, Google, eBay, and Pfizer, as well as nonprofits and international government agencies, the authors show how successful leaders of innovation don’t create a vision and try to make innovation happen themselves. Rather, they create and sustain a culture where innovation is allowed to happen again and again—an environment where people are both willing and able to do the hard work that innovative problem solving requires. Collective Genius will not only inspire you; it will give you the concrete, practical guidance you need to build innovation into the fabric of your business.

Roots represent half of the plant body - and arguably the more interesting half. Despite its obvious importance for the whole plant, until recently our knowledge of the root apparatus was very limited, mostly due to the inadequacy of the techniques available. Recent advances in the visualization and measurement of roots have resulted in significant progress in our understanding of root architecture, growth and behaviour. In this book international experts highlight the most advanced techniques, both lab and field methods, and discuss them in detail. Measuring Roots combines academic and practical aspects of this topic, making it a universal handbook for all researchers and others interested in root-measuring methods. To translate the journey from a living cow to a glass of milk into tangible terms, Kathryn Gillespie set out to follow the moments in the life cycles of individual animals—animals like the cow with ear tag #1389. She explores how the seemingly benign practice of raising animals for milk is just one link in a chain that affects livestock across the agricultural spectrum. Gillespie takes readers to farms, auction yards, slaughterhouses, and even rendering plants to show how living cows become food. The result is an empathetic look at cows and our relationship with them, one that makes both their lives and their suffering real.

At the dawn of the twentieth century, Theodore Roosevelt and J. Pierpont Morgan were the two most powerful men in America, perhaps the world. As the nation’s preeminent financier, Morgan presided over an elemental shift in American business, away from family-owned companies and toward

modern corporations of unparalleled size and influence. As president, Theodore Roosevelt expanded the power of that office to an unprecedented degree, seeking to rein in those corporations and to rebalance their interests with those of workers, consumers, and society at large. Overpowering figures and titanic personalities, Roosevelt and Morgan could easily have become sworn enemies. And when they have been considered together (never before at book length), they have generally been portrayed as battling colossi, the great trust builder versus the original trustbuster. But their long association was far more complex than that, and even mutually beneficial. Despite their many differences in temperament and philosophy, Roosevelt and Morgan had much in common—social class, an unstinting Victorian moralism, a drive for power, a need for order, and a genuine (though not purely altruistic) concern for the welfare of the nation. Working this common ground, the premier progressive and the quintessential capitalist were able to accomplish what neither could have achieved alone—including, more than once, averting national disaster. In the process they also changed forever the way that government and business worked together. **An Unlikely Trust** is the story of the uneasy but fruitful collaboration between Theodore Roosevelt and Pierpont Morgan. It is also the story of how government and business evolved from a relationship of laissez-faire to the active regulation that we know today. And it is an account of how, despite all that has changed in America over the past century, so much remains the same, including the growing divide between rich and poor; the tangled bonds uniting politicians and business leaders; and the pervasive feeling that government is working for the special interests rather than for the people. Not least of all, it is the story of how citizens with vastly disparate outlooks and interests managed to come together for the good of their common country.

The Moral, Philosophical, and Evolutionary Imperative to Treat All Beings with Compassion

The Revolutionary Phenotype: The amazing story of how life begins and how it ends

**The Surprising History and Science of Plant Intelligence
Big Questions in Science**

A New Understanding of Plant Intelligence and Behavior

A Miscellany

An Introduction to How Plants Work

First published in Great Britain in 2015 under the title: *The cabaret of plants: botany and the imagination*.

A captivating journey into the inner lives of plants – from the colours they see to the schedules they keep How does a Venus flytrap know when to snap shut? Can an orchid get jet lag? Does a tomato plant feel pain when you pluck a fruit from its vines? And does your favourite fern care whether you play Bach or the Beatles? Combining cutting-edge research with lively storytelling, biologist Daniel Chamovitz explores how plants experience our shared Earth – through sight, smell, touch, hearing, memory, and even awareness. Whether you are a green thumb, a science buff, a vegetarian, or simply a nature lover, this rare inside look at the life of plants will surprise and delight.

The eighteenth-century naturalist Erasmus Darwin (grandfather of Charles) argued that plants are animate, living beings and attributed them sensation, movement, and a certain degree of mental activity, emphasizing the continuity between humankind and plant existence. Two centuries later, the understanding of plants as active and communicative organisms has reemerged in such diverse fields as plant neurobiology, philosophical posthumanism, and ecocriticism. *The Language of Plants* brings together groundbreaking essays from across the disciplines to foster a dialogue between the biological sciences and the humanities and to reconsider our relation to the vegetal world in new ethical and political terms. Viewing plants as sophisticated information-processing organisms with complex communication strategies (they can sense and respond to environmental cues and play an active role in their own survival and reproduction through chemical languages) radically transforms our notion of plants as unresponsive beings, ready to be instrumentally appropriated. By providing multifaceted understandings of plants, informed by the latest developments in evolutionary ecology, the philosophy of biology, and ecocritical theory, *The Language of Plants* promotes the freedom of imagination necessary for a new ecological awareness and more sustainable interactions with diverse life forms. Contributors: Joni Adamson, Arizona State U; Nancy E. Baker, Sarah Lawrence College; Karen L. F. Houle, U of Guelph; Luce Irigaray, Centre National de la Recherche Scientifique, Paris; Erin James, U of Idaho; Richard Karban, U of California at Davis; André Kessler, Cornell U; Isabel Kranz, U of Vienna; Michael Marder, U of the Basque Country (UPV-EHU); Timothy Morton, Rice U; Christian Nansen, U of California at Davis; Robert A. Raguso, Cornell U; Catriona Sandilands, York U.

An accessible and compelling story of a scientist's discovery of plant communication and how it influenced her research and changed her life. In this "phytobiography"--a collection of stories written in partnership with a plant--research scientist Monica Gagliano reveals the dynamic role plants play in genuine first-hand accounts from her research into plant communication and cognition. By transcending the view of plants as the objects of scientific materialism, Gagliano encourages us to rethink plants as people--beings with

subjectivity, consciousness, and volition, and hence having the capacity for their own perspectives and voices. The book draws on up-close-and-personal encounters with the plants themselves, as well as plant shamans, indigenous elders, and mystics from around the world and integrates these experiences with an incredible research journey and the groundbreaking scientific discoveries that emerged from it. Gagliano has published numerous peer-reviewed scientific papers on how plants have a Pavlov-like response to stimuli and can learn, remember, and communicate to neighboring plants. She has pioneered the brand-new research field of plant bioacoustics, for the first time experimentally demonstrating that plants emit their own 'voices' and, moreover, detect and respond to the sounds of their environments. By demonstrating experimentally that learning is not the exclusive province of animals, Gagliano has re-ignited the discourse on plant subjectivity and ethical and legal standing. This is the story of how she made those discoveries and how the plants helped her along the way.

The Brother Gardeners

The Nature of Plants

The Life of a Leaf

Darwin's Most Wonderful Plants

A Reunion of Trees

An Exploration into the Wonder of Plants

Origin Story

Stephen Spongberg's vividly written and lavishly illustrated "travel story" of trees and shrubs tells of intrepid explorers who journeyed to the far corners of the globe and brought back to Europe and North America a wealth of exotic plant species.

The protest against meat eating may turn out to be one of the most significant movements of our age. In terms of our relations with animals, it is difficult to think of a more urgent moral problem than the fate of billions of animals killed every year for human consumption. This book argues that vegetarians and vegans are not only protestors, but also moral pioneers. It provides 25 chapters which stimulate further thought, exchange, and reflection on the morality of eating meat. A rich array of philosophical, religious, historical, cultural, and practical approaches challenge our assumptions about animals and how we should relate to them. This book provides global perspectives with insights from 11 countries: US, UK, Germany, France, Belgium, Israel, Austria, the Netherlands, Canada, South Africa, and Sweden. Focusing on food consumption practices, it critically foregrounds and unpacks key ethical rationales that underpin vegetarian and vegan lifestyles. It invites us to revisit our relations with animals as food, and as subjects of exploitation, suggesting that there are substantial moral, economic, and environmental reasons for changing our habits. This timely contribution, edited by two of the leading experts within the field, offers a rich array of interdisciplinary insights on what ethical vegetarianism and veganism means. It will be of great interest to those studying and researching in the fields of animal geography and animal-studies, sociology, food studies and consumption, environmental studies, and cultural studies. This book will be of great appeal to animal protectionists, environmentalists, and humanitarians.

*Every cow just wants to be happy. Every chicken just wants to be free. Every bear, dog, or mouse experiences sorrow and feels pain as intensely as any of us humans do. In a compelling appeal to reason and human kindness, Matthieu Ricard here takes the arguments from his best-sellers *Altruism* and *Happiness* to their logical conclusion: that compassion toward all beings, including our fellow*

animals, is a moral obligation and the direction toward which any enlightened society must aspire. He chronicles the appalling sufferings of the animals we eat, wear, and use for adornment or "entertainment," and submits every traditional justification for their exploitation to scientific evidence and moral scrutiny. What arises is an unambiguous and powerful ethical imperative for treating all of the animals with whom we share this planet with respect and compassion.

Omnipresent and essential to life, trees have been underestimated by biologists. But in recent years, they have been the subject of scientific discoveries that have allowed us to see these oldest and largest members of the community of living beings in a new light. Capable of sensory perception, showing complex communication skills, living in symbiosis with many other species and influencing the climate, trees are equipped with unexpected faculties whose discovery confirms what indigenous, traditional and local communities had long acknowledged. Featuring works by contemporary artists including forest people, scientific imagery, films, photographs and sound installations, the exhibition at the Fondation Cartier pour l'art contemporain, Paris, strives to highlight the beauty, ingenuity and biological richness of trees, allowing us to see and hear these impressive protagonists of the living world that now find themselves also under increasing threat. Through paintings, drawings, photographs, scientific images, maps and texts by specialists, the catalogue published to accompany the exhibition invites the reader to dive into the fascinating and beautiful world of trees.

The Nation of Plants

Herbarium

An Introduction to the Study of Plants

A Tour of His Botanical Legacy

The Cabaret of Plants

Forty Thousand Years of Plant Life and the Human Imagination

The Reason for Flowers

Behind every landmark drug is a story. It could be an oddball researcher's genius insight, a catalyzing moment in geopolitical history, a new breakthrough technology or an unexpected but welcome side effect discovered during clinical trials. Piece together these stories, as Thomas Hager does in this remarkable, century-spanning history, and you can trace the evolution of our culture and the practice of medicine. Beginning with opium, the "joy plant," which has been used for 10,000 years, Hager tells a captivating story of medicine. His subjects include the largely forgotten female pioneer who introduced smallpox inoculation to Britain, the infamous knockout drops, the first antibiotic, which saved countless lives, the first antipsychotic, which helped empty public mental hospitals, Viagra, statins, and the new frontier of monoclonal antibodies. This is a deep, wide-ranging, and wildly entertaining book.

Cultural history at its best—the engaging, lively, and definitive story of the beauty, sexuality, ecology, myths, lore, and economics of the world's flowers, written by a passionately devoted author and scientist, and illustrated with his stunning photographs. Flowers, and the fruits that follow, feed, clothe, sustain, and inspire humanity. They have done so since before recorded history. Flowers are used to celebrate all-important occasions, to express love, and are also the basis of global industries. Americans buy ten million flowers a day and perfumes are a worldwide industry worth \$30 billion dollars annually. Yet, we know little about flowers, their origins, bizarre sex lives, or how humans relate and depend upon them. Stephen Buchmann takes us along on an exploratory journey of the roles flowers play in

production of our foods, spices, medicines, perfumes, while simultaneously bringing joy and health. Flowering plants continue to serve as inspiration in our myths and legends, in the fine and decorative arts, and in literary works of prose and poetry. Flowers seduce us—and animals, too—through their myriad shapes, colors, textures, and scents. And because of our extraordinary appetite for more unusual and beautiful “super flowers,” plant breeders have created such unnatural blooms as blue roses and black petunias to cater to the human world of haute couture fashion. In so doing, the nectar and pollen vital to the bees, butterflies, and bats of the wild are being reduced. Buchmann explains the unfortunate consequences, and explores how to counter them by growing the right flowers. Here, he integrates fascinating stories about the many colorful personalities who populate the world of flowers—the flowers and pollinators themselves, with a research-based narrative that illuminates just why there is, indeed, a Reason for Flowers.

The world of plants and its relation to mankind as revealed by the latest scientific discoveries. "Plenty of hard facts and astounding scientific and practical lore."--Newsweek

The Life of Plants

What a Plant Knows

The Discovery of Exotic Plants and Their Introduction Into North American and European Landscapes

Thus Spoke the Plant