The Washington Post

Back to previous page

‘Shores of Knowledge: New World Discoveries and the Scientific Imagination by Joyce Appleby

By Marcia Bartusiak, Published: December 13

Post Most

Family values hypocrisy

Budget deal shows the GOP has PTSD

Lawrence Summers: Stagflation is not our fate — unless we let it be

The luxury of muddling through

Like Pope Francis? You'll love Jesus.

Christopher Columbus returned in 1493 from his first voyage with a bit of gold to entice royal support for future explorations. But far richer in importance, according to historian Joyce Appleby, were the many exotic objects he brought back from the New World, such as the colorful parrots and the tropical flowers unlike any seen before. “Finding these masses of land filled with mysterious people, unfamiliar plants, weird animals, and striking topography,” Appleby writes, “produced the kind of shock essential to shaking free of the church’s venerable injunction against asking questions about nature.”

Offering a unique perspective, “Shores of Knowledge” traces the origins of the scientific revolution from that crucial tipping point, when Europe at last broke free of the medieval isolation and religious conventions that had shackled the population’s curiosity for centuries. A flame was lit, though it would take generations to fully blaze.

Columbus’s voyages sparked an odyssey. “Rough-cut seamen, adventurous merchants, penurious hidalgos, and scions of noble families tumbled out of the Iberian Peninsula like oranges from an overturned basket,” the author writes. And among them were scribes, who kept careful note of all they witnessed. Some, unfamiliar with Latin, wrote and published in their vernacular, hastening the public’s recognition that a “new world” had truly been discovered and raising dangerous questions. Introduced to so many different flora and fauna, as well as entirely new peoples, many began asking whether life could have originated in sites other than the one found in the Bible.

The nearly simultaneous development of movable type accelerated the communication and “encouraged skepticism because it forced readers to confront contradictions in rival descriptions of the same phenomenon or even in their own knowledge of events,” Appleby writes. Powerful new instruments, such as the telescope and the microscope, helped smash the old dogma that inquisitiveness was an “adultery of the soul.” The study of nature was transformed into a devotion to God’s handiwork.

Travelers began to return from their journeys with caches of “curiosities,” filling cabinet upon cabinet with fossils, stuffed animals, cultural artifacts and shells (the forerunners of today’s natural history museums and

zoos). It wasn't long before this fascination with objects encouraged some to examine every plant and animal in minute detail, comparing the new world with the old. Classification was a natural follow-up. The 16th-century Venetian nobleman and collector Andrea Navagero was such an astute classifier that he correctly recognized the whale as a mammal rather than a fish.

Once Pandora's box was opened, there was no going back. Some collectors wanted to find out how nature worked. Leiden, Netherlands, native Jan Swammerdam, for example, proved in the mid-17th century that a caterpillar proceeded through different life stages from larva to butterfly. Using frogs, he also demonstrated that the brain worked through nerves to move muscles. Theories of spontaneous generation were dashed with a few controlled experiments. Special organizations, such as the Royal Society of London, arose to disseminate and discuss such findings. Francis Bacon championed the new approach, which Appleby describes as "one in which natural objects were looked at with questioning eyes rather than explained by Aristotelian deduction." If you have a hypothesis, test it. And don't ignore deviations. To Bacon, those outlying facts were portals to further knowledge.

The Swede Carl Linnaeus was an exemplar of this new paradigm. In the mid-18th century, he established a taxonomy of plants and animals based on their reproductive organs, causing one outraged scholar to denounce the system as "loathsome harlotry." (Linnaeus got his revenge by naming a common weed after this critic.) Moreover, Linnaeus placed humans among the primates, bravely telling his bishop that the principles of natural history made no distinction between humans and simians.

While this story may seem straightforward, Appleby tells it through the contributions of an array of characters — explorers, writers, collectors and early naturalists (the emphasis being more on the biological sciences than the physical) — giving the reader a sense of the progress over the centuries as seen through their eyes. The huge cast can be overwhelming in places, yet I still relished the tidbits I gleaned along the way: King Louis XIV learning, to his dismay, that France's borders had shrunk, once cartography got more accurate; how the exotic pineapple became a sign of "royal luxury."

More to my liking was the deeper focus in the final chapter on two men, Alexander Humboldt and Charles Darwin. Little-known today, Humboldt in his time was second in fame only to Napoleon. Inheriting a fortune, the Prussian baron took a five-year journey through South America and made many original discoveries in magnetism, oceanography, ecological variation and geography. To Appleby, "Humboldt helped drive the last vestiges of metaphysics from the study of nature," nearly 400 years after Columbus. Humboldt's account of his voyage — 30 published volumes that even he couldn't afford to purchase — deeply inspired the next generation of investigators, including Darwin.

Darwin started out when a career in science was almost a novelty. The 19th century's greatest natural philosopher gained his experience through exploration — his voyage on the H.M.S. Beagle. Exploration catalyzed the West's search for knowledge; it would serve to train individuals as well. Starting out as an amateur naturalist, Darwin returned from his journey — around South America, over to the Galapagos Islands, and then on to New Zealand and Australia — as a full-fledged scientist, primed to evaluate the immense stores of data he had gathered and ultimately allow us to make a quantum leap in knowledge.

Marcia Bartusiak is a professor of science writing at MIT. Her latest books are "Archives of the Universe" and "The Day We Found the Universe."

SHORES OF KNOWLEDGE New World Discoveries and the Scientific Imagination By Joyce Appleby Norton. 308 pp. $26.95