KAS BULLETIN

NEWSLETTER OF THE KANSAS ACADEMY OF SCIENCE

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The University of Kansas

158th ANNUAL MEETING OF THE KANSAS ACADEMY OF SCIENCE

Baker University

The 158th annual meeting of the Kansas Academy of Science will be held jointly with the Central States Entomological Society at Baker University and The University of Kansas, April 10th -11th of 2026. Check the KAS website for updates.

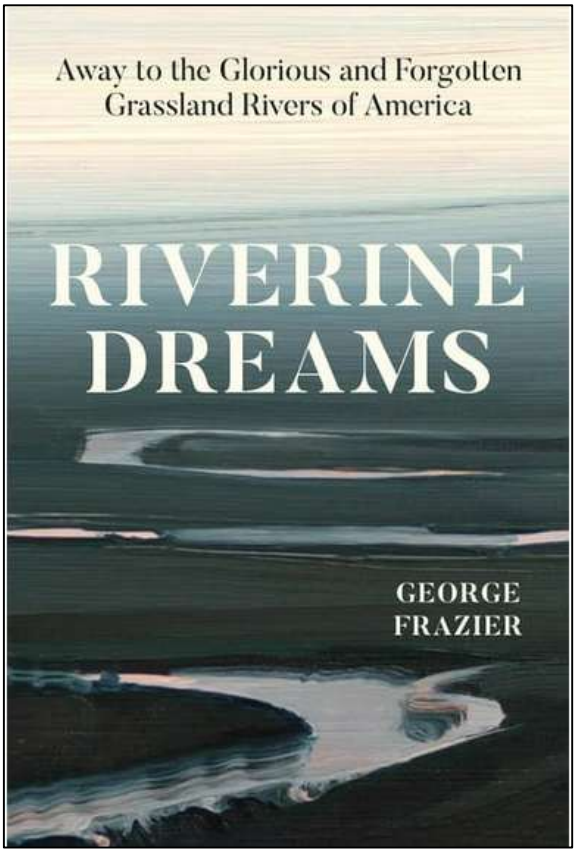
Registration Deadline: April 6, 2026
(registration link in the KAS website)

- **Friday events** will run from 3:30pm to 9:00pm at the Baker University Wetlands Discovery Center in Lawrence, KS. Events include a birding walk, wetlands tour, happy hour, 6:30pm banquet dinner, followed by talks and star gazing.

- **Saturday oral and poster presentations** will be presented at the Kansas Memorial Union on the KU campus. Stay for the luncheon and keynote speaker.

Book Review: Riverine Dreams

By George Frazier, University of Chicago Press, 2025. 296 p.
Reviewed by Hank Guarisco, editor



This delightful book highlights the author's adventures as he canoes along the major rivers of the grasslands of the Central Plains. His wonderful writing style brings his experiences and good historical information about each river bringing to life. The best way I can illustrate the character of the book, and its author, is to provide a series of quotations.

After quoting Mark Twain, George begins his discussion of the South Platte river (Chapter 6) as follows:

> "The South Platte has suffered indignities since long before Mark Twain inked is ill regard for this high plains river one hundred and fifty years ago. It is the principal tributary of the Platte proper, the storied Nebraska crane river where a half-million sandhill cranes congregate each spring in one of America's last great migrations. But the South Platte is a river with its own history apart from any downstream destiny. Even with a grassland twist, it suffers all the contemporaneous problems of western rivers, as it ferries snowmelt from the Continental Divide out into the parched shortgrass
> prairies of eastern Colorado and southwestern Nebraska."

I especially enjoyed his adventures along the Purgatoire River in Southeastern Colorado. I was fortunate enough to spend a few weeks studying spiders in the Comanche National Grasslands near La Junta, and can personally relate to this part of the book. It is a magical place containing the longest dinosaur trackway with large, round *Apatosaurus* footprints alongside the characteristic three-toed impressions of the carnivorous *Allosaurus*. A sense of deep time is experienced when these are seen next to raccoon tracks in mud from the previous night. Farther east, there is a graveyard of early Spanish settlers.

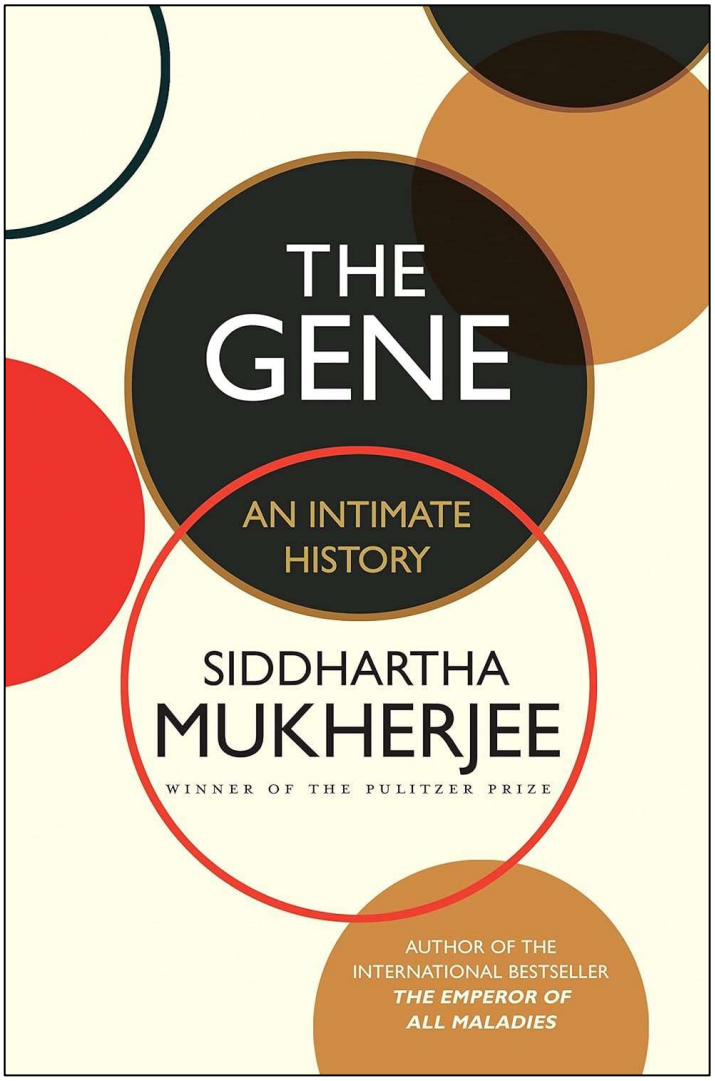
Closer to home, chapter 4 deals with the Kaw River.

> "At midnight, the world is quiet. From an ancient overlook above Yankee Tank Creek, the high beams of eighteen-wheelers barreling down a highway that outlines the black silhouette of the Wakarusa River appear as beacons in the void. For wandering minds, both the road and the river are narrow and dangerous. On nights like this, spring winds conjure visions of an older highway, one that could connect prairies of the past to prairies of the future."

This is one of those books that deserves a prominent place in your library. It is a delight to enter into the landscape of prairie rivers through, local author, George Frazier's eyes.

Book Review: The Gene

by Siddhartha Mukherjee, Penguin Books Ltd, 2016. 592p.
Reviewed by Hank Guarisco, editor



This book begins by exploring studies which led to the discovery of heredity by two famous figures: Mendel and Darwin. Although biologists have heard these stories many times, the author has a certain knack of bringing the reader into the historical moments of their discoveries. For example, he quotes the English biologist, Henry Bateson, writing to his friend, Francis Galton: "' I am writing to ask you to look up the paper of Mendl [sic] [which] seems to me one of the most remarkable investigations yet made on heredity and it is extraordinary that it should have got forgotten.'" This penchant for bringing the reader into the moment of discovery continues throughout the book.

The book's simple title belies its uncategorical success in providing the reader with a comprehensive, coherent story of the discovery of the gene (the mechanism of heredity) as well as the relevant societal ramifications that accompanied this knowledge through time. Details of inducing "mutant" fruit flies by exposure to weak levels of radiation strengthened the feasibility of the prevalent idea of eugenics – selecting for the "well-fitted over the ill-fitted, and the healthy over the sick." Some proposed a human studbook of sorts. "Men and women would be selected from this 'golden book' …and bred to produce the best offspring, in a manner akin to basset hounds and horses." However, H.G. Wells' book, The Time Machine published in 1895, imagined a future human race bred for innocence and virtue but lacking curiosity or passion. He did, however, believe that a better human race could be obtained by sterilizing the weak.

In the 1927 Buck v. Bell case, the US Supreme Court decided there was legal justification for the eugenic sterilization of "imbeciles." In Europe, these views led to the rise of "racial hygiene" programs instituted by the Nazis. Here the author outlines the slippery slope of philosophical thinking that led to the infamous gas chambers. Working with his personal physician, Hitler started the Scientific Registry of Serious Hereditary and Congenital Illnesses to eradicate genetic "defectives." Extending the logic of eugenics, "it was not enough to sterilize genetic defectives to cleanse the future state; it was necessary to exterminate them to cleanse the current state." At first, only defective children under 3 years old were dispatched. This time line

was extended into adolescence, so that juvenile delinquents were exterminated. Soon other scientists wrote books claiming that “neurosis and hysteria were genetic features of Jews.”

Moving into the 1950s, the book recounts the discovery of the structure of DNA, and how it subsequently instructs the cell to produce proteins. The nature of hemoglobin and its ability to transport oxygen to different organs is also explored in a historical context. There are extensive discussions of the discovery of the X and Y chromosomes, how they determine sex, and controlling genes that turn other genes on or off. Without going into the details, which are truly fascinating, the new research on gene therapy based on the Cas-9, CRISPR discovered by Jennifer Doudna is the culminating discussion of this extraordinary book. I highly recommend it.

Kansas Academy of Science Bylaws Amendment

Bylaws changes have been proposed by Shaun Schmidt, KAS Treasurer, on behalf of the KAS Executive Council in February 2026 as follows:

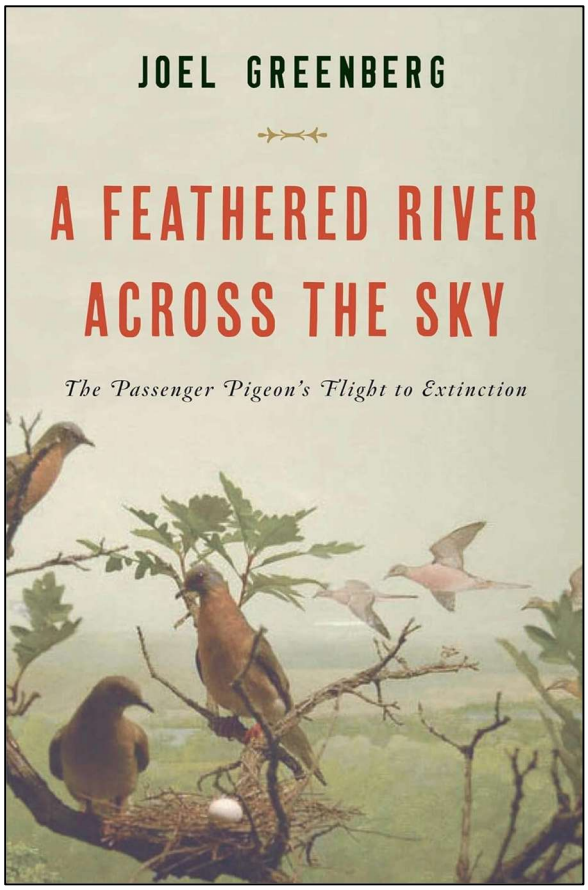
The KAS Executive Council proposes adding a new Article X, and renumbering Article X to Article XI. The new Article X establishes an Endowment, its purpose, and charges the Executive Council with its management.

Article X. Kansas Academy of Science Endowment

Section 1. The primary purpose of the Endowment is to provide decades-long-term financial security for KAS. A secondary purpose of the Endowment is to annually fund activities of KAS which focus on the long-term health and viability of the corporate body of KAS. The secondary purpose shall not impinge upon the primary purpose without consent of the Council.

Section 2. The Executive Council shall manage the affairs of the Endowment.

Book Review: A Feathered river Across the Sky The Passenger Pigeon's Flight to Extinction
by Joel Greeberg, Bloomsbury USA, 2014. 304p.
Reviewed by Hank Guarisco, editor



Like the iconic American bison whose thundering herds dominated the plains, several billion passenger pigeons flew through the skies of the eastern and central United States when Europeans first arrived on the continent. Early accounts by Audubon, Wilson, and others recount their overwhelming experiences. Wilson related: "I was suddenly struck with astonishment at a loud rushing roar, succeeded by instant darkness, which on the first moment, I took for a tornado, about to overwhelm the house and everything around in destruction." His companion replied that it was only the pigeons. Flocks of millions of birds, one mile wide and several miles long, blotted out the sun. "The dung fell in spots, not unlike melting flakes of snow."

The sudden appearance of a million birds was both a blessing and a curse. They roosted in surrounding forests destroying trees and consuming everything in sight: acorns, strawberries, as well as all the farmer's crops. However, the pigeons also provided a banquet of prodigious proportions to early colonists, who were often near starvation. The birds were netted and shot, their nests were raided, and the young squabs were a particular delicacy.

As subsequent decades brought more Europeans to our shores, passenger pigeons became a commodity. They were relentlessly hunted and the meat was salted, smoked, or pickled, packed in barrels and shipped to major cities. The famous New York restaurant, Delmonico's, "featured pigeon cutlets served with a medley of diced vegetables laced with butter." The feathers were commonly used as stuffing for pillows and beds.

By the late nineteenth century, this iconic species that had been ubiquitous started to become scarce. The market responded with rising prices being placed on the rare resource, which triggered even more hunting, and the eventual extinction of the species. Several individuals attempted to domesticate the passenger pigeon, but the last of her kind, named Martha, died in the Cincinnati Zoo on September 1, 1914.

The author did an amazing amount of research uncovering early written accounts of passenger pigeons, and documenting numerous attempts to rescue this imperiled bird, as well as its eventual demise. The bison was rescued, but the passenger pigeon is no more. Although this is a tragic story, the book is well worth reading for the numerous first-hand accounts, natural history information, as well as the thorough history of numerous human communities' interactions with the passenger pigeon.

Book Review: What's Hidden Inside Planets?

by Sabine Stanley, Johns Hopkins University Press, 2023. 245 p.
Reviewed by Hank Guarisco, editor

The author of this delightful book delivers amazing facts about our solar system in an easy to understand style that connects with her audience. What is under our feet?

It is very difficult to drill deep within the earth because for every mile of depth, the temperature increases by 70° F. Therefore, the deepest anyone has drilled is about 7 miles into the crust. We must rely on other indirect means of determining what lies deep within the earth. Below the crust is the mantle, then an outer core of liquid iron, followed by a solid iron inner core. The motion of the liquid core creates the earth's magnetic field which protects us from solar radiation. This motion is not created by the earth spinning on its axis; rather, it is the direct result of convection due to the extreme heat at this depth.

To understand the other planets in the solar system, the author presents a picture of their early formations from a flat, spinning disk of dust and gas. The proto-sun heated the planetary disk so that only materials with high melting points were able to condense near the sun. These resulted in the rocky planets that include Mercury, Venus, Earth, and Mars. The temperature decreased farther from the sun, allowing volatile compounds such as ammonia, carbon dioxide, and water to condense, which produced the gas and ice planets: Jupiter, Saturn, Uranus, and Neptune.

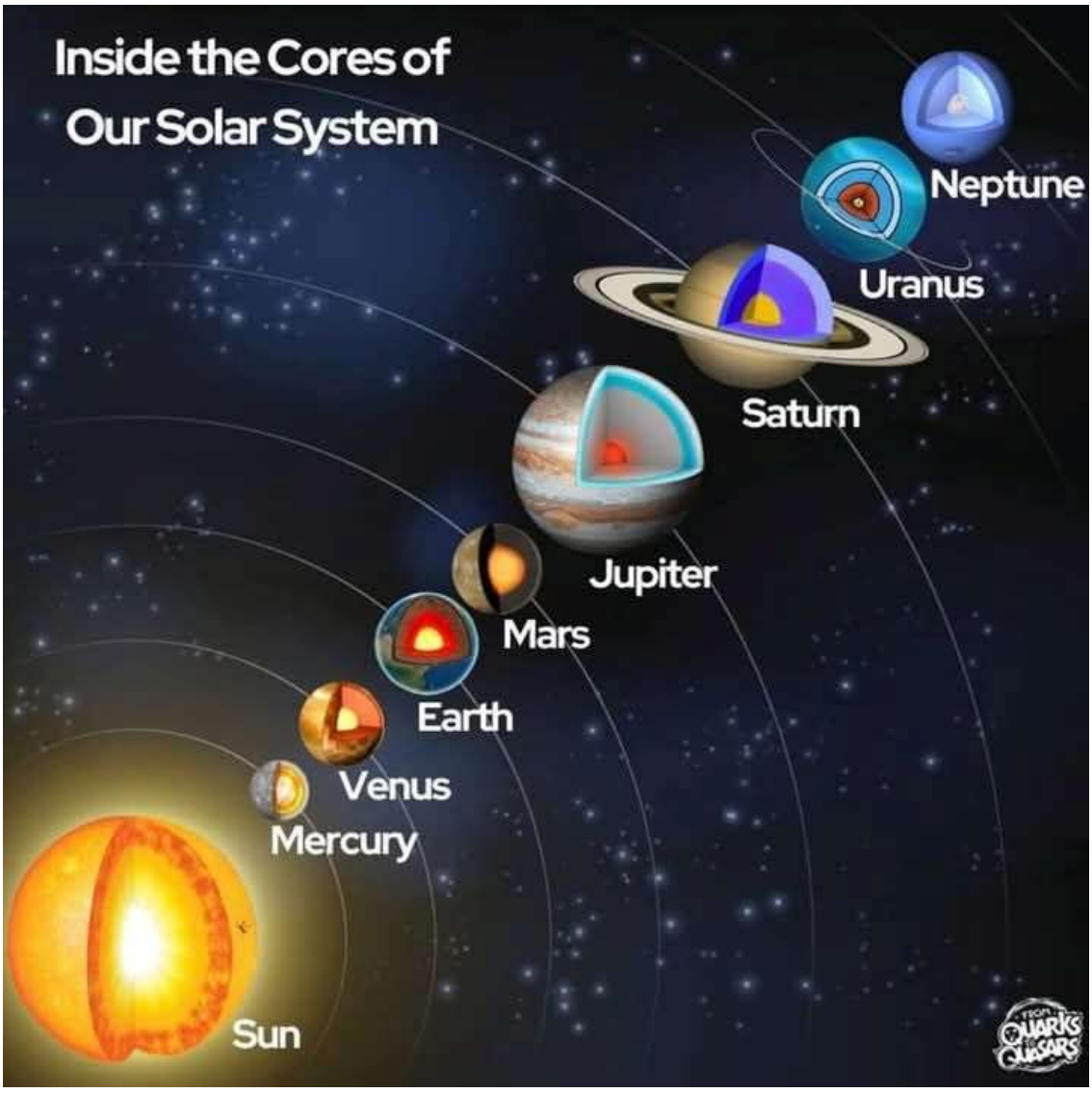
Delving deeper into the characteristics of each planet in the solar system reveals that, unlike earth, Venus and Mars contain about 55% iron, white Mercury consists of 85% iron. This is most likely due to an early collision with another proto-planet that stripped most of the rocky mantle away from Mercury, leaving the larger iron core.

Another interesting fact that I discovered was that rocks in the mantle are solid, even though they exist at very high temperatures deep within the earth. As they move toward the surface and produce volcanoes, these solid rocks become liquid magma only due to the depressurization they experience.

Helium and hydrogen are the most common elements in the universe, but are scarce on earth because they were too light to coalesce when the rocky earth was formed. However, on Jupiter and Saturn, the atmospheres are mostly comprised of these elements. As we travel deeper into these planets, the increased pressure causes hydrogen to become metallic and helium precipitates out as "helium rain."

Although we may be familiar with water in its three phases: a gas, liquid and a solid, there are actually 19 known solid phases of water! The ice we experience on earth is hexagonal with hydrogen bonds holding it together. However, below -150° F ice forms a cube instead of a hexagon. These other forms of ice are found on some of the outer planets where temperatures are much lower than on earth.

I highly recommend this very readable book that brings somewhat esoteric elements of astrophysics to the general reader.



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