

# KAS BULLETIN



## NEWSLETTER OF THE KANSAS ACADEMY OF SCIENCE

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February, 2023

## 155<sup>th</sup> ANNUAL MEETING OF THE KANSAS ACADEMY OF SCIENCE

April 14<sup>th</sup> - 15<sup>th</sup>, 2023  
McPherson College  
McPherson, Kansas

The 155<sup>rd</sup> annual meeting of the Kansas Academy of Science will be held, in conjunction with the Kansas Entomological Society, on April 14<sup>th</sup> and 15<sup>th</sup>, 2023. Register by March 11<sup>th</sup> for early registration discount. The abstract submission deadline is March 24<sup>th</sup>.

In addititon to the scientific talks and poster presentations on Saturday, field trips to The Land Institute and The McPherson Museum are offered on Friday.

Please check the KAS website for more information regarding abstract submission and registration: [www.KansasAcademyScience.org/meeting.html](http://www.KansasAcademyScience.org/meeting.html)

Abstract Submission Deadline  
**March 24, 2023**

# An Historical Perspective of the Kansas Academy of Science

By Hank Guarisco, editor

The Kansas Academy of Science has a long and interesting history beginning with its founding in 1868. In the interest of deepening the understanding of the roots of our society, I have decided to reprint an article from the 1903 volume of the Transactions entitled: "Historical Sketch of the Academy." Please note that in 1903, our society had over 120 members, roughly equivalent to today's KAS membership.

## Historical Sketch of the Academy.

THE organization of a Kansas association of scientific men at an early date was due to the efforts of Rev. Johns D. Parker and Prof. B. F. Mudge, who, in July, 1868, issued a call signed by seventeen men for a meeting of all persons in the state interested in natural sciences to meet in Topeka.

The first meeting was held in September of that year, in Lincoln College (now Washburn), and the Kansas Natural History Society was organized and officers elected. The object, as stated in the original draft of the constitution, "shall be to increase and diffuse a knowledge of the natural sciences, particularly in relation to the state of Kansas." At the fourth annual meeting, held in Leavenworth in 1871, the name was changed to the Kansas Academy of Science. In 1873 the Academy became a coordinate department of the State Board of Agriculture by the terms of the following act of the legislature:

"The Academy of Science shall be a coordinate department of the State Board of Agriculture, with their office in the agricultural rooms, where they shall place and keep for public inspection the geological, botanical and other specimens, the same to be under the direction and control of the officers of the said Academy of Science. An annual report of the transactions of said Academy of Science shall be made on or before the 15th day of November of each year to the State Board of Agriculture, for publication in the annual transactions of said board."

The Academy has increased in membership from the original small body of scientists to over 120. It has held thirty-five annual meetings, of which seventeen have been held in Topeka, five in Lawrence, three in Manhattan, two in Leavenworth, two in Emporia, and one each in Atchison, Baldwin, Iola, McPherson, Ottawa, Wichita.

Eighteen volumes of the Transactions have been published, varying in size from a few pages in the early numbers to 350 pages in the later volumes. These publications contain many papers of recognized scientific value. The exchange list includes over 500 names of societies and libraries.

The Academy has recently moved into new quarters, including an office and library room, and a large tile-floor museum for the economic collections of the state. The excellent Goss ornithological collection and the natural history collections are now placed in separate rooms prepared especially for them.





Lincoln College, Topeka, 1865.  
(Now Washburn College.)

In the recitation-room of Rev. Johns D. Parker, in this building, the Kansas Academy of Science was organized, September 1, 1868. The building is still standing, at Tenth and Jackson streets, in use as a ward schoolhouse.





KANSAS ACADEMY OF SCIENCE MUSEUM OF MINERAL INDUSTRIES.  
Capitol Building, Topeka.



OFFICE AND LIBRARY OF THE KANSAS ACADEMY OF SCIENCE,  
Capitol Building, Topeka.



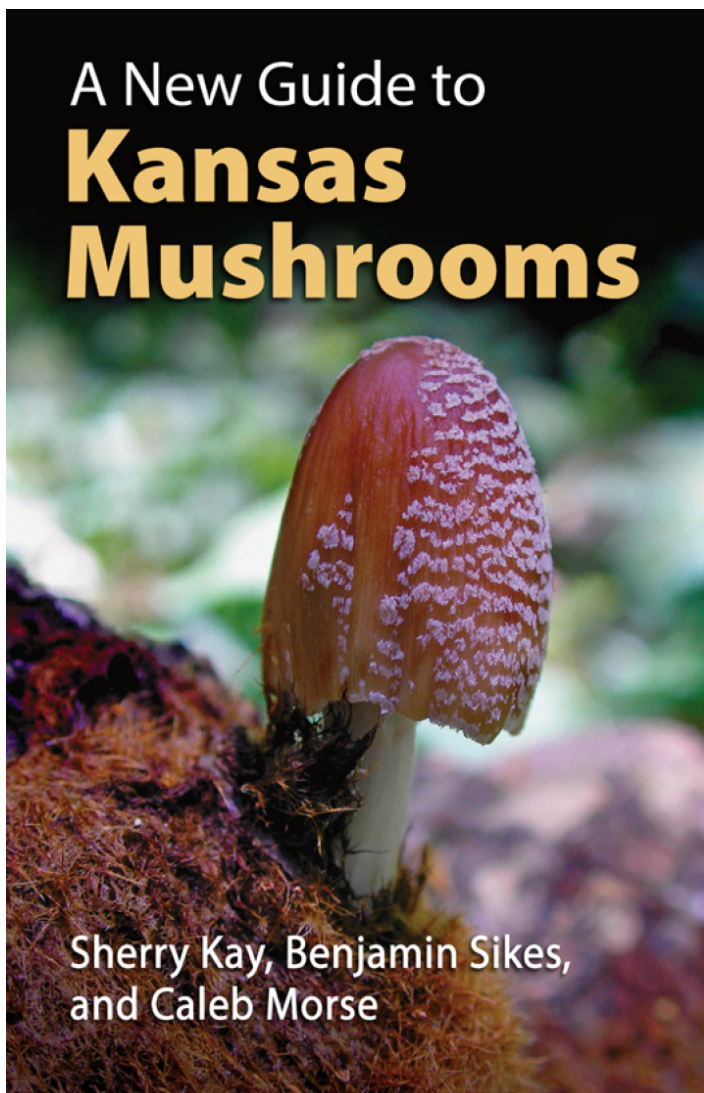
## A New Guide to Kansas Mushrooms

by Sherry Kay, Benjamin Sikes, and Caleb Morse, 2022,

The University of Kansas Press, Lawrence, KS

Book Review by Hank Guarisco, editor

The long-awaited book, “A New Guide To Kansas Mushrooms,” more than meets the expectations of the public. It is a well-illustrated guide with wonderful color images of our mushroom neighbors. It contains extensive sections on how to identify mushrooms, distinguish edible from poisonous species, how to grow mushrooms, and on the phylogenetic trees that indicate how they are related to one another. Recent molecular studies have resulted in many scientific name changes that reflect our current understanding of their place in the mushroom tree of life. They have also made us realize that just because a mushroom has a certain form, a shelf mushroom for example, doesn’t mean it is more closely related to other shelf mushrooms than to gilled mushrooms. The largest Kansas mushroom, *Bondarzewia berkeleyi*, is closely related to gilled mushrooms in the genus *Russula*.



The main body of the text contains species accounts of 200 of the most commonly encountered mushrooms: how to identify each one, where to find it, and if it is edible, inedible, or poisonous. The biodiversity of mushrooms is truly astounding in comparison with other organisms. While there are approximately 500 species of spiders in Kansas, the Kansas mushroom checklist contains over 1,400 species!

The primary author, Sherry Kay, has been studying local mushrooms for at least 4 decades, and has led members of the Kaw Valley Mycological Society on multiple forays during this period. Her coauthors, Professor Benjamin Sikes and Caleb Morse, have made important contributions to this book as well. Photographic images were taken by Sherry Kay, her recently deceased husband, Richard, Carla Wick, Ron Myers, Hank Guarisco, and others.

This 391-page, paperback guide is a welcomed addition to the library of anyone interested in learning more about the natural world in Kansas.

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## Quaint Perspectives on the Health of College Women in the 1890s

Hank Guarisco, editor

While moving out of my original Lawrence residence, I came upon some very old copies of the KAS Transactions. Particularly striking was a paper presented by Gertrude Grotty, at the 24<sup>th</sup> annual meeting of the Kansas Academy of Science in 1891 entitled: "Some statistics relating to the health of college women." I will quote extensively from this presentation to provide the reader with an interesting and somewhat amusing snapshot of the prevalent attitudes toward women at that time.

"We hear a great deal of complaint to the effect that the American woman is physically inferior to the women of Europe – of Germany. And only too often are we told that this physical weakness is the result of confinement in schoolrooms, and of overtaking of brains and nerves. But do these criticisms concerning physical infirmities hold good for the American woman alone? Innumerable statements have been made by foreigners who visit America to the effect that the American – the man as well as the woman – lives too rapidly - works too hard, lives upon his nerves, eats too much, sleeps too little, takes too few holidays and too little healthful, mental recreation. May not, in all justice, a share of the American woman's frailty be ascribed to the above causes rather than to her excessive schooling? Moreover, custom demands less outdoor sport for girls than for boys. The American woman walks less than her English sister."

"The American girl does not walk in fields with her governess, but is sent to public schools. Here she might have the benefit of healthful games upon the playground but propriety forbids to her basketball, blackman, tree climbing and various harmless sports. On the other hand, she is told from early childhood that she must 'try to be a little lady.'" "As a result, she becomes a listless, conscious, artificial child."

"It is very difficult for us to grow out of our prejudices..." "There have been, of course, numerous adverse articles written by scholarly men and even by women; but allow me to quote from a letter written by Professor Huxley to the *Times*. He says: 'We hear a great deal lately about the physical disabilities of women. Some of these alleged impediments no doubt are really inherent in their organization, but nine-tenths of them are artificial - the product of their mode of life. I believe that nothing would tend so effectually to get rid of these creations of idleness, weariness, and that over-stimulation of emotion, than a fair share of healthy work, directed toward a definite object, combined with an equally fair share of healthy play during the years of adolescence; and those who are best acquainted with the acquirements of an average medical practitioner will find it hardest to believe that the attempt to reach that standard is likely to prove exhausting to an ordinarily intelligent and well-educated young woman.'"

"A great deal is said, even in Kansas, about girls not being strong enough to attend college, and, by those who are, perhaps, not friends of the State University, about the injury to the physical welfare of girls caused by climbing the hill upon which the University is situated. These same people who complain enjoy a summer of mountain climbing in Colorado unattended by any physical injury. Six years of observation at the University tell me that very few of the girls themselves make or have occasion to make any such complaint."

The author then presents results of a survey of alumnae which indicated that the overwhelming majority considered climbing "the hill" not injurious, and even a "blessing."

Indeed, it is very difficult for us to outgrow our prejudices. Hopefully, this small slice of history will reveal how far we have come since 1891.

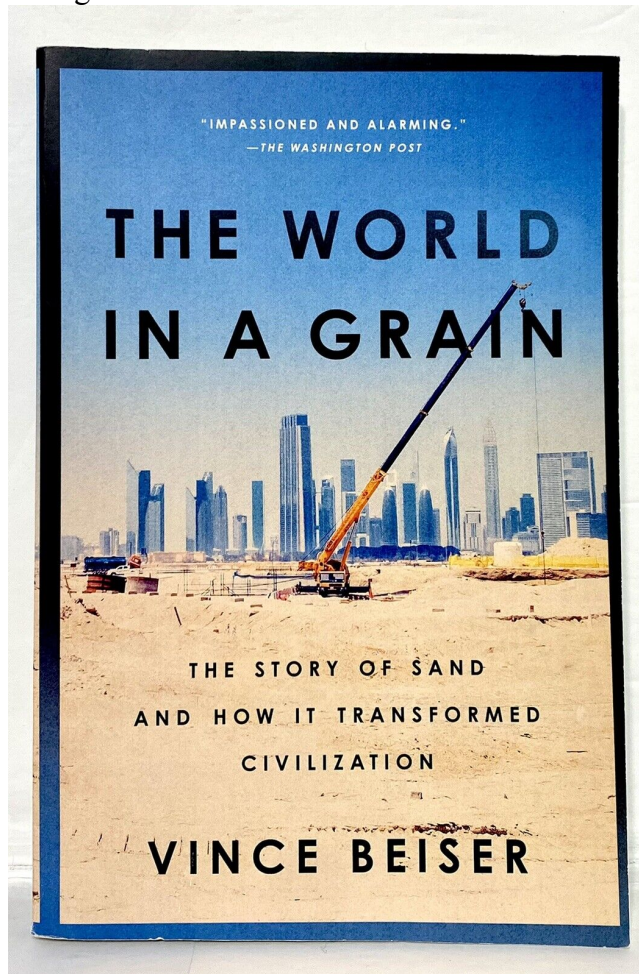
# The World in a Grain

by Vince Beiser, 2018, Riverhead Books, NY

Book Review by Hank Guarisco, editor

The almost 300 pages in this paperback book are totally devoted to opening the readers' eyes to the importance of one of the most common ingredients on earth, which is sand. The writing style is very engaging and easy to read, and the book's content reveals amazing details concerning the historic and current uses of various purities of sand, and the effects of world-wide shortages that are the result of exponentially increasing demand.

What is sand? By definition, sand consists of loose grains of any hard material with a diameter slightly larger than the width of a human hair. However, about 70% of all sand is made of grains of quartz ( $\text{SiO}_2$ ). These very hard grains are the product of the erosion of mountains. Geologist Raymond Siever writes: "Sand grains have no souls, but they are reincarnated." About every 200 million years, eroded sand is deposited, buried, uplifted to form mountains, then broken down into sand grains once more.



Currently, as well as historically, the greatest use of sand has been as a building material. The Romans constructed numerous concrete roads, houses, and harbors, many of which have survived to the present, mainly because they incorporated salt water and pumice from nearby volcanoes. Concrete is the product of unique combinations of sand, gravel, water, and cement. However, the sand used in concrete must be angular so that it can bind properly. Therefore, desert sand cannot be used because the grains have been rounded by wind erosion. Sand from the ocean floor is also generally avoided since it must be washed to remove the salts to make it suitable for modern concrete production.

As the human population grew, so did the need for buildings and roads. In the mid-1800s, experiments revealed that the tensile strength (ability to withstand bending or shearing forces) of concrete was greatly improved by imbedding concrete with iron bars. This made it useful for building all kinds of structures, such as roads, bridges, and buildings. Truly astronomical amounts of sand are currently used throughout the world. One amazing example is Dubai, a

small island nation in the Persian Gulf. Because of its small size, the leader of this oil-rich nation decided to build an artificial island in the shape of a palm tree by dredging 120 million cubic meters of sand from the shallow Persian Gulf, and piling it up behind a protective breakwater of rocks. Don't tell Donald Trump, but there is enough sand and rocks in this artificial island to build a seven-foot high wall completely encircling the earth! Two more islands are planned that will use even more sand. In this way Dubai was able to add 48 miles of new shoreline to its 40 miles of natural

coast. China's massive construction of cities throughout the country dwarfs what has been accomplished by Dubai. An entire chapter of the book is devoted to China's efforts.

Of course, there is a host of environmental problems involved with removing that much sand from rivers and lakes. A lot of sand mining in the Third World is illegal. This has sometimes led to violence and murder of those who try to stop the mining. One company was fined \$42 million for stealing millions of tons of sand from San Francisco Bay.

The tourist industry is also responsible for the use of sand to "nourish" or replace sand on beaches in California and Florida that have all but vanished due to erosion. Natural replenishment of sand has been interrupted by the construction of dams on rivers and breakwaters along the coast. Therefore, offshore sand is pumped from the sea floor and spread on the beaches so tourists will still come, lay on the beach, and spend their money.

Large amounts of sand are also used in the oil industry's fracking process. A mixture of crude oil condensate, chemicals to turn it into a gel, and a lot of sand is pumped under high pressure into an oil-bearing formation. The pressure expands the cracks in the formation and the sand keeps them open after the pressure released. This allows more oil to percolate through the sand from the widened cracks, thereby increasing the production of the well. This is a very costly procedure. In 1973, I worked for Dowell, a division of Dow Chemical, in Wyoming. We would charge a quarter of a million dollars for a frack job, which involved linking 10 piston pumps the size of jet engines in series, then pumping sand into the formation.

Of course glass is made from relatively pure sand. A fascinating history of the evolution of glass manufacturing is presented. By the late 1500s, people were experimenting with telescopes and eyeglasses. Soon after, microscopes were used to explore the world of "animacules," tiny living creatures in water. The industrial revolution led to mass production of bottles and Mason jars. Another chapter recounts the history of highly pure silicon made into computer chips.

"The World in a Grain" is a very interesting book that I highly recommend.

## **Historical Meanderings through the Biodiversity of Single-Celled Life Through 19<sup>th</sup>-Century Scientific Illustrations.**

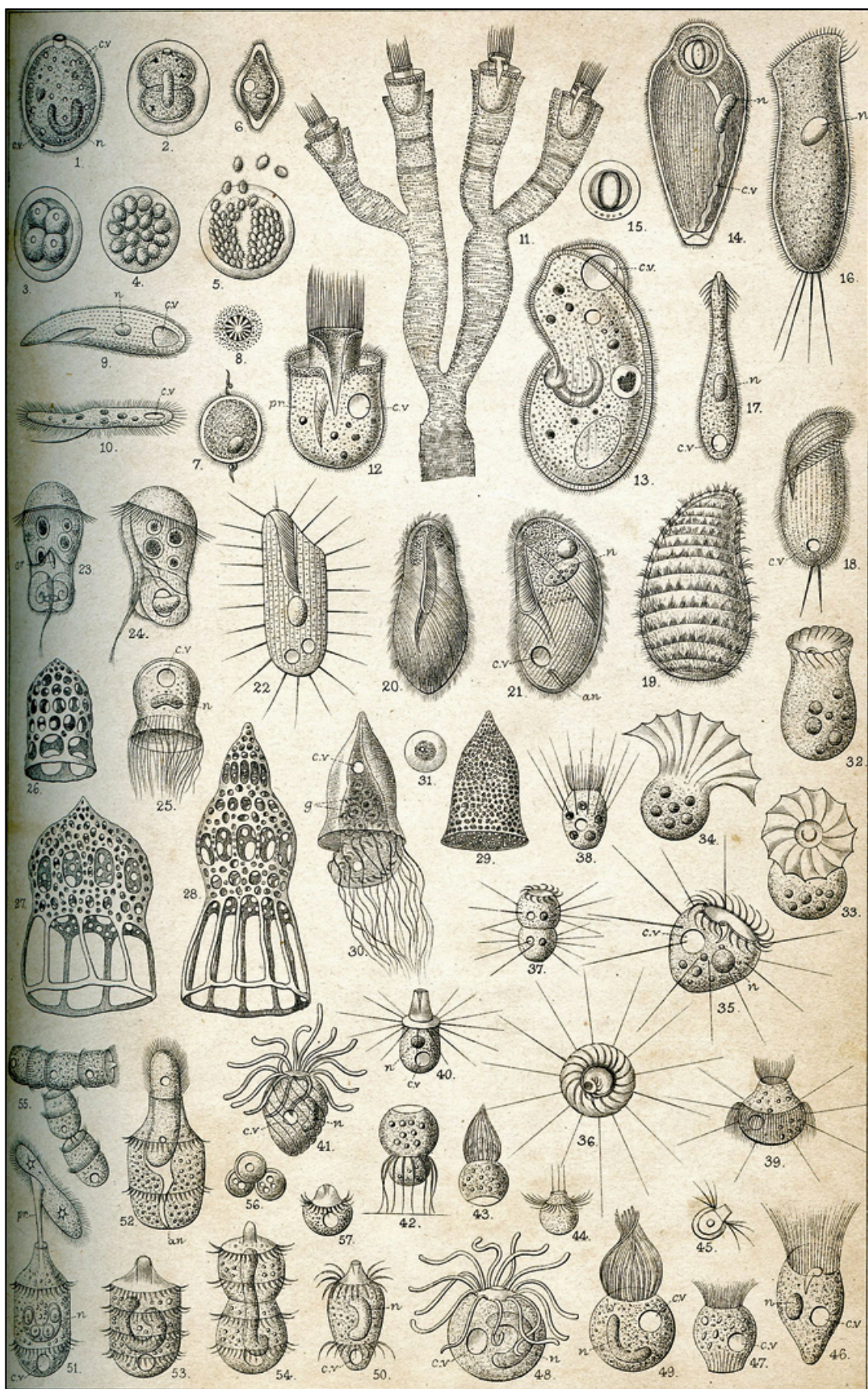
By Hank Guarisco, editor

The concept of biodiversity is currently on many people's minds as we are responsible for the loss of species at such an accelerated rate that this has been called the "Sixth Extinction." Most of us are only partly aware of the amazing diversity of life on earth. Therefore, I would like to end this issue of the newsletter with a series of plates taken from, "A Manual of the Infusoria." Vol 111, 1880-1882, by W. Saville Kent, a former assistant in the British Museum of Natural History.

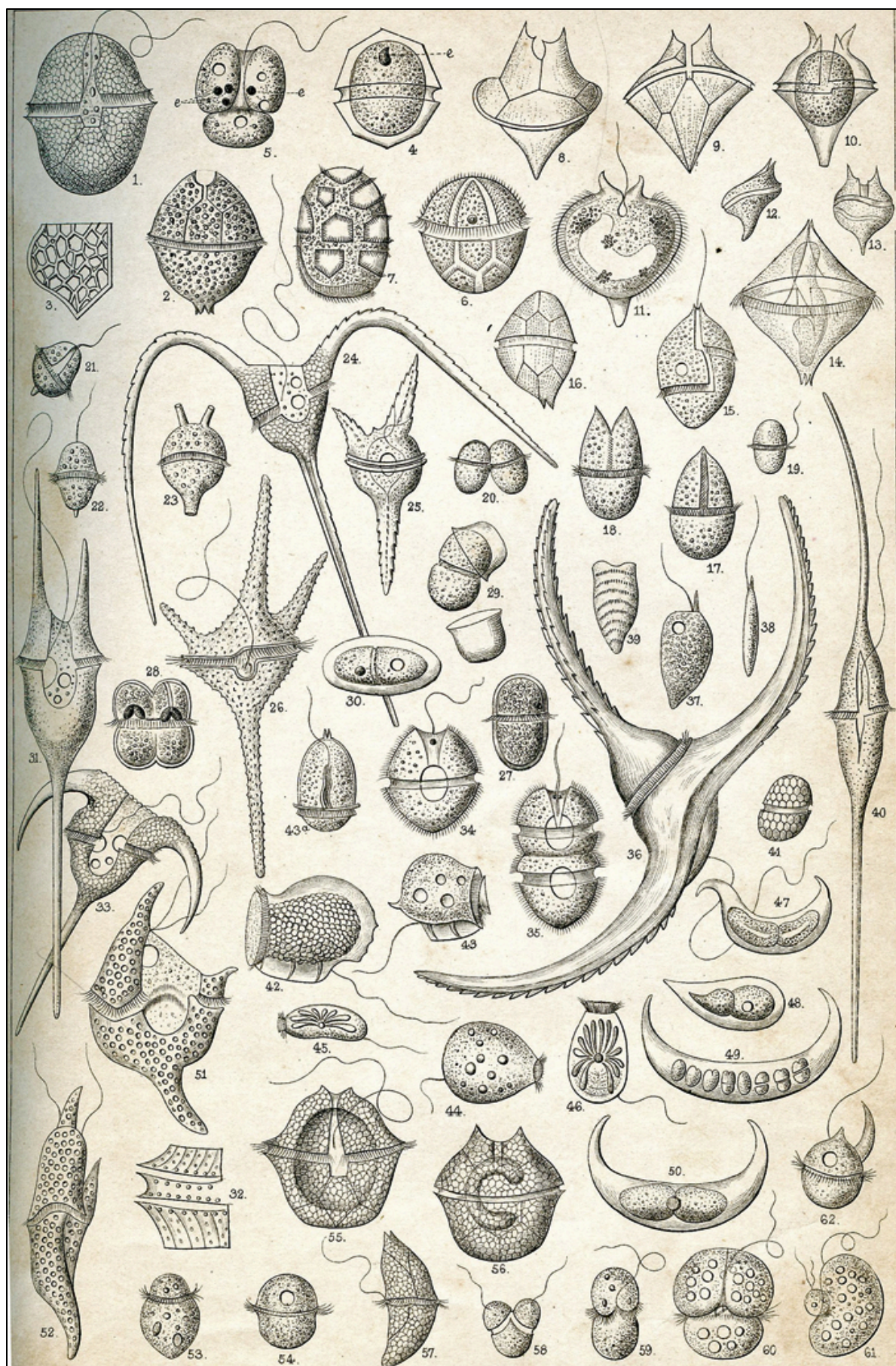














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