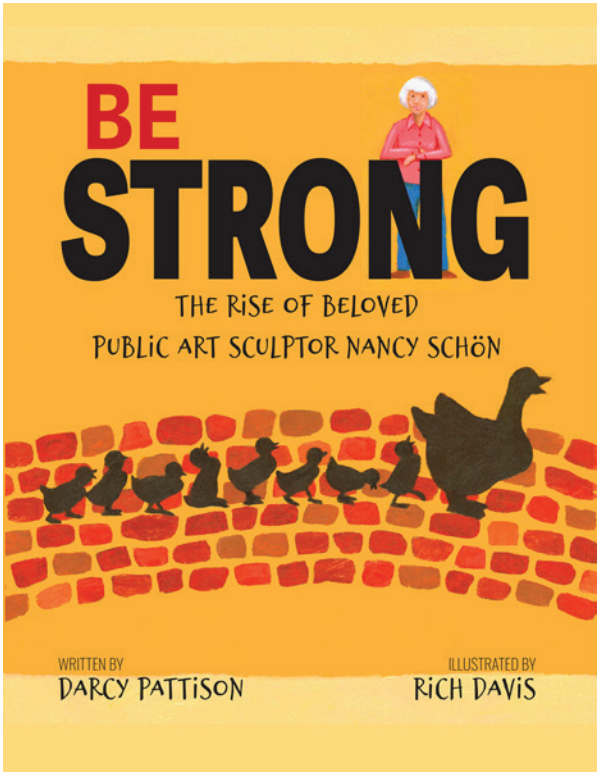
# BE STRONG

## The Rise of Beloved Public Art Sculptor Nancy Schön


## The Woman Who Sculpted *MAKE WAY FOR DUCKLINGS*

PUBLICATON DATE: MARCH 2024

PRESALES! EXCLUSIVE TO KICKSTARTER SEPTEMBER 2023

Mims house Books is thrilled to be working with Nancy Schön on this authorized picture book biography.

In October, 19987 Nancy's sculpture of the duck family from *Make Way for Ducklings* was installed at Public Garden, Boston, MA. Since then, she has created over 20 other public art sculptures. This is her story!

Be inspired by a woman's fight to create public sculptures for children. Against all odds, Nancy clung to these words: BE STRONG!

**CLICK ON THE QR CODE TO BE NOTIFIED WHEN THE BOOK IS AVAILABLE.**

SCAN ME

mims

1309 Broadway, Little Rock, AR 72202

## Download Our Catalog

SCAN ME!
TO DOWNLOAD CATALOG

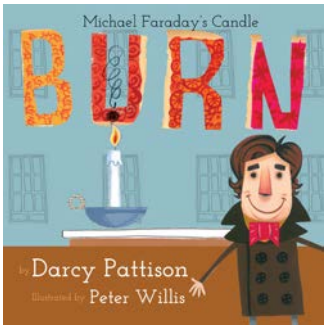
Mims House
SueFoster@mimshouse.com
MimsHouseBooks.com

# MOMENTS IN SCIENCE SERIES


There are certain Moments when everything changes. This series of picture book focuses on change in our scientific understanding. At what point did we start to understand something in a new way?

These eight books look at some big ideas of science as they discuss discoveries and mysteries of science.

Mims House
1309 Broadway
Little Rock, AR 72202
501-831-5275
Publicity: suefoster@mimshouse.com




# Writing BURN: Michael Faraday's Candle

Author Darcy Pattison answers questions about writing Burn: Michael Faraday's Candle.

**Question:** Burn is based on an 1848 lecture by Michael Faraday. Why did you choose to rewrite this famous lecture?

**Answer:** Since it was published in 1848, Faraday's lecture has never been out of print. When I learned this startling fact, I was intrigued. What was it about this lecture that has kept it alive for so long? In fact, the lecture is a fascinating look at a common, everyday object of 1848, a candle. The topic is deceptively simple. Yet, Faraday managed to discuss the candle burning for six hour-long lectures. In the world of science and science education, his lecture stands as a shining example of how to make a simple subject both complex and interesting. The lecture was given as part of the Royal Institution Christmas Lectures and especially designed to teach children about a scientific topic. And yet, it has never been published as a children's picture book. It was time.

**Question:** What were the challenges in writing this picture book?

**Answer:** The challenge of adapting Faraday's famous essay, "The Chemical History of a Candle," for a picture book format was immense. The first lecture is about 6000 words, and the language used in 1848 doesn't always translate well for 21st century students. The reading level is 1240L, which is a 9th-12th grade reading level. (See the original text on Gutenberg.org: http://www.gutenberg.org/cache/epub/14474/pg14474-images.html)

In other words, Faraday's lecture contained complex information, complex and archaic language, and informal presentation style suitable to an oral presentation. To adapt it for a children's book, I had to first set the scene. Peter Willis's whimsical illustrations captured Faraday's enthusiasm and helped to expand on the simple text on page 4.

Next, it was important to select only the most important scientific details, and to explain the concepts with simple, direct language. The constraints of a picture book meant topics had to be presented succinctly, with clarity, and be factually correct. In addition, the text had to be short, and we managed to edit it to a mere 626 words, a tenth of the original text, with a Lexile of 660L or 2nd-3rd grade reading level.

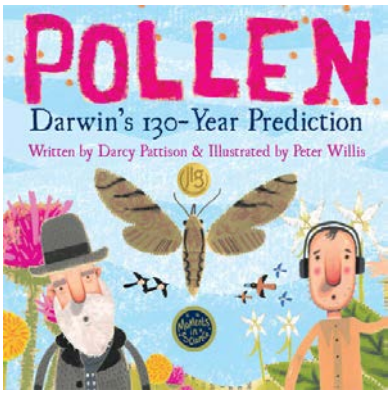
Finally, we strove to imbue the text with Faraday's passion for the topic. As a scientist, Faraday was known for his ability to design experiments. Even in such a short book, we managed to keep the bright light experiment that shows the hot air currents around a candle. Faraday went to the heart of

the scientific method with his comment, "What is the cause? Why does it occur?" We made it a prominent part of the story.

In the end, Burn: Michael Faraday's Candle is a simple text about a simple object. And yet, I hope that in the writing I was faithful to Faraday's passions and intelligence. Faraday was a self-taught man, and learned much by attending popular science lectures. In his early days, Faraday often attended such science lectures, made careful notes, and then published a book that recreated the lecture. It was a way for him to make money, and also spread the information to others. In a way, I've walked in his footsteps by taking his candle lecture and making it accessible to children. I believe Faraday would be very pleased.

***POLLEN: Darwin's 130-Year Prediction***
***Book 3, [Moments in Science]***

REPRINTED from the Mims House Blog:
https://mimshousebooks.com/blogs/books/how-long-does-science-take




Sometimes, science takes a long time.

On January 25, 1862, Charles Darwin received a box of orchids. It was the beginning of a long journey toward answers. One of the orchids, the Madagascar star orchid, intrigued him. Darwin knew a lot about orchids and could name most of the orchids in the box. But he had to write to his friend to find out the scientific name of this one. The orchid had an 11" long nectary, the long tube where the plant stored nectar.

Immediately, Darwin wondered how the orchid could be pollinated. He had no idea the answer would take 130 years to fully answer.

## MARIE CURIE'S TIMELINE

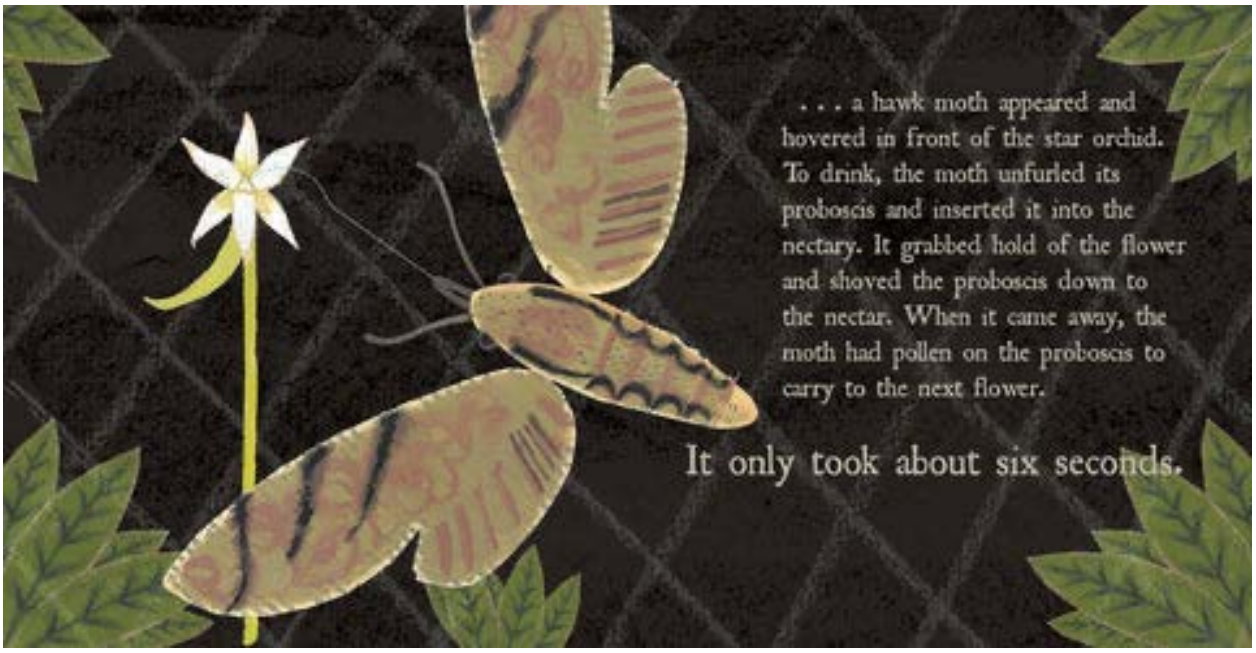
We know that science can be a matter of hard work, hours of repeating the same experiments. As Carla McClafferty wrote in her biography, Something Out of Nothing: Marie Curie and Radium (p. 40), Marie Curie worked hard to separate out radium and polonium from pitchblende. They discovered that there were two unknown elements. But isolating the elements out of pitchblende took four years.

Here's a timeline of her work in isolating the element of radium out of pitchblende.

Timeline:

- Uranium rays found in February 1896.
- 1897 Married Pierre Curie and had a baby
- 1898 Decided to study radium rays for her doctorial thesis.
- July 1898 named new element polonium
- December 1898 named new element radium
- 1899 – 1902 It took four years to isolated .1 gram of radium salt; she did eventually isolate a full gram of radium from 7 tons of pitchblende. That's like isolating 3 raisins from an adult elephant.
- March 28, 1902 Determines atomic weight of radium.
- 1903 Earns doctorate with her thesis
- 1903 Shared the Physics Nobel Prize, which was awarded tor Marie and Pierre Curie and Henri Becquerel
- 1903-1911 She continued the work on radium
- 1911 Marie Curie received the Nobel Prize in Chemistry in 1911.

## BIG IDEA: SOMETIMES SCIENCE TAKES A LONG TIME.




Darwin predicted that the Madagascar star orchid would be pollinated by a giant moth. 21 years later, in 1903, two etymologists, or insect scientists, published a new book about moths. Baron Rothschild and Karl Jordan described a new species of Madagascar hawk moth (Xanthopan morgani praedicta). It had a very long proboscis (straw-like mouth), long enough to pollinate the star orchid.

However, no one had actually observed the pollination happening.

POLLEN: DARWIN'S 130 YEAR PREDICTION is the story of the star orchid and the hawk moth and how scientists eventually proved that the moth pollinated the orchid.

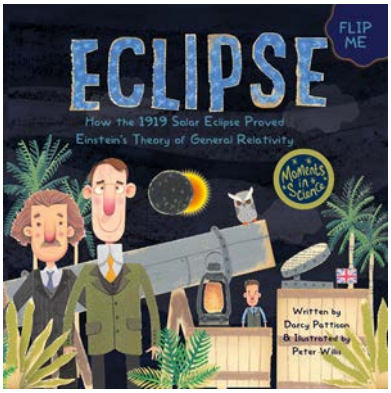
**It only took them 130 years!**

In other words, scientists stand on the shoulders of the giants in science who went before them. It's important to know the history of science and to learn about the scientific experiments and studies of previous generations of scientists. Each generation builds on the work of the previous as they work to answer questions about the world around us.

# APRIL 8, 2024 TOTAL SOLAR ECLIPSE

Arkansas will be in the path of totality for this solar eclipse. Prepare now!

Reprinted from the Mims House Blog: https://mimshousebooks.com/blogs/books/solar-eclipse




You hear that, world? The big day is fast approaching, so rustle up some solar eclipse glasses, familiarize yourselves with the moon's phases, and look up the name of any town that might be in the path of totality.

**That's right; the total eclipse is coming to North America on April 8, 2024.**

Now, you may be thinking to yourselves that an eclipse of the sun is not worth a road trip, but you may change your mind when you hear about what a great opportunity this affords.

First, this will be the last total solar eclipse visible from the United States until 2044. You'll have to wait twenty whole years before this rare opportunity offers itself again. Second, the path of the eclipse cuts straight through America, making it easier than ever before to find the perfect place to observe the full eclipse. You couldn't ask for a better view! Finally, there is no better way to teach kids about the phases of the moon as it passes in front of the sun. SEE the path of totality in the map below.

## PHASES OF THE TOTAL ECLIPSE

**It all starts with the "first contact."** That simply means that the moon has begun its path across the sun. As the full moon slowly but surely moves to block the light of the sun, a dark crescent shape starts to form. The "crescent" grows and grows until there is barely any light left.

Dark bands of shadows separated by white spaces start to move rapidly down the sides of buildings and along the ground. These "shadow bands" are caused by turbulent wind cells in the upper atmosphere that distort sharp-edged light rays. The bands are active for only a moment and are hard to photograph, but they serve as a signal that totality is quickly approaching.

**The next stage** is even more fleeting than the last. For an almost imperceptible moment, when the last of the sun's rays are shining through the moon's crevices and valleys, small beads of light are visible on the moon's edge. These little "beads", called **Bailey's Beads**, are quickly replaced by the next phase.

**The last phase** before the big event is called the **diamond ring effect**. This is the last time that the sun's rays are visible before the moon's shadow completely covers the sun. What happens is the sun's rays that are still shining around the moon concentrate in one spot and gleam like a diamond. Around the moon, a soft glow appears as the sun's outer atmosphere becomes visible. This is called the corona, and it forms a ring around the moon. Together with the last glowing sun rays, it gives the impression of a diamond ring.

Now comes the moment that everyone is there to see: **TOTALITY**. Totality, also known as second contact, is when the shadow of the moon completely blocks out the sun. Totality is only visible from the narrow path along which the moon's shadow falls—the path of totality. Viewers outside the path will only be able to see a partial solar eclipse. But those within the path are awarded a special treat. For the few minutes during totality, viewers can safely remove their protective eyewear. While their glasses are off, they can take a quick look at the wonders going on around them. With the sun's light blocked, the night sky offers a brighter view of the solar system. Stars and even planets shine brilliantly overhead. Around the moon, the corona and chromosphere (a faint pink glow caused by the solar atmosphere) tinge the sky.

TOTALITY.

DOWN ON EARTH, TEMPERATURES DROP,
A 360 DEGREE SUNSET CAN BE VISIBLE,
AND THE WORLD GOES EERILY SILENT.

After a few minutes elapse, the eclipse viewers **must put their solar glasses back on**. The second the sun's rays are visible again, it is no longer safe to view with the naked eye. This moment, when the sun's rays peep through on the opposite side of the moon, is called third contact. The phases then repeat themselves in reverse order: the diamond ring

effect, Bailey's Beads, and shadow bands. The second the moon's shadow is past the sun, fourth contact is achieved, and the eclipse is over.

## SAFETY

**Special Glasses.** As you may already know, **it is a terrible idea to stare into the sun**. The sun's powerful UV rays are incredibly harmful to the human eye when viewed without the proper protection. Clearly, it's a good idea to wear eye protection, but keep in mind that **a normal pair of sunglasses won't cut it**. In order to look at the sun safely, you need to wear special glasses that are rated for the eclipse. Normal sunglasses are inadequate and wearing them will result in eye damage.

**Pinhole Projector.** Another safe way to view an eclipse is with the help of a **pinhole projector**. This is simply a piece of paper, cardboard, etc. with a small hole punched in it that projects an image of the sun onto a nearby, flat surface. The hole will not protect your sensitive eyes from the sun, so do NOT use it to look directly at the eclipse. Instead, use it to watch the moon's shadow pass overhead indirectly.

**Solar Filter on Cameras.** Lastly, don't view or photograph the eclipse through a telescope, binoculars, camera lens, etc. without first **installing a proper solar filter**. The lenses will concentrate the sun's light and greatly increase the damage it can inflict. In a similar way, don't look through a lens while wearing eclipse glasses; the concentrated sun rays will melt and damage the solar filter in the glasses.

## RESOURCES AND ACTIVITIES


WATCH THE FLIP BOOK IN ACTION:

HTTPS://WWW.YOUTUBE.COM/SHORTS/GA-2CLA0AMQ

### FOR ALL GRADES

Learn about safety while watching a solar eclipse at SolarEclipseBooks.com

**Make a solar eclipse flip book to watch an eclipse.**

Need: download FLIP BOOK pdf (https://cdn.shopify.com/s/files/1/0066/3679/8009/files/ECLIPSE-FlipBook-MimsHouse.pdf?v=1687364836)

stapler, scissors

Print out the pages, cut out, staple them together, and have the kids flip through the book.


FIRST GRADE SOLAR ECLIPSE ACTIVITIES

**1. Act it out.**

Need: flashlight, a piece of paper, crayons, scissors

All you need to do for this fun activity is have the kids cut their paper in a circle, about the same size as the head of your flashlight. The children can then spend some time decorating their circles to make them look like the moon. Once the decorating is complete, dim the lights, point the flashlight at a smooth surface, and let the kids take turns passing their moons in front of the flashlight. Point out how the moons cast a shadow over the light and have the kids take note of it.

**2. Make sun prints.**

Need: wild flowers/ leaves/ plants, construction paper, tape

Take the children outside and have them gather different foliage (flowers, leaves, plants, etc.). Next, have each kid tape their finds to pieces of construction paper. Leave the papers outside in the sunlight for a few hours, then remove the plants. The sun will have bleached the paper, leaving an outline of whatever was taped on it. Use this as an illustration for teaching the children just how powerful the sun's light is. Remind them to never stare at the sun!

## SECOND GRADE SOLAR ECLIPSE ACTIVITIES

**1. Pop a balloon.**

Need: a balloon, a magnifying glass, sunglasses, a sunny day

If the sun is shining brightly, then this is a fun project to do. Have each kid blow up a balloon and take them outside. Once there, have the children take turns using the magnifying glass to focus the sun's rays on their balloons and pop them. Make sure that the kid currently taking their turn is wearing sunglasses since the concentrated sun ray will be quite bright. Use this as an opportunity to teach the kids about the power of the sun's rays, and caution the children to never stare at the sun!

**2. Act it out.**

Need: yellow and white construction paper, popsicle sticks, tape, crayons, scissors

Have the children cut the yellow and white papers into similarly sized disks. Let the kids decorate the two disks to look like the sun and the moon. Tape popsicle sticks to the back of the disks. The kids can then act out the eclipse, passing the moon in front of the sun.

## THIRD GRADE SOLAR ECLIPSE ACTIVITIES

**1. Make a simple pinhole viewer.**

Need: cardboard, a piece of foil, tape, a pushpin, markers, scissors

Let the kids cut the cardboard into square frames and decorate them. Next, have the children cut the foil into a similarly sized square and tape it to the back of the frame. Lastly, use the pushpin to make a small hole in the middle of the foil. Once the eclipse starts, the children can use their pinhole viewers to cast a shadow on a flat surface and view the eclipse indirectly.

**2. Make an edible eclipse demonstration.**

Need: Oreos

Have the children carefully separate the halves of their Oreos so that all the white filling is on one cookie. Tell the kids to take small bites of the half with the cream on it as you explain the different phases of the eclipse. Have the children look at their cookies after each bite and make a note of how much of the cream is still visible.

## FOURTH GRADE SOLAR ECLIPSE ACTIVITIES

**1. Diagram the different eclipse types.**

Need: paper, colored pencils

After teaching the kids about the differences between a total solar eclipse, partial solar eclipse, annular solar eclipse, and total lunar eclipse, have them draw a sketch of each one. Make sure they leave a space besides each sketch. In that space, have them write a few short facts about each eclipse.

**2. Make a complex pinhole viewer.**

Need: a thin piece of cardboard (like a cereal box), a pushpin

Have the kids cut the cardboard into a circle. Let them use the pushpin to create a design of little holes all over the cardboard. Once the eclipse starts, the children can use their pinhole viewers to cast a shadow on a flat surface to view the eclipse indirectly.

## FIFTH GRADE SOLAR ECLIPSE ACTIVITIES

**1. Make a moon journal.**

Need: a notebook, a pencil

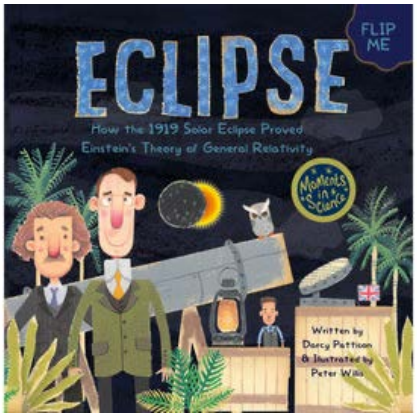
On the first day of the month, give each kid a notebook. Every night for the entire month, have the kids go outside, make a sketch of the moon, and write about their observations.

**2. Write an eclipse poem.**

Need: a piece of paper, a pencil

After you explain the stages of an eclipse, have the children write poems or short stories that creatively illustrate/ explain the stages.

## ECLIPSE BY DARCY PATTISON, ILLUSTRATED BY PETER WILLIS




Set in 1919, this book tells the true story of British astrophysicist **Sir Arthur Stanley Eddington** as he set out to photograph and study a solar eclipse.

Four years before, German scientist **Albert Einstein** had developed his famous theory of relativity. He said that the sun's incredible gravity could bend light. Scientists of that time believed that light always traveled in a straight line, so many found Einstein's theory hard to believe.

In order to test Einstein's theory, Eddington decided they needed to **photograph the stars before and during an eclipse** to measure if their light was actually bent by the sun. The act of taking photos back then was a more time-consuming process than it is now. They had to be quick, accurate, and incredibly lucky to pull this off.

But most importantly, they needed a clear sky.

You can imagine their horror when they awoke the morning of the eclipse to discover overcast skies and an incoming rain storm. Would it be clear in time?

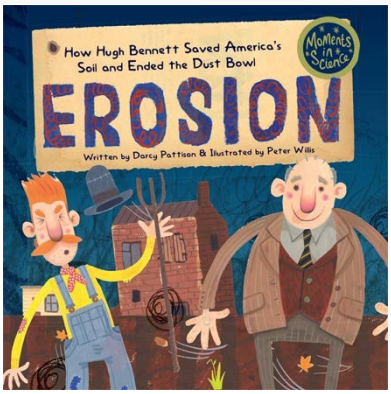
CLICK HERE FOR MORE INFORMATION ABOUT ECLIPSE

# LITLINKS: SOIL SCIENTIST AS HERO

This blog particle first appeared June 11, 2020 LitLinks,
https://www.patriciamnewman.com/litlinks-soil-scientist-as-hero/

Can a scientist be a hero? Can a SOIL scientist be a hero? Let's see.

The story begins with a huge rock, the Earth. It's covered with a thin layer of soil, and oh, how important is that soil! Without soil, humans couldn't live on Earth. Soil allows us to grow plant food and plants to feed animals that we eat.




My book, EROSION: HOW HUGH BENNETT SAVED AMERICA'S SOIL AND ENDED THE DUST BOWL, says it this way:
WITHOUT SOIL, THERE'S NO BREAD OR MILK.
WITHOUT SOIL, THERE'S NO TOMATOES OR POTATOES.
WITHOUT SOIL, THERE'S NO TOFU OR HAMBURGERS OR HOT DOGS.
WITHOUT SOIL, PEOPLE WOULD HAVE NOTHING TO EAT.
WITHOUT SOIL, PEOPLE COULDN'T LIVE ON EARTH.
From EROSION by Darcy Pattison, illustrated by Peter Willis

Soil is that important? Yes!

And if soil was in danger, we'd need a hero to save the day.

A soil scientist.

## WHY SOIL NEEDED A HERO

In the 1930s, soil in much of America was unhealthy. Farming practices such as deep plowing, along with a drought, meant the soil had little organic matter and was too dry. Windstorms picked up the soil creating dust storms. No one knew what to do. Except soil scientist Hugh Bennett, known as Big Hugh.

Born into a farming family, Big Hugh had studied soil all his life. He helped sample soils across the United States and learned that each type of soil was suited to one thing or another. Some soil was strong enough to support large buildings. Some soil was perfect for growing rice or corn or soybeans. Other soil was good for grazing cows or sheep.

Problems happened when the soil was used for the wrong purpose. Putting a large building on soft ground meant that the building sank. Growing corn on wet soil suited for rice meant a poor crop.

Big Hugh also studied the best ways to conserve the soil, to use it in a way that gave us the most food without damaging the soil. In the 1920s, the island of Cuba had problems with growing sugarcane. Big Hugh went to Cuba to teach farmers new ways to farm, including contour plowing, crop rotations and more. In fact, he wrote the book, *SOILS OF CUBA*.

## THE DUST BOWL

And then, the Dust Bowl hit the United States. Despair spread across America as the land dried up and blew away.

But Big Hugh knew what to do. But he needed the government's help. EROSION tells the exciting story of how he convinced Congressmen to establish the Soil Conservation Service. It was the first time any government on Earth created a law to protect the soil.

PHOTO CREDIT: THIS PHOTO SHOWS THE LINCOLN MEMORIAL IN WASHINGTON D.C. DARKENED BY A DUST STORM. THIS WAS LIKELY TAKEN ON EITHER MARCH 6 OR MARCH 21, 1935. IT APPEARED ON THE MARCH 30, 1935 COVER OF SCIENCE NEWS LETTER. PHOTO BY JOHN HUGH O'NEILL, PHOTO COURTESY OF USDA NRCS. NRCSDC13022

## BE A SOIL HERO: EXPLORING EROSION

It's easy to explore the process of erosion by using containers filled with soil.

**QUESTION 1: Does plant matter affect the rate of erosion?**
Materials:

- One potted plant
- one pot similar in size to the potted plant, but filled with just soil

Tilt both pots. Pour water onto the soil in each pot and observe what happens.

Vary the amount of water and the speed of pouring and record your observations.

Discussion: The plant and its root system will hold the soil in place. Without a plant, the dirt will be washed away.

**QUESTION 2: Is erosion affected by how steep a slope is?**
Fill a rectangular pan filled with a mix of soil, sand and rocks. Tilt the pan and pour water on it. Vary the amount of tilt. Does erosion occur faster when the slope is steeper?

Discussion: The steepness of a slope can accelerate erosion. Why do you think this happens?

## THREE WRITING ACTIVITIES

I think that Big Hugh's training made him a hero of the Dust Bowl. Think about the idea of heroes and heroism. Write an opinion essay: Can a Scientist be a Hero?

Big Hugh told a story about a drip from a barn roof. Read "Warning! The Story of a Drip" and look at the pictures of Providence Canyon State Park in Georgia. Write a poem about the drip and how it created such a large erosion canyon.

PHOTO CREDIT: COURTESY OF GEORGIA DEPARTMENT OF NATURAL RESOURCES

Look at the photos of the Dust Bowl in EROSION. Write a poem about what it would be like to breathe dust.

ABOUT TO BE ENGULFED IN A GIGANTIC DUST CLOUD IS A PEACEFUL LITTLE RANCH IN BOISE CITY, OKLAHOMA WHERE THE TOP SOIL IS BEING DRIED AND BLOWN AWAY. THIS PHOTO WAS TAKEN ON APRIL 15, 1935 AND IS INCLUDED IN KEN BURNS' PBS DOCUMENTARY "THE DUST BOWL."
(ASSOCIATED PRESS). FROM Los Angeles Times *article* BY SCOTT TIMBERG, NOV. 16, 2012.

# A.I. HOW PATTERNS HELPED ARTIFICIAL INTELLIGENCE DEFEAT WORLD CHAMPION LEE SEDOL

This blog article first appears on LItLinks, June 9, 2021

Welcome to today's A. I. smackdown! It's man versus machine.

In a 2016 exciting five-game match the world champion Go player Lee Sedol went up against AlphaGo, an artificial intelligence program. The world-wide excitement about the match shattered into confusion when AlphaGo won the first game. How could humans lose to machines? People stumbled over the idea that a computer program could be better than the best of humans.

What is A. I. or artificial intelligence? If humans have natural intelligence, then any intelligence created by humans would be artificial intelligence.

## HOW DOES A.I. WORK?

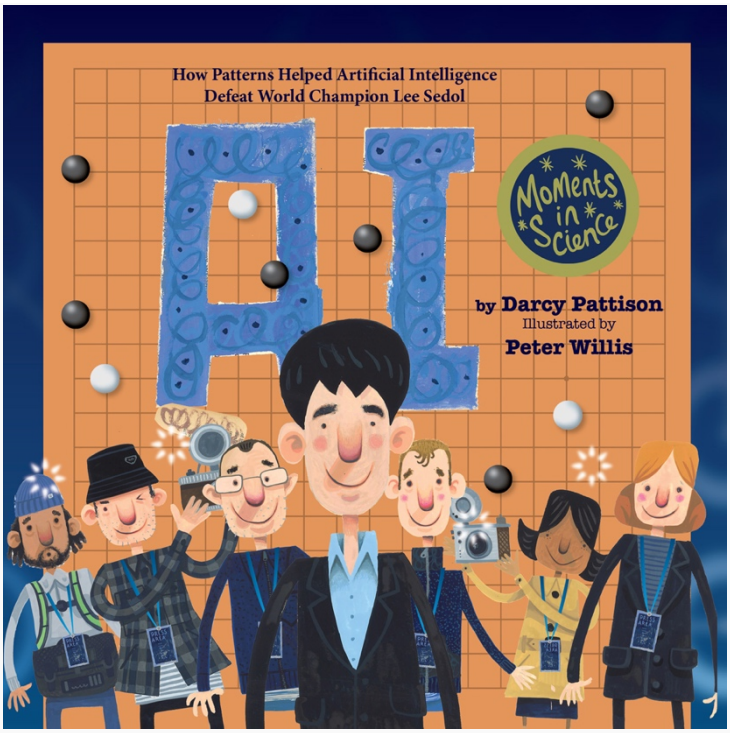
The basis of artificial intelligence is complicated mathematics, but the ideas behind it are simple. Early attempts at A.I. focused on tasks such as recognizing a photo of a cat. There were two basic ways to determine if a cat was in a photo.

First, you could give the program a set of rules. For example: If there's a circle shape with two triangles, it's a cat's face. The rules quickly become complex! What if a cat is chasing a rat? What if it's curled up asleep? The cat's position would mean a different set of rules.

Second, you could program an artificial intelligence with pattern recognition. Then provide the program with thousands of photos, each labeled CAT or NOT CAT. Such programs could analyze the photos and develop a mathematical model of CAT. This method requires powerful computing and lots of data. But in the end, it's more accurate.

DEEP LEARNING VS. RULES
FROM A.I.: How Patterns Helped Artificial Intelligence Defeat World Champion Lee Sedol

## ACTIVITY #1: STUDY THE GAME GO.




Read A.I.: HOW PATTERNS HELPED ARTIFICIAL INTELLIGENCE DEFEAT WORLD CHAMPION LEE SEDOL.
Discuss the following questions with students:

- Why are games used to test A.I. programs?
- Why was GO chosen as the game for this competition? Learn to play GO. Many apps teach the basics of GO.
- Discuss how pattern recognition can help players become stronger in games such as chess, checkers, or GO.

Watch this video for instructions on how to play GO: https://youtu.be/Jq5SObMdV3o

## ACTIVITY #2: RECOGNIZING PATTERNS

Next, ask students to write rules for recognizing a photo of a cat.

- Divide into groups. Each group is given a different photo of a cat engaged in a different activity: napping, eating, sitting, running, etc. Each group must write rules on how to recognize that the photo includes a cat.
- Compare the rules. Are there rules in common for the groups? How do the rules change when the cat's position changes?
- Combine all the rules, omitting duplicates. How many rules did you write? Are they enough to recognize a cat in any photo? Or would there need to be more rules?

- Discuss the advantages of artificial intelligence based on pattern recognition over writing rules.

## ACTIVITY #3: A. I. EVERYDAY

Determine what items in a student's daily life use artificial intelligence. As it becomes more common, many aspects of daily life are powered by A.I. Explore the following:

- Medical uses, for example, how a program can analyze a photograph of a skin mole to determine if it's cancerous.
- Business uses, for example, how they deliver packages efficiently.
- Navigation uses, for example, mapping programs on smart phones. Discuss if A.I. will help in developing self-driving cars.
- Law enforcement uses, for example, facial recognition to catch criminals.

FROM A.I.: How Patterns Helped Artificial Intelligence Defeat World Champion Lee Sedol

## ACTIVITY #4: WRITE ABOUT IT

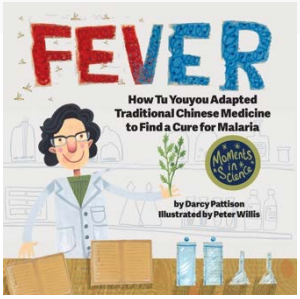
Write an informative piece about artificial intelligence. Explain how it works and how it powers many daily activities. Predict how A.I. will be used to power new technologies in the next five years.

## FEVER

## WHAT IS THE NOBEL PRIZE?

This blog article first appeared on LITLinks, April 13, 2022.
https://www.patriciamnewman.com/litlinks-how-your-students-can-imitate-a-nobel-prize-scientist/

On November 27, 1895, Alfred Nobel, a Swedish man, signed his will, leaving much of his wealth to establish several international prizes. The Nobel Prize has become one of the most respected prizes, awarded to scientists, writers, and those working for world peace.




Nobel was born in Sweden, grew up in Russia, and studied chemistry and technology in France and the U.S. He was fluent in several languages, wrote poetry, and was interested in science, inventions, business, literature, and peace work.

In 2015, Tu Youyou won the Nobel Prize in Medicine and Physiology for finding the cure for malaria. Watch her acceptance speech here: NobelPrize.org YouTube Channel

## ACTIVITY #1: WRITE AN APHORISM OR PROVERB

Alfred Nobel was known for his aphorisms or proverbs, which are short sayings that said something true. Here are some of his aphorisms:

*"Contentment is the only real wealth."*

*"The truthful man is usually a liar."*

*"Home is where I work and I work everywhere."*

Alfred Nobel

Ask students to work in groups to write their own aphorisms or proverbs.

## ACTIVITY #2: SPEAK LIKE A SCIENTIST

BUY YOUR COPY OF Fever

As your students read FEVER: HOW TU YOUYOU ADAPTED TRADITIONAL CHINESE MEDICINE TO FIND A CURE FOR MALARIA they may need definitions to understand the words scientists use. Ask students to look write down a definition of the following words based upon your readng of FEVER. Then ask students to look up the definitions.

- Parasite. (An organism that lives on or in another species, known as the host, and gets its food from the host.)
- Malaria. (any of a group of diseases, usually intermittent or remittent, characterized by attacks of chills, fever, and sweating: formerly supposed to be due to swamp exhalations but now known to be **caused by a parasitic protozoan**, which is transferred to the

human bloodstream by a mosquito of the genus ANOPHELES and which occupies and destroys red blood cells.)

- Extract or Extraction. (To get, pull, or draw out, usually with special effort, skill, or force.)

## ACTIVITY #3: MEET A PARASITE

Some examples of parasites are tapeworms which live in human intestines, mistletoe that lives on tree tops, and fleas that live on cats or dogs.

This photo (circa 1927) shows a Brazilian boy holding a board of tapeworms that were removed from his intestines.

The malaria parasite is PLASMODIUM FALCIPARUM. It has a complicated life cycle. First, it lives in mosquitos. When an infected mosquito bites a human, the parasite then grows inside the human. When a mosquito bites an infected human, the mosquito becomes infected.
Ask students to draw a model of the parasite's life cycle.

## ACTIVITY #4: EXTRACTING COMPOUNDS FROM PLANTS

Tu Youyou extracted compounds from plants to test them as a cure for malaria. After many failures, she reread the ancient Chinese texts. It said to soak the plants, but she had been boiling them. Boiling was faster, but perhaps it was destroying the chemicals they needed. She repeated every test with every plant to discover if the new extraction method worked.

You can try extracting from plants, too.

Collect plants used to extract flavors, such as mint, chives, onion, lemon, rosemary, and sage.

Look for recipes for "infused water" to find fun combinations. (NOTE: BE SURE TO WATCH FOR FOOD ALLERGIES IN YOUR CLASS AS YOU CHOOSE MATERIALS.) For example:

- cucumber and mint
- strawberry, basil and lemon
- blueberry, lemon, rosemary
- watermelon, kiwi, and lime
- pineapple, coconut, and lime

## TEST #1: COLD WATER V. HOT WATER

- Pitcher 1 has cold water.
- Pitcher 2 has very hot water.
- Soak the plants for one hour and then taste. Which one is stronger? What conclusions can you make?

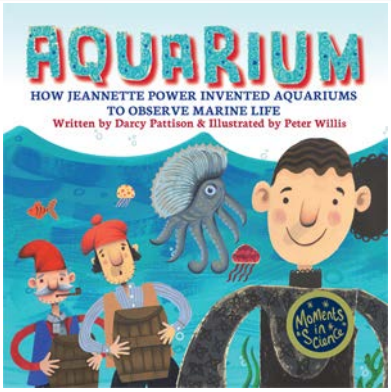
## TEST #2: DOES IT MATTER IF YOU STIR THE MIXTURE?

- Pitcher 1 is never stirred.
- Pitcher 2 is stirred every 15 minutes.
- Which one is stronger? What conclusions can you make?

For older students, you may want to do more analysis of the mixtures. For example, test the pH,

# AQUARIUM: How Jeannette Power Invented the Aquarium to Study Marine Life

This blog article first appeared on LITLinks, June 21, 2023.
https://www.patriciamnewman.com/litlinks-whats-the-best-way-to-study-live-marine-life/




My new addition to the Moments in Science series, *AQUARIUM: HOW JEANNETTE POWER INVENTED THE AQUARIUM TO STUDY MARINE LIFE*, is about a French female inventor. When she married, she moved from France to the island of Sicily, where she fell in love with the Mediterranean Sea and its creatures. She wanted to know more about the marine life, but in the early 1800s, scientists just studied dead animals. Power knew that she had to observe the marine animals alive, or she would never understand them.

At first, Jeannette had fishermen save specimens in barrels, but it was hard to see the animals there. For smaller animals, she gave them crystal vases with corks. But what about larger animals? The crystal vases worked so well that she realized she could use glass to create a special kind of cage – and the aquarium was born.

## DISCUSS THE BOOK

Read the story aloud with your class. The story is about the woman Jeannette Power, a unique octopus species, and how Power was able to observe the octopus to answer scientific questions.

Is this a biography of Power? A biography of the ARGONAUTA ARGO?
Where did the events take place?

What observations are included in the story?

How did Power discover the answer to the scientific question of how the ARGONAUTA ARGO gets its shell?
At the end of the story, explore the back matter about the ARGONAUTA ARGO octopus. What makes this octopus unique? Discuss the scientific question that Power needed to investigate.

## PROBLEM-SOLUTION

Inventions solve problems. For example, the lightbulb solves the problem of how to see in the dark.

What problems do these inventions solve?

- Fork
- Cell phone

- Wheel
- Compass
- Printing press
- Vaccines

Jeannette Power had a problem. To solve the problem, first she had to be able to state the problem. How would you describe her problem? (She needed to study live animals, not dead ones.)

Once the problem was clear, Power could invent a way to keep animals alive so she could observe them. To work, her invention would have to 1) keep the animals alive, and 2) allow her to observe them.

Discuss aquariums.

How do they keep animals alive?

How do they allow for observation?

Was the aquarium a successful invention for Power? How could you improve it?

## IMAGINATION VERSUS OBSERVATION

Powers realized that direct observation was important for scientific study. Scientists were arguing about how the ARGONAUTA ARGO got its shell. Some thought that they found the shell, like a hermit crab who often moves to a new shell when it outgrows the old one. Others thought the octopus made its own shell, but no one had an idea how that could happen.

"I DID NOT STUDY THIS MARINE ANIMAL…USING THE IMAGINATION BUT BY EXPERIMENTAL OBSERVATIONS."
Jeannette Power

Discuss what Power could have learned about the ARGONAUTA ARGO octopus with her imagination. Discuss what Power did learn about the ARGONAUTA ARGO octopus with her observations of over 1000 individual octopuses.

## TRY IT OUT


Photo: Female ARGONAUTA ARGO shell. Image is public domain.

Look at this picture of a female ARGONAUTA ARGO octopus shell. It's a "dead octopus," the shell that is left when the body decays. Write an "informative paragraph" using your imagination.
Now, watch this video of the octopus and make observations.

Paper nautilus sighted off California: https://youtu.be/0-4JYPXPSrk

- When was this video made? Where was it filmed?
- 00:05 seconds: Describe the ARGONAUTA ARGO shell.
- 00:09 seconds: Are the octopuses close to the surface or in deep water? How can you tell?
- 00:13 seconds: How do the octopuses interact? (Watch the two octopuses who are fighting. When they turn loose, one octopus reaches out its arms to grapple a third octopus.)
- Talk about the group of octopuses. What do you observe?
- The last half of the video doesn't show many octopuses. Read the description of the video to find out why.
- What else did you observe?

Write an informative paragraph about your observations.

## DISCUSSION

How are the two paragraphs similar?

How are the two paragraphs different?

Why is observation important for scientists?

Is it important to know when and where the octopuses were filmed? In your informative paragraph, did you write about when and where you made the observations?