Meredith Gourdine: Purifying the Air

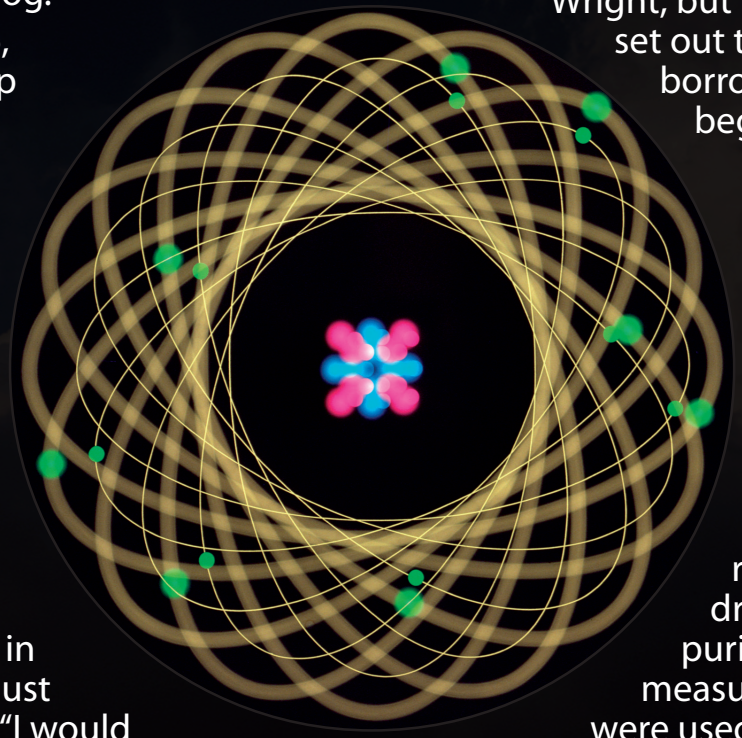
Meredith Gourdine **pioneered** the study of electrogasdynamics (EGD) technology. In the EGD process, gas **molecules** are electrically charged, or ionized, under high pressure, to produce energy. Gourdine's work led to more than 70 **patents**, most notably for techniques for getting smoke out of buildings, improving air quality, and freeing airport runways of fog.

Gourdine was born on September 26, 1929 in Newark, New Jersey. He grew up in Brooklyn, New York, where his father worked as a painter and janitor. While young Meredith attended Brooklyn Technical High School, he worked eight-hour shifts with his father, helping with painting jobs. Thanks to this experience, and to his father's advice to stay in school, he chose to **pursue** higher education, rather than continue working in a trade.

Meredith "Flash" Gourdine's greatest moment came at the 1952 Olympics in Helsinki, Finland. Jerome Biffle, also from the U.S., jumped 24 feet 10 inches in the long jump final, and Gourdine was just an inch and a half short of Biffle's mark. "I would have rather lost by a foot," the silver medalist said afterward.

Gourdine's career in the sciences was just as **illustrious** as his career in athletics. He graduated from Cornell in 1953 with a **B.S.** in Engineering Physics, before becoming an officer in the U.S. Navy. He directed the laboratory of Plasmodyne Corporation from 1960 to 1962 and was Chief Scientist of the Aeronautical Division of Curtiss-Wright Corporation from 1962 to 1964, where he worked on procedures for developing generators.

Gourdine tried to sell his ideas for procedures and inventions related to energy **production** to Curtiss-Wright, but when he failed in his efforts, he set out to start his own laboratory. He borrowed $200,000 from friends to begin Gourdine Laboratories.



Over the remainder of his career, Gourdine built a multi-million dollar business from his ideas about electrogasdynamics. Here are just a few of the **applications** he worked on: **purifying** the air, **converting** coal to electricity, cutting air pollution, heating, cooling, lighting, creating a high-powered paint spray, printing, refrigeration, making sea water drinkable by removing the salt, purifying the exhaust of cars, and measuring air pollution. His methods were used in **circuit breakers**, **acoustic imaging**, air monitors, and coating systems as well as the Focus Flow Heat Sink, which is used to cool computer chips.

In 1973 Gourdine founded Energy Innovations in Houston, Texas, to produce direct-energy conversion devices. He was the chief executive there until his death.

SOCIAL STUDIES

Determining Important Ideas

Meredith Gourdine: Purifying the Air

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Lesson focus:

Students will learn how to set a purpose for reading a text closely. They will also learn how to determine what is important in a text and how to evaluate the author's claims.

Text type:

Informational text
Literary nonfiction (biography)

Pages 37–38 of this book include the following vocabulary support for ELLs and struggling readers:

acoustic imaging, applications, B.S., circuit breakers, converting, illustrious, molecules, patents, pioneered, production, purifying, pursue

Follow-up activity

Page 5

Student Cooperative Activity Book

Lesson focus:

In this lesson, you will learn how to set a purpose for reading a text closely. You will also learn how to determine what is important in a text and how to evaluate the author's claims.

Note: Before you begin the lesson, mask the text so that only the title shows.

Prior to reading

State the lesson focus. Display the title and read it aloud. Model, by thinking aloud, how to examine the title and set a purpose for reading. For example, "Writers often give a hint in the title about what they think is important. My purpose for reading is to find out how Meredith Gourdine purified the air."

With your learning partner(s), discuss your purpose for reading. What questions do you have about the text based on the title? How can you turn these into a purpose for reading?

Display the entire text.

Skim and scan the text to get a sense of its meaning and purpose, and to find key ideas and words.

Interacting with the text

Read the first paragraph aloud. Model how to use the text structure to help determine the important ideas. For example, "The first thing the author tells us about Meredith Gourdine is that he was an early leader in electrogasdynamics (EGD) technology. This text is a biography, so I'm expecting to learn more about the significant events in his life. As I read on, I'm going to pay close attention to each paragraph. Like this first paragraph, each new paragraph might provide an important idea about Meredith Gourdine."

Read the remainder of the text aloud.

Do a close reading of the text. Discuss any difficult vocabulary. Can you figure out its meaning from the context? Discuss the main idea in each paragraph. Why do you think the author included the information about Gourdine's athletic abilities? Is this important information or an interesting detail that can be discarded?

Evaluate the claim in the text that Gourdine's career was "illustrious." Is the evidence given in the text relevant and sufficient? Why or why not? Show your partner(s) any irrelevant evidence in the text and discuss why you think the author included it.

Decide what is fact, opinion, and reasoned judgement in the text. How can you distinguish among them?

Reflecting on the text

Model how you reflect on the text. For example, you could notice Gourdine's long list of achievements and compare him with other famous inventors and innovators. What's the relevance of his athletic prowess?

List the most important idea in the text and two other important ideas. Discuss how setting a purpose for reading helped you to understand the text and evaluate the author's claims. Did determining the most important ideas help you remember the information in this text?

Facilitate a whole-group discussion about inventors and innovators, and how they bring about changes in the world. Invite some students to share their responses.

Writing activity

Use print and digital sources to research another inventor or innovator. Write a testimonial that describes their early life and achievements as well as the impact their work has had on the world. Use clear reasons and relevant research evidence to support the claims you make about the person. List the sources you use at the end.

Determining Important Ideas

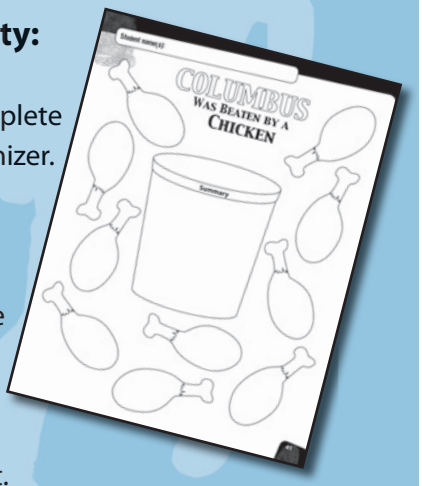
Prior to reading: Read the title. With your learning partner(s), discuss any background knowledge you have that will help you understand the title. For example, who was Columbus? What did he do? Discuss what you think this text may be about. Write down a question that you want answered in this text. Your purpose for reading will be to answer this question. Skim and scan the text.

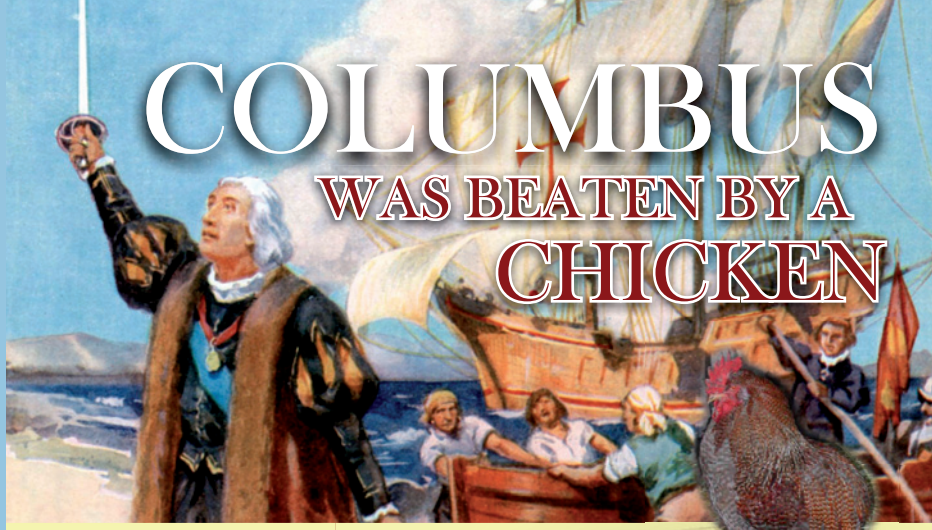
Interacting with the text: With your partner(s), take turns reading the text aloud, one paragraph at a time. At the end of each paragraph, discuss the most important idea and any supporting ideas in that paragraph. *Hint: the first sentence often introduces the main idea.* You could use sticky notes to help you remember important points. Discuss any words you are having difficulty understanding.

Discuss how the paragraphs are linked to build up ideas. Show your partner(s) some examples of words that link a paragraph to ideas in the paragraph before it.

Reflecting on the text: With your partner(s), discuss the most important idea in this text. Can you summarize it in one sentence? Discuss the question you used as your purpose for reading. Was it answered in the text? Can you think of a different question you could have asked? Discuss how reading to answer a question helped you to find the most relevant and important ideas in the text.

Writing Activity: Work with your partner(s) to complete the graphic organizer. On the chicken bones, record important ideas from the text. Use these important ideas to write a summary of the text in the bucket.





COLUMBUS WAS BEATEN BY A CHICKEN

For a long time in our nation's history, almost every American schoolchild learned that Christopher Columbus was the first person to "discover" the New World. Eventually, scientists and historians helped to set the story straight, confirming that Columbus was in fact beaten in the race to the Americas by quite a few people, including the **ancestors** of the Native Americans, the Vikings, and possibly even the Chinese. This is not to deny the importance of Columbus—clearly, the European **colonization** of the Americas was the direct result of his **voyages**. But he wasn't first past the post.

Now, a new study by New Zealand scientists offers the first hard proof for a hotly debated theory that **Polynesians** also made the journey prior to Columbus's arrival in 1492. And, it turns out, the Polynesians did not travel alone. When they first stepped on the shores of the Americas, they were joined by yet another visitor new to those foreign lands: the chicken.

The theory that ancient **seafaring** Polynesians reached the Americas before Europeans did began to **emerge** several decades ago on the basis of some striking observations about Polynesian and American civilizations.

Alice Storey [University of Auckland, New Zealand]'s research into this long **contested** theory began where some dinners end: with a pile of chicken bones. The bones were **unearthed** in 2002 at an **archeological** site called El Arenal-1, which is located in south central Chile. The site is thought to have been occupied by native South Americans from about 1000 to 1500 A.D.

To investigate further, Storey used a process called **radiocarbon dating** to confirm that the bones did in fact date to pre-Columbian times. Storey's analysis revealed that the bones had been buried between 1321 and 1407 A.D.—at least 85 years before Columbus' arrival.

Storey found that the El Arenal bone shared an **identical genetic sequence** with bones from two archeological sites in Polynesia: one from the island of Tonga, dating back about 2000 years, and one from American Samoa, dating to the same period as the El Arenal site. The presence of this shared sequence confirmed what Storey and her colleagues had suspected: the chickens buried at El Arenal were descendants of chickens brought over from Polynesia. As the researchers explain in their paper, "[T]he current results demonstrate that chickens with a Polynesian genetic signature reached the south-central coast of Chile before European contact with the Americas."

But, of course, Storey's conclusion isn't just **relevant** to the history of chickens in the New World. If one adopts the likely **assumption** that Polynesians were responsible for bringing Polynesian chickens to the Americas, the new study proves that Polynesians did in fact reach the New World before the time of Columbus.

"Columbus Was Beaten by a Chicken." Today's Science, July 2007.

Student name(s):

COLUMBUS WAS BEATEN BY A CHICKEN

On the chicken drumsticks, record important ideas from the text. Use these important ideas to write a summary of the text in the bucket.