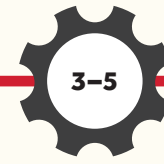


3 ENGINEERING MARVELS



Chicago hosted two World's Fairs just 40 years apart. Both exhibitions featured technology displays and sights previously unseen, but which are still used today. The 1893 Columbian Exposition, or World's Fair, debuted Mr. Ferris's great wheel. The modern wheel on Chicago's Navy Pier, just a few miles from its debut location, pays homage to the original. The 1933 Century of Progress World's Fair brought to life "dream cars" and "homes of tomorrow" for thousands of visitors to this dynamic display of culture and technology, and homes throughout the world don features proposed in the "Rainbow City". In addition to the two themes suggested below, consider the many STEM-based articles in *The Illinois Chronicles* as a snapshot of 200 years of Illinois engineering marvels.

DATE: 1893, WORLD'S COLUMBIAN EXPOSITION
ARTICLE: "A MODERN WONDER OF THE WORLD"

3-5

SCIENCE STANDARDS

- 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

ACTIVITY

- Explore the engineering principles which formed the basis of the Ferris Wheel. How did Mr. Ferris engage in the design and engineering process? What trials and previous designs existed? How did he choose materials and what skills did his laborers need to execute his plan? Integrate the Arts: design a poster or advertisement encouraging fair-goers to give The Great Wheel a whirl!



DATE: 1933, A CENTURY OF PROGRESS WORLD'S FAIR
ARTICLE: "RAINBOW CITY, SHOWCASE FOR THE MODERN WORLD"

6-12

STANDARDS

SCIENCE STANDARDS

- MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

SOCIAL SCIENCE STANDARDS

- SS.H.1.6-8.LC: Classify series of historical events and developments as examples of change and/or continuity.
- SS.H.2.9-12: Analyze change and continuity within and across historical eras.
- SS.H.6.9-12: Analyze the concept and pursuit of the American Dream.

ACTIVITIES

- Evaluate which technologies showcased at the fair came into use, which did not, and why? Do you know anyone with a personal helicopter pad, for instance?
- Explore what has changed about a particular device or tool from 1933 to today. For example, what features did Cadillac unveil in 1933 and what features are they advertising in commercials and at car shows today?
- If you were to design a home (or city) of the future, what features or inventions might you dare to dream and incorporate into your design? Consider all three major design principles— aesthetics, function, and innovation—in your proposal.
- Imagine you are the lead planner in designing the next Century of Progress World's Fair. Propose exhibits for the fair demonstrating forthcoming or new technologies.
- Invite guest speakers to illustrate how their company incorporates aesthetics, functions, and innovation into their product(s).



A MODERN WONDER OF THE WORLD



By our city editor

May 2, 1893

CHICAGO CAME of age as a great international city yesterday when the World's Fair opened to delighted crowds with magic, razzamatazz, and stunning innovations that preview the next century.

The first World's Columbian Exposition, held to celebrate the 400th anniversary of Christopher Columbus' arrival in the New World, was instantly acclaimed a "modern wonder of the age" with around 200 buildings dedicated to displays from every corner of the globe.

Under the supervision of works director Mr. Daniel Burnham, the temporary structures have been covered in plaster and painted white to gleam in the sun. This "White City" is illuminated at night to breathtaking effect by hundreds of electric lights.

There has been nothing like it seen in America. Visitors were visibly awestruck yesterday.

After the U.S. Congress authorized a world's fair, Chicago

beat a campaign by New York City to stage it. Yesterday, the fairgrounds, sited on a converted two-mile swamp on the shores of Lake Michigan, were officially opened by President Cleveland.

Their scale must be seen to be believed. Most states and 46 nations have exhibits. California's features a knight on horseback made entirely of prunes.

There are snake-charmers, Venetian gondolas, German artillery, and even a replica Viking ship. A belly-dancer beguiled crowds yesterday in the Streets of Cairo exhibit. At least 3,000 drinking fountains have also been



installed around the grounds. In Midway Plaisance stands an imaginative "Eskimaux Village," while Mrs. Bertha Palmer's Woman's Building is located nearby.

It is the technical innovations which stole the show yesterday, among them the first steam turbine and an electric train. Visitors also got a taste for the new snack food called "popcorn."

Star attraction is the giant wheel, an engineering marvel and world-first, built by Mr. George W. Ferris. Immediately labeled the "Ferris wheel," it surely rivals the Paris exposition's Eiffel Tower.

The 264-foot-high wheel carries 36 cars, each holding up to 60 people. Its axle alone weighs 70 tons and thus ensures the wheel is strong enough to lift as many as 2,000 people at a time high above the fairgrounds.

The fair is not without its controversy. Miss Ida B. Wells, the civil rights campaigner, has arrived in Chicago to protest the exclusion of exhibits from African Americans unless approved by all-white committees. Department

store owner Mr. Marshall Field has pledged he is ready to donate funds for a museum to house some of the wonderful artifacts that will be left behind when the fair closes in October.

Death of a Monster

CRAZED SERIAL killer H. H. Holmes was hanged yesterday for the murder of a longtime colleague, but investigators believe his horrendous crimes may have resulted in the deaths of dozens more victims, *writes our crime correspondent, May 8, 1896.*

The former medical graduate moved to Chicago, and opened a hotel in Englewood in which he built a labyrinth of rooms and stairways, some leading to nowhere.

The hotel has come to be known as "Murder Castle" after it emerged that he had been doing away with his mainly female staff and guests, often selling their body parts to medical schools to conceal the evidence.

"I was born with the devil in me," he once said.

RAINBOW CITY, SHOWCASE FOR THE MODERN WORLD

By our technology editor

May 28, 1933

THE CENTURY of Progress International Exposition opened its gates to visitors in Chicago yesterday, delighting them with “dream cars” and “homes of tomorrow” among many futuristic exhibits.

The World’s Fair, created to mark Chicago’s first recognition as a town in 1833, is sited on over 400 acres of land along Lake Michigan’s shore.

At a spectacular opening event last night, lights were activated when the star Arcturus was detected in the sky, chosen because its rays began their journey at about the same time as Chicago’s previous World’s Fair in 1893. The fairground buildings are multi-colored to create a “Rainbow City” in contrast to 1893’s “White City.” Visitors are moved around the site in special Greyhound buses.

The fair is a showcase for the latest advances in science and



technology, particularly transport. Cadillac and Lincoln are unveiling their “dream cars” while railroad companies are exhibiting the new era of streamlined trains.

The popular “homes of tomorrow” displays suggest a future of dishwashers and air conditioning. The German “Graf Zeppelin,” the world’s largest airship, is scheduled to fly over

Chicago, although it can expect a mixed reception. Many are unhappy with its association with German Chancellor Herr Adolf Hitler’s controversial and brutal rise to power.