

X-TREME FACTS: ENGINEERING

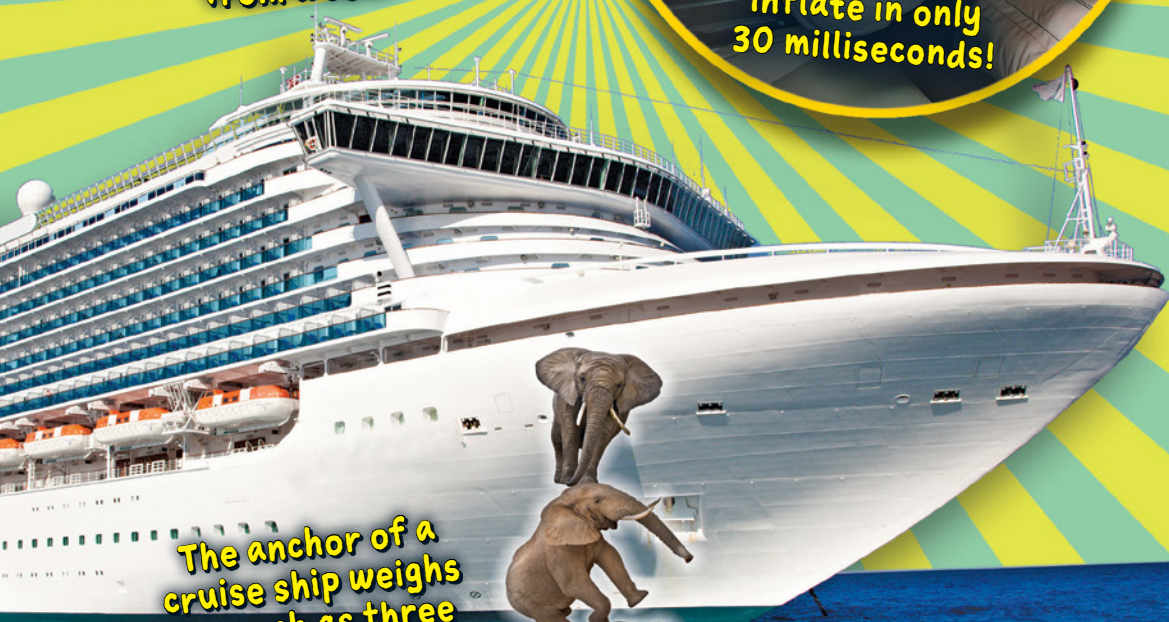
VEHICLES



The first bicycles were made almost entirely from wood.



Car airbags inflate in only 30 milliseconds!



The anchor of a cruise ship weighs as much as three elephants.



by Raymond Bergin

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Going Places

For hundreds of thousands of years, the only way people could get from one place to another was by walking. But humans are always trying to find better ways to do things. Once people began making simple boats and wheels, our tired feet got a break as feats of **engineering** took over! Canoes and carts led to rowboats and bicycles. Then, we figured out how to make planes, trains, and automobiles. Today, we're even taking trips into space!

Wheels were **invented** more than 5,000 years ago in Mesopotamia. **They were made of wood.**

WHAT ARE YOU
FIDDLING WITH
OVER THERE,
POTTER?

OH, NOTHING . . .
I'M JUST TRYING
TO REINVENT THE
WHEEL.



At first, wheels were used to shape clay. But then, someone decided to put them on carts to make moving things easier.

The first car was powered by steam and traveled at about 2 miles per hour (3 kph).

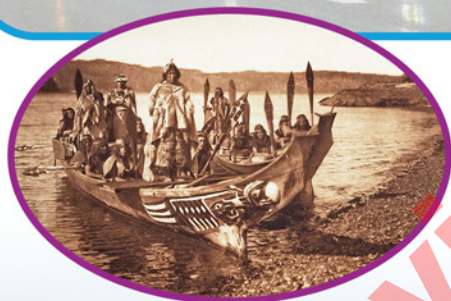


HONK!!!

I THINK THEY WANT US TO GO FASTER.

BUT WE'RE ALREADY GOING FULL STEAM AHEAD!

HONK!!!



The earliest boats were canoes carved out of tree trunks.

The first airplane flight lasted only 12 seconds. The plane traveled 120 feet (37 m).

UGH, WE'LL NEVER GET THERE AT THIS RATE!



I KNOW! MAYBE YOU SHOULD TAKE A CAR INSTEAD.

The fastest that humans have ever traveled was in the Apollo 10 spacecraft. It went 24,790 miles per hour (39,897 kph) on its flight back to Earth from the moon.



Let's Sail Away!

Back when walking was the only form of **transportation**, what did people do when they reached rivers or lakes? They built boats, of course! At first, simple canoes and rafts carried people over water. Then, about 5,000 years ago, the ancient Egyptians built bigger boats. These boats used sails to catch wind, which pushed them across the water. Soon, people made even larger vessels to sail across oceans. Let's hop in a boat and see where we can go!

Egyptian sailboats also had huge oars so rowers could keep the boats moving when the wind died.

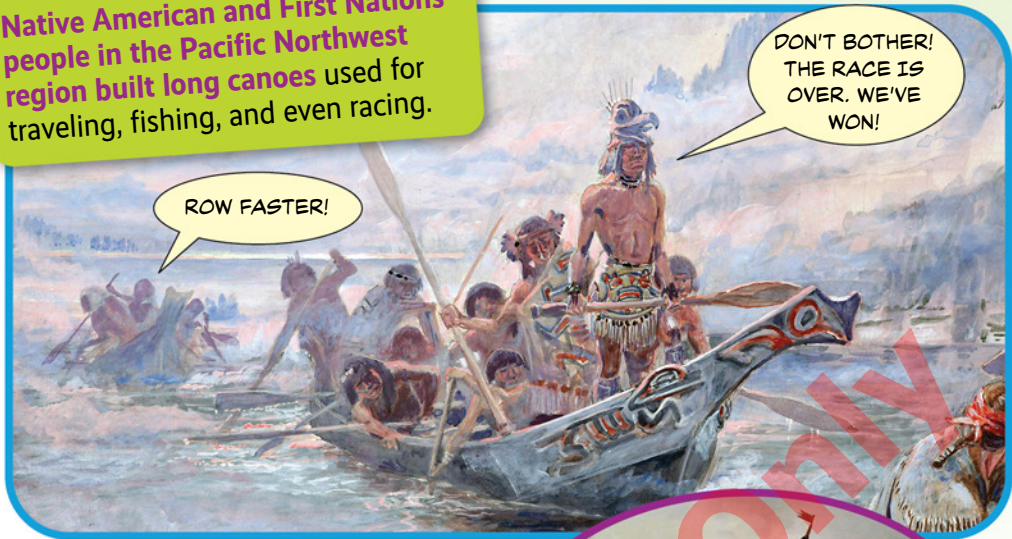


The largest Egyptian boats could carry as many as 4,000 people.

Chinese sailboats called junks were the first to include **rudders**, which help people steer boats.



Native American and First Nations people in the Pacific Northwest region built long canoes used for traveling, fishing, and even racing.



Viking longships were very thin and light, allowing them to sail long distances quickly.



In 1522, a Spanish sailing ship completed the first around-the-world trip.

Sailing ships haven't disappeared—they've just gotten bigger! The modern Royal Clipper is 439 ft (135 m) long and has 42 sails.



Shipping Out

For thousands of years, ships could move across water only with the help of wind or rowers. But in the 1800s, steam power hit the scene and began to replace sails. How did this new kind of power work? Water was boiled to create steam. Then, the steam was directed to a motor, which turned a paddle wheel or propeller to push the ship forward. Ships had a new way to move!

The first steamship was built in 1783. On its first trip, the **boiler** leaked and the ship broke apart!

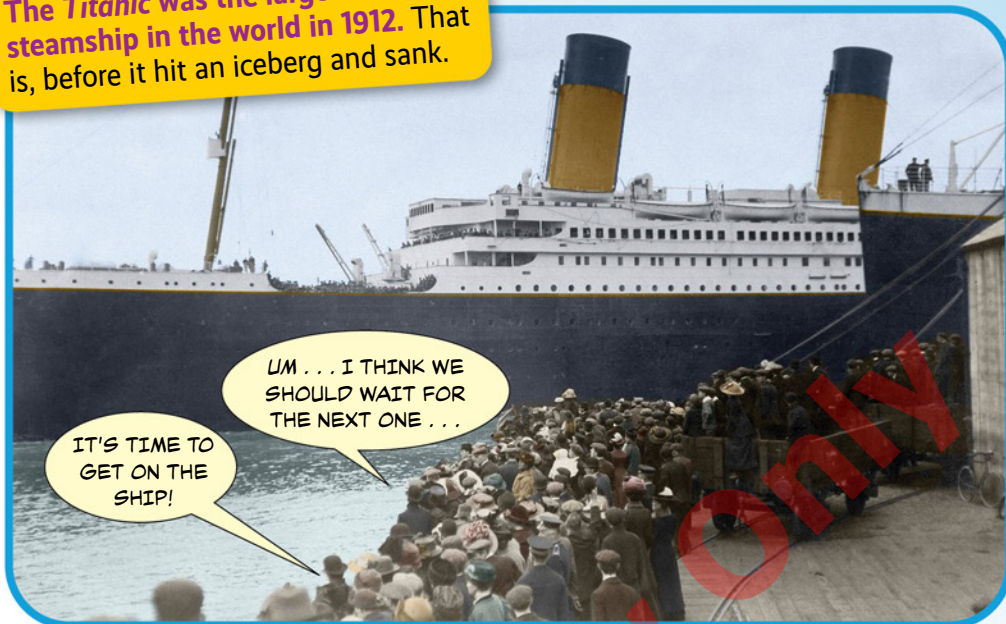
I WONDER IF
THEIR BOILER
WILL MAKE IT.

CROSSING AN
OCEAN IS NEVER
EASY!

In 1819, a steamship crossed the Atlantic Ocean for the first time. It took a month to sail from the United States to England.

While steam was replacing sails, **iron** and **steel** ships began replacing wooden ones.

The **Titanic** was the largest steamship in the world in 1912. That is, before it hit an iceberg and sank.



IT'S TIME TO GET ON THE SHIP!

UM... I THINK WE SHOULD WAIT FOR THE NEXT ONE...

Many steamships were destroyed during **World War II (1939–1945)**. After the war, ships powered by **diesel** fuel took over.

Today, some **freight** ships are as long as four football fields.

Modern cruise ships have made traveling across water more fun. They have movie theaters, water parks, ice rinks, and basketball courts.



LET'S HIT THE WATER PARK!

NAH, I'M GOING TO CHECK OUT THE ICE RINK!



Balloon-Powered Car

Craft Project

Cars have been powered by many kinds of energy, from steam to gas to electricity. Want to try building your own car? You can use one of the most environmentally friendly forms of energy—wind! Let's get started.



Land yachts are wheeled vehicles that use sails to catch the wind. They can go as fast as 126 miles per hour (202 kph)!



Several companies are working on cars with motors that are powered by blasts of pressurized air—just like the air that is released from a balloon!

What You Will Need

- An empty juice box
- Tape
- Scissors
- 3 bendy straws
- 2 wooden skewers
- A balloon
- 4 bottle tops with holes punched into their centers by an adult

