Flight of the Union

Book by Tekla White
Unit study by Lisa Dickinson and Celia Hartmann

Note: Celia recommends (as either a go along or as an extension of this unit) Holling C. Holling's Paddle-to-the-Sea. It will enhance the lessons on the water cycle, rivers, the Great Lakes, and Niagara Falls. It has excellent illustrations that will help your child identify each of the Great Lakes, visualize the elevation of the Great Lakes, and much more.

SOCIAL STUDIES

Geography: Canada

Locate Ontario, Canada and the state of New York on a map or globe. Use a piece of string or yarn to connect the two places.

Ontario, Canada

Canada is the country directly north of the United States. It has several provinces (similar to the states):

Alberta - a province in southwestern Canada
British Columbia - a province in southwestern Canada
Manitoba - a province in southern Canada
New Brunswick - a province in southeastern Canada
Newfoundland and Labrador - a province that is northeast of Quebec.
Nova Scotia - a province in southeastern Canada
Ontario - a province in southern Canada between Manitoba and Quebec, bordering Hudson Bay
Prince Edward Island - an island province just north of New Brunswick and Nova Scotia.
Quebec - a province in southern Canada
Saskatchewan - a province in southern Canada

Canada also has three territories: Northwest Territory, Yukon Territory, and

Nunavut.

Geography -- Niagara Falls and the Great Lakes

Locate the five Great Lakes and the location of Niagara Falls on a map or globe. The Niagara Falls is actually a set of three waterfalls going over the same cliff that are collectively known as the Niagara Falls. The American Falls and the much smaller Bridal Veil Falls are on the American side, with tiny Luna Island in between. The Horseshoe Falls is on the Canadian side. Goat Island splits the Niagara River and is between the Bridal Veil Falls and the Horseshoe Falls. The Niagara Falls is the second largest waterfall in the world. One-fifth of all the world's fresh water is in the four Upper Great Lakes. The Lakes outflow into the Niagara River and that outflow then cascades over the Niagara Falls. They cascade in a U shape rather than a straight line. The water travels 15 miles through a gorge until it reaches the fifth Great Lake, Lake Ontario. Each of the Great Lakes are lower in elevation, so that the outflow moves eastward from one Great Lake to another until it reaches the Niagara River and moves on to Lake Ontario and the St. Lawrence River and on out to the Atlantic Ocean.

Niagara Falls Live Webcam

History: Bridge Built Over Niagara Falls

In 1846 both an American bridge company, The International Bridge Company of United States, and a Canadian bridge company, The Suspension Bridge Company of Canada, would jointly own this first bridge built over the gorge. There were only four experts in the world who said that this feat was possible. These four men each eventually built their own bridge over the falls within a few years after the first bridge was built in 1850.

On November 9, 1847-- **Charles Ellet Jr.**, an ambitious engineer who studied suspension bridges in France, was awarded the contract to begin bridge construction at the chosen site-- the narrowest part of the gorge above the Whirlpool Rapids approximately 15 miles down from the great Niagara Falls. After many Bridge Building Meetings, the experts could not decide on a method to get the first line across the gorge. Charles Ellet Jr. himself suggested the use of a rocket. Finally, **Theodore G. Hulett**, a future judge, suggested a kite flying contest for the young boys in town. The first boy to reach his kite to the other side would receive a cash prize of $5. The contest was held January 1848. Fifteen-year-old

Homan Walsh won the contest on January 30, 1848. The next day a stronger line was attached to the kite string and later a cable made of thirty-six strands of number 10 wire. Later in life, Homan Walsh, 95 years old, living in Lincoln, Nebraska declares that his most precious memory was this exploit of his boyhood - his part in starting the first bridge over the gorge.

On January 31, 1848 the *Buffalo Dailey Courier* published this account:

"We have this day joined the United States and Canada with a cord, half an inch in diameter, and are making preparations to extend a foot bridge across by the first of June. Our Shanties are erected and we have a large number of men at work. Everything is going ahead. Men are very busy laying out the town of Bellevue, and are making arrangements for putting up a large hotel. The situation is a beautiful one, and bids fair, in the opinion of many to surpass the town at the Falls. I will keep you advised of the progress."

July 26, 1848 the first suspension bridge was completed.
The completed bridge was 762 feet long and 8 feet wide. The bridge was suspended 220 feet above the Niagara River. It did sway back and forth and dip under the pressures of the wind. Charles Ellet Jr. was the first to cross the bridge in his horse and carriage. He was impatient and daring, he did not wait for the safety rails to be built on the bridge. Newspapers quoted "Like a Roman Charioteer" he drove himself across the flimsy structure to the cheers of the spectators" The newspaper stated that women fainted at the sight and strong men gasped.

The following is what Ellet wrote to the bridge companies, March 13, 1848

"Dear. Sirs, I raised my first little wire cable on Saturday, and anchored it securely both in Canada and New York. Today, Monday, I tightened it up, and suspended below it an iron basket which I had caused to be prepared for this purpose…in this little machine I crossed over to Canada, exchanging salutations with friends there, and returned, again all in fifteen minutes. My little machine did not work as smoothly as I wished, but in the course of this week, I will have it so adjusted that anybody may cross in safety."

August 1, 1848 the bridge is open to the public!

History of Kites

Kite Timeline

Your older student may wish to create a time line with the following information; he may want to research further topics of study such as the Wright Brothers' kites.

Kites were brought to Europe by explorers returning from Asia.

1295 Marco Polo writes details of kite making in China
1405 European Manuscript tells of attempt to fly kites for Military technology
1430 Step by step instructions on how to make a kite from parchment paper and how best to connect strings so the kite flies it's best.
1749 Scottish meteorologist , Alexander Wilson, attaches thermometers to kites and flies 3000 feet to measure temperature changes in higher altitudes.
1752 Benjamin Franklin kite experiments to prove lightning is like static electricity.
1799 Sir George Cayley , kite experimenter and first aerial navigator., first man to explain problems before man could create a flying machine that would carry man.
1826 George Pacock invented a four string kite to pull a carriage
1833 Weather Forecasting improvements….British meteorologist, used kites to measure wind SPEEDS at altitudes. This method continued until 1930's!
1848 Homan Walsh
18th Century, Kites used to learn more in science.
Second half of 19th Century - SHIPS and Kites. Experiments for shipwrecked ships…flying the kite to signal on shore…stronger cables could be thrown out to rescue those on board by attaching them to the cable. Here is a drawing of this idea
1893 The Eddy Diamond and the Hargraves Box raised scientific instruments for weather research
1899 The Wright Brothers' Scientific Kites
1901 Guglielmo Marconi used a kite to lift an aerial to make his historical radio link between North America and Europe.
1964 Domina Jalbert designed the Para foil. His concepts have been adapted for parachutes and kites.
1978 Kuzuhiko Asaba flew 4,128 kites on a single line.

LANGUAGE ARTS

Writing: Book Dedications

Discuss what the word *dedication* means (to set apart for some purpose and especially a sacred or serious purpose) then read the book dedication (from the illustrator) with your student. Has your student ever noticed that authors dedicate their books? What does this dedication say? “to every young person who has experienced the dream and thrill of building a kite and the pain of losing it”). Grab some other books off your shelf and read through the dedications with your student. The next time your student writes a story, be sure to encourage her to include a dedication page.

Discussion/Comprehension Questions:

Why did Homan name his kite “UNION”?

List reasons why people would want a bridge connecting these two countries: tourism, convenience of travel, commerce, buy sell and trade.

Let students ponder how they would build a bridge with a kite string.

How would you feel crossing a rackety swaying bridge over the Niagara Falls for the first time?

Writing: Writing a Thank-You Note

The story does not say if Homan wrote a thank you note for the extra $5 silver dollars and retrieving his kite, but discuss with your student why he should have. Have your student pretend he is Homan and have your student write a thank-you note from Homan to the American man. If the opportunity arises, have your student write thank-you notes to people who have done something special for him.

Oral Poetry (go-along): "It Couldn't Be Done"

Read and discuss this poem with your student. You may also want to use it for copywork or recitation this week:

Somebody Said it Couldn’t Be Done
By Edgar Albert Guest

Somebody said that it couldn't be done
But he with a chuckle replied
That "maybe it couldn't," but he would be one
Who wouldn't say so till he'd tried.
So he buckled right in with the trace of a grin
On his face. If he worried he hid it.
He started to sing as he tackled the thing
That couldn't be done, and he did it!

Somebody scoffed: "Oh, you'll never do that;
At least no one ever has done it;"
But he took off his coat and he took off his hat
And the first thing we knew he'd begun it.
With a lift of his chin and a bit of a grin,
Without any doubting or quiddit,
He started to sing as he tackled the thing
That couldn't be done, and he did it.

There are thousands to tell you it cannot be done,
There are thousands to prophesy failure,
There are thousands to point out to you one by one,
The dangers that wait to assail you.
But just buckle in with a bit of a grin,
Just take off your coat and go to it;
Just start in to sing as you tackle the thing
That "cannot be done," and you'll do it.

ART

Art -- Advertisements: On page 7 of the story, a sign is posted on a tree to advertise the Kite Flying Contest. Discuss how the words are written large so they can be read from a distance, how only limited information fits on the sign, etc. Have your student make his own advertisement for a special event of his choosing.

Arts and Crafts -- Kite Art: Have your student design is own kite this week.

Encourage him to carefully choose this material and shape of the kite. (This perhaps might best be done after the Science lesson on kites.)

MATH

Geometry -- Hexagons and Diamonds: Ask your student if knows the name of Union's shape. (Hexagon). If necessary, explain that a hexagon is a six-sided shape. Ask your student what shape he traditionally thinks of as "kite-shaped." A diamond. If you have a geoboard, allow your student to create hexagons and diamonds. If you have pattern blocks, ask him to find the hexagon and diamond shapes. Encourage him to also explore what other shapes can be put together to create larger hexagons and diamonds. If you have two sets of tangrams, encourage your child to put pieces together until he can make a hexagon. See hexagon activity page in the printables section.

Units of Measurement: Yards
Homan's kite is made of a YARD of his mother's silk fabric. How much is a YARD of fabric? Using a yard stick measure things in your house to see what else is equal to one yard (3 feet or 36 inches).

Calendar Skills: Two Weeks
How many days did it take Homan to succeed? Mark 14 days on your calendar to grasp how much time and patience Homan invested in this endeavor.

Units of Measurement: Time
If your student makes a kite this week, have her predict how long she thinks she can get it to stay in the air.
Go outside with a stop watch and time (minutes and seconds) how long it is sustained.

Story Problem: Division
The size of the first bridge across the Niagara River was 762 feet long and 8 feet wide. It was suspended 220 feet above the Niagara River.

If possible, go outside somewhere and measure 762 feet to visualize the length of this suspension bridge. How many yards long was the bridge? (3 feet= 1 yard, divide by 3 to find the answer of 254)

SCIENCE

Geology -- The Earth's Water and the Water Cycle: Take this opportunity to discuss the waters of the earth and the water cycle. Water is a must for life! Without water, nothing could survive. Over 70% of the earth is covered by water. Almost all (97%) of this is in the form saltwater oceans.

Discuss how the sun evaporates the water from the earth and the oceans. It then condenses and forms droplets in the clouds. The clouds then drop rain, snow, or sleet (precipitation) back to the earth. These waters run off into the creeks, streams, and rivers and eventually out to the oceans, and the cycle continues without stop. Water is moving around, in, and through the earth at all times.

Simple Experiment: This will demonstrate how water is continually moving. Take a quart or pint jar (or other clear glass) and fill with water. Add one drop of blue food coloring. Do not move the jar, do not stir. When the blue hits the water, it begins to split up and swirl in different directions. After some time, the blue color has broken into so many parts that it has colored the entire water blue--all without stirring. The heat of the room (equate to the heat of the sun) provides the energy to keep the water molecules moving. (When Celia did this experiment she used the gel food color. It took longer, but still worked.)

Geology -- Rivers: A river is any natural stream of fresh water that flows into a *channel* (the path that a river takes; rivers create channels by their flow). There are rivers on every continent except Antarctica. Rivers start from a pond or lake, from an underground spring, or from a small stream. They can also start because of melting snow or mountain run-off. Rivers become wider as they come to flat land. A river ends when it arrives at a lake, ocean, or sea. A river can create a waterfall, which is when the land in a river channel drops. They can also create rapids, which is water that is moving very quickly. Sometimes a dam is built to hold back water to prevent flooding.

River terminology:

River bed - the bottom of the channel

River banks -are the sides of the river

River Mouth - where the river runs into the larger body of water.

The Niagara River, including the Falls, is 35 miles long. It has rapids and a dam. Half of the water in the Niagara River is diverted underground into hydro-electric generation plants to generate electricity for parts of Canada and New York.

Science -- Rainbows: Notice the rainbow in the background of the pages where Homan is on the boat being taken to Canada (pages 11 and 15). Rainbows are a common sight at Niagara Falls. Rainbows are created with light passes through water, such as rain. Whenever you see a rainbow, the sun is always behind you. The rain (or in this case, the mist and splash of the Niagara Falls) is in the same direction as the rainbow. The center of the rainbow's circular arc is directly opposite from the sun.

You may wish to have your student learn the colors of the rainbow: Red, Orange, Yellow, Green, Blue, Indigo, and Violet (ROY G. BIV).

Creating Rainbows: You may also wish to create your own rainbows with a prism or crystal. Or if you are doing this unit during on sunny summer day, experiment with the spray from a garden hose. Can your student create a rainbow? (Did he remember that the sun had to be behind him?)

Physics -- Why Kites Fly: Discuss with your student the things needed for a kite to fly.

1. Lift
The power of the wind to raise the kite! The wind moves across the kite and creates pressure. Wind pressure is like a hand pushing and holding the kite in the air. If the hand let's go, the kite falls. At the same time, there is low pressure created by wind moving across the back of the kite creating a pull from behind the kite.

2. Drag
Drag is created by wind resistance to the kites tail and/or surface.

3. Gravity
Gravity is created by the downward pull of the kite (because of the kite's weight).

The lift, drag, and gravity all come together to create the center of pressure. This is the exact place on your kite where your string is tied! This is called your *Tow Point*. You can change the amount of lift that is created when you change the angle of attack. The angle of attack is the angle at which your kite leans into the wind. When you tug or move the tow point, you change the angle of attack.

Science -- Wind: Homan understood the kinds of winds needed to get his kite across the river. Discuss the following to learn about wind.

The Beaufort Wind Scale: The system used to estimate wind speeds. It was introduced in 1806 by Admiral Sir Francis Beaufort, a British Navigator.

The scale is 0-12 (0 is calm and 12 is hurricane weather)

You should not fly a kite when the Beaufort Wind Scale is above 6. Level 6 is a strong breeze when the "Trees begin to bend with the force of the wind, and cause whistling in telephone wires, and some spray on the sea surface"

Anemometer: A device that measures the pressure of the wind.

Supplies: paper plate, 4 paper cups - three cups need to be the same color, one more cup of a different color, tape, empty thread spool, dowel

1. Tape your cups sideways all openings facing the same direction onto the paper plate

2. Tape your spool under the paper plate

3. Take your anemometer outside and poke your dowel or stick into the ground and attach the paper plate by putting the spool into the dowel so the plate spins in the wind. The faster the cups spin the stronger the wind is.

Zoology -- Silkworms: Homan's kite is made from his mom's best silk fabric. Discuss silkworms and the origination of silk.

Silk originated in China about 4,000 years ago. According to legend, a Chinese Empress was sitting under a mulberry tree and a cocoon of a silkworm moth dropped into her tea; she noted that the thin threads of the cocoon unraveled. The legend goes on to claim that in 2400 B.C. Empress Si-Ling-Chi (wife of Huang-ti) then experimented with the cocoons of these silkworms and developed silk for weaving. Each cocoon of the silkworm moth yields about 500-1,200 yards of silk.

Silkworms hatch from eggs. In about a month they will be 6-8 cm long and smooth white worms. Lifespan is about two months. Like all insects, they have no lungs; but breathe out of holes on the sides of their body. Silkworms have 8 pairs of legs (three pair of true legs, four pair of prolegs and one pair of claspers) and a beating heart. Silkworms love Mulberry leaves. They use their strong jaws to munch non-stop throughout the Larvae stage.

Silkworm spins its cocoon with a continuous silk thread from its salivary glands which harden as the thread is exposed to the air. The silkworm wraps this thread in a figure eight around it's body to form its cocoon. There is stays for a couple weeks. Becoming a moth, silkworm moths can only flutter because their bodies are too heavy. They flutter around, mate, lay their yellow sticky eggs, and die.

Health -- Kite Safety: Your child may not even realize that flying kites can be dangerous! Go over these basic kite safety rules with him.

DO NOT
1. fly near power lines
2. fly in stormy weather
3. fly near trees
4. fly using metallic flying line
5. fly near people
6. fasten yourself to a kite line (after all, you are not Flat Stanley!)
7. use a kite too large for wind conditions or fly a kite you can't safely control
8. cut the kite line and release a kite
9. yank on strings if you tangle your kite with someone else's (walk sideways together instead)

DO
1. be aware of your surroundings
2. use extreme caution when flying large kites

3. wear gloves when handling large kites
4. know the rules when flying near an airport
5. avoid flying in any area where you risk entanglement

BIBLE & CHARACTER

The following are various character qualities you may wish to discuss with your student as you read the book. Which qualities has your student demonstrated in his own life? Which qualities does he need to work on?

Attentiveness
Mindful and observant; aware
In order to fly a kite one must observe the weather and forecasting; one must pay attention to details.

Endurance
the ability to withstand hardship, problems, and stress
Homan fixes his kite and continues in the contest when some would have given up.

Patience
putting up with pains or hardships calmly or without complaint; showing self-control
The contest is a long event -- almost two weeks from start to finish.

Hospitality
generous and friendly treatment of visitors and guests
A Canadian family shares their home and food with Homan.

Encouragement
to cause to feel courage, spirit, or hope
American man promises Homan $5 more if he wins; this same man helps him in the contest, retrieves his kite, and gives him positive words.

Bible Story: Noah and the Ark

Genesis 6-8
You may wish to read this story with your student this week. Discuss why God gave Noah the sign of the rainbow.

Bible Verses: Rainbows

Genesis 9:13,15 - I have set my rainbow in the clouds, and it will be the sign of the covenant between me and the earth. Never again will the waters become a flood to destroy all life.
Psalm 104:7-9 - But at your rebuke the waters fled, at the sound of your thunder they took to flight; they flowed over the mountains, they went down into the valleys to the place you assigned for them. You set a boundary they cannot cross; never again will they cover the earth. (NIV)

Bible Verses: Light

Seeing the lanterns shining on distant land reminds us of being lights for Jesus.
Matthew 5:16- “Let your light so shine before men that they may see your good deeds and glorify your Father which is in heaven.”

JUST FOR FUN

Cooking / Recipes

When Homan's kite made it to the other side, Mrs. Barton made him special corn cakes. Here's a recipe to make your own this week:

Corn Cakes (serve these with breakfast or as a side dish for a family meal)

- 1 cup pancake mix
- 1 cup cornmeal
- 1 teaspoon baking powder
- 2 eggs, slightly beaten
- 1 can (15 ounces) cream-style corn
- 1 cup milk
- 2 tablespoons vegetable oil

Stir together the pancake mix, cornmeal, and baking powder. Combine the eggs, cream-style corn, milk, and oil; stir into dry ingredients, stirring just until moistened. Drop batter from a 1/4-cup measure onto a hot lightly greased griddle or skillet. Turn once to cook both sides. Makes about 16 corn cakes.
