This Teacher Packet includes the following elements listed below, to provide support in classroom preparation for class visits to the Bowers Museum for high school students and suggested activities for classroom review of the museum visit and exhibition themes.

- **About the Bowers Museum**
- **About the exhibit; *Endurance*: The Antarctic Legacy of Sir Ernest Shackleton and Frank Hurley**
- **Curriculum Connections**
- **Pre-Post Visit Materials:** Vocabulary and suggested activities related to each section of the exhibition
ABOUT THE BOWERS MUSEUM

MISSION & HISTORY

Vision

Celebrate world cultures through their arts.

Mission

The Bowers Museum enriches lives through the world's finest arts and cultures.

History

Founded in 1936 by the City of Santa Ana through a bequest from Charles and Ada Bowers, the Bowers Museum is one of California's finest and Orange County's largest museums. In 1986, the museum closed its doors for a period of self-study. In response to community needs and input, it reopened in 1992 as a new cultural center, and expanded children's programming in 1994 with the opening of the Kidseum. The museum also recently celebrated the grand opening of the 30,000+ square-foot Dorothy and Donald Kennedy Wing in February 2007. To achieve its mission, the Bowers offers exhibitions, lectures, art classes, travel programs, children's art education programs, and other special community programs.
ABOUT THE EXHIBIT

*Endurance* presents Frank Hurley’s photographs of the Imperial Trans-Antarctic Expedition (1914-1917) undertaken by renowned explorer, Sir Ernest Shackleton, and his crew 100 years after the epic expedition.

Hurley’s photographs remain one of the greatest ever photographic records of human survival. Scanned at the highest resolution from the Royal Geographical Society’s incomparable collection of the original glass plate and celluloid negatives, Hurley’s intrepid documentation of the expedition can be seen in stunning detail through a presentation of large format images in various mediums. Accompanied by select artifacts from the expedition and a narrative comprised of the logs and diaries of Shackleton and his crew, *Endurance* brings to life the incredible story of human survival and the drive to explore unreached territories.

IN THIS GUIDE

CURRICULUM CONNECTIONS

- Content and Common Core Standards

PRE-VISIT LESSONS AND ACTIVITIES

Activities and lessons to be prepare students before a visit to Bowers Museum.

- Summary of the *Endurance* expedition with glossary.

DURING AND POST-VISIT LESSONS AND ACTIVITIES

- Lessons to be completed during or after the students’ visit to Bowers Museum.

APPENDIX

- Enrichment and reference materials to supplement the activities.
Curriculum Connections

STATE CONTENT STANDARDS

ENGLISH LANGUAGE ARTS AND LITERACY CONTENT STANDARDS

This exhibit and all related activities connect to the California for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects for all grade levels through the promotion of creativity and innovation, critical thinking and problem solving, collaboration, and communication.

HISTORY AND SOCIAL SCIENCE CONTENT STANDARDS

Grade 1

1.2. Students compare and contrast the absolute and relative locations of places and people and describe the physical and/or human characteristics of places.
1.2.3. Construct a simple map, using cardinal directions and map symbols.
1.2.4. Describe how location, weather, and physical environment affect the way people live, including the effects on their food, clothing, shelter, transportation, and recreation.
1.4. Students compare and contrast everyday life in different times and places around the world and recognize that some aspects of people, places, and things change over time while others stay the same.
1.4.2. Study transportation methods of earlier days.

Grade 2

2.5 Students understand the importance of individual action and character and explain how heroes from long ago and the recent past have made a difference in others’ lives (e.g., from biographies of Abraham Lincoln, Louis Pasteur, Sitting Bull, George Washington Carver, Marie Curie, Albert Einstein, Golda Meir, Jackie Robinson, Sally Ride).

Grade 4

4.1 Students demonstrate an understanding of the physical and human geographic features that define places and regions in California.
4.1.1. Explain and use the coordinate grid system of latitude and longitude to determine the absolute locations of places in California and on Earth.
4.1.2. Distinguish between the North and South Poles; the equator and the prime meridian; the tropics; and the hemispheres, using coordinates to plot locations.

Grade 5

5.2 Students trace the routes of early explorers and describe the early explorations of the Americas.
5.2.1. Describe the entrepreneurial characteristics of early explorers (e.g., Christopher
Columbus, Francisco Vásquez de Coronado) and the technological developments that made sea exploration by latitude and longitude possible (e.g., compass, sextant, astrolabe, seaworthy ships, chronometers, gunpowder).

5.2.2. Explain the aims, obstacles, and accomplishments of the explorers, sponsors, and leaders of key European expeditions and the reasons Europeans chose to explore and colonize the world (e.g., the Spanish Reconquista, the Protestant Reformation, the Counter Reformation).

Grade 7

7.11 Students analyze political and economic change in the sixteenth, seventeenth, and eighteenth centuries (the Age of Exploration, the Enlightenment, and the Age of Reason).
7.11.1. Know the great voyages of discovery, the locations of the routes, and the influence of cartography in the development of a new European worldview.

Grade 10

10.4 Students analyze patterns of global change in the era of New Imperialism in at least two of the following regions or countries: Africa, Southeast Asia, China, India, Latin America, and the Philippines.
10.4.1. Describe the rise of industrial economies and their link to imperialism and colonialism (e.g., the role played by national security and strategic advantage; moral issues raised by the search for national hegemony, Social Darwinism, and the missionary impulse; material issues such as land, resources, and technology).
10.5 Students analyze the causes and course of the First World War.
10.5.4. Understand the nature of the war and its human costs (military and civilian) on all sides of the conflict, including how colonial peoples contributed to the war effort.

VISUAL ARTS CONTENT STANDARDS

Grade 4

3.0 Historical and Cultural Context
3.1 Describe how art plays a role in reflecting life (e.g., in photography, quilts, architecture).

Grades 9-12

Proficient

3.0 Understanding the Historical Contributions and Cultural Dimensions of the Visual Arts.
3.3 Identify and describe trends in the visual arts and discuss how the issues of time, place, and cultural influence are reflected in selected works of art.

Advanced

3.0 Historical and Cultural Context
3.1 Identify contemporary styles and discuss the diverse social, economic, and political developments reflected in the works of art examined.

**SCIENCE CONTENT STANDARDS**

**Grade 2**

ESS1.C: The History of Planet Earth
Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)

ESS2.A: Earth Materials and Systems
Wind and water can change the shape of the land. (2-ESS2-1)

ESS2.B: Plate Tectonics and Large-Scale System Interactions
Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)

Scientists study the natural and material world. (2-ESS2-1)

**Grade 3**

ESS2.D: Weather and Climate
Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)
Pre-Visit Materials

Use the following summary as an introduction to the exhibit. This is meant to provide students with context prior to entering the gallery. You may wish to provide students with the glossary of terms to help them better understand the time period, or, you may wish to have students look up the terms in small groups, and share what they find with the class.

Pre-Visit Activities

Plan Your Own Trip (Grade 1-4) Appendix 1
Plan Your Own Trip (Grades 5-12) *Weighty Decisions* Appendix 2
Man-Hauling Activity (Grades 5-12) Appendix 3
Compare California to Antarctica Activity (Grades 3-8) Appendix 4
Diary Writing Activity (Grades 3-12) Appendix 5

Post-Visit Activities

Shackleton’s Chronology Activity (Grades 1-3) Appendix 6
Crossword Puzzle (Grades 1-4) Appendix 7
Crossword Puzzle (Grades 5-12) Appendix 8
*Endurance* Diet Activity (Grades 6-12) Appendix 9
Longitude-Latitude Activity (Grades 3-6) Appendix 10
“The Coldest Place at the Bottom of the World” (Grades 7-12) Appendix 11
Antarctic Poetry Activity (Grades 3-6) Appendix 12
Reading Comprehension Exercise (Grades 5-8) Appendix 13
Reading Comprehension Exercise (Grades 9-12) Appendix 14
Antarctic Politics Activity (Grades 9-12) Appendix 15
A Brief Summary of the *Endurance Expedition*

In 1914, a group of 28 men sailed to Antarctica on a ship called *Endurance* from the island of *South Georgia*. They had the goal of being the first explorers to cross the whole continent. Many men traveled for the adventure, or to conduct scientific research there, and if they successfully crossed the continent, it would be a great achievement for the *British Empire*. The expedition was even called the *Imperial* Trans-Antarctic Expedition. Although Britain claimed most of Antarctica as part of their Empire, a Belgian Expedition was the first to successfully spend the winter there, and a Norwegian explorer, Roald Amundsen, was the first to the South Pole in 1911. The leader, Sir Ernest Shackleton, had been born in Ireland in 1874 and had already been on two previous expeditions to Antarctica. Many men on board also had experience in the region. Even though World War I had just started and nearly all of the men were of military age, the *Admiralty* told Shackleton and his men to “proceed.”

The plan was for the *Endurance* to land on the coast of the *Weddell Sea*, using dog *sledges*, cross to the South Pole, and end in the McMurdo *Sound* on the *Ross Sea*. A party of ten men had departed from New Zealand and was laying *depots* extending toward the pole to help the crossing party make it across. However, extremely bad ice conditions trapped the *Endurance* in the ice in January 1915, about one hundred miles from their goal. They were stuck, despite efforts to dislodge themselves. The men settled down, living on their ship, and waiting for the ice to melt and release their ship. But pressure from the ice was too great and in August and September began to destroy the *Endurance*. Shackleton ordered the ship abandoned on October 27th. They settled nearby about 3 miles away, at Ocean Camp, and continue to salvage useful things from the ship, including some of Frank Hurley’s photographic slides, before it sunk under the ice on November 21st. The men began a march out to the open sea, leaving behind nearly all of their possessions, but it was too difficult, so they settled in Patience Camp.

In late March 1916, the ice *floe* began to break up and on April 9th, the 28 men loaded into their three lifeboats and sailed for Elephant Island. After seven days at sea, on the 16th of April, they landed on Elephant Island. Elephant Island is extremely remote and does not have much shelter or resources. Shackleton announced that he would take five men and sail to a *whaling* station at South Georgia for help in their largest lifeboat, the *James Caird*. They departed on April 24th. On May 10th, after sailing 800 miles through some of the roughest seas in the world, guided by navigator Frank Worsely, the *James Caird* landed on South Georgia, but they landed on the uninhabited side. Shackleton, Worsely, and a third man, Tom Crean, hiked for 36 hours over glacier-covered mountains, before landing in the Stromness whaling station. After months of attempting to find a ship able to help and the right weather conditions, on August 30th 1916, the Chilean ship *Yelcho* rescued the men stranded on Elephant Island. On January 10th 1917, the Australian ship *Aurora*, with Shackleton aboard, rescued the seven surviving men of the Ross Sea Party.
Glossary

Admiralty-The Office of the Admiralty and Marine Affairs was the government department responsible for the Royal Navy until 1964.

British Empire-In the early 20th century, the British Empire was the largest empire in history and covered nearly a quarter of the world’s population and Earth’s land area, including Ireland, where Shackleton (and Tom Crean) was born, Australia, where photographer Frank Hurley was born, and New Zealand, where the Endurance’s captain Frank Worsley was born. People used to say “the sun never sets on the British Empire” because it covered so much of the globe that the sun was always shining in one of its territories.

Depot-a place for the storage of large quantities of equipment and food.

Floe-a sheet of floating ice.

Glacier-a slowly moving mass or river of ice formed by the accumulation and compaction of snow which is found near the poles and on mountains.

Imperial-relating to an empire.

Ross Sea-A deep bay in the Southern Ocean, nearest to New Zealand.

Sledge-a vehicle on runners for conveying loads over snow or ice.

Sound-a narrow stretch of water forming an inlet or connecting two wider areas of water such as two seas or a sea and a lake.

South Georgia-A remote, historically uninhabited island in the Southern Atlantic Ocean, discovered in 1775 by James Cook. It was used in the 19th and first half of the 20th centuries primary for whaling and sealing. Since the 1960s, it has become more popular for scientific research, fishing, and tourism.

Weddell Sea-Part of the Southern Ocean, east of the Antarctic Peninsula.

Whaling-the practice or industry of hunting and killing whales for their oil, meat, or whalebone, common around the world until the 1960s.
Plan Your Own Trip (Grades 3-4)

A trip like the *Endurance* expedition needs to be well-planned. Shackleton, for example, could not be sure that he would be able to find a supply of food in so much ice and cold weather. It is your turn to plan a one week trip. Pretend that you and five friends are going somewhere very isolated. You know that the weather is similar to your home. Write down what you would take with you and how much of each item to survive for 7 days without any electricity or contact with the outside world.

Do not forget to include:

1) Food
2) Water
3) Clothes
4) Tools
5) Medical Supplies
6) Anything else you can think of

For example, will you need a tent? What about a flashlight? How much water will you bring with you? What sort of clothing will be practical?
NOVA Activity Shackleton’s Journey of Endurance

In this activity, you are Sir Ernest Shackleton and your ship, the Endurance, has been frozen in the pack ice of Antarctica’s Weddell Sea for nine months. It’s clear that soon the Endurance will sink due to the pressure of the ice surrounding it. An enormous challenge is before you. What will you take with you and what will you leave behind?

Procedure

1. Below is a list of items that you can salvage from the Endurance before she sinks. You cannot possibly move everything across the ice, so you must choose wisely those things that are crucial. Twenty-seven men and 70 dogs are on your expedition.

2. As you make your choices, keep in mind that you don’t know how long you will be stranded.

3. Check each item as 1st, 2nd, or 3rd priority in the boxes beside each. First priority items must be included for survival. Second and third priority items may be left behind because their function can be achieved through other means or because they take space away from more important items.

Group Questions

Write your answers on a separate sheet of paper.

1. What were the principles and guiding questions that drove your group’s decisions?

2. Which items were most difficult to agree on?

3. How did your group resolve any differences of opinion?

Endurance Inventory

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>Artist’s oil paints</td>
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<td>Books</td>
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<td>Camera, film</td>
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<tr>
<td>Canned meat</td>
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<td></td>
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<tr>
<td>Compass</td>
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<td></td>
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<td>Cooking pots</td>
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<tr>
<td>Cotton shirts</td>
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<tr>
<td>Extra kerosene</td>
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<tr>
<td>Extra lamp wicks</td>
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<td>Flare Pistol</td>
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<td>Fresh water in canisters</td>
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<td>Journals and pencils</td>
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<td>Knives</td>
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<td>Matches</td>
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<td>Medical supplies</td>
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<tr>
<td>Pistols, cartridges</td>
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<td>Playing cards</td>
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<td>Radio</td>
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<tr>
<td>Reindeer skin sleeping bags</td>
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<td>Rifles, cartridges</td>
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<td>Rope</td>
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<td>Sail canvas</td>
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<td>Sextant</td>
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<tr>
<td>Ship’s bell</td>
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<tr>
<td>Signal mirror</td>
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<tr>
<td>Sledges and dogs</td>
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<td></td>
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<tr>
<td>Soccer ball</td>
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<td>Star charts</td>
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<td>Stove</td>
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<td></td>
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<tr>
<td>Tents</td>
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<tr>
<td>Tools</td>
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<tr>
<td>Wooden crates</td>
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<td></td>
<td></td>
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<tr>
<td>Woolen long underwear</td>
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</table>
**Weighty Decisions Teacher’s Guide**

Here are some of the decisions Shackleton made regarding which items should be taken from the sinking *Endurance* (compiled from written accounts of Shackleton's journey).

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<tr>
<td></td>
<td>1</td>
<td>Playing cards</td>
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Shackleton's first concerns were for the necessities of life. Penguins and seals were easily hunted with rifles (1), so canned meat (2) was unnecessary. Pistols however, would have been dead weight (3).

Fresh water (2) was essential, but heavy and bulky. Although sea ice is salty, glacial ice, iceberg fragments, and snow are plentiful sources of fresh water if there is a stove (1), kerosene (1), matches (1), and cooking pots (1) to melt them in.
Shelter includes staying warm. Rope (1) has many uses, including making replacement shelter for the flimsy tents (2) from sail canvas (1). Woolen long underwear (1) and reindeer skin sleeping bags (1) are warm when wet because they trap air. Cotton shirts (3) stay saturated and cold.

Some choices depended on the journey. The pack ice proved to be too rough for sledges (3), and the dogs required too many provisions. (They were shot.) The lamp wicks (1), and artist's oil paints (1) were used to caulk the lifeboats and the tools (1) and wooden crates (1) were essential to maintain the lifeboats.

Navigation to South Georgia depended on sextant (1) sightings of the sun, not stars; so star charts (3) were unnecessary. The value of medical supplies (1), knives (1), and a compass (1) are obvious.

Calling for help was not an option. Radio (3) was in its infancy in 1916, and Shackleton was too far from any rescuers for a signal mirror (3), a ship's bell (3), or a flare pistol (3) to be useful.

Shackleton was also concerned about the mental health of his men and included playing cards (1) and books (1) to help them through times when they were forced to lie low. Perhaps this explains why the extra weight of journals and pencils (2), and a camera and film (2) were permitted. But the soccer ball (3) would see little opportunity for use under these conditions.
Man-hauling Activity (Grades 5-12)

For Teachers

The game is designed to be a fun opportunity for students to learn more about what everyday life was like for early polar explorers such as Captain Robert Falcon Scott and Ernest Shackleton. Students gain an understanding about the difficulties expedition teams faced when it came to having sufficient resources available to them to live and work in a very harsh environment. While Ernest Shackleton did very little man-hauling, the Ross Sea Party crossed over 1000 miles laying depots through man-hauling, making this experience vital to understanding the circumstances of the expedition.

During the game, students are encouraged to think more about a time when life was extremely tough and there wasn’t easy access to support and resources. In the game, students choose from a variety of items to pack on a sledge which they will then have to man-haul across hundreds of miles during an upcoming sledging expedition. Students learn about making good choices when thinking about what will sustain them and help them survive in the Antarctic.

In particular it focuses on encouraging students to understand more about:

* The effects of environment and place on the choices we make
* How people make choices to meet their needs and wants
* Accessing and managing resources
* How exploration creates opportunities and challenges for people.
For Students

Whilst going out on sledging expeditions, Antarctic explorers needed to ensure they carried sufficient supplies to support their survival and maintain their general well-being - food, equipment, clothing and general items to help boost their morale when man-hauling heavy loads and working for 14 or more hours a day in temperatures of up to minus 40.

You’ll need to ensure you have a good balance of food to give you energy, clothes and equipment to protect you and allow you to work and items which are designed to keep your spirits up. It’s up to you to think ahead about what you’ll need to sustain you during some very long hard-working days. I'm the expedition’s storekeeper and I'll be helping you get ready for your first sledging trip.

You can choose 16 items to add to your sledge. You will need food, clothing, equipment and things to keep your spirits up during your trip. To help you, I’ve already packed basic things like your tent, an ice-axe and a sledge meter to track how far you’ve gone each day. Now, I’m giving you a chance to choose some items before you go into the main hut. These items are exactly what was available to Robert Falcon Scott’s *Terra Nova* Expedition to the South Pole at their base camp.
Equipment

Skis and poles
If surface conditions are suitable, skis are an efficient way to move quickly across ice-covered landscapes.

Primus stove
Primus stoves are light, small, quick to set up, reliable, and are taken on all sledge journeys - you cannot cook anything when you’re out of the hut without one, so it is vital gear.

Bat lamp
This Bat brand paraffin lamp is an important light source in the constant darkness of the Antarctic winter. Most sledging trips happen in summer when there is 24 hour daylight.

Crampons
Crampons are essential for walking on any icy surface, such as glaciers. We’ve tried different styles but this style is probably the safest and easiest to use. We fit them around our reindeer-skin boots. They’re essential when we’re hauling sledges.

Man-hauling harness
Man-hauling is a common method of transport on our polar expeditions. It involves a team of people pulling the sledges manually. A harness, such as this one, is worn by whoever is doing the hauling and is attached to the sledge. Be prepared to work hard. You’ll need to keep your energy up with plenty of food, whilst you’re hauling a sledge!

Toothbrush
You are responsible for your personal hygiene and so you’re expected to bring your own toothbrush, hair brush and toiletries. We do keep some items like this bone and bristle toothbrush in store in case you lose
yours, or forgot to bring one. Staying as clean as you can in this harsh environment is important for your health and your own mental well-being.

**Backpack**
Backpacks are used for short trips out. The draw cord is made from lamp wick, because it’s tough and versatile. We also use lamp wick for harness strap repairs, belts and strapping for boots and skis.

**Matches**
Matches are sealed in metal boxes to keep them dry on sledging journeys or while stored at depots. You’ll find the striking plate inside the tin.

**Sleeping bag**
A sleeping bag is a vital piece of equipment in any polar explorer's kit and they’re usually made of reindeer fur. Unfortunately our bags have problems. They become moist from our breath and freeze solid when empty. It’s a real ordeal to force oneself into the frozen bag at bedtime when we’re exhausted after a long day sledging.

**Thermos flask**
We use flasks for carrying hot drinks or melted water, and occasionally to hold marine scientific specimens to stop them from freezing. This flask was used by members of our team when out collecting penguin eggs for study.
Food

Huntley & Palmers biscuits (cookies)
Huntley & Palmers Biscuit Company provide our expedition with high-calorie sledging biscuits. They’re a really important part of our diet - we normally eat 6-8 biscuits each per day (although this can be as few as one biscuit if rations are low when we’re out on long trips on the sledges). We eat them plain, soaked in hot water, or added to ‘hoosh’ (hot thick pemmican stew). They really keep us going when things are tough.

Fry's cocoa and chocolate
J S Fry & Sons chocolate company donated different types of chocolate and cocoa to our expedition, and they’re a really important part of our sledging diet. Cocoa and chocolate keep our spirits up and give us energy when we’re hauling sledges. We measure cocoa to put into cloth ration bags to save weight when loading sledges.

Golden syrup (a light amber colored sugar syrup similar to molasses)
We were given 990 lbs. of golden syrup. Although Golden Syrup is not a survival food, we like to have it as a taste of home when we’re in the hut. It’s not really suitable to take with us when we’re on sledging trips.

Salt
Hauling up to 600 lbs. on a sledge through miles and miles of snow over 14 hours is hot, physical work. Keeping hydrated and replacing electrolytes lost through sweat means that salt is a critical sledging ration, as well as improving the flavor of food. It’s supplied to us in heavy glass jars, and we decant small amounts into lighter weight containers for sledging journeys.
**Pemmican**
Pemmican is a common survival food for explorers. It contains powdered meat, large quantities of fat (50-60% lard) and sometimes dried fruits. We brought 3,520 lbs. of pemmican to the Antarctic with us and we use it in lots of different ways, especially in ‘hoosh’ (pemmican stew).

**Tinned asparagus**
We brought plenty of tinned fruit and vegetables with us, including luxuries like tinned asparagus, which is nice to have for special occasions like Christmas dinner. We don’t usually take it when we are sledging, surveying, or on scientific expeditions, since it doesn’t provide much energy and the tins are heavy to carry.

**Sugar cubes**
A British sugar company has supplied us with nearly 5,060 lbs. of sugar. Sugar keeps really well and is a big part of our sledging diet as it’s a high energy source.

**Butter**
Butter is an important source of fat for us alongside Pemmican. They both provide a high energy to weight ratio on a sledging trip. New Zealand farmers donated meat and dairy products to the expedition before we sailed south to Antarctic waters.

**Tea**
Tea, usually made with sugar, makes it easier to keep hydrated and helps keep us awake when we’re tired from long hours of sledging. Hot tea is very tasty when it is cold outside.
Clothing

**Balaclava (ski mask)**
We wear balaclavas under our windproof hoods. It is best to tuck them into the neck of your jersey, since they add extra insulation around the ears and neck, which is important at temperatures of around minus 40-60 degrees outside the hut (or even colder in winter). In very cold weather we attach an additional piece to protect the nose and cheeks from frostbite.

**Snow goggles**
Goggles are needed to avoid snow blindness (a burn on the cornea caused by overexposure of sunlight). This can be really painful and dangerous. While we have all been issued a standard pair with colored glass lenses, some people have brought their own special goggles with aluminum eyepieces.

**Woolen mittens**
We use lots of layers of hand wear because it’s so cold here - down to minus 60 with wind chill! Woolen mittens such as these are worn over half mitts - mitts with a long cuff and open fingers. Thick wolf, reindeer or caribou fur mittens can sometimes be worn instead.

**Boots**
We use several types of footwear including ski boots and reindeer skin boots. In icy and slippery conditions, we strap crampons on to our boots to improve the grip.

**Oiled cotton pants**
Thin oiled pants are worn as an outer layer on sledge journeys since they’re windproof and waterproof. We have two types of pants, thick for
winter and thin for summer. Most of us prefer the thin summer pants all year round as they are easier to handle when the fabric freezes.

**Socks**
You have to make sure you have plenty of socks with you, whether they’re hand knitted by your friends and family, or purchased from a store. Remember, they get saturated by snow, ice and sweat while on the march, so you’ll need to dry them out by wearing them next to your skin, or sleeping with them inside your sleeping bag at night.

**Morale-Boosters**

**Letter diary**
We often write letter diaries to send home, so it’s a good idea for you to take pen and paper with you, if you want to do the same. People usually write about life in the hut, the day-to-day boredom of sledging (for up to 14 hours a day) and thoughts of home, since we do miss our families and friends.

**Book**
Reading and writing are great hobbies, especially during the long, dark winter months when we’re confined to the base. We often take small light books with us when we’re out sledging in case we get confined to the tent in a snow storm - it’s good to have something to occupy us when we can’t go outside to do anything.
## Compare California to Antarctica Activity (Grades 3-8)

### How Does Your State Compare?

<table>
<thead>
<tr>
<th></th>
<th>Antarctica</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land area (square miles)</td>
<td>5,100,000</td>
<td></td>
</tr>
<tr>
<td>Average temp. (°C)</td>
<td>-50°C</td>
<td></td>
</tr>
<tr>
<td>Average rainfall</td>
<td>2-4 inches estimated</td>
<td></td>
</tr>
<tr>
<td>Average altitude</td>
<td>14,000 feet (rocks, snow, and ice)</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>International Treaty</td>
<td></td>
</tr>
<tr>
<td>Population size</td>
<td>Visiting scientists (less than 4,000)</td>
<td></td>
</tr>
<tr>
<td>Common life forms</td>
<td>Seals, whales, penguins, moss</td>
<td></td>
</tr>
<tr>
<td>Natural Resources</td>
<td>Almost none, a little whaling</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Diary Writing Activity (Grades 3-12)

In the early exploration of Antarctica, explorers wrote almost daily in their dairies. They did this for a few reasons. Writing in diaries each day was a way to fill the time, which could sometimes get boring. It also let them record their experiences for their families with whom they could not communicate while there. Sometimes, they would sell their diaries as a way to finance their expeditions. Finally, they knew that they were contributing to history and they wanted to preserve their legacy. Frank Debenham, an Australian geologist on the Terra Nova Expedition, camped out at Cape Evans in the Ross Sea and wrote the following in his diary:

28 May 1911

“A typical day starts at 8 for breakfast at 8.30 – tho’ some are always late…

For breakfast we have porridge, tea and coffee, bread and butter and some dish such as fried seal and bacon or scrambled ‘Tru-egg’. The porridge is excellent but as all 25 of us like it there is never quite enough.

Afterwards I start work immediately, which consists of cutting sections, learning German, using the microscope, writing the diary or reading books. When fine I go for a walk, but walks in the dark are most uninteresting. The others fill in their mornings in various ways. Sunny Jim and Charles are always busy with their meteorological gadgets, setting them up, repairing or taking them down. The ponies are regularly exercised when the weather permits.

Cherry puts in the day typing copy for the South Polar Times or building a stone-hut in which to flense sealskins. Bill is always sketching or painting and Teddy Evans has plenty of work with chart making and working up the summer’s surveying data. Ponting is regularly engaged in taking prints from negatives he made in the summer, or in making flashlights.

Lunch is at 1.30 and consists of bread (or biscuit) and butter with potted meat, jam and cheese on alternate days, also tea and cocoa. Dinner is at 6.30 and is always a 3 course meal – soup, meat and pudding. After each of the meals a good many sit at the table smoking and talking for a long time. The table breaks up into 2 or 3 groups each with its own subject and there is a general buzz of conversation.”
Appendix 5

*The men of the* Endurance *also wrote detailed diary entries:*

“This is not a pleasant job. We have to dig a hole down through the coal while the beams and timbers groan and crack all around us like pistol-shots. The darkness is almost complete, and we mess about in the wet with half-frozen hands and try to keep the coal from slipping back into the bilges. The men on deck pour buckets of boiling water from the galley down the pipe as we prod and hammer from below, and at last we get the pump clear, cover up the **bilges** to keep the coal out and rush on deck, very thankful to find ourselves safe again in the open air.”

- *The Endurance’s* captain Frank Worsley, writing about having to go down in the bunkers of the *Endurance* and clear ice from the bilge pumps a few days before the crew was forced to abandon the ship.

“In addition to the daily hunt for food, our time was passed in reading a few books that we had managed to save from the ship. The greatest treasure in the library was a portion of the Encyclopedia Britannica. This was being continually used to settle the inevitable arguments that would arise. The sailors were discovered one day engaged in a very heated discussion on the subject of Money and Exchange. They finally came to the conclusion that the Encyclopedia, since it did not coincide with their views, must be wrong.”

-Sir Ernest Shackleton, describing an occurrence at Ocean Camp in his memoir of the *Endurance* voyage.

*Write a diary entry which explains what an average day is like in your school for people interested in the future.*
Glossary

Bilge- the area on the outer surface of a ship's hull where the bottom curves to meet the vertical sides.

Flense- to slice the skin or fat from a dead animal.

Geology- the branch of science that deals with the earth's physical structure and substance.

Meteorology- the branch of science concerned with the processes and phenomena of the atmosphere.

Potted meat- meat that has been preserved in a jar or pot.

Porridge- similar to oatmeal, porridge is a food made by boiling ground, crushed, or chopped starchy plants—typically grain—in water or milk.

Survey- to examine and record the area and features of an area of land.

Terra Nova Expedition - This expedition (1910-13) was the third British attempt to be the first to the South Pole. The leader, Robert Falcon Scott, and the other four men that accompanied him to the Pole all died on their way back to Cape Royds after discovering that they had been beaten by Roald Amundsen by a month. Tom Crean, who later served on the Endurance was also a member of the Terra Nova Expedition.
ESCAPING THE ICE

After six months on the ice, Shackleton and his men made a desperate dash to Elephant Island in three lifeboats. Match the captions below to the correct panels, then fill in the speech bubbles to show what Shackleton and his crew have to say on this treacherous journey.

A. At night, the men camp on ice floes. When the ice splits, one of the men falls into the dark water.

B. Despite the bitter days and nights, second-in-command Frank Wild remains cheery as ever, steering the boat on towards the warm prospect of breakfast.

C. Luckily, Shackleton was nearby to rescue him. The Boss asks the drenched sailor if he is alright.

D. Shackleton sees the ice beginning to break up and tells his crew it’s time to move.

E. Sailing is dangerous as fast, foamy water hurls blocks of ice to and fro, and killer whales threaten to capsize them.

F. The 28 men get into three lifeboats. Their lives depend on them reaching land now.
Shackleton and the *Endurance*

**Across**
2. What type of vessel was the *James Caird*?
6. This sea mammal attacked Frank Worsley.
8. A heavy snowstorm
10. Flightless bird that lives in Antarctica
11. Mrs. Chippy was the ship's_____
12. Weddell______
13. The *Endurance* was crushed by this

**Down**
1. What type of vessel was the *Endurance*?
3. Nickname given to Shackleton by his men.
4. Shackleton brought 30 boxes of _____ on the *James Caird*
5. The country where Shackleton was born.
7. The most southern continent
9. There were 69 of these on the ship south
Answer Key

Across
2. Lifeboat
6. Seal
8. Blizzard
10. Penguin
11. Cat
12. Sea
13. Ice

Down
1. Ship
3. Boss
4. Matches
5. Ireland
7. Antarctica
9. Dogs
Shackleton and the *Endurance*
Appendix 8

Across
1. A shelter for dogs
4. The most southerly continent
6. Shackleton's first name
8. When WWI broke out the British government told Shackleton to...
9. An injury caused by extreme cold
10. First name of the expedition's stowaway
13. A very strong wind
16. Fixed daily amounts of food
17. Lifeboat that Shackleton took to South Georgia
18. Frank Worsley got attacked by a ______ seal
19. When a boat is over turned in water

Down
2. You use a chronometer to find this
3. Shackleton's second in command
5. The first man to reach the South Pole
7. The most southerly point on Earth
9. A sheet of Floating Ice
11. A dome-shaped hut made from snow
12. The island where Shackleton stopped on his way to Antarctica and where he sought rescue.
14. A Heavy Snowstorm
15. Cat that went South on the *Endurance*
Answer Key

Across
1. Kennel
4. Antarctica
6. Ernest
8. Proceed
9. Frostbite
10. Perce
13. Gale
16. Ration
17. James Caird
18. Leopard
19. Capsize

Down
2. Longitude
3. Frank Wild
5. Amundsen
7. South Pole
9. Floe
11. Igloo
12. South Georgia
14. Blizzard
15. Mrs. Chippy
A Meal of Endurance

Lesson Objectives

By the end of this activity, students will be able to:

- understand the nutritional value of the explorers' meals.
- describe the trend in the diet changes that the explorers experienced over the two-year expedition and explain the physiological consequences that these changes implied.
- analyze caloric intake vs. caloric expenditure and recognize the pattern of slow starvation of the explorers.
- analyze the nutritional balance and caloric intake of the student's own diet.

Related National Standards

National Science Education Standards (National Research Council)
Grades 5-8
Science Standard C: Life Science
Regulation and behavior

- All organisms must be able to obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing environment.
- Regulation of an organism's internal environment involves sensing the internal environment and changing physiological activities to keep conditions within the range required to survive.

Curriculum and Evaluation Standards for School Mathematics (National Council of Teachers of Mathematics)
Grades 5-8
Standard 7: Computation and Estimation

Tools and Materials Needed

- blue and red pen
- copy of Meals of Endurance activity sheet
- reference for calorie content of food
- access to the Internet

Estimated Time to Complete Lesson

The activity should take one class period to complete.
Teaching Strategy

Background information
The food Calorie (written with an upper case C) discussed in this guide and other nutritional references is in reality a kilocalorie, which is 1,000 calories. The daily amount of calories an individual requires is based on numerous factors. Chief among them are body build, height, gender, age, rate of metabolism, and level of activity. If an individual is in a very cold climate, he or she will need more calories to maintain body temperature. Due to these variations it is necessary to use calorie estimates when making comparisons of calories consumed versus calories expended.

It is estimated that at the beginning of the Shackleton journey (December 1914) the explorers had sufficient calories and a variety of foods to meet their nutritional needs at their level of activity. A year later—when they were stranded on the ice floes—the demands on them for physical labor increased and they probably expended more energy then they consumed. Also, the proportion of their diet that was comprised of carbohydrates was reduced (carbohydrates are essential for normal metabolic function). At the end of the journey—when the men basically had no carbohydrates left to eat—they had trouble performing physical labor. They subsisted on mainly seal, penguin, and seaweed.

A normal diet is approximately 35 percent fat, 10 percent protein, and 55 percent carbohydrates; the explorer's diet at the end was comprised just of protein and fat. At this point they neither consumed enough calories nor did they have the variety (carbohydrates and certain vitamins) in their diet necessary to fulfill basic nutritional needs.

Procedure

1. To help students understand what the Antarctic environment is like, have them read Danger on the Ice on this Web site.
2. Organize students into groups and distribute the Meals of Endurance activity sheet. Have students characterize the food listed on the sheet by placing a check in the appropriate food category (carbohydrate, protein and/or fat) and rate the meal as being satisfactory or not in terms of variety.
3. Have students calculate the calories the men consumed in the meal. Have students multiply this value times three in order to estimate the caloric intake of the men in one day. Have students evaluate the sufficiency of the caloric intake of the men in terms of calories expended in a typical day by the men. Students can make a bar graph where the vertical axis is Kcal and the horizontal axis is Time (December 1914 to May 1916). Have one column represent intake of calories and one column represent expenditure of calories. Do the men ever eat enough calories to sustain their activity levels? How would students describe the diet at the end of the expedition? Have students look at the three meals and discuss the trends in the variety and the caloric sufficiency of the diet the men consumed.
4. Have students keep a log of all the food they eat in one day. Then have them categorize it as they did the explorers' meals. Have them add in their own number of calories consumed to the bar chart. How does their diet compare with the explorers'? How might the energy required for a teenager living today's life compare with the calories required of an explorer?

5. To conclude the lesson, have students comment on the sufficiency and/or insufficiency of their own diet. Is a one-day analysis enough data on which to base a valid conclusion? What would students need to do in order to perform a more meaningful analysis of their diet? Have students discuss how important or unimportant food is in their day. Is variety important? How would they feel if they had no bread, fruit, or vegetables for a week? Ask students to imagine what it would be like to eat the restricted diet the explorers ate in a very cold and no-electricity environment for months on end.
Endurance Diet

Part I. A representative meal at the beginning of the expedition (Dec. 1914)

<table>
<thead>
<tr>
<th>Food</th>
<th>Carbohydrate</th>
<th>Protein</th>
<th>Fat</th>
<th>Variety (satisfactory/unsatisfactory)</th>
<th>Calories (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quaker Oats</td>
<td>350</td>
<td></td>
<td></td>
<td></td>
<td>350</td>
</tr>
<tr>
<td>Tinned meat</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td>500</td>
</tr>
<tr>
<td>Bacon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>300</td>
</tr>
<tr>
<td>Dried Fruit</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td>300</td>
</tr>
<tr>
<td>Cocoa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Analysis:
a. Total Calories consumed in this meal:
b. Estimate the calories consumer per day by multiplying the meal Calories by 3:
c. At this point of the expedition, the activity level of the men per day is estimated at between 4,000 and 6,000 Calories. Did the men consume enough food or did they expend more calories than they consumed?
Part II. A representative meal at the middle of the expedition when locked on ice floes (Dec. 1915):

<table>
<thead>
<tr>
<th>Food</th>
<th>Carbohydrate</th>
<th>Protein</th>
<th>Fat</th>
<th>Variety (satisfactory/unsatisfactory)</th>
<th>Calories (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baked &quot;bannacks&quot; (Dough)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>450</td>
</tr>
<tr>
<td>Bacon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>Fried Seal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>800</td>
</tr>
<tr>
<td>Nuts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>Tea with sugar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Analysis:
- a. Total Calories consumed in this meal:
- b. Estimate the calories consumer per day by multiplying the meal Calories by 3:
- c. At this point of the expedition the activity level of the men per day is estimated at between 6,000 and 8,000 Calories. Did the men consume enough food or did they expend more calories then they consumed?

Part III. A representative meal at the end of the expedition (May 1916):

<table>
<thead>
<tr>
<th>Food</th>
<th>Carbohydrate</th>
<th>Protein</th>
<th>Fat</th>
<th>Variety (satisfactory/unsatisfactory)</th>
<th>Calories (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal steak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>800</td>
</tr>
<tr>
<td>Penguin Liver</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>800</td>
</tr>
<tr>
<td>Boiled Seaweed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Tea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
Analysis:
a. Total Calories consumed in this meal:
b. Estimate the calories consumed per day by multiplying the meal Calories by 3:
c. At this point of the expedition, the activity level of the men per day is estimated at between 7,000 and 10,000 Calories. Did the men consume enough food or did they expend more calories than they consumed?

Part IV: Make a chart so that you can record what you eat in one day. You should have a section for breakfast, lunch, dinner, and snacks. Analyze your food consumption for that day in the same manner that you did the explorers'. You need a calorie reference in order to do this. The number of calories you expended in that day mainly depends on your activity level, height, weight, body build, and gender. An average-sized female consumes 1,900 calories if inactive, 2,200 calories with moderate activity and 2,400 calories if active. An average-sized male correspondingly consumes 2,200, 2,500, and 2,800 calories. Consider the accuracy of your work. What assumptions and/or estimates did you make?
Part V: Bar Graph Analysis
This is an analysis of Kilocalories consumed versus Kilocalories expended by the explorers and you.

Key: Blue pen bar represents calories consumed
Red pen bar represents calories expended
The race to the Pole

Read about 12 key events in Antarctica’s discovery and exploration. Red dots on the map show where they took place.

- Decide what you think are the five most important of these events.
- Use the co-ordinates to find the matching red dots for each on the map.
- Use arrows and words to label captions on your map to describe your five most important moments in Antarctica’s history.
- Compare your map with your neighbour – have you chosen the same events?
Need help with using the co-ordinates?

On a world map or globe, latitude lines run horizontally. Think of them like rungs of a ladder – ‘ladder-tude’! Meanwhile, lines of longitude run vertically, like segments in an orange.

To make sense of the latitude number you need to start from the equator, which is $0^\circ$. To the north, they are numbered degrees North until you reach $90^\circ$ North at the North Pole. To the south, they are numbered degrees South until you reach $90^\circ$ South at the South Pole (the centre of this map).
### Location  |  Date  |  Information
--- | --- | ---
A  | 70 SOUTH  
106 WEST  |  UK  
1773  | Captain James Cook and his crew were the first people to cross the Antarctic Circle, although they never saw Antarctica itself.
B  | Weddell Sea  
74 SOUTH  
45 WEST  |  UK  
1823  | British seal hunter, James Weddell sailed further south than anyone had ever gone before – 345 kilometres further south than Cook’s expedition fifty years before. The waters that he reached are now called the Weddell Sea.
C  | Ross Island, Ross Sea  
78 SOUTH  
166 EAST  |  UK  
1841  | Following orders to discover the South Magnetic Pole, British Royal Navy commander, Sir James Clark Ross, reached the sea now named after him. He also discovered Ross Island, Mount Erebus (named after Ross’s ship) and the Ross Ice Shelf.
D  | Cape Adare  
78 SOUTH  
170 EAST  |  Norway/UK  
1899  | Norwegian Carstens Borchgrevink set sail from Tasmania, southern Australia to lead the ‘British Antarctic Expedition’ even though there were only three British members of the crew. They were the first group to spend winter on the Antarctic mainland. They were also the first to use teams of dogs to transport them across the ice.
<table>
<thead>
<tr>
<th></th>
<th>Location</th>
<th>Country</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Snow Hill Island</td>
<td>Sweden</td>
<td>1902</td>
</tr>
<tr>
<td></td>
<td>64 SOUTH 57 WEST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>82 SOUTH 165 EAST</td>
<td>UK</td>
<td>1902</td>
</tr>
<tr>
<td>G</td>
<td>88 SOUTH 162 EAST</td>
<td>UK</td>
<td>1908</td>
</tr>
<tr>
<td>H</td>
<td>Coulman Island, Ross Sea</td>
<td>Japan</td>
<td>1911</td>
</tr>
<tr>
<td></td>
<td>73 SOUTH 169 EAST</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A Swedish geologist, Otto Nordenskjold, and five other men undertook the first exploration by sledge. Nordenskjold’s team covered 650 kilometres but in the meantime their ship was crushed and written off by ice. They spent two winters stranded on Antarctica before being rescued by an Argentinian ship in 1903.

Robert F. Scott, Edward Wilson and Ernest Shackleton set off for the South Pole. They covered 5,000 kilometres but snow blindness and illness forced them to give up after two months.

Ernest Shackleton had another go at reaching the South Pole, this time accompanied by Frank Wild, Eric Marshall and Jameson Adams. Although they got further than Scott’s team illness and hunger forced them to give up just 180 kilometres from their destination.

Lieutenant Nobu Shirase led the first Japanese expedition to Antarctica. They got as far as Coulman Island before heavy storms and treacherous ice in the water forced them to abandon their expedition.
Norwegian Roald Amundsen and four other men were the first to reach the South Pole thanks to a new route that only took them 57 days. Amundsen planted a Norwegian flag and wrote two letters — one for the king of Norway, and one for the British Antarctic Expedition team led by Robert F. Scott.

Robert F. Scott, Edward Wilson, Edgar Evans and Lawrence Oates finally reached the South Pole only to discover that the Norwegian, Amundsen had got there 33 days earlier. Scott and his companions all died on their return journey.

Ernest Shackleton led a team that intended to be the first to cross Antarctica from coast to coast by sledge. But their ship, 'Endurance', was crushed by ice and sank in the Weddell Sea. Then the most amazing story of survival in Antarctica’s history began. Shackleton and his men had to camp on floating ice for five months. Finally, a break in the ice enabled Shackleton and five others to take a very small boat 1,300 kilometres north in search for help. The rescue team did not reach the remaining men for 105 days.

With Australian explorer, Douglas Mawson in charge, the British, Australian and New Zealand Antarctic Research Expedition established a base on Antarctica.
The Coldest Place at the Bottom of the World

Lesson Objectives

By the end of this activity, students will be able to:

- trace Shackleton's actual route on an area map and estimate the trip miles using a map scale.
- trace Shackleton's intended route on an area map.
- describe the altitude changes involved in a trek across Antarctica.
- present some basic information about Antarctica and how it compares to the student's own state.

Tools and Materials Needed for each group

- copy of Shackleton's Route activity sheet
- copy of Antarctic Map activity sheet
- copy of Antarctic Altitudes sheet
- red and blue pen
- ruler
- access to library and Internet

Organize students into groups and provide each group with a copy of the Shackleton's Route activity sheet. Specific longitude and latitude coordinates of Shackleton's Actual Route are given on the activity sheet. Have students mark these locations on their map with an "X" and then trace Shackleton’s route in red pen, marking the direction of travel with arrows. Note: it may be helpful if students label all the longitude lines on the map before starting.

- Have students use the map scale to estimate how far the explorers traveled.
- Now provide each group with a copy of the Antarctic Map activity sheet. Have students plot the coordinates given for Shackleton's Intended Route with an "X" and trace that route in blue pen. Have students compare the two routes. How far off was Shackleton from his intended journey?
- Have students use the Antarctic Altitudes sheet to describe the altitude changes involved in the trip Shackleton intended to take across the continent.
Shackleton's Route

Note: This route approximates Shackleton's Journey.
Shackleton’s Intended Route
Shackleton planned to be the first person to cross Antarctica. He was headed for the area of Coats Land (in the Weddell Sea) when his ship got stuck in pack ice.

In Shackleton’s original plan, once he reached Coats Land he was going to then strike out for the Ross Sea. Find Coats Land using the coordinates and then trace a path to McMurdo Sound in the Ross Sea—going through the South Pole—to see the general route Shackleton was trying to take.

<table>
<thead>
<tr>
<th>Position</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coats Land (Weddell Sea)</td>
<td>76°S</td>
<td>30°W</td>
</tr>
<tr>
<td>South Pole</td>
<td>90°S</td>
<td></td>
</tr>
<tr>
<td>McMurdo Sound (Ross Sea)</td>
<td>78°S</td>
<td>160°E</td>
</tr>
</tbody>
</table>
Antarctic Altitudes

Antarctic Cross Section: Weddel Sea to Ross Sea

Use this graphic to describe the altitude changes involved in Shackleton's intended route.
The Rime of the Ancient Mariner

In 1798, the English poet, Samuel Taylor Coleridge wrote about a voyage to the South Pole and back in “The Rime of the Ancient Mariner”. Read through the verses that describe how they were driven by a storm towards Antarctica. Choose one of the pictures taken from early voyages to illustrate the different verses.
The Rime of the Ancient Mariner

And now the storm-blast came, and he
Was tyrannous and strong:
He struck with his o'ertaking wings,
And chased us south along.

And now there came both mist and snow,
And it grew wondrous cold:
And ice, mast-high, came floating by,
As green as emerald.

And through the drifts the snowy cliffs
Did send a dismal sheen:
Nor shapes of men nor beasts we ken -
The ice was all between.
The ice was here, the ice was there,
The ice was all around:
It cracked and growled, and roared
and howled,
Like noises in a swound!

In mist or cloud, on mast or shroud,
It perched for vespers nine;
While all the night, through fog-smoke white,
Glimmered the white moonshine.

The Sun now rose upon the right:
Out of the sea came he,
Still hid in mist, and on the left
Went down into the sea.

The fair breeze blew, the white foam flew,
The furrow followed free;
We were the first that ever burst
Into that silent sea.
Reading Comprehension Exercise for 5-8th Grade

This is a fictional portrayal of a real person, eighteen-year-old Perce Blackborrow, who joined the crew of the Endurance. Ernest Shackleton commanded the ship in 1914, intending to cross Antarctica. The vessel was crushed by icebergs, and the men were stranded for more than four months before all were rescued.

Shackleton’s Stowaway
by Victoria McKernan

Once on deck, Perce stopped and stared. The flat, endless ice plain they had lived in for months was torn apart. But rather than opening up the sea for their escape, it was trapping them more than ever.

Great jagged slabs of ice were piled up all around the ship, lifting her hull half out of the water, tipping the Endurance until she was almost on her side. Deck planks were snapping, and metal halyards screeched like fingernails on a chalkboard. Shackleton stood on the bridge, calmly giving orders in the chaos. Wild directed the men as they came on deck.

“Billy,” Wild shouted. “Help McNeish with the lifeboats.” The Endurance was heeled so far over, the lifeboats on the port side were in danger of being crushed against the ice.

“Blackie, Tim,” Wild commanded. “Help get the dogs on board.” Dogloo city was a wreck. The dogs howled with fright. Some of the chains had come free, and the loose dogs ran everywhere. Others were trapped and buried in their dogloos. Huge slabs of ice stuck straight up like tombstones in a giant’s graveyard. Perce grabbed an ax in one hand and a pike in the other. It was hard even getting to the dogs through the maze of broken ice. Perce began to chop the chains free. Crean was digging Sampson out of his collapsed dogloo.

“What’s happening?” Perce had to shout to be heard over the noise of crunching ice.

“Pressure!” Crean shouted back. “Ice starts to break up, and the current jams it all together. Then the wind catches the broken slabs like sails and pushes it up more.”

It was scary to see blocks of ice that weighed ten tons piled up around them like a child’s building blocks. Crean freed Sampson and led him to the safety of the ship, with the four grown pups running right behind. Hurley had his hands full with Shakespeare but grabbed another dog from Perce. They bolted in opposite directions, almost pulling him in two. Hurley swore, yanked on the leashes, and muscled the dogs back to his side. It was a frantic race, but within ten minutes every dog was securely on board the ship. They were so terrorized, they even forgot to fight. They just cowered in corners and whined.

McNeish came running, as much as anyone could run on the sloping deck.
“She’s sprung fore an’ aft, Boss!” he announced. “There’s two foot of water in the hold, and the pump’s froze up.”

“Very well,” Shackleton said evenly. “Get some men on the hand pumps. Can you stem the leaks?”

“Timbers is split, sir. I might build a cofferdam, though. Might keep the water back from the engines.”

“Take whatever men you need.”

“You two—” Wild pointed at Perce and Tim. “Help Hurley secure the dogs, then relieve the men on the pumps. You there—Bill, Vincent, the rest of you there—get the pikes, let’s try to push some of this ice back from the ship. The rest of you with McNeish.”

They worked all day and all night. McNeish and his crew sloshed waist deep in the freezing water as they tried to stop the leaks. The sailors, officers, and scientists worked shoulder to shoulder. They were so wet and dirty, you could hardly tell one man from another. Fifteen minutes on the hand pumps—fifteen minutes’ rest, half hour chopping at the ice or helping with the dam down below. Perce pounded nails and stuffed blankets into cracks, then went back to the pumps. The labor was extreme. The water was pouring in so fast, they had to pump full out. After five minutes, his arms ached. After ten minutes, his shoulders and neck were in a spasm.

The night became a blur. Once Perce fell asleep while holding a board in place on the dam. Once he found a mug of soup in his hand and didn’t know how it got there. The strangest thing was how the Boss was everywhere all the time. When a shift finished on the pumps, there he was with mugs of chocolate. When the strips of blanket floated out of the cofferdam, it was Shackleton’s hand that caught them. His clothes were as wet and dirty as any of theirs, but he never rested, never seemed tired.

Finally, late the next morning, the efforts began to show success. Water still came in, but slower. Shackleton ordered an hour’s rest. Charlie had somehow managed to cook with the galley at a crazy tilt and now dished out big bowls of porridge. The men ate hunched over, too tired to speak. Some fell asleep at the table, their heads beside the empty bowls. And always, the terrible screech and groaning of the pressing ice continued all around them.

1. What is a central idea of “Shackleton’s Stowaway”? Use two details from the story to support your response.

2. Why must the crew of the Endurance work through the night? Use two details from the story to support your response.
Glossary

Aft—near the stern (back) of a ship
Bridge—the elevated platform on a ship from which the captain and officers direct operations
Cofferdam—an enclosure pumped dry to permit repair work below the waterline
Deck—a structure of planks extending across a ship at various levels. It usually refers to the area at the highest level that is open to the weather.
“Dogloo”—kennels that the men of the Endurance constructed for their dogs near the trapped ship.
Fore—the front part of a ship
Galley—the kitchen in a ship (or airplane)
Halyards—ropes used for raising and lowering sails
Heeled—when a ship is tilted by pressure of uneven weight distribution
Hold—a large space in the lower part of a ship or (airplane) where cargo is stowed
Hull—the main body of a ship or other vessel, including the bottom, sides, and deck
Porridge—similar to oatmeal, porridge is a food made by boiling ground, crushed, or chopped starchy plants—typically grain—in water or milk.
Port—the side of a ship that is on the left when one is facing forward. Starboard is the right side.
Reading Comprehension Activity (Grades 9-12)

This poem was framed by Shackleton and hung on the wall of the *Endurance*. He even saved it before the ship sank into the ice.

*If*

Rudyard Kipling (written in 1895)

If you can keep your head when all about you
   Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
   But make allowance for their doubting too;
If you can wait and not be tired by waiting,
   Or being lied about, don’t deal in lies,
Or being hated, don’t give way to hating,
   And yet don’t look too good, nor talk too wise:

If you can dream—and not make dreams your master;
   If you can think—and not make thoughts your aim;
If you can meet with Triumph and Disaster
   And treat those two impostors just the same;
If you can bear to hear the truth you’ve spoken
   Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
   And stoop and build ’em up with worn-out tools:

If you can make one heap of all your winnings
   And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
   And never breathe a word about your loss;
If you can force your heart and nerve and sinew
   To serve your turn long after they are gone,
And so hold on when there is nothing in you
   Except the Will which says to them: ‘Hold on!’

If you can talk with crowds and keep your virtue,
   Or walk with Kings—nor lose the common touch,
If neither foes nor loving friends can hurt you,
   If all men count with you, but none too much;
If you can fill the unforgiving minute
   With sixty seconds’ worth of distance run,
Yours is the Earth and everything that’s in it,
   And—which is more—you’ll be a Man, my son!
1) What do you think this poem is about?
2) What do you think is the most important characteristic that Kipling gives for being a man?
3) Are there conditions any that you disagree with? Why?
4) Why do you think Shackleton brought this poem with him on the expedition South?
Antarctic Politics Exercise Grades 9-12: Who Owns Antarctica?

**Question:** Who Owns Antarctica?

**Activity:** Take a straw poll among students for who owns Antarctica.

**Explain:** Seven countries claim Antarctica: Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom. Have students identify these countries on the map. Discuss what they know about them.

**Question:** Why might these countries claim Antarctica? Are you surprised that the US does not claim Antarctica?

**Activity:** Have students fill out a blank map of Antarctica (attached) by drawing border lines for which country they think claims different parts of the Continent. Compare this to an actual political map of Antarctica.

**Question:** Is there any part of Antarctica claimed by more than one country? Which countries? Why can this present a problem?

**Explain:** Activities in Antarctica and its surrounding seas are governed by a unique agreement between nations: The Antarctic Treaty. Signed in 1959 it was designed to provide an agreement for the future care and use of Antarctica, as well as avoid territorial and other disputes among and between nations.

Group Activity: Read Articles I-V of the Antarctic Treaty. (attached)

1) What does the treaty say about nuclear weapons? Why is this relevant?
2) What purposes can Antarctica be used for?
3) What was the International Geophysical Year?
4) What does the treaty say about the exchange of knowledge? Do you think this is practical?
5) Article IV is the most controversial part of the treaty. Why do you think that is the case? What is it saying?
6) Do countries claim oceans or seas? Why or why not?
7) Does exploration and discovery mean ownership? Should countries be able to claim the Moon or Mars?
Antarctic Treaty

The Governments of Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of South Africa, The Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America,

Recognizing that it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord;

Acknowledging the substantial contributions to scientific knowledge resulting from international cooperation in scientific investigation in Antarctica;

Convinced that the establishment of a firm foundation for the continuation and development of such cooperation on the basis of freedom of scientific investigation in Antarctica as applied during the International Geophysical Year accords with the interests of science and the progress of all mankind;

Convinced also that a treaty ensuring the use of Antarctica for peaceful purposes only and the continuance of international harmony in Antarctica will further the purposes and principles embodied in the Charter of the United Nations;

Have agreed as follows:

Article I

1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons.

2. The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purposes.

Article II

Freedom of scientific investigation in Antarctica and cooperation toward that end, as applied during the International Geophysical Year, shall continue, subject to the provisions of the present Treaty.

Article III

1. In order to promote international cooperation in scientific investigation in Antarctica, as provided for in Article II of the present Treaty, the Contracting Parties agree that, to the greatest extent feasible and practicable:
(a) information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;

(b) scientific personnel shall be exchanged in Antarctica between expeditions and stations;

(c) scientific observations and results from Antarctica shall be exchanged and made freely available.

2. In implementing this Article, every encouragement shall be given to the establishment of cooperative working relations with those Specialized Agencies of the United Nations and other international organizations having a scientific or technical interest in Antarctica.

Article IV

1. Nothing contained in the present Treaty shall be interpreted as:

(a) a renunciation by any Contracting Party of previously asserted rights of or claims to territorial sovereignty in Antarctica;

(b) a renunciation or diminution by any Contracting Party of any basis of claim to territorial sovereignty in Antarctica which it may have whether as a result of its activities or those of its nationals in Antarctica, or otherwise;

(c) prejudicing the position of any Contracting Party as regards its recognition or nonrecognition of any other State's right of or claim or basis of claim to territorial sovereignty in Antarctica.

2. No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty shall be asserted while the present Treaty is in force.

Article V

1. Any nuclear explosions in Antarctica and the disposal there of radioactive waste material shall be prohibited.

2. In the event of the conclusion of international agreements concerning the use of nuclear energy, including nuclear explosions and the disposal of radioactive waste material, to which all of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX are parties, the rules established under such agreements shall apply in Antarctica.