Measuring the Aurora Vocabulary

Overview:

Throughout the *Aurora Alive* Curriculum, students have been developing an understanding of historical contributions made by scientists and technology as it developed. Students learn the impact of computers and other technology on current research and that scientists conduct research using appropriate instruments to observe and measure the aurora over time.

Objectives:

The student will:

- identify instruments scientists use on the ground and in space to study the aurora;
- use technology to locate, select, and apply information;
- describe in writing the function of each instrument studied in this unit; and
- discuss science as a human endeavor.

Materials:

- *Aurora Alive* DVD
- VISUAL AID: "Measuring the Aurora"
- STUDENT WORKSHEET: "Instrument Vocabulary"

Activity Procedure:

1. Ask students to recall instruments from Unit 7: Measuring the Aurora on the *Aurora Alive* DVD. List the instruments on the chalkboard. Ask students if they remember how scientists use each instrument to obtain information about the aurora.

2. Ask students to consider how new technology, such as satellites, have affected observation of the aurora. Help students realize that the aurora is being observed and measured by instruments on the ground, in space and around the world. Explain that scientists work together globally to solve problems and scientists from many cultures have contributed to aurora research.

3. Review the VISUAL AID: "Measuring the Aurora," then hand out the STUDENT WORKSHEET: "Instrument Vocabulary." Ask students to label each instrument and write a brief description of the instrument's function on the lines provided.

Measuring the Aurora Vocabulary

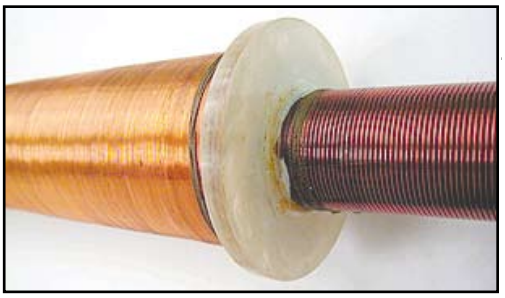
Answers to Student Worksheet:

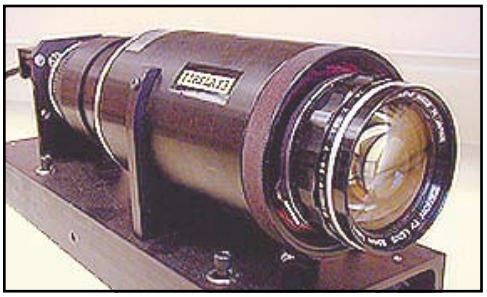
1. *induction magnetometer; allows scientists to hear noises from space including the sounds of the aurora*
2. *narrow-field camera; lets researchers see a part of the aurora in detail*
3. *meridian scanning photometer; an instrument that uses six light meters with optical filters to select aurora colors, rather than using a grating mirror. These light meters select six different colors at the same time, making research into brightness go much faster.*
4. *magnetometer; instrument used to detect changes in Earth's magnetic field (a magnetometer consists of a magnet hanging from a glass fiber as thin as a spider web. A mirror that reflects a beam of light is attached to the magnet. Changes in Earth's magnetic field are recorded on paper as the magnet moves.)*
5. *satellite; an instrument launched from the ground or from the space shuttle to orbit Earth. They can record eruptions on the sun and solar particles that help create auroras.*
6. *all-sky camera; lets researchers see an aurora covering the whole sky.*
7. *aurora TV camera; captures the aurora in full color. Uses fisheye lenses to photograph the entire sky.*
8. *spectrometer; separates aurora light into red, green and blue wavelengths, to help scientists learn basic facts about the brightness of the different colors of the aurora.*

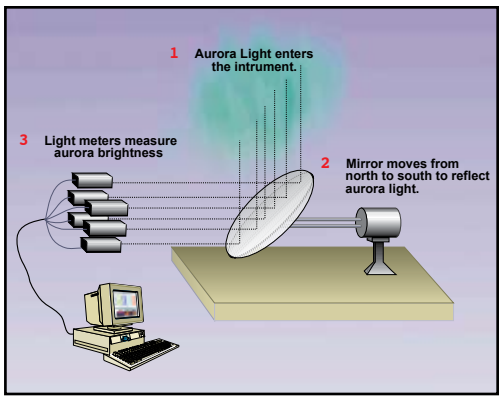
Name:_____ **Student Worksheet (1 of 2)**

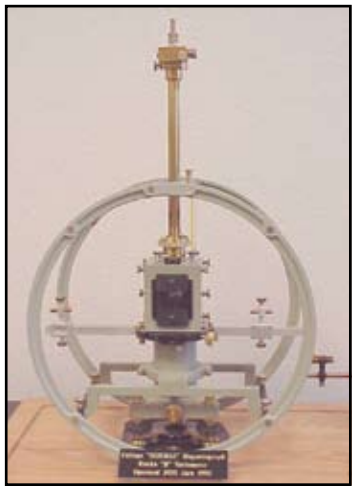
Instrument Vocabulary

Directions: Label each instrument and write a brief description of its function on the lines provided.

1. 

2. 

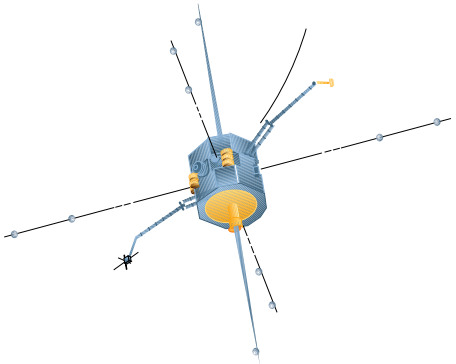
3. 

4. 

Name:_____ **Student Worksheet (2 of 2)**

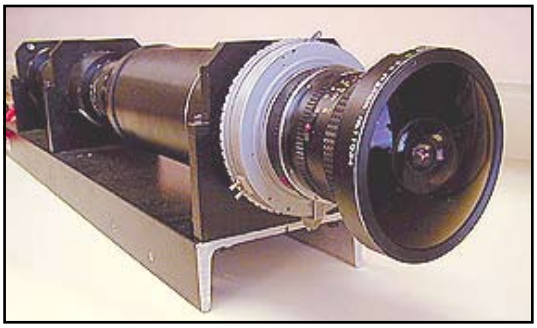
Instrument Vocabulary

5.



6.

7.



8.