

# AURORA BOREALIS

## *Finding color in winter*

The invention of the Alaska outhouse must have been inspired by the aurora borealis. Even for those with modern plumbing, a quick trip outside can be well worth leaving the warm bed. Here are some tips for catching this magical phenomenon.

- ✓ Watch the skies between mid-August and mid-April.
- ✓ Look anytime between evening twilight and dawn on clear, moonless nights without city lights or automobile light interference.
- ✓ If good auroras are reported one night, go out the next night.
- ✓ Check forecasts for high magnetic activity. The Anchorage Daily News Web site, [www.adn.com](http://www.adn.com), has aurora forecasts with its weather.
- ✓ After major auroral displays, watch for them again 27 days later – the solar zone that created the activity might be active when the sun rotates back around.

### Aurora Euphoria

What is the aurora borealis? It originates at the sun. As gases are boiled off, particles – electrons and protons – stream toward earth in the solar wind. This wind hits the magnetic barrier that surrounds the earth – the magnetosphere – and is blocked. Some particles seep through and are drawn to the magnetic poles. The incoming particles strike other particles in the ionosphere – the partly ionized

atmospheric layer 50 to 600 miles above the earth. This striking of molecules against molecules results in little flashes of light or the aurora.

### Pole activity

Because the aurora is created at the poles of the earth, auroral displays occur simultaneously in a mirror image of each pole. Auroras in the northern hemisphere are called aurora borealis, in the southern hemisphere, they are called aurora australis.

### Colors

Auroral colors are determined by the type of gas that is struck by incoming molecules. Oxygen molecules 60 miles above the earth create green auroras. Oxygen molecules 200 miles up in the ionosphere create the rare, red aurora. Nitrogen molecules create blue auroral colors and neutral nitrogen creates purplish-red colors and ripple edges.

### Sounds

Auroral sounds have scientists puzzled – the air 60 miles above the earth is too thin to carry sound. Although sounds have been reported for thousands of years, no successful recordings have ever been made.

*– Catherine Norkin,  
Federal Highway Administration  
and the State of Alaska Department of  
Transportation and Public Facilities  
contributed to this article.*



### *Capturing an Auroral Image*

- **Protect the camera from extreme cold. Place the camera and lenses in a plastic bag before coming inside to prevent condensation and moisture damage.**
- **Experiment with the equipment, and take notes on exposures.**
  - **Equipment: tripod, f/3.5 lens (or faster), and shutter release cable.**
  - **Shoot pictures with a foreground object – trees, cabins, mountains – to create dimension. Avoid bright lights.**
  - **Use normal or wide-angle lenses.**
  - **Photograph the aurora when it is not moving rapidly.**
- **Film: Black and white panchromatic films, 100 ASA or higher; Kodak Kodachrome, 200 ASA; Kodak Ektachrome, 200-400 ASA; Fuji, 400 ASA; or Konica, 3200. Note: Film is designed for sunlight, not the auroral spectrum, so it may not produce the exact hues.**
  - **Expose each photo 1 – 30 seconds – the shorter, the better due to auroral movement. Experiment by shooting several exposures at varying rates.**
  - **Wind your film slowly to prevent static electricity, which can produce streaks on your film. Ground your camera to a large metal object.**

