NATURE DETECTIVES

SUMMER 1994

TWINKLE, TWINKLE, LITTLE STAR, HOW I WONDER WHAT YOU ARE! UP ABOVE THE WORLD SO HIGH, LIKE A DIAMOND IN THE SKY. WHEN THE BLAZING SUN IS GONE, WHEN HE NOTHING SHINES UPON, THEN YOU SHOW YOUR LITTLE LIGHT, TWINKLE TWINKLE ALL THE NIGHT. THEN

TWINKLE SO!

PULL OUT AND SAVE

THE TRAIL IN THE DARK THANKS YOU FOR YOUR TINY SPARK! HE D NOT SEE WHICH WAY TO GO IF YOU DID NOT

TWINKLE, TWINKLE!

Star light, star bright! We see more than stars at night! The moon, the sun, planets, and stars! What are all these heavenly bodies? Stars are huge globes of hot gas. They stay in one place and send their light and heat into space. Did you know that the sun is a star, and only a medium-sized one? It looks bigger than other stars because it is the closest to the earth - only 93 million miles away! The sun is close enough for us to feel its warmth. It is close enough to give us daylight and drown out the light from more distant stars. That is why we see other stars only at night.

A planet moves around a star. The word planet comes from the Greek word for wanderer. Earth is a planet. It orbits the sun, along with eight other planets - Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.

A moon orbits a planet. The Earth has a moon as do six of the other planets in our solar system. Our moon has no light of its own. Moonlight is really sunlight that shines on the moon. And sunlight is really starlight!

For thousands of years people have studied the stars. They have named them and noted how their positions in the sky change with the time of night and with the seasons. Look up into the sky and start getting to know the stars!

YOU ARE MY SUNSHINE

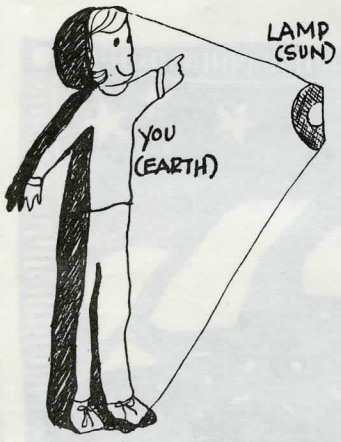
In ancient times people worshipped the sun. Somehow they knew how important the sun is to life on Earth. They could feel its heat in summer and watch plants eager to grow toward it. They suffered the chill of winter and saw the plants die back. Indeed, without the sun there would be no life on Earth. Plants need heat and light from the sun in order to grow. Animals not only need plants for food, but also the oxygen that plants release during photosynthesis.

The sun also affects nature in other ways. As air is warmed by the sun it rises. Cool air rushes in to take its place and we feel this as wind. The sun causes moisture to evaporate from the Earth's surface. This in turn falls back to the Earth as rain or snow. And the sun gives us day and night as well as the four seasons.

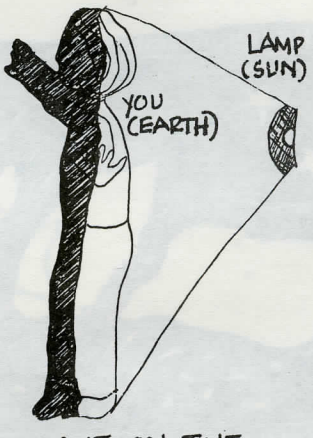
DAY AND NIGHT

We say the sun rises and sets. But really, the sun doesn't move at all! It is the Earth turning which moves one side of the Earth towards the sun, where it is then day, and the other side of the Earth away from the sun, where it is then night. Every 24 hours the Earth revolves once around its axis (a line that joins the North Pole and the South Pole with the center of the Earth).

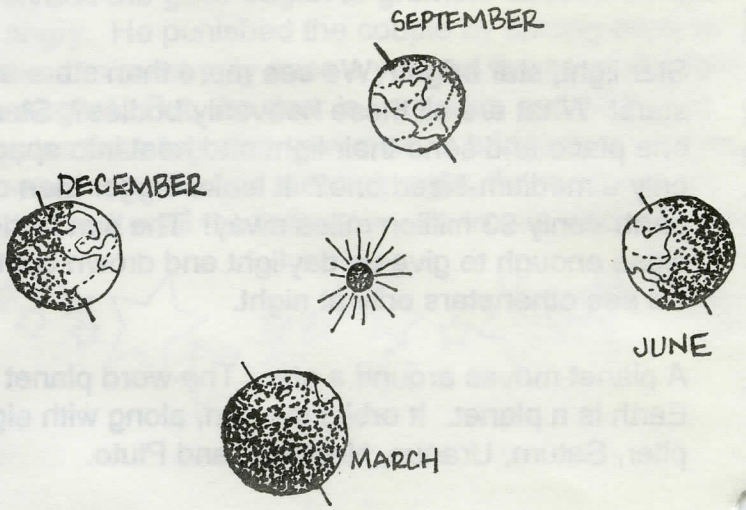
Pretend you are the Earth and a lamp on the table in front of you is the sun. It is daytime on the front side of your body and nighttime on your back. As you slowly turn around, your front moves into night and your back moves into day. Or another way to say it is the sun is setting on the front side of your body and rising on your back!



DAY ON THE FRONT SIDE OF YOUR BODY



NIGHT ON THE FRONT SIDE OF YOUR BODY



SEASONS

Next time you look at a globe in your classroom at school or at home, notice how it is tilted on its stand. That is because the axis of the earth is tilted in relation to the sun. As the Earth makes its year-long jouney around the sun, it is this tilting which makes the four seasons.

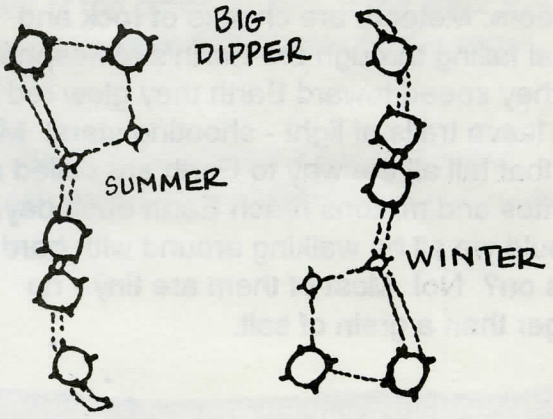
In June, the northern half of the Earth, or Northern Hemisphere, is tilted toward the sun. It therefore gets more sunlight and warmth than the Southern Hemisphere. So it is summer north of the equator (an imaginary line around the middle of the earth) and it is winter south of the equator. In December, the Northern Hemisphere leans away from the sun and it is winter there. The Southern Hemisphere now tilts toward the sun and has summer. In September and March, sunlight is shared equally between the Northern and Southern Hemispheres because the Earth's tilt is sideways in relation to the sun. Half of the Earth has spring while the other half has autumn.

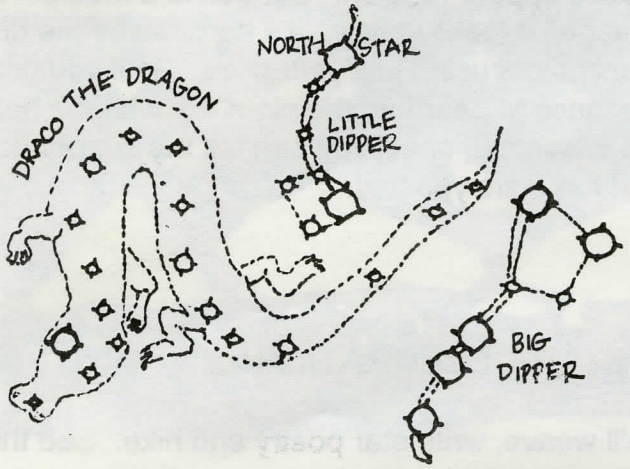
IN THE DARK BLUE SKY YOU KEEP, AND OFTEN THROUGH MY CURTAINS PEEP, FOR YOU NEVER SHUT YOUR EYE, TILL THE SUN IS IN THE SKY.

THE STAR THAT DOESN'T MOVE

When you look up into the night sky, Polaris, the North Star, is always in the same place. The Navajo Indians call it "the star that doesn't move". The North Star is directly over the North Pole. As the Earth rotates, other stars seem to move through the sky, but Polaris stays put.

Polaris is the end star in the handle of the Little Dipper and the Big Dipper's two largest bowl stars point directly to it. In the summer you can see the handle of the Big Dipper pointing down and in the winter it points up. Both of the dippers can be seen in the bear constellations. They are called Ursa Major and Ursa Minor, meaning Big Bear and Little Bear. According to Greek legend, Zeus pulled the bears into the sky by their tails.





Near the Big Dipper and winding halfway around the Little Dipper is Draco, the dragon. This constellation contains over 80 visible stars and stands almost directly overhead early in the summer evenings. Draco, according to legend, was the dragon that Hercules killed in order to steal golden apples.

AS YOUR BRIGHT AND TINY SPARK LIGHTS THE TRAVELER IN THE DARK, THOUGH I KNOW NOT WHAT YOU ARE,

CELEBRATING STARS

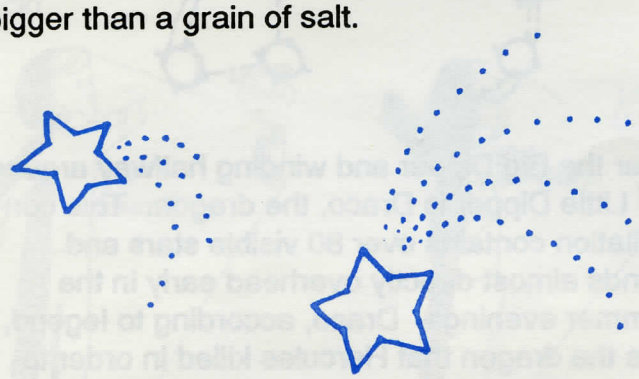
Every August in Japan there is a Star Festival called Tanabata. The celebration is based on this story about the stars:

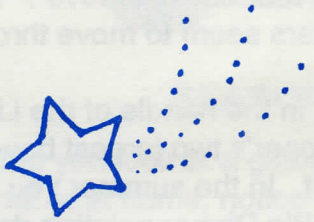
The Celestial Emperor named Tentei and his daughter lived on the eastern side of the Star River (the Milky Way). The daughter was always busy weaving cloth for the gods that lived in her father's house. Because she sat at her loom day and night, she was known as Shokuho or Weaving Girl.

When Weaving Girl was old enough, she was married to Kengyu the ox puller. He ruled the east side of the Star River where he pastured his ox. The two fell so deeply in love that they no longer took care of the ox or wove cloth. The ox grew thin and the gods began to grumble about their lack of clothing. This made Weaver Girl's father very angry. He punished the couple by forcing them to live on opposite sides of the river. They were allowed to meet only once a year on the seventh night of the seventh moon, which usually occurs late in August. But, the river is very wide and no bridge crosses it so when the meeting night arrives, magpies flock together and make a bridge that Weaver Girl can walk across to meet her husband. If the weather is bad on meeting night, the magpies are unable to build the bridge and the couple is forced to wait until the following year to see each other.

FALLING STARS

Falling stars aren't really stars at all - they're meteors. Meteors are chunks of rock and metal falling through the Earth's atmosphere. As they speed toward Earth they glow red hot and leave trails of light - shooting stars! Meteors that fall all the way to Earth are called meteorites and millions reach Earth each day. Should we all be walking around with hard hats on? No! Most of them are tiny - no bigger than a grain of salt.





RED! ORANGE! YELLOW! BLUE!

The color of a star tells you how hot it is. Very hot stars have a blue-white tint, while the coolest stars appear reddish. Our sun is a medium-hot star so it looks yellow. It's hard to see the different colors using just your eyes. So if you get a chance to peer into the night sky with the help of a telescope, see if you can tell the temperatures of the stars you find.

NATURE DETECTIVES: STAR CELEBRATION!

Celebrate Tanabata with the Nature Detectives! We'll weave, write star poetry and hike. See the Discover calendar for details.

TWINKLE, TWINKLE, LITTLE STAR, HOW I WONDER WHAT YOU ARE! TWINKLE, TWINKLE! ★★★

Boulder County