

Contents

A Productive Partnership.....	3
The Whys of Weather	6
Charged Up for Dinner	8
Disease Hunters.....	10
The Road to Discovery	12
Getting the Bugs Out.....	14
Earth's Special Shield	16
Roaming the Red Planet.....	18
Exploring the Desert	20
The ABCs of Trees	22
A Wealth of Knowledge	24
Putting the Sun to Work	26
Tracking Your Thirst	28
A Quick Look at the Atom	30
Our Colorful World.....	32
Waves of Fury.....	34
Surviving Space Travel	36
All in the Genes.....	38
Riding on Air	40
Chips Off the Old Block	42
Don't Drink It!	44
A Critical Challenge.....	46
The Fuss About Fusion	48
The Expanding Universe	50
The Roots of Rust	52
Carrara's Claim to Fame	54
The Science of Sound	56
A Man Who Wouldn't Be Derailed	58
The Baby Detective	60
A Well-Kept House.....	62
Glossary.....	64



Tracking Your Thirst

It's a hot summer day and you've just been out mowing the lawn and working up a good sweat. Nothing would taste better than a tall, cool drink of water. But have you ever wondered why you feel this way? When you get thirsty, your body is telling you it needs to replace the fluids you have lost.

Our bodies are up to 75 percent water and need certain amounts of water and salt in order to work properly. Too much or too little water or salt can damage and destroy cells. The amount of water and salt inside and outside the body's cells must be balanced. A part of the brain stem called the hypothalamus (HY•poh•THAL•ah•mus) detects this balance. The hypothalamus responds to changes in the amount of salt in the blood. When the amount of salt in the blood is high, the amount of water is low. The hypothalamus responds to a shortage of water by sending a signal to the brain. That is the feeling you get when you are thirsty.

Hypothalamus sends a signal to the brain to create feeling of thirst

Messages stimulate hypothalamus

Spinal cord carries water shortage messages to hypothalamus

THE PROCESS OF THIRST

It's important, however, not to let yourself get too thirsty. By that time, you are probably way too low on water. It's also important to



remember that our bodies can lose just as much fluid in cold weather as they do in hot weather. You sweat just as much in the cold, but you may not realize it because the sweat evaporates rapidly or is absorbed by heavy layers of clothing. A recent study found that your body does not get as thirsty in the cold weather because when the body senses cold air, the blood vessels constrict. Blood is then pushed to the body's core to preserve heat. The extra blood in your trunk fools the hypothalamus into thinking the body has enough fluids even when it does not. So it's important to make sure you get enough to drink when the weather is cold.

Water helps to regulate our body temperature and also transports oxygen and nutrients throughout our bodies. Colds and flu can lead to *dehydration*, so it's important to drink as much water as you can when you're sick so your body can replace the fluids it has lost and heal properly.

You also want to remember not to drink your water too fast. It's best to take small, frequent sips. Why not enjoy every minute of refreshment that you can?

