OZARK ADVENTURE

SPONSORED BY FANTASTIC CAVERNS SCIENCE RESEARCH PROGRAM

Fantastic Science Saturdays

Fantastic Caverns has teamed up with **Mad Science** to present **FANTASTIC SCIENCE SATURDAYS** during the month of June. The day-long adventure will cover areas of learning that include dinosaurs & mastodons, archaeology & paleontology, Native American history & learning games and the popular CSI: Fantastic Caverns program.

Visiting students will participate in Mad Science and Fantastic Caverns Science Research Program activities each Saturday throughout the month of June, 2009. The combination of these innovative programs will prove to be a unique addition to your summer activity schedule. Attributes of each program are designed to be highly-interactive, educational, age-appropriate and fun.

FANTASTIC CAVERNS SCIENCE RESEARCH PROGRAM

<u>Registration Information</u> is available at:

Mad Science of Southwest Missouri (417) 890-6237 or on-line at www.madscience.org/swmo

Keeping It Clean!

Visitors to America's caves expect to see natural beauty, unscathed and protected. Most people stopping to see a cave do not understand the enormous amount of work it takes to keep a cave system protected and beautiful. There are influences on a cave that come from both outside and inside the cave. Some of the most common factors that take away from a pretty cave are dust and lint. Several large, well-attended cave attractions actually spend weeks each year collecting lint from inside the cave. Where does the lint come from? PEOPLE! That's right. When we go inside a cave, we take with us tiny particles of dust and lint from the outside. We even leave skin cells and hair when we tour a cave. The amounts from each person are minute, but when there are thousands of tourists through a cave in a single year, these tiny deposits add up in a hurry.

Some of the most popular caves in the country are within our National Parks System. Mammoth Cave National Park (www.nps.gov/maca), located in central Kentucky, has over a 400,000 visitors tour the cave each year. (Continued)

Waynesburg College (Waynesburg, PA) lint crew in the Historic Section of Mammoth Cave. Photo by Rick Olson, Mammoth Cave National Park, KY.

As you can imagine, this many people will create quite a pile of lint. Each year, volunteers & staff at Mammoth Cave host "Lint Pickin' Days" in the cave.

The group will actually follow the tour trail through the cave and clean up the small deposits of lint found there. They will use tools that range from tweezers and brooms to double-sided tape and vacuum cleaners with HEPA (High Efficiency Particulate Air) filters to collect the debris. These special filters catch very small particles of dust and lint and prevent them from being scattered in the cave. Cave staff and volunteers also participate in special "Don't Mess With Mammoth" weekend projects that collect trash from area sinkholes and dumps. By doing this on a regular basis, Mammoth Cave National Park is kept looking natural for future visitors to enjoy.

Another example of the hard work that goes into keeping a cave pretty is at Fantastic Caverns (www.fantasticcaverns.com), near Springfield, Mo. Here, visitors travel through the cave on tour trams with little opportunity to actually touch formations. Yet, the cave formations inside this natural, limestone cavern can get dirty. This is a result of air-born dust particles that collect on the damp (continued) formations. The dust builds up in little lines that kind of look like worms.

To clean the cave, employees use a portable pressure washer. They will start at the beginning of the tour and begin washing everything in sight. Stalagmites, columns, stalactites, flowstone, floors and ceilings all get this special treatment! Because of the immense size of the cave, it will take the clean up crew over a week to clean passageways that are visited by tours.

Volunteers from Trinity Christian College (Palos Heights, IL) participate in annual "Don't Mess With Mammoth Days" cleanup event. Photo by Rick Olson, Mammoth Cave National Park, KY.

Before **After**

Formations shown before and after cleaning.

Cave staff at work pressure cleaning dust and lint from formations.

Once in awhile, a cave will need cleaned up in a much more serious way. Since caves are hidden away beneath the earth, people sometimes don't realize just what kind of influence they can have on this underground world. Things we do on the surface often have terrible consequences in the caves below us. One of the longest and hardest cave cleanings took place in the town of Horse Cave, Kentucky. This is the town where Hidden River Cave (www.cavern.org) is located. For many years, sewage from the area seeped into (continued)

the groundwater system. This is common in karst areas; areas known for many caves, springs and sinkholes. As time passed, the water flowing through the cave system was polluted by the sewage. Methane gas even developed in explosive concentrations and the town could no longer use the underground river for their water supply.

Cleaning up this cave was a major project. First, the source of the pollution had to be stopped. This meant fixing existing sewer lines and building new ones to stop the flow of pollution into the ground. Next, there were algae
levels and silt in the cave stream that had to be removed before the water in the underground river could support life.

Today, success! The stream flowing through Hidden River Cave once again supports cave life and is toured by visitors to the American Cave Museum (www.cavern.org) located above the entrance. Here, people from around the world have learned lessons on how to not only clean up similar problems in their communities, but more importantly, how to avoid them.

CAVES ARE WARM!

Temperatures in caves stay about the same all year long. A cave's temperature is *approximately* the same as the average annual temperature in the region where it is located. For example, caves in the northern portion of the Ozarks have an average temperature of 56 degrees, according to "The Wilderness Underground: Caves of the Ozark Plateau," by H. Dwight Weaver. In the southern Ozarks the average temperature is near 60 degrees. Thus, cave temperatures vary from region to region. Winter is heating up as a vacation season in the Missouri Ozarks, and with the region becoming a year-round leisure destination; a cave is a perfect place to come in out of the cold.

At **Fantastic Caverns**, in the heart of the Ozarks just north of Springfield, Missouri, the temperature is a comfortable 60 degrees throughout the year, regardless of the weather outside. Warm during the winter -- cool during the summer. At the **Cave of the Mounds** in Blue Mounds, Wisconsin, the average temperature is about 50 degrees. It's near 53 degrees in **Wind Cave** at Hot Springs, South Dakota, and at **Skyline Caverns** in Front Royal, Virginia, the mercury stays in the mid-50s. **Kentucky Caverns** in Horse Cave, Kentucky, hovers between 58 and 60 degrees. **Lake Shasta Caverns** in O'Brien, California, averages 58 degrees. But in warm south Texas, the average reading in the **Caverns of Sonora** is 71 degrees. Caves by their nature are humid places, and the 98 percent relative humidity in Caverns of Sonora makes it feel like the temperature is a sultry 85 to 90 degrees!

2009 SUMMER DISCOVERY

The **2009 Summer Discovery Program** will allow students to experience a time when Native American children learned, played and lived. This 90-minute, special educational program is designed to meet classroom instructional goals. It includes a visit to the outdoor classroom (near the cave entrance) and the all-riding educational cave tour.

Visiting student groups will participate in a simulated archeological dig, excavating and identifying artifacts once used by Native Americans, both before and after the arrival of settlers and explorers. Students will also take part in a variety of Native American games. Some are familiar, while others will seem new. Native American children played games for fun, and to develop skills and training useful for hunting, stalking, weapon use, fitness, agility and powers of observation…all necessary skills needed to grow up in their culture. Summer Discovery is a special tour available at 10 AM and noon every day from June 1 through November 25, 2009.

STUDENTS ARE IMPORTANT!

FANTASTIC CAVERNS SCIENCE RESEARCH PROGRAM

At Fantastic Caverns, students are important. This issue (Spring 2009) of *Ozark Adventure* is available on-line to thousands of classrooms around the globe. While producing this on-line magazine a huge undertaking for a small family business, understanding caves & springs is important. Taking care of these natural resources will keep the Ozarks a wonderful place for future generations to live and visit. Check the "Education" tab of our website for previous issues of *Ozark Adventure*.

This magazine is sponsored by the Fantastic Caverns Science Research Program.

Spring 2009 WORD SEARCH

Find These Vocabulary Words!

R	E	D	R	L	D	Q	A	S	H	L	E	V	I	T	A	N
M	Y	D	N	L	Y	G	M	Y	E	D	I	S	N	I	K	F
E	T	K	I	T	A	T	S	I	T	N	E	I	C	S	H	O
R	L	O	M	S	B	N	I	K	D	V	R	J	W	L	T	M
U	C	N	U	Q	T	S	O	I	N	R	T	N	Z	T	T	G
T	K	L	V	R	N	U	S	I	G	L	A	T	W	O	R	V
A	R	T	A	I	I	C	O	C	T	C	G	Y	D	K	E	M
R	A	S	K	S	O	S	M	C	I	A	T	O	G	P	R	Q
E	Z	S	U	V	S	A	T	R	J	I	C	L	M	N	U	T
P	O	K	E	M	G	R	E	E	D	Q	V	U	F	C	T	S
M	V	R	J	A	M	M	O	I	Y	T	R	B	D	D	N	U
E	Y	F	Z	T	A	E	M	O	T	D	N	D	R	E	E	O
T	Y	I	M	C	Z	U	R	Z	M	A	Y	I	T	G	V	M
J	N	B	W	K	H	E	V	A	C	M	V	L	L	R	D	R
E	R	E	E	T	N	U	L	O	V	T	R	M	Z	E	A	O
S	Y	R	T	L	U	S	M	T	W	K	F	D	E	E	R	N
T	N	E	M	I	R	E	P	X	E	I	M	A	D	L	F	E

ADVENTURE
AMERICAN
CAVE
CLASSROOM
DEGREE
DISCOVERY
EXPERIMENT
EDUCATIONAL
ENORMOUS
HUMIDITY
INSIDE
LINT
MAD
MAGAZINE
NATIVE
OUTSIDE
OZARK
SCIENTIST
SKIN
SULTRY
SUMMER
TEMPERATURE
TOURIST
VOLUNTEER