

# Kid's KOrner

## Spectacular sinkholes are earthmoving experience

When the thirsty earth takes a giant gulp, it can swallow up trees, highways, businesses, houses, and automobiles — leaving a yawning sinkhole behind. But nature is not totally to blame for sinkholes; often man has a hand in digging them.

Like tornadoes and hurricanes, sinkholes can appear without warning and destroy lives and property. Not an uncommon occurrence in limestone-based regions, sinkholes have been increasing as man's thirst for water depletes the vase underground store.

Tremendous quantities of ground water are being pumped to meet the demands of a growing population and the expansion of irrigated farming, mining, and industry. Further aggravated by the drought affecting more than 40 states, the underground water table in some regions is reaching precariously low levels.

Sinkholes occur in regions underlain with water-soluble rock formations such as limestone and dolomite, where water percolating down through the porous rock over the centuries has carved away subterranean tunnels and caverns.

If the rock is covered with a vulnerable material such as clay or sand and the water table falls below the top of bedrock, the earth can collapse into the cavities.

"The buoyant support that water provides to the land above is lost," said John Newton, hydrologist with the U.S. Geological Survey in Tuscaloosa, Ala. "Suppose we were floating in a swimming pool and the water was removed suddenly. We'd fall and injure ourselves."

Numerous states are plagued with sinkholes, including Georgia, South Carolina, Tennessee, Kentucky, Maryland, Missouri, and Minnesota. Pennsylvania was the site of a large number in the 1950s, but Florida and Alabama have experienced the most sudden and devastating of the recent "sinks."

The giant sinkhole that began forming May 8 in Winter Park, Fla., left a gaping hole larger than a football field and more than eight stories deep. It collapsed gradually during the night and the following day and created more than \$2 million of property damage.

Other sinkholes have formed in central Florida since the big one at Winter Park. Scientists believe several of these are along the same geological formation — indicating that a fracture zone in the subsurface limestone may be widening.

Enlargement of fracture zones is caused by pumping, when a conical depression is created in the water table where the pipes are

drilled. Water surrounding this "cone of depression" accelerates as it descends, and the increased velocity permits the water to pick up more soil and other material. This underground erosion in bedrock leaves cavities that can grow and eventually collapse.

One of the most spectacular subsidences of this type was the collapse of the "December Giant" in 1972 in Shelby County, Ala. The earth caved in with a terrifying roar and mature trees crashed behind. The void — 350 feet in diameter and 125 feet deep — is now one-third full of water.

Fortunately, the collapse took place in the countryside, but houses in nearby settlements were shaken and residents said it sounded like a tornado. But the

noise ended abruptly and they looked outside to clear skies.

Known locally as the "Golly Hole," the sinkhole swallowed a quarter of a million square yards of earth and broken trees, Newton said. He thinks the entire amount of lost earth may have funneled through a large opening in a fault or fracture.

The Golly Hole was one of 13 sinkholes that formed along the same fracture in the subsurface limestone as the water flowed toward a cone of depression, Newton said.

Anticipating where these sinks may occur is one objective of a year-long assessment of sinkhole activity by the U.S. Geological

Survey. Newton, who has conducted a detailed inventory of sinkholes for Alabama, is in charge of the survey for the eastern half of the country.

"Our ultimate goal," he said, "is to define what happened and is happening — the specific forces involved with sinkholes in different areas. Then we'll be able to provide reports to the people who have to deal with sinkholes — lawmakers, engineers, waterworks superintendents — and prescribe ways to prevent them, minimize their damage, or repair them more successfully."

Meanwhile, those who live in active sinkhole regions accept them as part of nature's unpredictability.

## Feed your foal correctly

A foal receives its basic physical characteristics from its sire and dam, but it is only through proper nutrition and education that it can develop to the full extent of its inherited potential.

Growth is the basic foundation of horse production. Horses can't perform properly or possess the necessary speed and endurance if their growth has been stunted or their anatomy injured by improper nutrition in early life.

The feeding program for the first 18 months of a foal's life is the most important of its lifetime, says Dr. C. M. Reitnour, equine specialist at the University of Delaware. After a horse has reached maturity, its proper ration could be neglected inadvertently for short periods, then corrected later with no serious after-effects. But this is not true if the neglect occurs during the maximum growing phase.

Milk from the dam gives the foal a good start in life. For rapid growth, greatest skeletal development, most desirable weight for age, and external appearance, foals should be placed on supplemental feed two or four weeks after birth.

Early supplemental feeding is important because the mare's milk declines in quantity and in the percentage of certain nutrients following foaling. However, individual mares differ in the quantity and quality of their milk.

A supplemental feed mix should contain ample protein, energy, vitamins and minerals. When a foal is consuming about two to three pounds of concentrate per day, it's taking a nutritional load off its dam. With this system of care management, the foal becomes less dependent on its dam, which makes weaning easier.

By weaning time, the foal's ration should be increased to about 3/4 lb. or more per 100 lbs. of live weight per day. The exact amount may vary with the individual, the type of feed, and the desired development.

Properly cared for, a foal will normally attain about 60 percent of its mature weight during the first year. A good foal ration should include rolled oats, cracked corn, soybean meal, brewer's yeast, molasses, dicalcium phosphate, salt, and vitamins.

## COLOR THIS!

- |           |              |
|-----------|--------------|
| 1. BLACK  | 6. PEACH     |
| 2. RED    | 7. GREEN     |
| 3. YELLOW | 8. LT BROWN  |
| 4. BLUE   | 9. LT BLUE   |
| 5. BROWN  | 10. LT GREEN |

THE LION LIVES IN AFRICA AND IS A MEMBER OF THE CAT FAMILY. IT IS OFTEN CALLED "THE KING OF BEASTS" BECAUSE OF ITS POWERFUL BODY, LOUD ROAR AND KINGLY LOOK. IT IS VERY EASY TO TELL A MALE FROM A FEMALE. THE MALE HAS A HEAVY MANE ON ITS NECK. LIONS ARE MEAT EATERS FEEDING ON ZEBRAS AND ANTELOPES. THEY DO THEIR HUNTING MOSTLY AT NIGHT.

