

MAGS EXPLORER



Memphis Archaeological and Geological Society Youth Newsletter

April 9, 2004 • Volume 3, Number 04

Meteorites and Tektites

MIKE BALDWIN-One of the grand prizes at the 25th Annual Mid-America Mineral, Fossil, Jewelry Show (April 24-25) will be the meteorite pictured on this page. Exactly what is a meteorite? Read on to find out.



During clear nights, if the sky is dark enough, you may see needle-like streaks of light cutting across the sky. Anywhere from one to a dozen or more may be seen in an hour. They have been called shooting stars and falling stars, but the objects that make up

these trails are actually bits of ice, stone or iron from outer space. When one of these bits falls into our atmosphere the effect it produces is called a **meteor**.

The terms **meteor**, **meteorite** and **meteoroid** are confusing to many, and with good reason. They all refer to the same object, but under different circumstances. Let us first examine the origin of these terms. The word **meteor** comes from the Greek word meteoron, meaning astronomical phenomenon, or something in the heaven above. This meaning can be understood when considering that meteorology is the science dealing with the atmosphere and its phenomenon. In its most literal sense, anything that occurs in the sky could be called a **meteor**, whether it be a thunder cloud, a supernova or a UFO. For the purpose of sanity, we shall confine its usage to small bodies which drift through space, fall into Earth's atmosphere, and sometimes reach the ground.

The meteorite pictured above will be given away at the Rock Show on April 25. On February 12, 1947 at 10:35 a.m. local time, a large meteorite weighing about 70 tons fell in the Sikhote-Alin northern range, a few hundred miles north of Vladivostok. The forest was laid waste over an area two miles long and one mile wide. The first scientific expedition to reach the site was led by Dr. E. L. Krinov.

[continued on page 2]

MAGS Explorer is published monthly by and for the youth members of the Memphis Archaeological and Geological Society. Please send your comments and articles to Editor Mike Baldwin, 367 N. Main St., Collierville, TN 38017 or rockclub@earthlink.net. Youth can give articles, artwork, poems, puzzles, experiments, or stories to co-editors Jennifer Baldwin, Emily Randolph, Kelly Baldwin, or Abbey Randolph.

Except for items that are specifically copyrighted by their authors, other societies may use material published in MAGS Explorer provided that proper credit is given and the sense or meaning of the material is not changed. ©2004 Memphis Archaeological and Geological Society.

Meteorites and Tektites

... continued from page one

A **meteoroid** is a small object, smaller than an asteroid or minor planet, drifting through space in orbit around the Sun (bits smaller than grains of sand are sometimes called **micrometeoroids**). A **meteor** is the effect produced as the **meteoroid** falls into our atmosphere and streaks across the sky. A glowing trail, sometimes called a train, is created to mark the path of the **meteoroid** as it falls. When a meteoroid, or a fragment of it, reaches the ground, it is called a **meteorite**. These may be found, dug up, held, and examined (The only way to hold a **meteoroid** is either to float in space or fall through the sky with it!).

Most **meteorites** are composed of rocky material, chiefly silicate. These are often called *stony meteorites*. They usually resemble terrestrial stones, although they are normally more dense, or heavy. *Stony meteorites* are rich in silicates but poor in metal and sulfides. The principle subclass of the *stony meteorites* are the achondrites. Some carbonaceous **meteorites**, another subclass of *stony meteorites*, might actually be fragments of comets.

Some **meteorites** are composed primarily of nickel-iron alloy. These are called *iron meteorites*. They are made of iron and 5 to 15 percent nickel usually combined in a mixture, or alloy. There is often a small amount of cobalt or even smaller amounts of other elements. *Iron meteorites* usually have a pitted, brownish appearance when they are found because of rust from exposure.

A third type has nickel-iron alloy intermixed with silicate material. These are called *stony-iron meteorites*.

Micrometeorites, which are smaller than grains of sand, are difficult but not impossible to collect. They have been gathered on filters attached to aircraft flying in the stratosphere.

Micrometeorites also accumulate on the bottom of the deep ocean.

Tektites are silicate-based material associated with meteorite impacts. Their origin is not completely certain. At first glance they resemble volcanic rock. However, a closer inspection shows that they have the appearance of small distorted globules of liquid rock which solidified during flight.

The name **tektite** is derived from the Greek *tektos* meaning "molten." **Tektites** have a range of shapes including tear drops, rods, disks, flanged buttons, and even dumb-bells. All of these shapes appear to be the result of solidifying in flight. Their colors range through black, brown, a kind of bottle-green, and they range in size from a walnut (or smaller) to an apple.

The origin of **tektites** could be explained by two basic processes. (a) They were terrestrial in origin and may be a result of volcanic activity. (b) They are a product of **meteorite** impact--either in the form of modified cosmic material or earthly material transformed by heat.

Current opinion favors the **meteorite** origin. **Tektites** smaller than 1 mm diameter, called microtektites, have been discovered in marine sediments of the South Pacific which date at approximately 700,000 years. These resemble the nearby Australian mainland **tektites**, lending support to the opinion of meteorite origin.

The areas where **tektites** are found are called strewnfields, referring to the way the objects appear to be scattered or strewn about.

REF: Meteoroids, Meteors, Meteorites and Tektites; Museum of Astronomical Resource Society; Tampa FL; <http://www.roamingastronomer.com/marsastro/meteors.htm>. *The information contained in this article is used for educational purposes under the provisions the the "Fair Use Act of 1976"*