Yellow Cat Area Glossary Terms

AGATE/AGATIZED: Agate is the most common variety of *chalcedony*, which is a form of *quartz*. *Agate* is, in fact, identical with *quartz* in composition and physical properties. Composed of silicon dioxide (SiO_2), it has a hardness of 7 to 9 on the MOH scale, a glassy luster, a conchoidal fracture, and a specific gravity of 2.60. It is formed from layers of *quartz* in a wide variety of colors and textures. *Agate* is a hard gemstone, it is formed by filling a cavity in host rock. As a result, this gemstone sometime is found in *fossils* such as *dinosaur bone*, *petrified wood*, *coprolite*.

ALABASTER: One of its composites is *Gypsum* and has a very fine grain and is usually white. Occasionally very light shades of pink, yellow and orange can be found. Alabaster is highly sought after for stone carving and sculpting.

ALGAE: grew in shallow waters along the shore of ancient lakes during the Cambrian period some 570 million years ago. This algae began growth on the bottom and then floated to the surface, buoyed by the oxygen that it produced. As the algae mixed with the calcium in the water, it sank to the bottom and great reefs were built up. Over the years the earth's surface rose and fell and the reefs were covered with several hundred feet of sand, silt and clay. In the eons that followed the algae was dissolved out and replaced a cell at a time by *silica* laden waters that seeped down through the soils. Through earth sifting and erosion, these algae beds would eventually become exposed and weather out.

ALLOSAURUS: was by far the most dominant *theropod* predator of North American during the late *Jurassic period*. Its remains are so abundant in Utah that this fierce dinosaur predator has been designated the official Utah state fossil. Swarms of these theropods pursued prey animals across the Morrison basin for millions of years during the late Jurassic. Allosaurus was the largest common *theropod*, some reaching 43 feet in length. Standing 8-9 feet tall at the hips, they weighed in at least 2 tons! The skull was approx. 3 feet long and was lightly constructed with numerous openings and hollow cavities. The many dagger-like teeth were positioned far forward in the jaw. The neck of Allosaurus seems to have been very powerful and quite flexible with a natural upward S-shaped curve. The vertebrae of the backbone had tall neural spines and horizontal transverse processes that suggest strong ligaments and powerful muscles.

The caudal vertebrae had shorter neural spines indicating a more circular tail. This tail helped counterbalance the body and facilitate changes in direction. The hind limbs of *Allosaurus* were massive. The feet had 5 toes, but only 3 of these supported any weight. The overall structure of the hind limbs, pelvis, and back would clearly enable this dinosaur to run efficiently. The forelimbs were small compared to the hind limbs. Each hand had 3 fingers with very sharp curving claws. With sharper teeth and a more graceful build, *Allosaurus* rivals Tyrannosaurus-rex as the supreme meat-eater of the Mesozoic.

AMETHYST: **is** the purple variety of *quartz*. Although it must always be purple to be amethyst, it can and does have a wide range of purple shades including purple, lilac and mauve. Ideally, it is a deep medium purple with rose-colored flashes that give amethyst its beauty and fire.

AMMONITE: are an extinct group of marine animals. They are excellent index *fossils*, and it is often possible to link the rock layer in which they are found to specific geological time periods. Ammonites are an extinct fossilized animal similar in structure to the snail. These sea faring squids built a chambered shell in which they would pump air into the empty chambers and float at different levels of the ocean in search of food. Ammonites lived approximately 400 million years ago.

ANGULAR: any *clastic rock* with sharp edges. Usually indicates recent mechanical weathering.

ANGULAR UNCONFORMITY: An angular unconformity separates younger strata from eroded, dipping older strata. Layers above and below an unconformity that have different oientations (see geologic unconformity).

ANHEDRAL: No visible external crystal form. Unfortunately, most mineral specimens are *anhedral*.

ANTICLINE: a fold that is convex up or to the youngest beds. On a geologic map, *anticlines* are usually recognized by a sequence of rock layers that are progressively older toward the center of the fold. The strata dip away from the center of the fold. If an anticline plunges (i.e., is inclined to the earth's surface), the surface strata will form *V*s that point in the direction of plunge. An *anticline* that plunges at both ends to form a circular or elongate structure is a dome. *Anticlines* are favored locations for oil and natural gas drilling; the fuel's low density causes it to migrate upward to the highest parts of the fold, until stopped by an impermeable layer.

APATOSAURUS: a relative of *Diplodocus* is one of the most familiar sauropods to many people because of the popularization of the old name *"Brontosaurus"*. This dinosaur approached 75 feet in length and weighed in at 35 to 45 tons. This *sauropod* had forelimbs that were a little shorter than the hind limbs giving it a slight forward tilt. The long neck had 15 vertebrae and the tail had up to 80 vertebrae. The skull of the *Apatosaurus* was elongated with tiny peg-like teeth. Even though the evidence for the *sauropods* being fully terrestrial, the placement of the nostrils on top of the head presents an intriguing puzzle. This dinosaur lived 150 million years ago during the late *Jurassic period*.

ARAGONITE: It is a widespread mineral, the stable form of *calcium carbonate* ($CaCO_3$) at high pressures. It may be distinguished from calcite, the commoner form of calcium carbonate, by its greater hardness and specific gravity. It and the mineral *calcite* are the two common, naturally occurring polymorphs of calcium carbonate. *Aragonite* is made up of translucent purple-pink-brown hexagonal or white needle crystals.

AUTHIGENIC: minerals are formed in sediment or a sedimentary rock. Their in-place origin distinguishes them from minerals that are formed elsewhere and transported to the site of deposition. Authigenic minerals occur in all sedimentary rock and can vary from trace amounts to virtually the total rock. Some of the most common types of Authigenic minerals include *calcite*, *celestite*, *barite*, dolomite, and *quartz*.

BAROSAURUS: is the largest of the 3 most common Morrison *diplodocids*, though it was less abundant. It was about 80 feet long and stood more than 14 feet at the hips. This dinosaur also had somewhat of a slender build. The most distinctive feature of Barosaurus was its extremely long neck, which comprised almost half of its length. The tail probably tapered to the whiplash tip typical of other *diplodocids*. A natural impression of this dinosaur's skin was found in eastern Utah and reveals skin that was knobby with many folds. This was a highly successful *sauropod* during the late *Jurassic period*. It had an enormous range from North America to Africa.

BARITE: Barite is often an accessory mineral in hydrothermal vein systems, but frequently occurs as concretions or cavity fillings in sedimentary limestone. It also occurs as a residual product of limestone weathering and in hot spring deposits. It occasionally occurs as extensive beds in evaporite deposits. It often is an accessory mineral to other minerals. At times bladed or tabular crystals of *Barite* form a concentric pattern of increasingly larger crystals outward. This has the appearance of a flower and when colored red by iron stains, these formations are called "Desert Roses". Because *Barite* is so common, it can be confused for other minerals. *Celestite* ($SrSO_4$) has the same structure as *barite* and forms very similar *crystals*.

BARITE BALLS/ NODULES: Barite usually replaced with black *Chalcedony* with red or yellow *Carnelian* centers. Some *barite* balls only show light colors but most show the radiating, crystalline structure of the original *barite* mineral in brilliant red or yellow colors.

BELEMNITES: Belemnites are an extinct group of marine cephalopod, very similar in many ways to the modern squid and closely related to the modern cuttlefish. They are bullet-shaped fossils which occur commonly in rocks of Jurassic and Cretaceous age (65-205 million years old). They can be found weathered out of *clays* and chalks in great abundance at some localities.

BENTONITE HILLS: These multi-colored rounded hills have been formed in the *Brushy Basin* member of the *Morrison Formation*. The rocks are composed of bentonite or smectitic clay from altered volcanic ash and weathering of primary silicate minerals. This suggests that volcanism was an active process in the area during Morrison time. Smectitic clays are considered swelling clays because they expand each time they are wetted, and contract each time they are dried. This creates the highly "cracked" or "popcorn" nature of the land surface and allows the *Brushy Basin* to erode relatively rapidly creating the rounded hills. When wet, the clay within this rock layer absorbs water and may become very slick and sticky. This makes vehicle travel almost impassible.

BLACK RIDGE: is located a few miles south of Moab. It is an area with lots of old worked out mines, some of them once being big producers of uranium. It was named Black Ridge because of the dark cedar and juniper trees that gave it a black, sinister look from a distance. It is about 3 miles long with an elevation of approximately 6000 feet. The top part of the ridge is the *Cedar Mountain formation* with the *Brushy Basin formation* just under it.

BONE CAST: Similar to a limb cast. After a bone was buried, it slowly rotted away, leaving a perfect mold of the bone. As the mold filled with ground water, minerals were deposited and left behind forming *agate* and creating a cast of the bone.

BRACHIOSAURUS: was one of the most immense land dinosaurs that ever lived on the earth. These gigantic sauropods had relatively long skulls with large bulging nostrils placed high on the face. Lining the entire margin of the jaw were chisel-like teeth. The 13 cervical vertebrae were highly elongated, giving the *Brachiosaurus* the longest neck of any dinosaur. The tail, in contrast to the neck, was short and strongly tapered. The front limbs were significantly longer than the hind legs. The limb structure, coupled with the animals' extremely long neck, gave the Brachiosaurus the appearance of an overgrown giraffe. This dinosaur also lived during the late *Jurassic period*.

BRECCIA: Breccia is derived from the Latin word for "broken," is typically a rock composed of angular fragments in a matrix that may be of a similar or a different material.

BROWN'S HOLE: is located southwest of Moab and is a large basin area covering several square miles. Once very active with uranium mining, now it's mostly private land with a few homes. In 1882 an old prospector by the name of Doby Brown settled there. He lived there for a short time and then moved on. The area was then named for him.

BRUSHY BASIN: 'Brushy Basin' is a member of the *Morrison Jurassic formation* in the Northern San Rafael swell area of Utah. Localities are known from northeast of Moab, west to the green River, south to the Dolores River, and even farther southwest to areas around the Henry Mountains. Its geology consists of multicolored mudstone, thin brown limestone and brown discontinuous sandstone. This area has most of the dinosaur bones found in the *Morrison formation* and the only known source of the very rare *Yellow Cat RedWood*. Formation colors; Reds and pinks common in main area and brilliant green with gray in area west of Arches. This is the source of most of the magnificent ***Carnelian "Redwood***". The wood is often found near the top of formation member in conjunction with gritstones, and thin conglomerates and at the base.

BURRO SEEPS: is a small drainage out in the Klondike Bluffs area of Little Valley, just a few miles North of Moab. A formation in the LaSal Mountains of southeastern Utah, it has been a favorite area for rock hunters for many years. Back in the 60's this used to be a popular spot for the moviemakers of California. There's still an old movie set out in the flats.

CABOCHON: 'Cabochons' or cabs for short, is a precious or semiprecious *gemstone* of convex or oval form. The *Cabochon* cut is a method of cutting gem-quality stones with a convex, rounded surface that is polished but unfaceted. The back of a normal cabochon-cut stone is flat, but it may be hollowed to lighten the color. Some cabs are laminated. This is a painstaking process in which several different stones are cut into slabs, then gluing the slabs together to create a cab of different stones. Some cabs are calibrated, meaning they are cut to a specific size and shape so they may fit certain settings. Other cabs are done freeform, in which the lapidary artist selects the size and shape.

CALCRETE: also called *Caliche* or *Hardpan*, it is a conglomerate of surficial gravel and sand cemented by calcium carbonate. It is formed on calcareous materials as a result of climatic fluctuations in arid and semiarid regions. *Calcite* is dissolved in groundwater and, under drying conditions, is precipitated as the water evaporates at the surface. Rainwater saturated with carbon dioxide acts as an acid and also dissolves *calcite*. *Calcrete* has several forms, thin, white crusts or rinds on individual pebbles and fillings in pores and crevices in soil or bedrock.

CALCITE: the most common form of natural calcium carbonate ($CaCo_3$), a widely distributed mineral known for the beautiful development and great variety of its crystals.

CALICHE: is a hardened deposit of calcium carbonate. This calcium carbonate cements together other materials, including gravel, sand, clay, and silt.

CAMARASAURUS: was a medium-sized sauropod, about 50 feet long and stood some 12 feet high at the hips. A mature adult weighed in at 25 to 30 tons. *Camarasaurus* remains are mostly found in the *Morrison formation* of Utah. The skull of *Camarasaurus* is fairly short and massive with large spoon-like teeth. The neck is rather short and thick compared to the *Diplodocus*. The tail is also short and relatively blunt. The forelimbs are longer than the hind limbs reflecting a nearly leveling of the back. The hind foot of *Camarasaurus* had 5 widely spayed toes, with the innermost having a large curved claw. The robust teeth were adapted to feed on very coarse vegetation. At least 3 species of *Camarasaurus* populated the *Morrison* plains of the late *Jurassic*.

CAMPTOSAURUS: is a most common and abundant *sauropod* dinosaur of the *Morrison formation*. Most are 15 to 18 feet in length and weigh approximately 2000 pounds. He has a beak-like snout and chewed his food with small leaf-shaped teeth. He had powerful hind legs with 4 large toes. It is believed that he spent most of his time feeding in heavy foliage.

CARNELIAN: is a light brownish-red to deep transparent or translucent red *chalcedony* is called Carnelian, which owes its red to color to hematite (iron oxide). It is a semiprecious variety of the silica mineral chalcedony. It is also the national gemstone for Norway and Sweden. Color types Orange/yellow and *Red Carnelian.* It is a close relative of Sard, which is browner in color and more opaque. The Greeks and Romans used *carnelian* in rings and signets.

CARNOTITE: Carnotite is a potassium uranium vanadate mineral. *Carnotite* is a bright yellow to lemon- and greenish-yellow that occurs typically as crusts and flakes in sandstones. Amounts as low as one percent will color the sandstone a bright yellow. In *Yellow Cat* the principal region of carnotite mineralization is the Salt Wash member of the *Morrison formation*. The high uranium content makes carnotite an important uranium ore and also radioactive. It is also a source of radium and vanadium. *Carnotite* is found in *sedimentary rocks* in arid climates. It occurs as disseminations in sandstone and concentrations around petrified logs.

CEDAR MOUNTAIN: The Cedar Mountain Formation is a distinct layer of rock that crops out in western Colorado and eastern Utah. It is made from sediments, such as sand and mud, which were altered into rock over geologic time. The original sediments were deposited mostly in rivers and on flood plains, as well as in small, seasonal ponds. The Formation is made up of five smaller sub layers, called members. From bottom to top these are: Buckhorn Conglomerate, Yellow Cat Member, Poison Strip Sandstone, Ruby Ranch Member, and the Mussentuchit Member.

CELESTITE: Celestite is a mineral consisting of strontium sulfate. The mineral is also known as **celestine** and is named for its occasional delicate blue color. *Celestine* is the approved name for this mineral. *Celestite* occurs as crystals, and also in compact massive and fibrous forms. It is mostly found in *sedimentary rocks*, often associated with the minerals *gypsum*, anhydrite, and halite.

CELLULAR STRUCTURE: The cells of the original bone are replaced cell by cell with mineral laden silica, leaving the *cellular structure* and perhaps even some DNA cells intact. These cells look like small "**blotches**" of various colors surrounded by matrix, which is the bone itself. The matrix is usually a different color than the cells. The vivid colors are determined by the minerals present during permineralization. The most prevalent mineral is iron, and that may color the cell structure black, red, pink, or maybe orange. When good gemstone quality dinosaur bone is polished, it brings out the details and colors of the cell structure, and becomes an excellent gemstone.

CERATOSAURUS: is not one of the common dinosaurs of the *Morrison formation*. An adult would reach the length of 20 feet and would have weighed over 1 ton. The skull was large, light, and narrow with about 60 teeth in the upper and lower jaws. He also had prominent horns on the nose and over the eyes. The hind limbs were long, massive, and probably heavily clad in muscle, making it well designed for speed.

CHALCEDONY: Chalcedony (kal SED' uh nee) is formed from Silicon dioxide, better known as quartz, and is one of the most abundant minerals on Earth (*quartz* makes up about 12% of the earth's crust). The term chalcedony is derived from the name of the ancient Greek town Chalkedon in Asia Minor, in modern English usually spelled Chalcedon. *Chalcedony* was a sacred stone of Native Americans. It has a compact fibrous structure, a fine splintery fracture, and a great variety of colors-usually bluish-white, gray, red, yellow, or brown. *Agate* is a form of *chalcedony*.

CHATOYANCY: Chatoyancy is the lustrous, cat's eye effect seen in some cabochon stones, like cat's eye, tiger's eye, and sometimes in other stones, like aquamarine. In chatoyancy, light is reflected in thin bands within the stone. Chatoyant stones are cut in cabochon to maximize the lustrous effect.

CHERT: Chert is a fine-grained silica-rich cryptocrystalline sedimentary rock that may contain small fossils. It varies greatly in color from white to black, but most often manifests as gray, brown, grayish brown and light green to rusty red.

Its color is an expression of trace elements present in the rock, and both red and green are most often related to traces of iron (in its oxidized and reduced forms respectively). Red *Jasper* is basically chert which owes its red color to iron inclusions.

CHINLE FORMATION: existed in the later stages of the *Triassic Period* approximately 220 million years ago. It consists of coarse sandstone and conglomerate beds between light colored shale. Colorful *petrified wood* and *dinosaur bone* are found in this formation.

CLASTIC ROCKS: Any fragment of rock debris, usually weathered from bedrock by mechanical processes. It refers to rocks formed from fragments of pre-existing *sedimentary rocks*. Clastic refers to rocks formed from fragments of pre-existing rock. *Clastic sedimentary rock* which are composed of angular to sub angular, randomly oriented clasts of other *sedimentary rocks*.

CLAY: Very fine grained clasts, often the result of chemical weathering. Can be sub-divided into two (2) separate varieties, which is important when trying to assign field names to the fine-grained *clastic sedimentary rocks*. There are many varieties of *Clay* the Mineral, but all share several characteristics. They are the product of chemical weathering, are very small (microscopic), and have basal cleavage. When clasts settle to the bottom of the water, they pile up in sub-parallel layers. *Sedimentary rocks* made from *Clay* the Mineral therefore have a distinct foliation, and are usually called claystone or shale.

CLAY SIZE: Any fine grained *clast*, but not necessarily with *basal cleavage*. They can be any shape: cubic, spherical, oblong, rounded, angular, whatever. Therefore, the *sedimentary rocks* made from Clay the Size may not exhibit *foliation*, and are usually called siltstone or mudstone.

CLEAVAGE: The ability of a mineral to split along parallel lines of weakness when broken, resulting in smooth, mirror-like breaks. Minerals can have 1, 2, 3, 4, or 6 directions of cleavage. If more than one (1) direction is present, the angle between the cleavage planes is an important diagnostic feature (such as "2 directions at 90°"). *Cleavage* is further defined based upon its quality, with such modifiers as "perfect," "good," and "poor" being used. The following are commonly accepted terms:

Basal cleavage: One (1) direction (mica, clay, graphite)
Cubic cleavage: Three (3) directions at 90° (galena, halite)

COELUROSAURS: The Coelurosaurs were a group of small, agile carnivores that evolved in the late *Triassic Period*, and persisted through the late *Cretaceous*. These dinosaurs were rather like miniature, streamlined, *tyrannosaurs*. They ranged in size from 2 to 18 feet, and have been called the jackals and hyenas of their time.

COLORS: The vivid coloring of some fossils is due to the mineral properties within the *silica*. This impure *silica* dissolved in moving groundwater may partially fill hollow spheroids and precipitate crystals to form colorful geodes, or it may cement loose sand grains together to form striking concretions and nodules. The mineral properties of the *silica* alone owes to the natural coloring of the fossils.

CONIFER/FIR: Any member of the division Coniferophyta, living and fossil gymnospermous plants that usually have needle-shaped, evergreen leaves and seeds attached to the scales of a woody cone. These dominated the Mesozoic, and provided the bulk of the food for plant eating dinosaurs. They are still abundant today with names like cedar, cypress, and pine.

CONCHOIDAL FRACTURE: Smooth, scalloped-shaped fractures common to *quartz* and other *silica*-rich minerals and rocks.

CONCRETION/NODULES: Mineral mass formed within another type of rock, often very different in appearance and composition. *Silica* and minerals dissolved in moving groundwater may partially fill hollow spheroids and fossil molds and precipitate *crystals* to form *geodes*, or it may cement loose sand grains together to form colorful *concretions* and *nodules*.

COPROLITE: 'Coprolites' are the fossilization of the excrement of organisms and are the rarest of all dinosaur fossils. They belong to a group known as trace fossils, which includes dinosaur tracks, regurgitalites (fossilized vomit), and cololites (coprolite trapped in the lower digestive tract).

COPROLITE GEMSTONE: Probably one of the most unusual gemstone is Coprolite, it is dinosaur dung that has become a gemstone. *Coprolite* is the *agatized nodules* of dinosaur excrement. The *Morrison formation* in Utah (laid down about 140 million years ago during the last of the *Jurassic period*) is a great location to find these *nodules*. Those found here are usually about 2 to 4 inches in diameter and about 8 inches long. On the outside they are rather nondescript brown rocks, but check their cross section and you find red, yellow and even blue agate.

CORAL: any of a variety of invertebrate marine organisms of the class Anthozoa (phylum Cnidaria) that are characterized by skeletons-external or internal-of a stone-like consistency. The term coral is also applied to the skeletons of these animals.

CRETACEOUS: The *Cretaceous Period* (144 to 66.4 million years ago) was a time of great inundation by shallow seas that created swamp conditions favorable for the accumulation of fossil fuels at the margin of land areas. It is usually noted for being the last portion of the "Age of Dinosaurs", but that does not mean that new kinds of dinosaurs did not appear then. It is during the *Cretaceous* that the first ceratopsian and pachycepalosaurid dinosaurs appeared. Also during this time, we find the first *fossils* of many insect groups, modern mammal and bird groups, and the first flowering plants.

CRYSTAL: Common term used to indicate any mineral which grew into open space and therefore was free to take its perfect external form. Three (3) terms are used to indicate the degree of *crystal* development.

1. Euhedral: A perfect external *crystal* form with all faces developed.

2. Subhedral: Some external *crystal* form is visible.

3. Anhedral**:** No visible external *crystal* form. Unfortunately, most mineral specimens are anhedral.

CRYSTAL GEYSER: is located on the east bank of the Green River approximately 4.5 miles downstream from Green River, Utah. It is a rare example of a cold water "soda pop" geyser caused by groundwater mixing with subterranean carbon dioxide under pressure. It erupts about every five hours, sometimes to a height of 150 feet or more. The geyser was created by an exploration well drilled circa 1940. At some time in the distant past, there was evidently a natural mineral spring at the site. It is also near the site of *Falcarius* dinosaur find, which has been named the Crystal Geyser Quarry.

CRYSTAL HABIT: Seven possible *crystal* systems are possible, and are based on the internal organization of the atoms.

CRYSTALLINE STRUCTURE: The external *crystal* form of a mineral (if visible) is a reflection of the internal arrangements of the atoms. This arrangement is one of the fundamental defining properties of a mineral, and is always constant at the atomic level (see *Crystal Habit*). The external form (forming a "*crystal*") is only evident if the mineral was allowed to crystallize in open space.

CUESTA: is a geological term, used to describe the ridges formed by gently tilted hard rock layers. Every cuesta has a steep slope, where the rock layers are exposed on their edges, called an escarpment or, if more severe, a cliff. Usually an erosion-resistant rock layer also has a gentler slope on the other side of the ridge called a 'dip slope'. The term derives from the Spanish word for 'slope'. It is an asymmetric ridge characterized by a short, steep escarpment on one side, and a long, gentle slope on the other. The steep side exposes the edge of erosion-resistant rock layers that form the cuestas. They are usually formed by erosion in plains areas underlain by gently dipping *sedimentary rock* layers. Cuestas have a more gentle dip than similar structures called *hogbacks*.

CYCADS: Cycads are an ancient group of seed plants with a crown of large compound leaves and a stout trunk. They are a minor component of the flora in tropical and subtropical regions today, but during the *Jurassic Period*, they were a common sight in many parts of the world. For this reason, the *Jurassic* is often referred to as the "Age of *Cycads*". The cycads plants bear a superficial resemblance to palms, although they are not at all related. *Cycads* have a habit similar to palms with a turgid trunk and a crown of leaves at the terminus. The trunk can vary from several centimeters in height to several meters. *Fossil cycads* from the Paleozoic (about 240 million years ago) have many characteristics similar to the cycads of the present time.

Apparently, during the *Triassic* and *Jurassic periods*, the *cycads* enjoyed an abundant distribution. They can be found in both the *Cedar Mountain* and *Brushy Basin Formations*.

DAKOTA FORMATION: The *Dakota Formation* consists of yellowish-orange sandstone and conglomerates that sits atop the *Cedar Mountain Formation*. It is considerably variable in thickness and in some places is completely missing so that the *Mancos Formation* sits directly atop the *Cedar Mountain Formation*.

Where it is missing, there is sometimes a thin gravel bed between *Cedar Mountain* and *Mancos* that suggests the sands were winnowed out by wave action.

DEER NECK MESA: A large mesa south of Moab in the shape of a deer head and neck. Located just north of the Big Indian mining district, which is rich in uranium, copper, and rattlesnakes.

DENDRITE: A *dendrite* is a crystal that develops with a typical multi-branching tree-like form. Dendritic *crystal* growth is very common and illustrated by snowflake formation and frost patterns on a window. Dendritic crystallization forms a natural fractal pattern. Some dendritic minerals provide the appearance of vegetative growths.

DINOSAUR BONE GEMSTONE: Dinosaur bone has long been used for ornamentation. When polished it shows many colors as well as cell structure. Dinosaur bone, as a gem is described as “jasperized” or “agatized” and is a popular gemstone used in jewelry. Of all the fossilized dinosaur bone, only about 2% is the very rare jasperized! Most agatized varieties are more common and therefore less expensive. *Moss agate* dinosaur bone is the exception. *Moss agate* dinosaur bone is found in very few locations making it rare and more expensive and very desirable for fine jewelry. The most important criterion for determining the value of ’*jasper*’ and '*moss agate*' *dinosaur bone gemstones* depends on their cell structure, color and rarity. In order to bring out the best in color and texture of our fine jasperized and agatized dinosaur bone gemstones, the stones are cut and polished to round or oval cabochons, or any other softly domed shape, depending on the raw material. Only the jasperized and agatized dinosaur bone gemstones that combine the best possible characteristics and are the most beautiful.

DIPLODOCUS: are named after Diplodocus, a well-known member of the *sauropods* family. All *Diplodocids* share some basic skeletal characteristics that are used to define the group and distinguish them from other sauropod dinosaurs. The skulls of *Diplodocids* are lightly built and relatively long and slender. They had elongated necks, bulky bodies and long tails that ended with a whip-like tip. These dinosaurs were very big and heavy, some 90 feet long and weighing up to 25 tons. *Diplodocus* was a large but relatively slender and lightly constructed sauropod. Full-grown adults may have attained a length of 70 to 85 feet, but only weighed between 13 and 17 tons. Like other *Diplodocus*, the skull was narrow and long, with pencil like teeth projecting forward from the front of the mouth. The shoulders were lower than the hips, which stood about 13 feet high. The extremely long neck provided easy access to the low plant life of the *Morrison basin*.

All they had to do was stand in one spot and swing their head from side to side. These creatures lived approximately 150 million years ago.

DISCRETE: hard, white nodules or lumps; thick, massive, rock-hard accumulations that cement gravel, sand, and fines of a sediment, producing a dense and impermeable layer that resembles fresh-water limestone. Such massive *caliche* layers (*calcretes*) are common in deserts at depths of a few centimeters to about 2 m.

DISCONFORMITY: A disconformity represents a time of nondeposition, possibly combined with erosion, and can be difficult to distinguish within a series of parallel strata.

DNA: Amber may turn out not to be the only potential source of dinosaur *DNA*. Scientists at Brigham Young University, in Provo, Utah, have reported finding *DNA* in cells of fossilized bones recovered from an underground coalmine. After two years of painstaking analysis and hundreds of unsuccessful attempts, a scientist at Brigham Young University has extracted the genetic material *DNA* from what he thinks are bone fragments of 80-million-year-old dinosaurs. The surprise was that the recovered *DNA* bore little or no resemblance to that of any modern animals. The bone fragments, possibly from a limb bone and a rib of a large animal, were found in a coal mine in eastern Utah. They were embedded in rock that is associated with dinosaur fossils when found in other Utah areas. It is likely that the bone fragments belong to a *Cretaceous period* dinosaur or dinosaurs.

DRYOSAURUS: was a relatively small dinosaur, ranging in length from 6 to 10 feet and would have weighed about 200 pounds. It had a small and delicate skull with small leaf - shearing teeth. It was a speedy little dinosaur with long well muscled hind limbs. The hind feet had only 3 toes.

FALCARIUS: The adult dinosaur walked on two legs and was about 13 feet long and stood 4.5 feet tall. It had sharp, curved, 4-inch-long claws. Falcarius dates to the Early *Cretaceous Period* about 125 million years ago, belongs to a group of dinosaurs known as therizinosaurs. The group includes feathered dinosaurs such as Beipiaosaurus that were found in southeast China in recent years.

Falcarius and Beipiaosaurus are about the same age and appear to represent an intermediate stage between deadly carnivores and later, plant-eating therizinosaurs. Several specimens have been found at the *Crystal Geyser* Quarry.

FLINT: Flint is also a variety of chalcedony. Flint is a hard, *sedimentary* cryptocrystalline silicate rock with a glassy appearance. Flint is usually dark-grey, blue, black, or deep brown in color. It occurs chiefly as nodules and masses in *sedimentary rocks*, such as chalks and limestone.

FIZZ TEST: Minerals containing calcium carbonate ($CaCO_3$) will generally react when exposed to any weak acid (usually hydrochloric acid (HCl), but even vinegar will work). Carbon dioxide (CO_2) is released and the mineral or rock literally "fizzes".

When doing the fizz test it is often necessary to scratch the rock (most, if not all, carbonates are relative soft) and make a small pile of powdered material (this increases the surface area).

FOLIATION: A visible layering within a *sedimentary* or metamorphic rock, usually the result of the parallel orientation of flat, platy minerals with basal cleavage. These can include *Clay* the Mineral (as in shale), or the various micas (in metamorphic rocks).

FOSSIL: Fossils (from Latin fossus, literally "having been dug up") are the mineralized or otherwise preserved remains or traces (such as footprints) of animals, plants, and other organisms. *Fossils* ' are usually heavier than the original item since they are formed entirely of minerals (they're essentially stone that has replaced the original structure). Most *fossils* are made of ordinary rock material, but some are from more exotic gemstone materials such as *agate*, *opal* and *jasper*.

GASTROLITH: gastroliths are in a nutshell "gizzard stones". These stones, which are found in, the gizzard of the organism help to grind food to pieces as the stomach muscle (gizzard) squeezes to and fro. *Gastroliths* or "stomach stones" are often found in the remains of *sauropods* indicating that these gigantic beasts swallowed the stones to help digest the foods that they ate. Appearance-wise, they have rounded edges and smooth polished surfaces, but they can only be called *gastroliths* when they are found in presence of reptilian remains.

GEOLOGIC UNCONFORMITY: Surface in rock that represents periods of non-deposition or erosion.

GEMFOSSIL: *dinosaur bone, coprolite, petrified wood* that has been fossilized in a hard *jasper, agate, quartz* or the very rare Yellow Cat Redwood are recognized as 'gemstones' or 'gemfossils'. This very hard fossil material can be highly polished and is desirable for making *cabochons* for fine jewelry settings. The 'jasperized' fossil gemstones are most sought after. However, 'agatized' specimens are also considered ***'semiprecious stones '***, although the jasperized fossils are regarded as the elite and are very rare.

GEMSTONE: 'gemstones' may be formed in single or multiple discrete *crystals* (such as diamond), in massive collections of microscopic crystals (cryptocrystalline) such as *jasper, agate, quartz, chalcedony,* or in amorphous (non-crystalline) masses such as *opal*. There are several classes of *crystal* structure based on symmetry of the resulting crystals and in addition, there are some organic materials (such as *dinosaur bone, petrified wood, coprolite*) that have been used traditionally as 'gemstone' or 'gemfossil' material**.**

GEODES: are geological rock formations which occur in sedimentary and certain volcanic rocks. *Geodes* are essentially rock cavities or vugs with internal *crystal* formations or concentric banding. The exterior of the most common geodes is generally limestone or a related rock, while the interior contains *quartz crystals* and/or *chalcedony* deposits. Other *geodes* are completely filled with *crystal*, being solid all the way through. These types of *geodes* are called *nodules*.

GRABEN: A graben is the result of a block of land being downthrown between geologic faults producing a valley with a distinct scarp on each side. "Graben" is the German word for "ditch.

GRYPHAE: also known as *Devil's toenails* are a genus of extinct oyster. They are bivalve fossils from the *Jurassic period*. Gryphaea fossils are common in many parts of the *Yellow Cat* area.

GREEN RIVER: probably got its name from heavy concentration of algae in certain areas, especially during summer months. It originates in Wyoming and flows south through the eastern half of Utah before emptying into the Colorado River just southwest of Moab. The Green River has carved out many canyons and eroded thousands of square miles exposing many great "rock hunting" areas.

GYPSUM: A widespread colorless, white, or yellowish mineral, $CaSO_4 \cdot 2H_2O$, used in the manufacture of plaster of Paris, various plaster products, and fertilizers. *Gypsum* is one of the several evaporite minerals. This mineral group includes chlorides, carbonates, borates, nitrates, and sulfates. These minerals precipitate in seas, lakes, caves, and salt flats due to concentration of ions by evaporation.

HOGBACK: a sharp-crested ridge with steep slopes on both sides, formed by the erosion of steeply tilted rock layers. *Hogbacks* are commonly formed along the eroded flanks of large, tightly folded anticlines and synclines.

JADE: Jade is the term applied to forms of jadeite and nephrite. These minerals are similar in appearance, but today it is jadeite that is considered the true jade and commands prices much higher than nephrite. Jadeite is a much more vivid green with finer translucency than nephrite.

JASPER/JASPERIZED: Jasper is an opaque, impure *Chalcedony*, traditionally thought of as red. It also comes in pinks, yellows, greens, browns, and grayish blues. Association with other minerals gives jasper nice bands and patterns. In the ancient world *Jasper* was a favorite gem. *Jasper* is usually named according to its pattern. Jasper gemstones come in red, brown, green, gray-blue, and yellow and a variety of other colors depending on their mineral composition. *Jasper* is found in Arizona, California, Utah and Wyoming. Jasper is an ornamental gemstone composed mostly of chalcedony, microcrystalline quartz, in association with other minerals, which give it color. *Jasper* was a favorite gem in the ancient world, and the name jasper can be traced back in Hebrew, Assyrian, Persian, Greek, and Latin. "Jasperized" Dinosaur bone, make rare gemstones used in some jewelry. Of all the fossilized dinosaur bone, only about 2% are the very rare jasperized! The "agatized" variety is more common and therefore less expensive.

JURASSIC PERIOD: In the Jurassic period (135-190 million years ago) the climate was tropical and wet. Unlike the *Triassic Period,* the land was flat and pitted with stagnant swamps, marshes and lakes. Around these foul smelling bogs, oozing with fetid and decayed vegetable matter grew tangles of luscious tree-sized ferns, palms, giant fig trees, luxuriant willows and primitive poplars.

Giant dinosaurs waded and splashed in the shallow water of sluggish, lazy rivers, meandering under the vegetation while swarms of huge insects buzzed in the humid atmosphere. Plants and animals woke one day to find their environment changed. They sadly discovered they had developed so far in one direction that it was impossible to cope with their new environmental conditions. This left them stranded with but one choice: to die and become extinct.

KOKOPELLI: is a prehistoric deity depicted in mysterious rock art over thousands of years in the southwestern U.S. Often drawn as a humpbacked flute player, this mystic being has survived in recognizable form from Anasazi times to the present. There is something appealing about Kokopelli, which fascinates all kinds of people.

LAPIDARY: 'lapidary′ is the art of cutting, polishing and engraving gems. Lapidary comes from the Latin word “lapis", meaning stone. Before the 1300s, most gems were cut as cabochons, and that art is still in practice today. The cutting and polishing of flat surfaces at specified angles is known as faceting. Diamonds, rubies, emeralds, and sapphires are popular faceted gems.

LIMB CAST: 'Limb Casts′ - nature's sculptures, are a form of petrified wood that are formed when a limb is buried and then decomposes leaving a hollow or mold of the limb. The mold is then filled with sediment that is usually composed of calcite, minerals, and *silica*. This hardens creating a colorful cast in the exact shape and texture of the mold. The vivid *colors* within these structures owes to mineral properties within the *silica* sediment.

MANCOS SHALE: The Mancos Shale overlies the *Dakota Formation*, although in some places it lays directly atop the *Cedar Mountain Formation*. The presence of marine invertebrate fossils indicates that the Mancos was deposited on the seafloor when North America was split in half by the Cretaceous sea.

METAPHYSICAL PROPERTIES: There is much folklore associated with the metaphysical properties of gemstones, minerals and fossils, usually beginning with Ancient Indigenous peoples who depended on Nature to assist them in life. To them everything in Nature was a part of the "Spirit" world. Everything, had consciousness and wisdom and it was believed that stones held certain energy to assist humankind, extending beyond the physical boundaries of the matter. Subtle energies of stones may indeed be able to gently nudge your 'vibration' to be in harmony with that which you want in your life, what the Indigenous peoples of the world had claimed all along.

MOGANITE: is described as an abundant new polymorph of *silica* occurring in *quartz* specimens. This mineral is a newly recognized species that may be quite abundant in nature, particularly associated with microcrystalline or cryptocrystalline quartz. It has a crystal structure closely related to that of *quartz*; essentially that of *quartz* twinned periodically on the atomic scale.

MORRISON FORMATION: The Morrison formation takes its name from the Town of Morrison, Colorado. Beneath the resistant sandstone caprock of the Dakota Group, the pastel-colored shale and sandstones of the *Morrison Formation* have been protected somewhat from erosion. The sediments that comprise the *Morrison Formation* are believed to have been deposited about 150 million years ago, during Late *Jurassic* time.

It has yielded a rich trove of dinosaur fossils, beginning with dinosaur discoveries made near Morrison in 1877. The *Morrison Formation* in the Colorado Plateau consists largely of interbedded conglomerate, sandstone, mudstone, and altered volcanic ash with relatively small amounts of marlstone, limestone, and claystone. All together, the Morrison contains *nine formally named members* on the Colorado Plateau.

MOSS AGATE: is a transparent to translucent agate containing inclusions of minerals that resembles moss and hence the name. Color range includes red, green, yellow, brown and brown-black.

MOSS AGATE DINOSAUR BONE: is fossilized dinosaur bone that that has been partially replaced by a rare agate that contains inclusions of minerals that resembles moss and hence the name, moss agate. Part of the cellular structure of the fossilized dinosaur bone is still in place, but the matrix, or webbing around the cells has been replaced with moss agate. This type of petrified dinosaur bone is found only in small areas of the *Morrison formation* where moss agate and dinosaur bone are both found, so it's found in very few locations, making it very rare. Moss agate can be found in other formations, but not with dinosaur bone.

ONYX: This is a striped, semiprecious variety of agate that has black and white alternating bands. Onyx is used in carved cameos and intaglios because its layers can be cut to show a color contrast between the design and the background. Onyx is one of the 12 stones mentioned in the Bible as adorning the breastplate of the high priests.

OPAL/OPALIZED: is a beautiful gemstone in various shades and colors. Opal has been a popular gem for many centuries and has a very interesting structure. The chemistry of Opal is primarily SiO_2 and varying amounts of water. Basically opals are simply a combination of silica and water. Or, to be more precise: Opals are a gel from silica, with varying percentages of water. The name opal probably is derived from the Sanskrit name for precious stone; upala. Today most precious opal comes from Australia with significant sources from Mexico and the Western United States.

ORNITHOLESTES: This moderate-sized theropod dinosaur lived in western North America in the late *Jurassic period*. The name means "bird robber", a reference to the notion that this animal routinely preyed on birds. Its teeth were large and it had a very powerful bite, along with long forelimbs and fingers, it may have grabbed its prey with a powerful lunge. It grew to about 6 to 7 feet.

PALEONTOLOGY: the study of fossils, deals with the remains or evidence of ancient animals and plants preserved in rocks. Only a very small fraction of life is recorded in rocks because *fossil* preservation requires a combination of favorable circumstances.

The (3) main conditions are: (the organism possesses hard parts such as bone, teeth, shell, woody tissue, etc.) (It escapes destruction after death.) (It is buried rapidly to retard decomposition).

PALM WOOD: A fossil wood, from the Oligocene period about 38 million to 23 million ago, that contains rod-like structures within the regular grain of the silicified wood. These can show up as dots, tapering rods, or continuous lines, depending on the angle of the cut. The rod-like structures are sclerenchyma bundles, or plant tissues, that comprise part of the woody tissue that give the wood its vertical strength. The best palm wood is found in Louisiana- it's their state fossil.

PALEOSOLS: ancient soils, soil formed long periods ago.

PETRIFIED DINOSAUR BONE: is the product of millennia-old fossilized bone (from dinosaurs!) in which the cellular contents have been replaced by quartz, agate, or in some cases rare gemstone material, leaving the cellular bone structure intact. The deserts of the American southwest (notably Utah) produced many *'dinosaur species* ' -'dinosaur bones' range in color from browns to black with splotches of red, blue and bright yellow.

PETRIFIED WOOD: ' Petrified Wood′ fossils formed during the *Triassic period* and Jurassic period by the invasion of minerals into cavities between and within cells of natural wood, usually by *silica*, calcite or in some cases rare gemstone material. The petrified forests of the western United States are silicified woods, the tree tissues having been replaced by *chalcedony*.

PETRIFIED WOOD GEMSTONE: petrified wood when polished shows many colors as well as cells of natural wood fiber. Petrified wood, as a gem is described as"jasperized" or "agatized" and are popular gemstones used in jewelry. Of all the petrified wood, only about 2% is the very rare 'jasperized'! The 'agatized' variety is more common and therefore less expensive. The most important criterion for determining the price of fine 'jasperized' and 'agatized' petrified wood gemstone specimens depends on the wood fiber structure, color and rarity. Only the jasperized and agatized petrified wood gemstones that combines the best possible characteristics and are the most beautiful, which come together in an attractive combinations, are used in the construction of custom made jewelry.

PIGEON BLOOD AGATE: is a form of translucent, reddish-orange to red *agate*, it is very early Cretaceous *quartz*. It is a member of the *carnelian* family.

PINE HOLLOW: is a small hollow that runs down into East Canyon several miles south of Moab. As the name implies, it is lined with many pine and cedar trees.

POISON STRIP: was a name coined by local ranchers to emphasize the potential danger in using these strips for cattle grazing due to the high Selenium content. Most of these strips are located in the Salt Wash Formation. It is also used to identify one of the 5 members of the *Cedar Mountain Formation* in the *Yellow Cat* area.

POLISHED/UNPOLISHED: ***Polished End***, ***Polished Bottom***, is a reference to the polished bottom, or polished end of a *fossil*. You generally polish a damaged side, a broken end, or in some rare cases, the rough bottom of a fossil, to show its beautiful rainbow of vivid interior colors, formed by the mineral laden *silica* that has permeated and fossilized the material. However, if it is a complete specimen, unbroken, and in perfect condition, it usually remains unpolished and sold 'as is'.

PSEUDOMORPH: Pseudomorphism is the act of one mineral chemically replacing another.

QUARTZ: In general quartzes/chalcedony comprise a wide group of minerals made up of tiny, interlocking micro crystals of quartz, many forms and colors. Water-clear crystals were known to the ancient Greeks as krystallos, hence the name crystal.

REDWOOD: Limb casts, probably of conifer wood, found initially and most prolifically in the *Brushy Basin Yellow Cat* area of Grand County, Utah, are among the world's most beautiful examples of agate fortification wood. ' Redwood', as it is called by local collectors, occurs as limb casts containing red-banded agate with accents of white, gray, black, yellow, orange, blue, and violet. This very rare and localized gemstone material has been collected for more than seventy years and, because of its beauty, is much sought after by domestic collectors of fossil wood. All 'Redwood' occurs only in the *Brushy Basin Member of the Morrison Formation* and of all Brushy Basin petrified wood; only about 0.5% is the very rare 'Red Wood'. Although everyone who collects this fossil wood uses the term "redwood", the name is purely a color description and a colloquialism.

Prize specimens are agate casts that do not preserve any of the original woody textures, thus making identification impossible. However, the original wood was most likely a conifer. Redwood has been found outside the Yellow Cat area in a few other locations but always in sediments of the *Brushy Basin Member of the Morrison Formation*. Redwood from Yellow Cat and surrounding areas is one of the world's most beautiful examples of a fossil limb cast. The chances of finding larger deposits of red wood in the original *Yellow Cat* area are not favorable because so many collectors have scoured the area.

SALT WASH MEMBER: is a member of the *Morrison Formation*. It consists predominantly of gray or brown sandstone beds and lesser quantities of red and green mudstone beds. Roughly the upper half of the member consists of pebbly or conglomeratic sandstone, or even conglomerate in much of the northern and western parts of the Colorado Plateau. Bentonitic beds are absent or rare in the *Salt Wash Member*. The member was deposited by streams that flowed generally eastward from highland source regions west of the Colorado Plateau in western Utah and eastern Nevada. In many places, rich uranium ores have developed in Salt Wash sandstones.

SAUROPOD: are all herbivores (plant eaters) and range in size from the diminutive forms which appear in the late *Triassic* to the gigantic of the *Jurassic* and *Cretaceous Periods*. Some of the more notable *sauropods* are *Diplodocus*, *Apatosaurus* and *Brachiosaurus*. All sauropod dinosaurs tend to have a long slender neck with long whip-like tails. These animals have high-shouldered bodies and high snouted heads.

The heyday of the *sauropods* was the *Jurassic* where they were both abundant and diverse in most parts of the world.

SEDIMENTARY ROCK: is one of the three main rock groups (along with igneous and metamorphic rocks) and is formed in four main ways—by the deposition of the weathered remains of other rocks (known as '*clastic*' sedimentary rocks); by the accumulation and the consolidation of sediments; by the deposition of the results of biogenic activity; and by precipitation from solution. Sedimentary rocks include common types such as chalk, limestone, sandstone, clay and shale. Sedimentary rocks cover 75% of the Earth's surface. Four basic processes are involved in the formation of a clastic sedimentary rock: weathering (erosion) caused mainly by friction of waves, transportation where the sediment is carried along by a current, deposition and compaction where the sediment is squashed together to form a rock of this kind.

SELENITE: Selenite is a hydrous calcium sulfate, meaning it is composed of oxygen, sulfur, hydrogen, calcium and water. It is a glassy, well-crystallized form of *gypsum* and is often referred to as *satin spar*.

SEPTARIAN NODULE: A *concretion***,** mass or *nodule* of mineral matter, usually oval or nearly spherical in shape, and occurring in sedimentary rock. It is formed by the accumulation of mineral matter in the pore spaces of the sediment, usually around a fossil or fossil fragment acting as a nucleus. Most concretions are very dense and compact, and are usually composed of calcite, silica, or iron oxide. The material making up the concretion is believed to come from the surrounding rock, being re-deposited around the nucleus. Concretions having radiating cracks filled with mineral matter are called turtle stones, or septaria.

SILICA: a name for silicon dioxide (SiO_2). It is the material most common in the formation of rocks. Except for oxygen, it is the most common element in the earths crust. The mass of the Earth's crust is 59 percent silica, the main constituent of more than 95 percent of the known rocks. *Silica* dissolved in moving groundwater may partially fill hollow spheroids and precipitate crystals to form geodes, or it may cement loose sand grains together to form concretions and nodules. The vivid colors within these structures owes to mineral properties within the *silica*.

SILVER: is a chemical element, a white, lustrous metal valued for its decorative beauty and electrical conductivity. The term 'Sterling silver' denotes any silver alloy in which pure silver makes up at least 92.5 percent of the content

STEGOSAURUS: The most common of the "shield bearing" *sauropod* dinosaurs. The main feature of this dinosaur is the triangular plates along the back, and down the tail. The smaller species of stegosaurus was usually less than 15 feet long, and weighed one to two tons, while the larger species was 15 to 25 feet long and weighed up to 6 tons. They had a toothless beak and small leaf-shaped teeth that would have been effective in shredding fibrous plants.

STRATIGRAPHY: a branch of geology, is basically the study of rock layers and layering (stratification). It is primarily used in the study of sedimentary and layered volcanic rocks. The subject was essentially invented and first rigorously applied by William Smith in England in the 1790s and early 1800s. Smith, known as the Father of English Geology, created the first geologic map of England and first recognized the significance of strata or rock layering.

SYNCLINE: a downward-curving fold, with layers that dip toward the center of the structure. On a geologic map (or "in map view"), synclines are recognized by a sequence of rock layers that grow progressively younger, followed by the youngest layer at the fold's center or *hinge*, and by a reverse sequence of the same rock layers on the opposite side of the hinge. If the fold pattern is circular or elongate circular the structure is a basin.

THEROPOD: include all the carnivorous (meat-eating) types; the name means “beast foot" on account of the very sharply clawed three-toed feet on these dinosaurs. The group includes such notables as *Allosaurus* and *Tyrannosaurus*. The body form tends to be very similar with long powerful hind limbs ending in sharply clawed birdlike feet, lightly built fore limbs. The body was being balanced at the hips with a long muscular tail. The head was equipped with large eyes and long jaws, nearly always lined with dagger-like teeth. *Theropods* were fierce predators living for millions of years from the late *Triassic* through the *Jurassic* to the end of the *Cretaceous periods*.

THOMPSON SPRINGS: Utah is east of Crescent Junction and near Interstate 70 at Sego Junction. E.W. Thompson lived near the springs and operated a sawmill to the north near the Book Cliffs. It was also a prominent shipping point for cattle that were run in the Book Cliffs area. Stockmen from both San Juan and Grand counties used Thompson Springs.

TEMPSKYA FERN: is a rare silicified or agatized fossilized tree fern. It was among the most bizarre of plants, with an unbranched trunk up to 16 inches across, tapering bluntly to a height of about 20 feet and covered densely on its upper two-thirds with small leaves. The lower trunk was almost entirely composed of fibrous roots; stems continued higher up scattered among the roots, becoming free but compressed together throughout the upper trunk.

TINK TEST: A simple field method of distinguishing between shale (a sedimentary rock composed of Clay the Mineral) and slate (a metamorphic rock composed of interlocking grains of minerals with basal cleavage). Shale, being composed of piles of loose debris, goes "thunk" when dropped, while slate, being harder and more tightly inter-grown, goes "tink".

TRAVERTINE: a form of massive calcium carbonate, $CaCO_3$, resulting from deposition by springs or rivers. It is often beautifully colored and banded as a result of the presence of iron compounds or other (e.g., organic) impurities. This material is variously known as calc-sinter and calcareous tufa and also as onyx marble, Mexican onyx, and Egyptian or Oriental alabaster. Travertine is generally less coarse-grained and takes a higher polish than stalactite and stalagmite, which are similar in chemical composition and origin.

TRIASSIC PERIOD: (245-208 million years ago) marked the beginning of the major changes that were to take place throughout the Mesozoic in the distribution of the continents and the impact of those changes on paleoclimates and paleobiogeography. The super continent of Pangaea comprised virtually all the major landmasses of the world at the beginning of the Triassic.

Terrestrial environments with warm, dry climates predominated, which resulted in an increase in the relative importance of land animals, including the first mammals at the end of the Triassic. Reptiles increased in diversity and number, heralding the great radiation that would characterize this group during the Jurassic and Cretaceous periods.

TURITELLA AGATE: is any of several species of gastropods (snails) abundantly represented in fossil and living form from the Cretaceous Period, which began about 144 million years ago, up to the present.

TYRANNOSAURUS: was the top predator living in the Late Cretaceous period approximately 65 million years ago. It was an animal well adapted for hunting. Bigger than any of the other meat-eating dinosaurs of its time, Tyrannosaurus was about 40 feet long and weighed in at 7 tons. With one of the biggest and strongest heads, it could kill its prey with one crushing bite. Tyrannosaurus had strong hind legs to carry its huge body some say up to speeds of 40 mph.

UNCONFORMITY: A geological surface separating older from younger rocks and representing a gap in the geologic record. Such a surface might result from a hiatus in deposition of sediments, possibly in combination with erosion, or deformation such as faulting.

UTAHRAPTOR: is from the Dromaeosauridae family of dinosaurs and is found in the early Cretaceous period. These were fierce bipedal predators with long and powerful legs, a stiff counterbalancing tail, a large skull carrying many razor sharp teeth, and greatly enlarged sickle-shaped claws on the 2nd toes of the hind feet.

They were generally small dinosaurs, about 10 feet in length and weighed approximately 200 pounds. But the Utahraptor was 20 feet long and weighed in at 1000 pounds making the Utah raptor the largest known Dromaeosaur in the world.

WIRE WRAPPING: is the art of using gold and silver wire to wrap around a gemstone creating a special piece of jewelry. It can be a simple wrap of one strand or an advanced style of several strands. Many different types of jewelry can be formed using this craft, including rings, bracelets, pins, necklaces and so much more. This art has been around for a long time, but is just now getting popular.

YELLOW CAT FLATS: The ' Brushy Basin Yellow Cat Flats′ area, a Member of the Morrison Formation, at an elevation of about 5000 feet, has an arid climate with an average rainfall of only 8 inches per year. Juniper, pinion, grease wood, Mormon tea, and scrubby brush grow sparingly on the rocky terrain.

The curious appellation "Yellow Cat" is derived from a strange looking yellow mountain lion or cougar that was killed near an old campsite alongside one of the rare springs. The site became known as the Yellow Cat Campsite, later the name was used to refer to a mining claim, a mine, and the general area. The Yellow Cat area is located in Grand County, Utah, about 6 miles south of Interstate 70 at Ranch Exit 193.