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## **IMPERIAL VALLEY CONCRETIONS: ... THERE ARE SOME WEIRD SHAPES IN THE CALIFORNIA DESERT**

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Some of the most interesting geological specimens that I have ever collected are the weird sand formations and concretions near El Centro, California. To get to the area where they are found, take Interstate 8 about 13 miles west of El Centro to the Dunaway Road turnoff, and head south for about one-tenth of a mile. At this point, turn right on to the dirt road and follow it for approximately one mile to the start of the collecting area. From here you will see countless sand formations covering the desert floor, and continuing to do so for two or three more miles. My favorite spot to collect is about 3.2 miles from the pavement. Here you will find a nob-like hill, which is the landmark for the main collecting area.

Park your vehicle somewhere near the hill and start walking in any direction. You will discover literally hundreds of interestingly shaped sand formations, in addition to the more rare geometric concretions. A good many of the sand formations are uninteresting and not really too spectacular. Many, though, are quite intricate, and possess extremely complex and provocative shapes that will cause comment in any rock collection, or in any yard. Some of these sand formations have amazing geometric shapes, and these are the concretions. They occur as perfect spheres, and often look like dumbbells, golf tees, or little animals. The shapes seem to be infinite in variety, and the sizes range from very large to very small. I have found perfectly spherical concretions larger than the size of bowling balls, and I have found them as small as marbles.

This area is covered with these amazing natural wonders, so be selective and don't hesitate to walk a bit. I have picked up most of my very nice ones by walking quite a distance from the road, since the area near the road has been picked over.

Keeping in mind that this is desert, weather can be extremely hot in the summer and can get very cold during winter. Be prepared. The trip to the collecting area is on a relatively good dirt road, but I would recommend having a four-wheel drive unit, since there are some sandy areas. Do not travel here during or immediately after a rainstorm unless your vehicle is equipped for travel through slippery mud.

While in the vicinity, I recommend that you continue on to the oyster beds. Here you can find cliffs, which are literally made from oyster shells and other fossils. To get to this area, continue from the main concretion area to the left for approximately two miles, crossing the wash. Then, after traveling another four-tenths of a mile, turn left and go another one-tenth of a mile to the hills. Here you can find outstanding fossilized specimens of ancient sea life. You can also obtain small, delicate, selenite crystals of a mediocre quality, and more sand formations.

The history of this locality offers a theory as to how the sand formations and fossils were deposited in the first place. Geologists all seem agreed that this basin area, now called the Colorado Desert, was at one time an extension of the gulf of California, but many years ago there was an uplift and/or a substantial increase in the deposits at the delta of the Colorado river near the present gulf shoreline. This caused the area around the present-day Salton Sea southward into Mexico to be separated from the ocean of which it was once a part. The water disappeared and the ancient seabed was just sand. Many years later, apparently, the Colorado River flooded into this basin and there was a huge lake, Lake Le Conte (sometimes referred to as Lake Cahuilla). It is theorized that this lake remained for many thousands of years, but, due to another shift in the Colorado, it eventually dried up.

Scientists feel that Lake Le Conte was dry for many more thousands of years before the Colorado River once again changed its course and a second Lake Le Conte was formed. A recent theory expounds that this second huge lake didn't dry up until 1400 or 1500 AD. As the lake dried up, it is speculated that the minerals contained in the water concentrated and eventually crystallized. Ancient sea life, small rocks and even grains of sand, often served as "seeds" for these crystals, and as the minerals crystallized around these objects, the sand was included, forming the concretions. The irregularity of the grains of sand often caused irregular and bizarre crystallizations, helping to form odd shapes so often seen in the final specimens. Those areas of the ancient sea that were not involved in this crystallization process formed mud containing minerals, which, upon drying, and through the process of erosion, have formed these other strange sand formations of this locality.

On an historical note, there is some evidence that there was for a time, an outlet to the Gulf of California from the more recent Lake Le Conte. Many years ago there were reports of people coming across an old ship, "possibly Phoenician or Viking," partially-buried deep within one of the many canyons in the area. Is it possible that people actually sailed above what is now the great Colorado Desert? It is very possible, even though there have been no recent reports of seeing this ancient ship. Some scientists feel that an earthquake may have buried it, and that maybe someday another earthquake will uncover it again.

As you search the Colorado Desert, you will continually be running into shells scattered all over the terrain, and some are nicely cemented into the sandstone rocks and cliffs. The fossils cemented high in the cliffs are thought to be much older than those that are found loose, or in the soft sand. Probably those cemented into the rock are from the first ancient lake, and the others are from the more recent one. In any event, these fossils make nice displays for a rock collection.

I must once again emphasize that it will take some walking and patience to find the nicer specimens from this locality, but it will be worth it, since it is getting harder and harder to find objects like these nowadays.

## YUHA BASIN

These sites are only a short distance from Interstate 8 and offer the rockhound an opportunity to collect a variety of materials. It should be mentioned, though, that the roads cut through areas of clay, making them impassable when wet, even if your vehicle is equipped with four-wheel drive. To get to Site "A", park off the ruts, at the given mileage, and hike toward the green and white hills to the south. As you walk, look for chalcedony, jasper, agate and obsidian. These gems are not overly plentiful, but some are quite colorful, usually making the effort worthwhile. The hills at Site "A" are covered with rocks filled with fossil shells. It takes some time and patience to find the very best specimens, but that extra effort is usually rewarded. You may want to do some pick and shovel work in order to uncover less weathered and potentially better pieces.

At Site "B", one can find unusual, spherical concretions in areas surrounding the hill shown on the map. Just do some walking for quite a distance, keeping an eye to the ground. These unusual mineralogical oddities range in size from about an inch in diameter to some measuring over one foot across. They are found in many fascinating forms, including dumb-bells or cones, but most are spherical. They are usually concentrically layered, making it easy to "repair" damaged ones by chipping off an outer layer and forming a perfect, but smaller, replica of the original.

Site "C", only a short distance farther along the road, is part of what local collectors refer to as the Oyster Beds. There, virtually every hill is littered with fossil-filled rocks, similar to that at Site "A". In addition, rockhounds can find occasional selenite crystals "growing" in the soft soil. They are very fragile, though, and should be handled and transported with utmost care. Better selenite and fossils can often be procured by cautiously using a small hand rake and/or trowel to unearth otherwise hidden but better protected specimens.