

Triton Fun Company

Science Newsletter August 2007

# Science Newsletter

## August 2007

### Native American astronomy on the California coast: the Chumash astronomers

A. Shepherd

#### Special points of interest:

Archeo-astronomy

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Superfluous questions

On clear Saturday nights, Southern California astronomers gather at Mt. Pinos in the Los Padres National Forest, north of Los Angeles, to gaze at the stars through telescopes from an elevation of 8,831 feet. Hundreds of years ago, Chumash (native American) astronomers did the same, minus the telescopes. They followed the planets and their conjunctions, studied eclipses and admired meteor showers just as we do today.

In fact, Mt. Pinos and its close neighbor, Frazier Mountain, together with nearby Cuddy Valley, were the center of the Chumash world at that time, which extended along the south-central coast of California from Topanga Canyon in the east to Estero Bay in the north and also included four islands in the Santa Barbara channel. The Chumash Indian tribes still exist in California today.

A Chumash council of 20 senior astronomers was charged with observing the skies in these early times in order to keep an eye on the balance of the cosmos. These astronomers were well aware that the universe is in a state of flux, moving and expanding, and that cataclysms (such as meteor strikes) were always a possibility. However, topics of council meetings also included more mundane matters, such as making periodic

calendrical adjustments to compensate for differences between the solar and lunar calendars.

Serving as celestial interpreters, the Chumash astronomers communicated their knowledge to the population at large in metaphorical terms. For example, they referred to a celestial contest, a nightly peon (gambling) game between two teams of "sky people." One team was led by *Sky Coyote* (the mythological character associated with Polaris), another by *Sun*. Other members of the teams were the two aspects of Venus, the *Morning* and *Evening Stars*, and *Moon* served as scorekeeper. On the eve of the winter solstice, a count was made to determine which team had won the most times. If the side led by *Sky Coyote* was ahead, the coming year would likely be rainy with an abundance of food. If the other team was victorious, its leader, *Sun*, might be dining on human flesh left by drought and starvation. The Chumash astronomers may have used similar metaphors to explain visiting comets and eclipses of the sun and moon.

As a routine matter, the Chumash astronomers watched the changing position of the sun against the fixed feature of three peaks on the eastern horizon at dawn. Their winter solstice observatory was Condor Cave in the rugged back



**Ancient rock art** from the Chumash tribe depicting the California condor; in their mythology, it was associated with the planet Mars.

country of the Los Padres National Forest where observations and interpretations were recorded on the rocks. To facilitate observation, the Chumash had bored a two-inch hole through the cave's southeast wall. It looks out on a sandstone outcropping that stands out from a plain. On December 31, the sun would rise over the jagged outcropping, producing a narrow, intense beam of light in the cave through the window.

A variety of locations were used for different types of observations. In one cave a painting shows two comet motifs with varying brightness and tail length. These likely represent Chumash astronomers' observations of a comet seen over a period of days or weeks.

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## Chumash astronomers, continued

Photo: U.S. Fish and Wildlife Service

Just as our planets bear the names of Roman gods, the Chumash named the planets in correlation with the “sky people” of their mythology. Before the ancient Greek astronomers realized that the Morning and Evening Stars were manifestations of a single planet (Venus), they treated them separately, as did the Chumash. Among the Chumash sky people, *Golden Eagle* represented Venus as the Evening Star; which character correlated with the Morning Star is unclear. The *California Condor* was Mars because the Chumash had noticed the planet’s reddish color and associated it with that bird’s reddish-orange head.

They had also noticed that Mars moves along the ecliptic of the sun and, compared with Venus and Jupiter, at times appears to move quite rapidly against the backdrop of stars. That’s why, in Chumash mythology, Condor travels an easily recognizable path and is credited with being able to cover vast distances in a short time. Unfortunately, insufficient evidence survives to determine the associations of Jupiter, Saturn and other planets with Chumash sky people.

While Polaris’ mythological name was *Sky Coyote*, the Chumash also gave it a more scientific name which meant “divide” or “separate in the middle” and recognized it as the “star that never moves.” This shows that they were aware of the concept of an astronomical central meridian, the imaginary line which runs from south overhead to Polaris. They had observed how the sun, moon, planets and most stars rise in the east and climb higher until they are on the central meridian.

The process then reverses as the celestial bodies sink lower and finally set in the west.

Polaris also served as a navigational star for northward sea voyages between the mainland and the Chumash islands. Canopus was the primary navigational star for southbound sea voyages, as well as enabling mariners to estimate distant weather conditions indicated by the flickering of its light under windy conditions.

The Chumash also named many constellations, but most of the patterns they recognized were different from our own. They had of course noticed the conspicuous star cluster of the Pleiades, but considered them to be males rather than females (as in the *seven sisters*). A Chumash myth speaks of an eighth man who disappeared, and, in fact, one of the original Pleiades has become faint over the course of recent centuries.

The Big Dipper’s origin is described in a myth of seven boys who were rejected by their mothers, flew up to the sky and became stars. The Chumash had also noticed Alcor, the companion star of Mizar, and according to the myth, it represents Raccoon who accompanied the boys on their flight.

Castor and Pollux were two sisters who had fled the earth and headed for the sky. A constellation called “three steady persons in their place” may have referred to the three stars in Orion’s belt or, more likely, to the three-star asterism in Aquila. Stars from two modern constellations, Canis Major and Lepus, make up a seven-star Chumash constellation of unclear designation.

Another constellation called *Land of the Widows* consists of stars from Cassiopeia and perhaps other stars close by. The Chumash also had a constellation called Scorpion Woman

but it was not equivalent to Scorpio. Rather, it was composed of stars of Cygnus and Lyra with Vega perhaps representing the Scorpion Woman’s stinger. The Chumash must have recognized hundreds of other stars, asterisms and constellations, but little information survives on their names and associations.

The Milky Way had several names, among them “Journey of the Piñon Gatherers” and “Night’s Backbone.” Chumash mythology associates the Milky Way with the journey of the soul to the next world. Stars within Cepheus and Lacerta represented crashing rocks and giant ravens that threaten the soul on its way, and, in fact, this region of the Milky Way is highly irregular with voids of dark, interstellar dust clouds. Rock art represents the Milky Way in the context of complex circular motifs that show the sun, the Milky Way, as well as stars above the galactic equator, and stars below the galactic equator.

The mythological names and associations of heavenly bodies must not be taken as evidence of “primitive” science. After all, today’s scientists still use the names of Roman deities for the planets and call the constellations by the names of animals and mythological characters. The ancient Chumash astronomers were very sophisticated, but the primary purpose of their pursuit was not science *per se*. Rather, it was the application of knowledge of the heavens for the benefit of society. Therefore they needed a commonly understood vehicle for communicating information to the population at large and to the younger generations, and mythology fulfilled that role.

### References:

1) Hudson, T. and E. Underhay, *Crystals in the Sky: An Intellectual Odyssey Involving Chumash Astronomy, Cosmology and Rock Art*. Ballena Press, 1978.

2) Website: [http://www.rain.org/campinternet/astronomy/native\\_astronomy.html](http://www.rain.org/campinternet/astronomy/native_astronomy.html)



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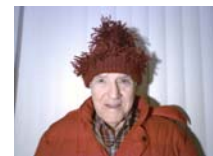
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## Superfluous Questions:

1. A lemniscate is another name for what symbol ?

- a) the at symbol, @    b) the pound sign, #    c) the "greater-than" symbol, >    d) the infinity symbol,
- $\infty$

2. A Kronian moon would be a moon of what planet?

- a) Uranus    b) Jupiter    c) Saturn    d) Neptune

3. Where is the Gallatin National Forest ?

- a) Colorado    b) New Hampshire    c) Montana    d) Wyoming

4. What state was Hank Aaron, the legendary baseball player, born in ?

- a) Illinois    b) Arkansas    c) Alabama    d) Mississippi

--&gt; ANSWERS in next months issue of the Science Newsletter ! &lt;---

**\*\* ANSWERS to July's Superfluous Questions: 1. c) 1920 2. c) Wonder Man 3. c) Albania 4. c) Explorer 1**