

TWO UNKNOWN METEOR CRATERS IN ANTOFAGASTA REGION, NORTHERN CHILE

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INTRODUCTION.-

During a field work, in February and March 1976, according with a regional investigation of geomorphology, two new meteor craters was discovered at the nearest of the Salar de Atacama, in Antofagasta region, northern Chile. One of these craters was observed with R. Lagos A., geographer by the Universidad del Norte, and the author. The other was a communication from L. Núñez A., archeologist of Smithsonian Institute and Universidad del Norte, whose attention had been strongly called by a singular form appreciated in an aerial photograph, during his archeological investigations.

THE METEOR CRATERS.-

These new meteor craters are located, one of them at south of Salar de Atacama, at the Tilocalar Hills, $24^{\circ} 59'$ lat. S. and $68^{\circ} 08'$ long. W. The other one is at south-east of the Salar, at the Tujle Chain, $23^{\circ} 50'$ lat. S. and $67^{\circ} 57'$ long. W.

Considering local toponyms, propose the name "Meteor Crater of Tilocalar" for the first, and "Meteor Crater of Tujle" the second.

The dimentions of the Tilocalar Crater, obtained from a topographic map of I.C.M.-Chile (scale 1:50.000), are 400 mts. in E-W direction, and 300 mts. in N-S direction. His major deepness is around 50 mts. in the north part, where are lacustrine sediments of temporal water acumulations. This crater is located at 3.100 mts. over the sea level.

The Tujle Crater has 350 mts in E-W direction and 300 mts. in N-S direction, dimentions obtained by the same way before mentioned. His major deepness is nearest of 60 mts. at the east section. This crater also present a little deposition of lacustrine sediments. The altitude of the area where the crater is located is 3.550 mts. over the sea level.

GEOLOGY OF THE AREA OF TILOCALAR METEOR CRATER.-

This Meteor Crater is on a Tertiary ignimbritic plateau, which was to much eroded during the Pluvial Periods of Pleistocene, leaving long and narrow tabular surfaces limited by scarps. One of this orographic units is the Tilocalar Hills ("Lomas de Tilocalar").

This ignimbritic plateau is overlaid to a intrusive of granitic rocks of Jurassic and Cretacic age.

Immediately at north of the Meteor Crater there are a Quaternary lava dome, wich is constituted by andesitic and basaltic rocks.

The meteor cuts a superficial deposit of piroclastic rocks and the ignimbritic formation. Finally, it strokes the surface of the granitic intrusive.

Today, only is possible to find some traces of meteor iron in quartz fragments and recrystalized rocks, because this area is, from a long time ago, walk across by Aymaraes indian troupes, in atention to the numerous trails that exist in there.

People who live in the nearest says that this indians have meteoric fragments in their houses by generations, now a gift of the heaven.

GEOLOGY OF THE AREA OF TUJLE METEOR CRATER.-

This crater is located in the upper of the scarp of a ignimbritic plateau, wich is also dated has Tertiary.

The meteor pulverized the ignimbrite, without take contact with the sub-yacent rocks, and spread its fragments in an area of 1.3 square kilometers around of the crater, aproximatively.

There is not rests of the hexahedrite in here in atention to the same reason before.

HEXAHEDRITES AND METEOR CRATERS OF NORTHERN CHILE.-

With this two new meteor craters described summary here, the list of hexahedrites and meteor craters of northern Chile is the following, in order of latitude: (completed from Henderson, 1941).

<u>Name</u>	<u>Lat. South</u>	<u>Long. West</u>
Negrillos (H)	20° 14'	(On the Iquique Pampa)
Rio Loa (H)	21° 26'	70° 05'
Coya Norte (H)	22° 20'	69° 40'
Cerro del Buey Muerto (H)	22° 40'	69° 50'
Puripica (H)	22° 45' aprox.	68° 05' aprox.
Sierra Gorda (H)	22° 53'	69° 18'
Filomena (H)	23° 00'	69° 26'
Unión (H)	23° 03'	69° 30'
Mejillones (H)	23° 07'	70° 30'
Tujle (MC)	23° 50'	67° 57'
Monturagui (MC)	23° 55' 25"	68° 15' 40"
Imilac (MC)	24° 17' aprox.	68° 50' aprox.
Tilocalar (MC)	24° 59'	68° 08'
San Martín (H)	30° 00'	71° 18'

(H) : Hexahedrites
(MC) : Meteor Craters

Complete this list, we must mention to Fletcher, 1889, who describes thirteen meteorites found in the Atacama Desert, referred under the following names and relative localization: "Three of these meteorites, Mejillones, Polanco and Mount Hicks, were all found within a few leagues of the Bay of Mejillones; Varas and Imilac were found nearly a hundred miles away, and about forty miles apart; Vaca Huerta, Cachiuyaya, Copiapo and Lutschamig, and probably also Isilali, came from a more southern part of the Desert, while Barranca Blanca and Juncal were brought from the south-east; Joel was discovered in an unmentioned part of the Desert". (Fletcher, p. 224).

Some of them below to the named in the list upper detailed.

CHRONOLOGICAL CONSIDERATIONS.--

Just considering some geomorphological and litological aspects so that: a) The Tilocalar Meteorite cuts, on the surface, a deposit of quaternary piroclastic rocks, and b) This crater and the others of Tugle and Montuzaqui, in the nearest, maintain their circular form perfectly limited by the original scamps, means that they was not exposed to erosion during the Pleistocene Pluvial Periods, we think that the meteorites fall could happen during or immediately after the last Pluvial Period.

However, is necessary other tests to determine the exactly date of the impacts.

REFERENCES.-

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