

Field trip to the Eastern Ranges of Salta and Jujuy

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Tuesday, August 22nd

We will be reaching Salta city by plane on the morning of the 22nd. After a sightseen tour of the city and San Bernardo Range (wonderful Tremadoc to Arenig, highly fossiliferous section) and having lunch, scientific sessions will be held during the afternoon in the conference hall of the Hotel Portezuelo.

On the same night a dinner with live music has been planned (welcoming you to this part of the trip).

The field trip will start the next morning from the hotel.

Thursday, August 23rd

Stop 1.- La Pedrera (Fig. 4):

In this first stop of the Eastern Ranges field trip we will see a "condensed" section comprising all the materials from the Precambrian-Cambrian Puncoviscana Formation to the Cambrian-Ordovician Santa Victoria Group.

The section is placed about 11 km. south of Salta, within Mojotoro Range, and comprises a summary of all the Cambrian System in Northern Argentina. We will see cropping out the basal Puncoviscana Formation (Precambrian-Cambrian, named in this locality as Sancha by Sánchez, 1994), being followed by the Mesón Group (Mid-Upper Cambrian) and lastly by the base of the Santa Victoria Group (Cambrian-Ordovician-mosdy covered).

With this stop, we want to focus on the stratigraphy of the Mesón Group with a section that records only 65,5 m (Sánchez, 1994). The basal Lizoite Fm. displays the thick and well selected quartzites with the basal conglomeradic level, followed by the greenish-deep purple Campanario Fm and finally with the quartzitic Chalhualmayoc Formation. All the section presents an abundant ichnofauna, not studied in detail yet, with *Skolitos*, and *Syringomorpha nilssoni* a.o. (Alonso and Marquillas, 1984; and Seilacher pers. comm.).

The transition to the Santa Victoria Group is covered by modern alluvial sediments and the development of soils.

Stpo 2.- El Alisal:

About 45 km west of Salta city, in the immediate vicinity of "El Alisal" (left side of the Quebrada del Toro, Rosario de Lerma Department, Salta Province), there is an outcrop of the

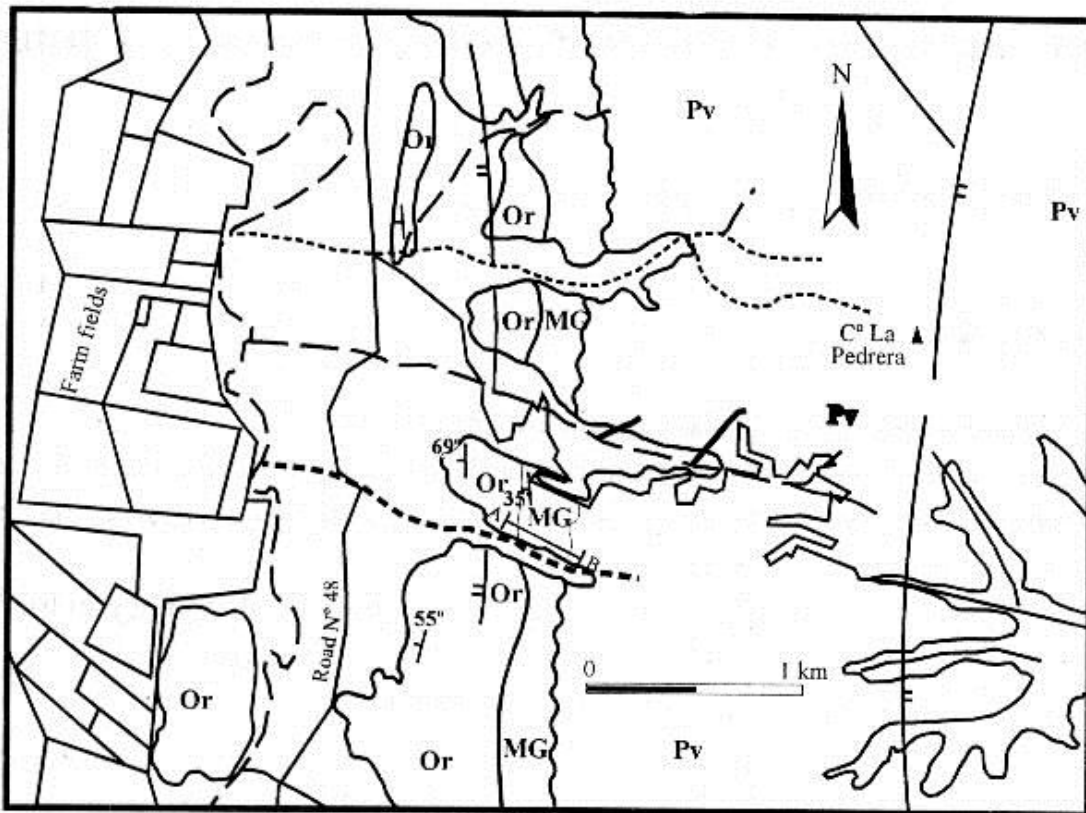


Fig. 4

- | | | | |
|----|--------------|--|---------------|
| Or | Ordovician | | Section |
| MG | Mesón Group | | Rivers |
| Pv | Puncoviscana | | Highest point |
| | Faults | | |

Modified from **Sánchez, 1994**

Puncoviscana Formation bearing well preserved trace fossils. The locality is represented by an alternation of grayish-bluish slates and fine sandstones of 5 to 15 cm thick (also colored differentiated). Trace fossils are assigned to *Torrosvangea*, *Cochlichnus* and some unidentifiable limb marks.

Stop 3.- Chorrillos:

In this locality cae will see the Puncoviscana Formation with the "red facies and conglomerates" of Jezek (1990). This facies are interpreted as deposited on intermediate areas of the slope, bearing most of the sedimentary structures recorded in the unit. Incomplete Bowma sequences have been recorded, as well as some sandier bodies interpreted as progradant fine sand lobes belonging to mid to outer fans. Fluidized flows and sliding have also been recorded (Jezek, 1990).

Sleep in Purmamarca tocan.

Thursday, August 24

Stop 1.-Purmamarca:

In this stop cae will see the bluish-green highly folded slates of Puncoviscana Formation, with well preserved ripple marks. From this outcrop was recovered the only sample of *Protichnites* recorded in this Formadon (Durand and Aceñolaza,1990).

Stop 2.- Sightseen of type outcrops of *jujuyaspis keideli* Kobayashi

Kobayashi (1936) described *jujuyaspis keideli* with material recovered from this locality ("one kilometer south of the train station"). The genus is currently considered as a marker of the Lowermost Ordovician around the world, with occurrences in U.S.A., France, Australia, China, Colombia, Bolivia, Korea, Norway, Canada, Kazakhstan and Spain ? (see Shergold this volume).

Stop 3.- Tilcara Tocan - Indian fort ("pucará").

A short touristic stop will be done in the ancient indian fort of this tocan (called with the indian name of "pucará").

Stop 4.-Tilcara, Huasamayo River-Puncoviscana-Mesón unconformity.

After a short walk by the river cae will be reaching a close gorge done by the Huasamayo River on the greenish-bluish slates and shales of the Puncoviscana Fm. The main reason for this stop is to see the impressive Cambrian unconformity that separates the early mentioned Puncoviscana Formation from the Lizoite Formation (lowermost unit of the Mesón Group). Due to the lack of good chronostratigraphical useful fossils, this unconformity is referred only as intracambrian by the moment.

Different lithological characters for the Puncoviscana Formation and the Mesón Group will be seen (basal conglomerates are typical in this locality).

Stop 5.- Angosto de Perchel:

We will make a short stop on the narrow passage of the Grande River in this locality. Here will be seen the Typical quartzites of the Mesón Group. The river cuts through the softer Campanario Formation, induced by a fault system that runs N-S all along the Quebrada de Humahuaca. The lithology of Lizoite, Campanario and Chalhualmayoc formations (Mesón Group) will be seen.

Stop 6.-Tropic:

A short sightseen stop on the southern tropic will be done to see a general view of the Puncoviscana-Mesón transition.

Stop 7.- Angosto de Chucalezna:

In this locality we will walk by an old train track analyzing the lithological characters of a thick and better developed Mesón Group reaching up to the basal part of Santa Victoria Group. Typical greenish shales following Chalhualmayoc Formation will be seen, with few fossiliferous levels bearing the Cambrian-Ordovician trilobite fauna that belongs to the *Parabolina (N) frequens argentina* biozone.

Stop 8.- Pintayoc:

The main aim of this stop is to see the *Rhabdinopora* Green shales of the lowest Ordovician levels that belong to the Santa Rosita Formation (Santa Victoria Group).

Indian paintings on thick quartzites that belong to the Cambrian Chalhualmayoc Formation will also be seen.

Farewell dinner with live ondean music. Sleep in Uquía Town

Friday, August 25~h

Stop 1.- Volcán tocan-Puncoviscana limestones, Volcán Formation.

In this locality we can see the uncommon limestone facies outcropping east of the Rio Grande. No associated fossils have been found in this facies. The Volcán section is representative of a few other localities that have been interpreted as tectonic highs and shallower restricted sectors of the same basin in the Puncoviscana sea.

Departure from Salta airport.

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