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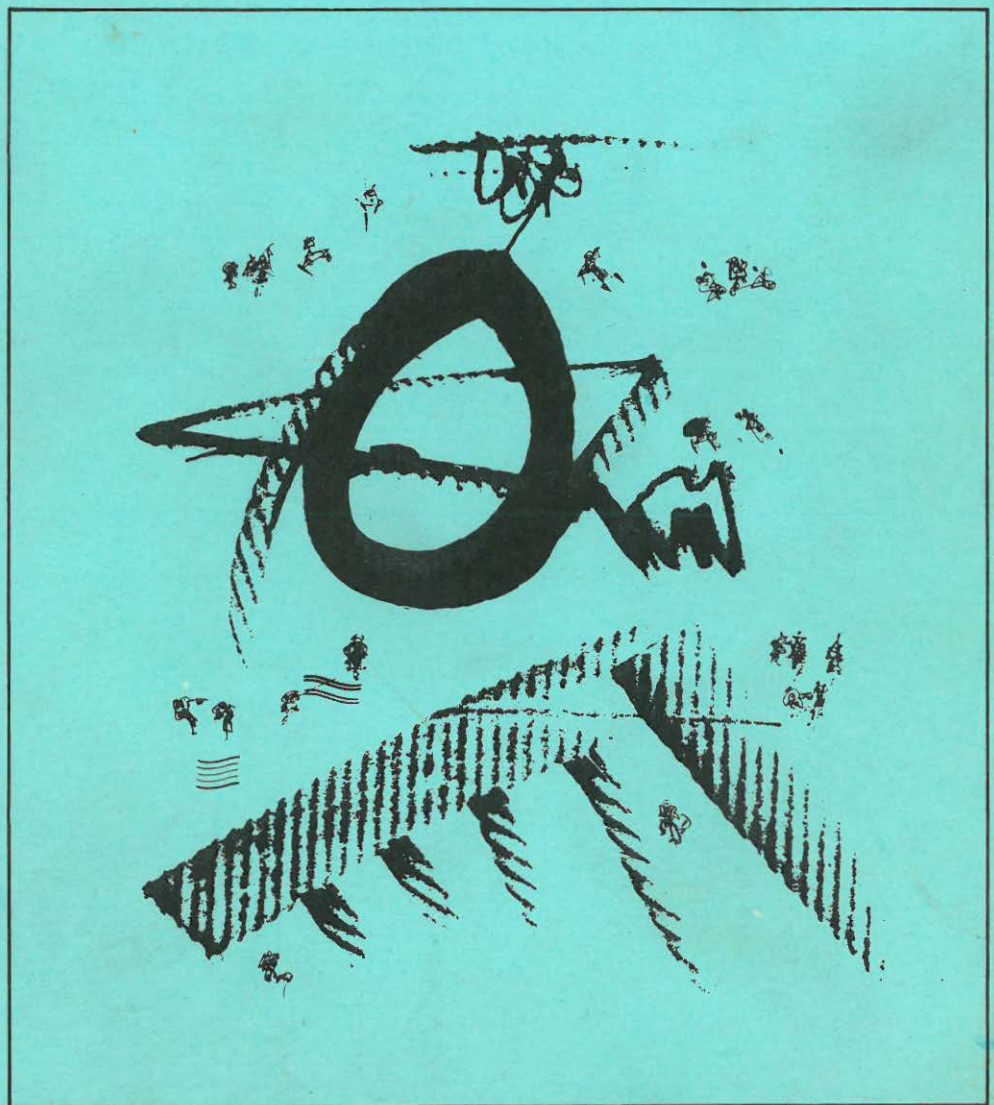
# ABSTRACTS & POSTER ABSTRACTS

## 6th EUROPEAN REGIONAL MEETING



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# RUIDERA POOLS: A TRAVERTINE DAMS SYSTEM ON THE UPPER GUADIANA RIVER (CENTRAL SPAIN). A SEDIMENTOLOGICAL APPROACH.

ORDOÑEZ, S. Dep. de Petrología. Univ. Complutense. Madrid.
GONZALEZ MARTIN, J.A. Dep. de Geografia. Univ Autónoma. Madrid.
GARCIA DEL CURA, M.A. Instituto de Geología Económica. C.S.I.C.

The upper Guadiana river, locally named "Lagunas de Ruidera" is located in Central Spain, 100 Kms East of Ciudad Real. Drainage network is developped on an older erosional surface (Campo de Montiel geomorphological unity).

The bedrock is mainly mesozoic materials, gypseous shales (Trias) and brecciated dolostones (Lower Jurassic). The gypseous shales are a waterproof layer, and dolostones are the regional aquifer. This fact and the gentle tectonic of materials are responsible of the hidrological features:

- discontinuity of superficial flow (average 1 $m^3$/sec.)
- scarcity of detrital sediments (only gravitational).
- surface waters are feed mainly by ground waters.
- high content in bicarbonate, calcium, magnesium and other ions ($Cl^-$, $SO_4^=$).

From Peñarroya reservoir to Laguna Blanca (25 Kms) there are nearly fifteen pools, located in a narrow valley. The size of pools are smaller than 2000 m. (average 800 m.) in length,and a width of 250 m.. The down slope average is nearly 0,5/100. Almost all the pools are related and conected by natural dams. The nature of this dams are travertine with a very complex origin. Commonly a travertine terrace with horizontal accretion surrounds the pools. Locally older travertine dams may be fossilized by present day carbonates.

Many antropic actuations , in the past half century, are responsible of the environmental perturbations that have destroyed almost all the dams, and fell water level in the pools. The soft nature of materials and your erosionability, when the biological cover is destroyed, lead to travertine dam system damage.

A fluvial system tend to stablish a dynamic condition of balance within a given hydrologic and geologic environment so that discharge and load are adjusted to river morphology and hidraulics. For this reason when a river have a low energy, and a irregular longitudinal profil, the regime of flow may be laminar in the gentle slope sections, and turbulent in some singular points.In this singular points, if the erosion is low, may be colonized by bentonic plants. High oxigen water, related with turbulent flow, high light related with shalow waters and with the scarce suspended load, and $CO_2$ desgazing (mechanical and biological) lead to growth and simultaneous sinter of bentonic plants. This is the origin of initial travertine dam buildups. In the back and the fore travertine dam the wall are also colonized by plants and incrusted by LMC. The morpholy of growth layers of the back travertine dams are mainly vertical and the $CO_2$-desgazing mechanism is biological, however the morphology of growth laminae of the fore travertine dams are gently slope, and $CO_2$-desgazing mechanism is agitation. Water fall travertines are genetically relatedwith erosional processes, induced by climatic changes, or others geomorphological features; the travertine dam system may be partially eroded, and the water level in the pools descends. Water fall carbonates have a morphology in "hangings".

The origin of travertine terraces, or algal reefs, is the same as back travertine dam. The rise of water level in the pool, related with the vertical growth of the dam, lead to a climbing structure of rimstone pools.

Macroscopically point view, may be distinguished "tubes facies", related with incrustation of high plants, with a section thickness between 0,5 - 1,5 mm. This "tubes facies" show a stromatoli-

tic structure, with lobate fabric (spongiostromata), and scarce arborescent fabric (porostromata). Locally "tubes facies" shows a concentric micritic filaments arround of the stems.

But the mainly macroscopically type is"moss tuf". Bryophytes are the incrusting support and interstitial LMC show several microstructures , thus clotted micrite fabric associated with lobate fabric or single algal mats are common in back travertine dam and algal reef in the present time pools.

But in the fore travertine dam and water fall travertine the Bryophytes support single crystals of sparite, and locally associated with "pseudo-Microcodium" type facies. Bryiophytes as support of epiphytic blue green algae are the origin of another microscopic microstructure; physiological activity of the blue green algae lead to porostromata fabric and framework of colonial algae Rivularia type also.

The arborescent facies, related with coastal lacustrine carbonate sedimentation, are located mainly in the rimstone pools. There are also stromatolites buildups on tufaceous limestones, locally SS-C type oncolites are associated. This oncolites are similar with this of the old alluvial deposits.

Present time mosses have been classified as Didymodon and Barbula (Dr$^{a}$ M.E. RON). In the algal mats have been identified Oscillatoria, Phormidium, pennales diatoms, unicellular colonies of Chlorococcales and also probably Rivularia. Unio and diverse gasteropods are very abundant.