CURRENT RESEARCH IN THE PLEISTOCENE NOTE,
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GEOLOGICAL OBSERVATIONS AT HUEYATLACO ARCHAEOLOGICAL SITE, VALSEQUILLO AREA, PUEBLA, MEXICO (500 words)

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Crated sediment columns and boxed geologic samples collected 1964-1973 from the Hueyatlaco archaeologic site and surrounding area, State of Puebla, Mexico have recently been opened and examined. Detailed sampling of the complete sedimentary section exposed at the site, including the artifact-bearing beds recognized by Irwin-Williams (Irwin-Williams 1967, 1978 and cited references; Steen-McIntyre et al. 1981 and cited references) revealed several horizons rich in microfossils. The diatoms from these beds contain taxa extinct by the end of the Sangamon Interglacial 80,000 years ago (VanLandingham 2000, 2002a,b, 2003, in preparation). Contrary to a previous statement (Dincauze 1984 , p. 288) no younger sediment occurs there. A primitive human skull filled with diatomite (Dorenberg Skull), collected in the area over 100 years ago also dates to this great age (Reichelt 1899 (1900) as reported in VanLandingham 2000, 2002a). It was destroyed during the bombing of Leipzig during WW II.

The site has been dated at roughly 250,000—275,000 years or older by ten radiometric dates on fossil butchered bone associated with bifacial tools and on overlying (younger) tephra units (Szabo et al. 1969; Steen-McIntyre et al. 1981; Donelick et al. in preparation). Two uranium-series dates on a butchered mastodon tooth fragment associated with unifacial tools, from the near-by El Horno site a few
meters lower in elevation give older dates (Szabo et al. 1969).

Because the Hueyatlaco site and Valsequillo Reservoir area in general offer such great potential for the study of early humans in the New World, I list here briefly the geological observations I made while working there. Hopefully they will help others to recognize sediments of similar age when they encounter them in the region. Research by other scientists from Mexico, the USA, and England is planned for the area.

If a new excavation in the Valsequillo area exhibits the following characteristics, consider the site “old” (Late Mid-Pleistocene, around a quarter-million years).

CHARCOAL, SHELL: Lacking.

BONE MATERIAL: Completely lacking in collagen (no possibility of C-14 dates); dark stained (manganese); heavy (organic matter replaced by mineral matter).

OVERLYING, PRIMARY TEPHRA LAYERS: Under the microscope, hypersthene phenocrysts

that have been ultrasonically cleaned of clay weathering products appear deeply etched (they form delicate “picket-fence” or “sawtooth” structures); silicic glass shards are completely hydrated, with at least five per cent water of superhydration in all enclosed spindle-shaped vesicles (bubble cavities) 10-50 micrometers in length. These and other weathering characteristics of the primary tephra layers have been discussed in detail elsewhere (Steen-McIntyre 1975, 1977, 1981a,b, 1985, submitted).

SEDIMENT: Indurated when dry (trench walls remain vertical for years); color tends to light tan or pink (unless the clasts themselves are dark in color, such as basalt fragments); clay adhering to mineral grains, especially the feldspars; difficult to disaggregate with finger pressure; skins and/or manganese stain and/or “mexican onyx”-like deposits (translucent, banded pink carbonate) in sediment voids and as veinlets.

CARBONATE DEPOSITS: Occur as casts of ancient root molds and old animal burrows (krotovinas); occur as veinlets along planes of weakness in the sediment; does NOT occur as primary caliche.

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