Abstract
Within the basins of Mexico and Tlaxcala in the Central Highlands of Mexico, thick pyroclastics paleosol sequences, grouped into units T1 to T7, can be found. Unit T2 at the site Tlalpan was chosen for a mineralogical-microscopical study. The unit consists of four late Pleistocene strata of pyroclastics (toba) with associated clayey soil horizons. Apart from magmatic particles, the pyroclastics contain many opal particles, especially diatom fragments and other bio-opals. In the basal stratum of pyroclastics i, the opals are orientated within the layers and, therefore, must have been deposited together with the other components. They were not, consequently, admixed later through soil formation or bioturbation. The very well-preserved microlamination and the orientation of the individual particles render a significant loss of pore volume (compaction) after sedimentation unlikely. According to the microscopic findings, in-situ weathering is the dominating process in this stratum, as it is, probably, in the other pyroclastic strata (c, e and g) as well. The clayey soils as the tobas are characterized not only by weathering of volcanic glass, but also by weathering of opal particles. Colloidal silica gel is the result of weathering of opal and volcanic glass, in addition to which clay minerals are formed from the glass. Microscopic silica gel crusts and clay cutans are the characteristic forms found, the latter described more precisely as clay-mineral / silica gel compounds. Laterally adjacent to the studied profile, characteristic indurated layers, so-called Tepetates in the pyroclastic strata eand i can be observed. They develop out of the respective pyroclastics after their exposure following erosion. The following reasons for their formation are proposed: A comparatively dense packing of the parent material, a subsequent compaction, an intense re-location of silica gel within the matrix, its loss of water, and, probably, its partial crystallization. These results only refer to the stratigraphic unit T2 and may not be applied to other stratigraphic units.

Keywords
pyroclastics, paleosols, opal, silica gel, tepetate, micromorphology, late Pleistocene, Mexico.