"Documento original en mal estado"

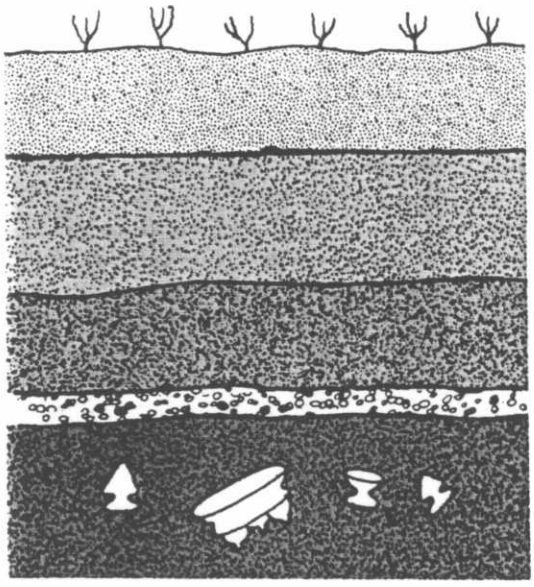
and animals, especially animals with gills, which the tiny, sharp, glassy volcanic particles cut and clog.

Evidence of flooding at about this time has also been found in western Honduras. It would not be surprising if it had resulted from Ilopango, inasmuch as western Honduras lies even closer to the source of the eruption and is on a line with Barton Ramie and the Belize River. Thick flood deposits in river floodplains also have been found at Copán along the Copan River, and at Playa de los Muertos and Santa Rita along the Ulua River. The devastating impact of floods is compounded by El Salvador's position in the tropical zone only 13 degrees north of the equator. Because of its location on the Pacific side of Central America, the area has a marked monsoon climate giving it about 80 inches of rainfall during the annual rainy season which lasts from May to October. During the rest of the year relatively little rain falls and the country is dry—indeed, many trees shed their leaves in the months of March and April, the height of the dry season, to conserve precious moisture. The original vegetation covering most of the country was a deciduous tropical forest, dense in the center and west and more open in the east. Tropical evergreen forests flourished near the numerous lakes and along streams and the coastal piedmont where ground water was abundant. The deciduous forests were the ones hardest hit by the eruption of Ilopango.

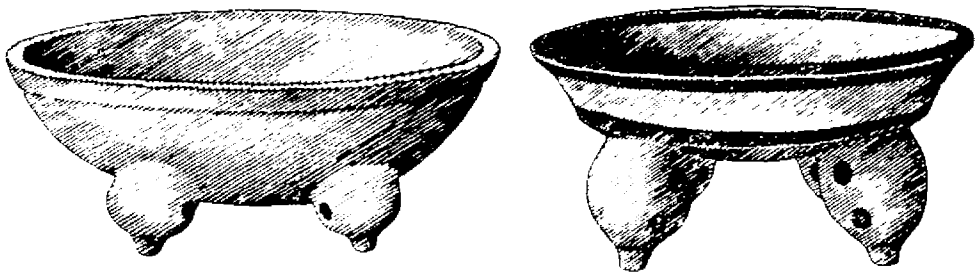
The archaeological record supports the theory that disaster victims migrated to other areas of Central America. Intrusive elements show up in the material assemblages of a number of sites in the Petén of northern Guatemala and in Belize at just about the time of the Ilopango eruption. Importantly, these characteristics are also found in El Salvador under the ash layer. Their long local development in El Salvador, therefore, was abruptly truncated by the white ash layer.

The hallmark artifact of the Protoclassic intrusive complex is the mammiform tetrapod vessel—a bowl with four supports, each in the shape of a female breast. While the migrants probably did not actually carry such vessels with them, or indeed any other brittle and heavy pots—especially over distances of 300 to 500 kilometers—they certainly would have brought their technological capabilities to their new cultural setting. At present, the complete intrusive Protoclassic complex is known to have shown up at Altar de Sacrificios, Barton Ramie, Holmúl, Poptún and five other lowland sites. Yet at as many sites in the lowlands Protoclassic artifacts show up only intermittently and not suddenly as a composite group. Doubtless the immigrants moved into some lowland communities and not others and their particular kinds of wares would have shown up in some sites only intermittently through trade.

At Altar de Sacrificios, excavated from 1958 to 1963 by Gordon Willey, a sufficiently detailed ceramic analysis has been done to trace the ethnic interactions of the residents and newcomers. The picture which emerges shows the lowland villagers responding to the influx of displaced highland peoples at a time when many of these lowland settlements were changing from egalitarian to ranked societies or, as in some cases, from ranked to more complex stratified societies with a centralized economy. At some sites such as Barton




*Idealized stratigraphy of San Salvador area of El Salvador. Fertile Preclassic soil with artifacts was buried by the Ilopango tierra blanca tephra during the third century after Christ. Weathering and vegetation allowed for human recolonization two centuries later, but soils and prehistoric cultures never thoroughly recovered from the disaster.*



*Ceramic vessels from Barton Ramie, Belize. These highly distinctive mammiform tetrapod vessels are characteristic of the Protoclassic Period (A.D. 1-300)*

time, the population more than doubled as evidenced by a more than twofold increase in occupied houses. But the immigrants did not eliminate the indigenous traditions, although they must have disrupted and consequently added to them and, it seems, even dominated them for a time. It is significant, for instance, that at Altar de Sacrificios the first luxury ware, apparently associated with a newly-emerging elite, is linked to the intrusive Protoclassic tradition and not the indigenous group. The same Protoclassic domination of Early Classic elite artifacts was found at Barton Ramie, where other kinds of Protoclassic wares were introduced in addition to ceramics—barkbeaters, squared off slabs of stone used for beating bark into paper or cloth for garments, spindle whorls used in the manufacture of cotton thread and stone tools.

The intrusive Protoclassic peoples did not maintain their dominance for long. After a generation or two, they were absorbed gradually into the overall development of lowland Classic Maya society. But what of the long-term repercussions? Since population increases promote adaptive innovations, it is not at all surprising that many of the raised agricultural fields and terraces in the Maya area were first cultivated in the Early Classic Period. Nor, for the same reason, is it surprising that social control measures were strengthened, in part by means of a heightening of class or rank distinctions. Thus, while the volcanic disaster increased the rate of social change it did not introduce into lowland communities fundamentally different social or political institutions.

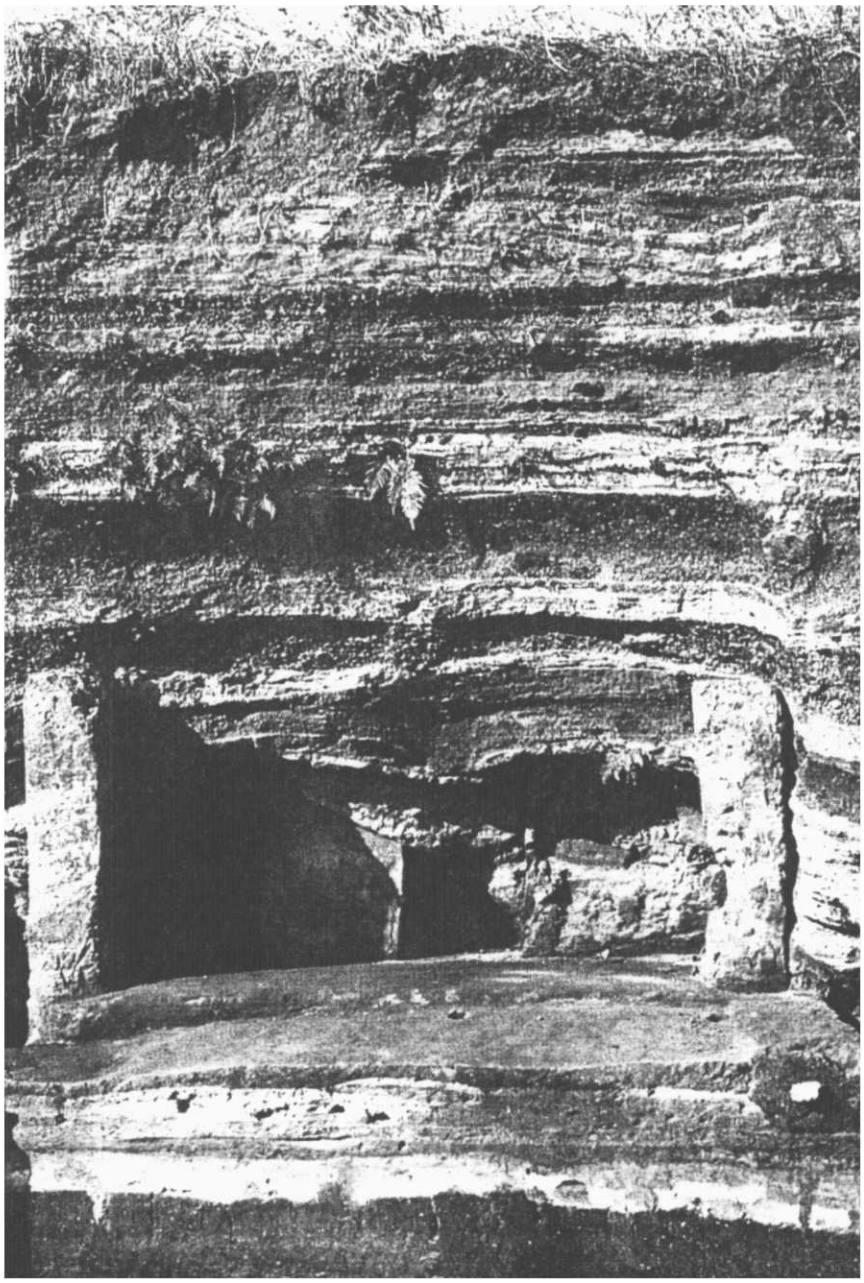
The most dramatic changes were seen at Tikal which prospered very conspicuously during the Early Classic Period, particularly from A.D. 300-500. Tikal, situated between the headwaters of two major lowland river systems, served as the primary portage for canoe-based transport. The interrupted trade route which the leaders of Tikal redirected through their city had already been established by the Olmec before 1000 B.C., crossing the Isthmus of Tehuantepec and running along the Pacific coast of Guatemala into El Salvador. Key commodities such as jade, cacao, obsidian, cotton and salt were transported along this newly reestablished trade route. In conjunction with this change political-economic delegations from Central Mexico—from the other end of the trade route—established themselves at Tikal. That Tikal should be the only Maya lowland city to have a large group of highland occupants ought not to be surprising if this thesis is correct—all based on the premise that Ilopango did indeed disrupt the long-established lucrative trade route and forced highland peoples to migrate.

While Tikal was benefitting from its newly found wealth and power, the devastated areas slowly began to recover. Rains were eroding and redistributing the ash and chemical weathering was beginning to restore the fertility of the soil. Cautiously at first, vegetation began recolonizing the blanketed area: first the lichens and algae, then the ferns, grasses, shrubs and, finally, the trees. As vegetation established itself on the ash blanket, other key nutrients could build up in the soil, among them the nitrates and phosphates which are especially necessary for successful agriculture. But to the best of our knowledge, human recolonization did not become significant until the sixth century after Christ, approximately two centuries after the disastrous eruption. The immigrants, once again, came from the north and brought with them Classic Maya culture. They were probably a part of the Chorti Maya southern expansion so well documented by the late Sir Eric Thompson. The Chorti, an eastern lowland branch of the Maya, were interested in establishing colonies in this area in order to


*Stratigraphic sequence of airfall eruptions and cultural horizons for the Zapotitan Valley exposed at the Cambio site roadcut. (A) Preclassic soil with artifacts including exposed vessels ; (B) basal pumice layer from Ilopango which is located 37 kilometers away; (C) lower "T2" component of the Ilopango tephra; (D) upper "T1" component of the Ilopango tephra; (E) soil developed out of the Ilopango tephra with Middle to Late Classic artifacts; (F) thin layer of the Laguna Caldera tephra which buried the Cerén site to the north; (G) San Andres tufa, a hardened volcanic ash layer from another eruption in the area; (H) Late Classic artifacts and floor construction; and (I) tephra from the Playon eruption of 1658-71.*

control two large outcrops of obsidian at Ixtepeque and Ayarza. The subsistence of these colonists was, at least in large part, based on corn and bean agriculture. These are the two crops which have been so extraordinarily well preserved at the remarkable Cerén site.

Situated in El Salvador in the Zapotitan Valley, the Cerén site must rank as the nearest Central American equivalent to Pompeii. Excavated by the Protoclassic Project in 1978, this Classic Maya colony was established by agrarians who built their homes atop the partly weathered white ash blanket from Ilopango. Their multiroom farmhouse and a nearby work platform was made of wetlaid clay floors which were first allowed to dry and were then fired in place. Upright posts



*Ceren farmhouse looking southwest. The bottom of the doorway is visible in the center. The hole through the left wingwall was caused by the hot tephra degassing itself after it fell, creating a tunnel. The airfall layers of tephra caused by the Laguna Caldera eruption are four meters deep above the floor.*

supported roofs of palm thatch and the internal partition walls were covered with wattle and daub—all of these features were remarkably well preserved and found nearly intact. This excellent state of preservation, both of building materials and vegetation surrounding the house, is attributable to the eruption of the Laguna Caldera volcano during the sixth century after Christ, a catastrophe much smaller than Ilopango, covering only a few kilometers. The farmhouse at Cerén, however, lay in its path and the eruption caught the inhabitants entirely off guard. The family evidently was trapped in the house and all of the members killed by burning or asphyxiation.

Unfortunately, the portion of the house containing the bodies was razed by a bulldozer three years ago; the only information about the occupants comes from modern local residents who describe having seen a number of bodies in one room huddled together on the floor.

The work platform associated with the house originally may have had its own wattle and daub wall, but it had fallen into disrepair or else had been removed. The platform yielded most of the chipped stone tools found at Ceren and it must have been a locus of male activities, since in Mesoamerican societies the manufacture of stone implements was exclusively a male duty and