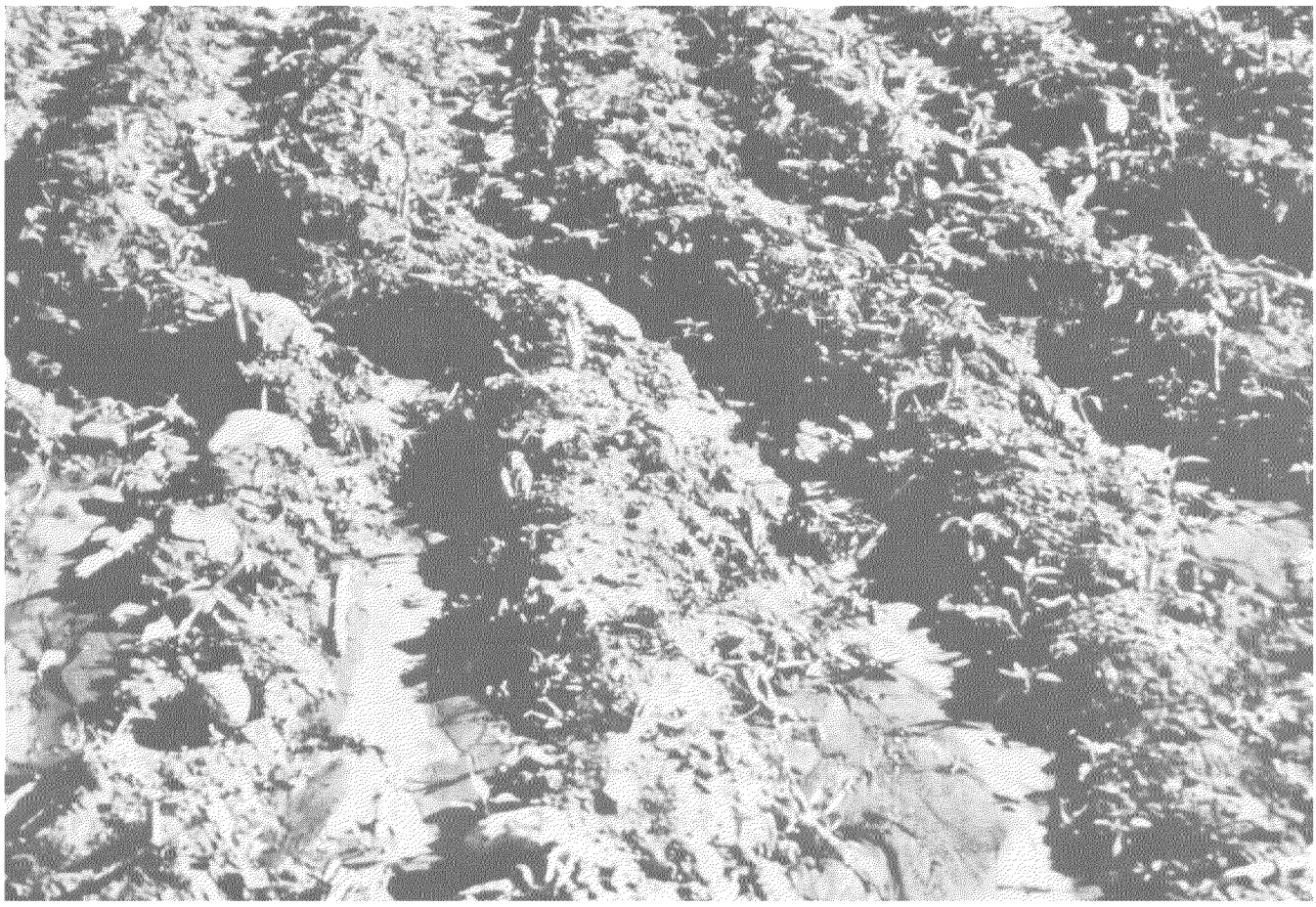

FIGURE 25.—View towards the north showing rows in a cultivated field west of El Progreso (station 11, table 7) that are offset 105 cm in a sinistral sense by the Motagua fault. See figure 23 for location of El Progreso.

variations in energy release along the fault, construction practices, topography, and movement on subsidiary faults, undoubtedly influence the distribution of damage resulting from seismic shaking.

SECONDARY FAULTS

Secondary faults (faults which underwent surface displacement approximately concurrent with that on the main fault but which at the surface do not join the main fault) ruptured the ground surface in the Mixco area, in the western part of Guatemala City, and in the area between those cities. Data presently available indicate that the secondary faults occurred as much as 30 km from the main fault. This distance from the main fault is one of the longest ever documented for secondary faults associated with historic strike-slip faults, and this fact alone makes the study of these faults of international interest. The faults are particularly important to Guatemala for at least two reasons. First, they traverse an urban area, and their future behavior should be considered with regard to present and future land use adjacent to them. Second, the generally north-trending faults near Guatemala City, on some of which the 1976 secondary ruptures occurred, may themselves be capable of producing damaging earthquakes. Even though such earthquakes probably would be of smaller magnitude than those produced by the Motagua system of faults, they could damage Guatemala City because of their proximity.

The following description of the distribution and trends of the secondary faults relies on data gathered by the Sociedad Geológica de Guatemala, which in a remarkably short time prepared a map of the faults. The description of details of the faulting at particular places is based on field examinations by the writers. The secondary faults can be grouped into the three zones indicated in figure 29; individual faults are not shown, primarily because of the scale of the figure. The description of the faults will proceed from west to east.