FIGURE 47.—Puerto Barrios wharf, Department of Izabal, destroyed by February 4 earthquake. Arrows show large warehouse partially submerged. See figure 40 for location of town.

one obtains an M_S value of 7.4. These values are in good agreement with the value M_S 7.5 determined for the Guatemalan earthquake from teleseismic observations (Person and others, this report).

Having established that $M_S=7.5$ is a reasonable estimate for this earthquake, we proceed to determine the seismic energy, E_S, from the Gutenberg-Richter energy-magnitude relationship given by Richter (1958):

$$\log E_S = 11.8 + 1.5\ M_S. \qquad (3)$$

This equation yields $E_S = 1.1 \times 10^{25}$ ergs for the Guatemalan earthquake of $M_S=7.5$.

The stress drop (Keilis-Borok, 1959; Aki, 1966; Brune, 1970, eq. 30) is defined by

$$\Delta\sigma = \frac{\mu\bar{u}}{r}\frac{7\pi}{16}, \qquad (4)$$

where r is the radius of a circular dislocation, assumed in this case to be 150 km, the rigidity representative of volume around the faulted area is

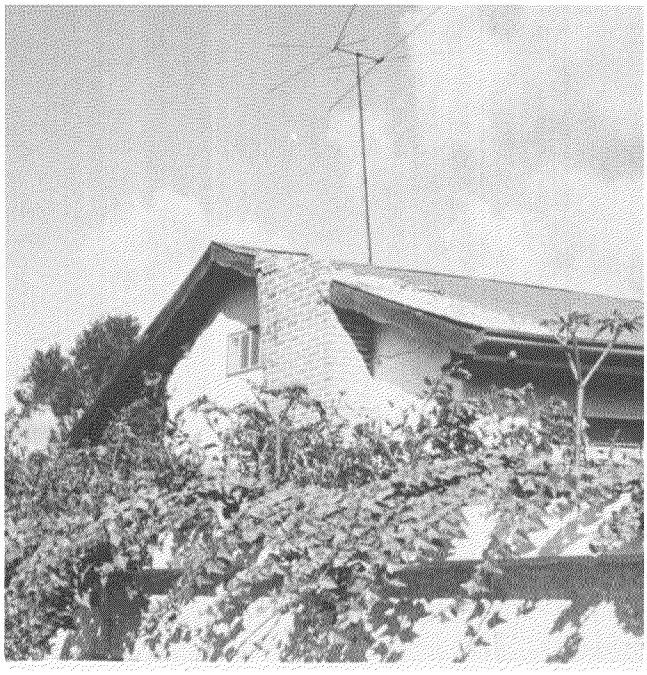

FIGURE 48.—Chimney collapse from a one-story house in Guatemala City, Zone 11.