Since the γ_2 phase region of the mercury-tin equilibrium phase diagram is quite broad, $HgSn_{7-8}$ samples were prepared in the middle of the range - 13.4 weight % Hg and 86.6 Weight % Sn. The samples were melted in evacuated, sealed vycore tubes and were cooled slowly. Specimens were cut, cold worked and annealed for 24 hours. X-ray diffraction studies and metallographic examination showed that the specimens were single phase γ_2.

γ_1-Ag_2Hg_3 samples were prepared by triturating 200 mesh silver powder with 71 weight % mercury in a Wig-L-Bug for one minute. The specimens were condensed in a one cm. cylindrical die and were allowed to set for ten days. The specimens were shown to be single phase γ_1 by x-ray diffraction.

The velocities of longitudinal and shear ultrasonic waves were measured in each alloy at pressures up to 50 kb. using the technique discussed in the previous paper.[1]

RESULTS

The variations of the longitudinal and shear ultrasonic wave velocities with pressure of the three alloys are shown in Figures 1a and 1b. The wave velocities of all three alloys show linear increases with pressure. Examination of these graphs indicates that the slope of the shear velocity of γ appears to change in the neighborhood of 25 kb.; the slopes of the longitudinal and shear velocities of γ_2 appear to change in the neighborhood of 15-20 kb. The possible causes of these observations will be discussed below. The remaining velocities exhibit linear behavior from 0-50 kb. Table 1 lists the slopes of these curves and the longitudinal and shear velocities of each alloy at atmospheric pressure; these values were obtained by least squares analysis and back extrapolation. The percent errors shown represent the