standard deviation from the least squares line and not the experimental error of the data points; the precision and accuracy of these measurements are as described in the previous paper.[1]

The elastic constants of these alloys were calculated from the wave velocities as described in the previous paper.[1] Figures 2, 3, and 4 show the behavior of the bulk, shear, and Young's moduli of γ, γ_1 and γ_2 as functions of pressure. The values of each elastic constant at atmospheric pressure in Table 2 were obtained by back extrapolation along the straight lines fitted to the data points by least squares analysis.

DISCUSSION

There are many factors, either singly or in combination, which could be responsible for the apparent slope changes observed previously in dental amalgam[1] and also in the γ and γ_2 velocity data, see Table 1 and Figures 1a and 1b. Such changes could arise from the experimental configuration; although the pressure calibration is periodically checked, small changes might occur during data runs. Additional changes could arise from the non-hydrostatic geometry of the pressure apparatus and its effect on materials with quite different plastic deformation properties. Another possible factor is the introduction of porosity in the form of microfissures and cracks due to fracturing during stress release.

The analytical calculation itself may be a contributory factor. The analytic computations involve, as part of the boundary conditions, the pressure dependence of the elastic properties of the pyrophyllite gaskets. This input data has been derived from previous experiments.[3] However, each data run requires two new pyrophyllite gaskets, and although the gaskets were prepared