of all P-U_p states in a medium which can be achieved by a right-going shock wave. Consider the Hugoniot curves for two media in Fig. 5. Case II of Fig. 4 illustrates the pressure profile for this situation. The sequence of events can be described in the following manner. Medium 1 is brought from the initial state P = 0, U_p = 0 to the state P_1, U_{p1} by the action of a right-going shock wave S_1. When the shock wave interacts with the interface between the two media, a transmitted shock wave S_2 transforms medium 2 to the state P_2, U_{p2} from the initial state. At the same time, a rarefaction wave S_3 is reflected back into medium 1 causing the material to be relieved to the state P_2, U_{p2}. This state is represented by the intersection of the rarefaction curve which corresponds to the locus of P, U_p states attained behind the rarefaction wave in medium 1 and the Hugoniot curve for medium 2. This intersection point must necessarily be the point at which the continuity conditions are satisfied. The rarefaction curve is actually a release isentrope and for most solids there is little difference between a mirror image of the Hugoniot curve and this isentrope. Another observation concerning the shock wave-interface interaction is that the straight lines which connect the origin and the points P_1, U_{p1} and P_2, U_{p2} have slopes of $\rho_0 U_{s1}$ and $\rho'_0 U_{s2}$ respectively and are the quantities normally measured in an experiment. This leads to the impedance-match technique or graphical solution method for determining the pressure and particle velocity in an unknown material, when interfaced with a known material.

The application of this technique, illustrated in Fig. 6, utilizes 2024 aluminum alloy as the known standard material in