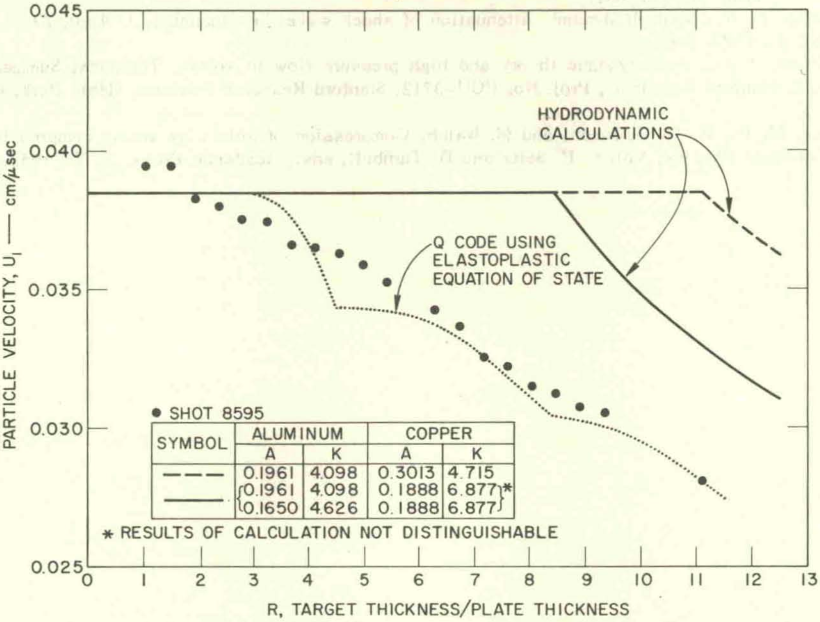
can be compared with the calculations. Such data are plotted in Fig. 7. It is readily apparent that the experimental data agree more closely with the results obtained by the use of the elastoplastic model than with those obtained by the use of the fluid model.

Peak particle velocity as a function of distance is shown in Fig. 8 for the case of an aluminum plate hitting a copper target. Again, the results obtained with the elastoplastic model more nearly agree with the experimental data than do the results from the fluid model. This result is obtained for all reasonable representations of the Hugoniot data of aluminum and copper, i.e., different pairs of values of the parameters $A$ and $K$.




| SYMBOL | ALUMINUM A | ALUMINUM K | COPPER A | COPPER K |
|---|---|---|---|---|
| – – – | 0.1961 | 4.098 | 0.3013 | 4.715 |
| —— | 0.1961 | 4.098 | 0.1888 | 6.877* |
| | 0.1650 | 4.626 | 0.1888 | 6.877 |

Fig. 8. Peak Particle Velocity in Copper Target Hit by an Aluminum Projectile

## V. Conclusions

The numerical method for calculating shocks developed by von Neumann and Richtmyer [1] has been successfully applied to a problem involving an elastoplastic stress-strain relation. Comparison of the results of the numerical work with the results of experiments shows that elastoplastic behavior of aluminum and copper is required to account for the observed rapid attenuation of shock waves. Present results are valid for stresses up to 0.1 megabar in aluminum and up to 0.15 megabar in copper.

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