TABLE 3.1.--Types of experiments

Name of Experiment	Accelerating System	Intermediate Materials	Impact System
Elastic precursor	WSU gas gun	Aluminum projectile/ vacuum	Projectile impacting iron
Plate slap	2,4,6-Trinitrotoluene (TNT)[a]	Naval brass/ aluminum/vacuum	Aluminum impacting iron
Explosively driven	Ammonium perchlorate (AP)[a]	.....	Detonation shock impacting iron

[a]Initiated by Pentolite plane wave boosters.

3.5. Plate Slap Experiments

Shock wave transmission experiments were performed on thin samples of Armco iron in which final driving stress was near 200 kbar. Specific details of plate slap experiments are given in the following subsections. Included are discussions of flier system, target construction, and laboratory methods.

3.5.1. Flier Plate System for Plate Slap Experiments

The shock wave system is illustrated in Fig. 3.1. The system consists of a plane wave explosive booster (a), a cast 2,4,6-Trinitrotoluene (TNT) pad (b), a brass plate (c), an aluminum flier plate (d), a vacuum chamber (f, g, and k), and a target (g) which holds the iron sample. Reproducibility of the system was about 18 percent, as indicated by the range of free surface velocities (1.01-1.19 mm/μsec) obtained for the plastic II shock in iron.

The difference in impedance between the 2.54-cm-thick brass plate and the 0.32-cm-thick aluminum plate causes the brass-aluminum interface to go to zero pressure when backward-facing relief waves from the free surface of the aluminum plate reach the interface. The aluminum flier plate separates from the brass plate and flies free. It travels 12.7 mm through vacuum at an average velocity of 1.6 mm/μsec before impacting the iron samples. The time required for a flier plate to travel the 12.7 mm was approximately 8 μsec, which is sufficient time for eight wave reverberations to occur in the plate before impacting the iron sample.