# A STUDY OF THE FLOW FIELD INDUCED BY AN EXPLOSION NEAR THE GROUND

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An experiment is described in which an attempt was made to investigate the phenomenology of an airburst explosion, in particular those phenomena related to the interaction of the blast wave with the ground beneath the charge. The experiment was conducted under free-field conditions using a 1000 lb TNT charge suspended 72 feet above the ground. The primary instrumentation was photographic, using shadow techniques to record the trajectories of the shock fronts and smoke puff tracers to record the trajectories of individual air elements entrained in the blast wave.

The analysis of the particle trajectories was based on the technique originally proposed by Dewey. However, the analysis was re-worked to account for cylindrical rather spherical symmetry, and extended to account for more than one shock wave. Using this analysis, it was possible to completely describe the development of the blast wave in both space and time in the region investigated. Details of the experimental and analytical techniques are given.

Results of the analysis of the shock trajectories and the particle trajectories are presented, and several interesting phenomena are identified related to the reflection of the blast wave from the ground.