Ammonium picrate or explosive D upon which this country had depended almost entirely up to the time of our entry into the war was forced into the shell under hydraulic pressure. The adoption of the point-fused shell and an explosive for shell filling new to this country, namely, amatol, made necessary the provision of new methods for shell loading and the expansion of plant facilities for these new methods capable of loading the vast and tremendous numbers of shell required in modern warfare. As a result of reports, following investigations by our officers of methods used abroad, various new shell-loading plants were built in the United States.

The names, location, and output of the shell-loading plants in our country are as follows:

Company.	Location.	Total capacity daily (shell).
T. A. Gillespie Loading Co	Morgan, N. J	47,000
Do	Parlin, N. J	25,000
Do	Runyon, N. Y	3,500
Poole Engineering & Machine Co	Texas, Md	15,000
United States Arsenal	Rock Island, Ill	1,000
Sterling Motor Car Co	Brockton, Mass	10,000
American Can Co	Kenilworth, N. J	20,000
Atlantic Loading Co	Amatol, N. J	53,500
Bethlehem Loading Co	Mays Landing, N. J	41,000
Do	New Castle, Del	27,400
Do	Redington, Pa	4,000
duPont Engineering Co	Penniman, Va., G plant	41,000
Do	Penniman, Va., D plant	13,350
J. D. Evans Engineer Corp	Old Bridge, N. J	30,000
Total		284,750

It was found necessary in the early stages of the war to fill all shell with T. N. T., regardless of cost, until there could be built the required and properly equipped plants for the mixing and loading of amatol.

Two methods for loading T. N. T. were adopted. The one most largely used, however, was the casting method by which the chemical was brought to a molten condition in a steam jacketed kettle and poured into the shell. To do this two operations were usual. First, the shell was filled approximately two-thirds full with the molten material, and then as soon as a crust was formed this was broken through and the second filling took place. This process was necessary to prevent the formation of cavities in the filling charge. Such cavities cause breakdowns, resulting almost invariably in incomplete or entire failure of detonation.

The ammonium nitrate first produced in this country during the war was of such a character that proper densities could not be obtained when mixed with T. N. T. to form amatol. This difficulty was overcome after much investigation, and proper methods were outlined for the ammonium nitrate manufacturers, with the result