SECTION III

Research and Development

In the conduct of war, nations must depend on effective equipment as well as the individual soldiers and their superior training in order to win. Without effective equipment, the chances of success for the soldier are small. The sound research and development program developed by the Engineer Board prior to World War II allowed the Corps of Engineers to expand its existing research and development program to the point where it produced enough equipment in sufficient time to contribute to winning the war.

On 14 September 1921, the Chief of Engineers established a Board on Engineer Equipment at Camp A.A. Humphreys (later Fort Belvoir). It had the responsibility for designing, testing, and adopting articles of engineer equipment for use by the Corps. During its 11 years of operation, the Board on Engineer Equipment conducted work on 349 projects.

On 26 January 1933, a new Army regulation established an Engineer Board and required it to develop Engineer equipment, consider subjects pertaining to the Corps of Engineers as referred by the Chief of Engineers, and originate and submit to the Chief of Engineers recommendations to improve the Corps of Engineers.

From January 1933 to June 1945, the board worked on 1,663 projects, 87 percent of which began after 1 July 1940. The Corps of Engineers Technical Committee recommended 885 items of equipment for adoption as standard, standard substitute, or limited standard during that period.

There were 14 fields of engineer research and development. Listed alphabetically they began with Air Corps installations; barrage balloons; bridging (one of the more important fields of engineer research and development); camouflage materials; demolitions and obstacles; electrical and related work; and electronics, including research on mine detection equipment.

In addition to its work in specific fields of research and development, the Corps of Engineers pursued investigations into general fields. One field included lightweight equipment, transportable in the C-47 cargo plane, for airborne engineers in the construction and repair of airfields.

The War Department assigned the Corps of Engineers the responsibility for the compilation and reproduction of all maps for the Army ground forces. The Engineer Board designed a complete mobile map reproduction train which consisted of ten truck-mounted units and provided for both lithographic and photographic duplication for field mapping units.

The mechanical equipment field included the tractor-mounted earth auger (requested by the Chief Signal Officer in March 1944), a medium and light portable sawmill, snow removal equipment designed for use at military airports, railroad track-laying machinery, portable gasoline power tools, air compressors, sprayers, power shovels, pile drivers, cranes, tractors, dozers, and fire-fighting equipment.

In the field of petroleum distribution equipment, the Army initiated large-scale procurement of pipeline equipment about a year after the United States entered the war. Until that time the Army relied upon tank cars and trucks for the distribution of petroleum products.

One field of responsibility belonging to the Engineer Board, that of water supply equipment, required that safe, potable water be provided for troops, either by purification or distillation. The board later developed new, lightweight equipment to be carried by troops.

The following essays discuss just a few of the many projects of concern to the Engineer Board during World War II.

Probing for mines proved dangerous and tedious. In search of a better way, the Engineer Board instituted research on mine detection equipment, both metallic and nonmetallic, early in the war. The development of the mine detector is the subject of the first essay.

The second essay describes the development of the tank dozer. Initially, experiments conducted on clearing mines consisted of detonating them with explosive devices. But the board heard about British efforts to clear minefields by using a dozer blade on a tank, and it began experiments that led to the successful development of the tank dozer.

The use of heavier mechanized equipment by the military led the board to develop new types of bridging equipment. The third essay concerns the development of the all-purpose Bailey bridge.

The development of airfields for tactical aircraft and heavy bombers brought a corresponding requirement for the development of landing mats and landing fields to support them. These are the subjects of the last two essays in this section.

These essays give some idea of the Engineer Board's wide-ranging effort during World War II to provide the soldiers with the best equipment to perform their missions.