

THE ENGINEER BOARD*

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IN ORDER to give a clear picture of the work in Photogrammetry carried on at the Engineer Board, a general description of this organization and its functions as the research and development agency of the Corps of Engineers is required.

The Engineer Board, correctly speaking, is made up of a group of Senior Officers of the Corps of Engineers duly appointed by the Chief of Engineers. This group, which averages about five members, functions as the final approving body for the more important items produced by the working group, known officially as the Technical Staff of the Engineer Board. This technical staff is usually referred to in loose terms as the Engineer Board, and it is the group intended when Engineer Board is mentioned in the following.

It is unnecessary to delve very far into the past and cover the origin and history, although much of the ground work and planning fell in this period. Rather, let us begin in 1941 when the Engineer Board began to take on its present size and capacity. At this time construction of modern buildings was underway. Many of these buildings were of special design in accordance with the varied requirements of development and testing of Army engineer equipment. There are over 20 in all, including warehouses and administration buildings. There are facilities for testing equipment in all types of climates and at any temperature desired, machine shops for even the heaviest machinery, electrical and electronic laboratories, laboratories for chemical testing of all materials, facilities for boat and bridge testing, a woodworking shop and a model shop, also a foundry, facilities for coating mirrors for searchlights, etc. As an example, the pilot model of the rectifying camera to be discussed later was completely manufactured at the Engineer Board with the exception of the lens.

Along with these facilities, a technical staff made up of officers, enlisted men, and civilians has been assembled which numbers well over 1000. These include specialists in each phase of engineering. Now, I do not wish to leave the impression that the Board is made up of long-haired scientists because it is not. Rather, we try to keep up to date on progress in our particular line and know where to go for the specific information or assistance we need. However, we work together rendering mutual aid. If we have a photogrammetric instrument that needs some electrical apparatus in its operation, we go to the electrical boys and tell them what we want, and we get the best thing they can dig up.

We also receive tremendous help from other government agencies (as I will mention later) and from industry.

Actually the manufacture of any item of equipment at the Board is adopted only as a last resort when no firm in industry will take the job. We prefer to work with some industrial company or companies on a development in order that the said company will become educated to the problems of manufacturing the item. Then when quantity procurement is decided upon (assuming the development is successful) the company is better prepared to produce.

When a pilot model of an item is produced, as a general rule it is first tested at the Board. If considered reasonably satisfactory, it will then probably be sent to an Army unit using equipment of this general nature, for test. If the

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item survives this ordeal, a report is made to the actual Board of Engineer Officers who refer it up through channels for adoption as a standard item or bounce it back to us for further study or improvement. Several of these steps may for various reasons be sidestepped, except one. The report is inevitable. How pleasant development work would be if it were not for reports. In this connection I might mention the fact that all ideas or inventions pertaining to engineer work originating in the Army or reaching the Army from almost anywhere eventually land at the Engineer Board, and we must study them and send a report back analysing them regardless of how crazy they are. Since many phases of topographic work are rather vague in the minds of the general run of Army personnel, those ideas or inventions which no one can make heads or tails of, are sent to us under the assumption that it must have something to do with us. Like many other tedious tasks, this study of inventions is essential because we obtain a great number of good ideas in this manner which more than offset the trouble connected with it.

Getting back to the organization of the Engineer Board, the technical staff is divided into six divisions; the Service Division, handles general administration, personnel, procurement, fiscal, and similar matters. The technical divisions are: One—Demolitions, Camouflage; Two—Electrical, Electronic; Three—Mechanical equipment, such as Bulldozers, Generators, Tractors; Four—Bridges, Roads, Boats; Five—Topographic, which is the one in which we are concerned. This division is broken down into a Ground Control Branch, a Photogrammetric Branch, a Photo & Litho-Reproduction Branch, an Aerial Photographic Branch at Wright Field, and the Motion Picture Branch which takes movies of tests at the Board.

This division grew up from the Engineer detachment at Wright Field and the Mapping Branch at the Engineer Board. The Wright Field detachment began in 1920 with the assignment of Major Bagley to Wright Field to co-operate with the Air Forces on topographic mapping. All through the nineteen thirties the Wright Field detachment made up of military and civilian personnel conducted research in photogrammetry along with the aerial photographic development by the Army Air Forces. During the later part of this period, work in connection with ground control and reproduction was being conducted at the Engineer Board at Belvoir by a group which became the Mapping Branch in the reorganization of the Board in 1941. Soon after the war began a considerable amount of the work at Wright Field was moved to Ft. Belvoir and by 1943 most of the personnel were moved also.

The Aerial Photographic Branch of the Topo Division still remains at Wright Field under the direction of Major Eldon Sewell, a member of this society. This Branch works with the Aerial Photo Laboratory, Wright Field, calibrating aerial cameras used for mapping, analysing results of tests of aerial photographic equipment such as camera stabilizers by use of multiplex or similar instruments. It also serves as a liaison between the Air Forces at Wright Field and the Engineer Board.

Although the remainder of the Engineer Board operates under the direction of the Research and Development Division of the Office, Chief of Engineers, Tech V (The Topographic Division) functions under the direction of the Military Intelligence Division, O.C.E. (Colonel A. G. Matthews) since this office is charged with mapping operations.

At the beginning of the war conditions in topographic matters fell into the same pattern as the Army in general. There were two G.H.Q. Topo battalions, and approximately three Topo Corps Companies. From this meager beginning

there evolved 6 G.H.Q. Battalions, 11 Army Battalions, approximately 16 Topo Corps Companies, and approximately 18 Air Force Topo Companies. Personnel gleaned from cadres of the existing units, various mapping agencies, etc., formed the backbone of these units.

These organizations required equipment as quickly as possible and since personnel in Army Supply were rather unfamiliar with most of the items, a considerable amount of this procurement was passed directly to the Engineer Board.

Here development and procurement moved hand in hand due to the urgency of the demand. Quite frequently items were accepted only because they were available and not because they were particularly suitable.

We received valuable assistance from such government agencies as the National Bureau of Standards, the Naval Observatory, the Army Map Service, the Coast and Geodetic Survey, the Geological Survey, and others, in this work.

Many firms familiar to you, such as Fairchild, Aero Service, Abrams Aerial Surveys, Bausch and Lomb, Eastman Kodak Company, as well as many others, produced equipment for us. At least 8 million dollars were used in this work.

Now that the war is over, it is the plan of the War Department that research and development continue in order that procurement for any future emergency will have more thorough and efficient preparation. Data from the units using the equipment which we furnished will be studied. Foreign and domestic equipment of this nature will be analyzed and pilot models of new types of equipment produced.

For photogrammetry, Major Lorenz and his able assistants in the Photogrammetric Branch will have to study all existing devices, possibly produce new ones to keep pace with existing needs, put rubber tires and chromium plating on our wheelbarrow, the Multiplex, and with the assistance of Major Sewell's Branch at Wright Field keep pushing toward better quality, more speed, and less expenditure of time and effort in aerial photography and map making.