

## TEN YEARS OF PROGRESS IN PHOTOGRAMMETRY IN THE CORPS OF ENGINEERS

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THE progress of photogrammetry made by the Corps of Engineers in the past decade may best be illustrated by reviewing the operations of the Twenty-Ninth Engineer Topographic Battalion during that period. The work of this organization, a veteran of World War I, has effected the employment of photogrammetry in every U. S. Army topographic unit. Progress made by the Twenty-Ninth is, therefore, indicative of progress made by the entire military mapping establishment.

At the time the American Society of Photogrammetry was organized the Twenty-Ninth was still seeking means for mapping large areas with relatively few photographs. The belief that multiple-lens cameras and tandem mounts could be utilized for accurate, large-scale, three-dimensional mapping died hard. It was a wonderful dream but hard cold facts proved that single-lens photography was necessary for the accomplishment of the type of work desired.

As a result of exhaustive tests, multiplex was adopted as the basic photogrammetric mapping equipment. The normal projectors first used were later replaced by wide-angle equipment. With its present multiplex installations the Twenty-Ninth is capable of mapping twelve fifteen-minute topographic quadrangles per month or about thirty four thousand square miles per year.

The Twenty-Ninth Engineer Topographic Battalion has developed the densometric method of control in processing diapositives. This method is particularly valuable in military mapping operations since it permits mass production (thirteen hundred diapositives have been printed in a single day by the Twenty-Ninth Engineers) of good quality diapositives without the limitations of the "human equation." Mass production is important because in military mapping the original film is available only for a short time in many cases.

Another development of the Twenty-Ninth of value in military mapping is the analytical method of adjusting vertical extension displacement in multiplex operations. This is of extreme value in areas where vertical control is inadequate.

Wing prints of trimetrogon photography taken primarily for air chart compilation are being successfully used in Multiplex topographic mapping. Special adapters make this operation possible. The scale and accuracy limitations imposed by this photography do not prohibit its use for compilation of topographic maps for certain types of ground force operations.

While the Twenty-Ninth has adopted definite methods and procedures in accomplishing its missions, they are not always able to follow the prescribed routine. The first consideration is to get the job done according to orders. Many missions have been successfully accomplished with material that in normal times would not be considered for use in mapping operations. The use of inadequate material calls for extreme ingenuity and resourcefulness. The fact that successful military operations have been based on maps in the preparation of which inadequate photography and control were used, is a testimonial to the fact that topographic units are not lacking in resourcefulness and ingenuity.

While photogrammetry as practiced by civilian components of the Corps of Engineers is incidental to the main job of performance of construction work, nevertheless photogrammetry has played an important part in these construction operations. The Fort Peck Dam, the canalization of the Ohio and Mississippi rivers, and numerous major engineering works accomplished by the Corps

of Engineers were expedited due to the employment of photogrammetry in the mapping operations. No project of any appreciable magnitude was accomplished within the last ten years by the civilian components of the Corps of Engineers without the use of photogrammetry. The methods used were not always orthodox but the results always justified the particular adaptation of photogrammetry employed.

The Corps of Engineers does not consider that present methods and equipment have reached perfection. Experiences during the present war offer a firm basis for further research and development. We believe that progress made in photogrammetry in the next ten years will far surpass that made during the past decade.

## ANNOUNCEMENT

**T**HE following announcement was received from the Chilean Army, Geographic Military Institute, Commercial Section. Translated by Mr. Guillermo Medina, Head Engineer, U. S. Hydrographic Office.

I take pleasure in informing you that the Commercial Section of the Military Geographic Institute of Chile has for sale the 1943 edition of a Topographic text by Major Alberto Marin Madrid.

The author has had an extensive practice as Technical Topographic and Geodetic Office and as professor in that branch of engineering. The subject is presented in clear and simple style with practical problems.

The originals were revised by the following engineers: Messrs. Eduardo Aguirre, President of the Chilean Association of Engineers, Carlos Llona, Professor of the Catholic University, Arturo Quintant, Professor of the University of Chile, and Luis Montt, Professor of the Catholic University. All of them are of the opinion that this text possesses great technical value and will be received with interest by all professional men. In order that better judgment may be had of its contents a list of the chapters follows:

### 1. Part—Fundamental Conception

Geographic elements—Geographic coordinates—Scales—Scale problems—Copies, enlargements and reductions—Pantograph—Units of measure—Measurement of distances—Stadia—Angular measurement (horizontal and vertical)—Representation of the terrain—Contours—Methods of planimetric development—Chart problems—Triangulation—Determination of areas—Planimetry.

### 2. Part—Field Instruments

Simple instruments—Common parts of instruments—Complex instruments—Stadios—etc.