

THE SEMI-ANNUAL MEETING  
HELD AT  
INSTITUTE OF GEOGRAPHICAL EXPLORATION

*Cambridge, Mass., September 21, 22, 1950*

THE PROGRAM\*

- Address of Welcome*—Dr. Karl T. Compton, Chairman of the Corporation, Massachusetts Institute of Technology.
- What Is Stereo?*—Dr. Lorrin A. Riggs, Department of Psychology, Brown University.
- High Altitude Stereo Techniques*—Dr. Claus M. Aschenbrenner, Optical Research Laboratory, Boston University.
- The Attenuation of Contrast by the Atmosphere*—W. E. K. Middleton, National Research Council of Canada.
- Luncheon*
- Tour of Boston University Optical Research Laboratory*
- Cocktail Party and Dinner with Illustrated Talk, Some Recent Developments in High Speed Photography*—Dr. Harold E. Edgerton, Department of Electrical Engineering, Massachusetts Institute of Technology.
- Astronomical Photogrammetry*—Dr. Fred L. Whipple, Harvard College Observatory.
- Deep Sea Underwater Photography*—David M. Owen, Woods Hole Oceanographic Institution.
- The Study of Size and Shape by Means of Stereoscopic Electron Micrography*—Chester J. Calbick, Bell Telephone Laboratories.
- The Airborne Profile Recorder*—Bruce I. McCaffrey, Photographic Survey Corporation, Ltd., Toronto.
- The Application of Statistics to Photogrammetry*—Prof. John C. Sammi, New York State College of Forestry.
- A Commercial Laboratory for the Calibration of Photogrammetric Cameras*—Revere G. Sanders and Clarice L. Norton, Fairchild Camera and Instrument Corp., and David W. Mann, Lincoln, Massachusetts.

LOCAL PROGRAM COMMITTEE

|                       |                     |
|-----------------------|---------------------|
| Charles O. Baird, Jr. | Duncan E. Macdonald |
| Louis H. Berger       | David W. Mann       |
| Donald W. Flinn       | Herman J. Shea      |
| Alexander Forbes      | Hyman B. Ullian     |
| Elmer C. Houdlette    | Edward S. Wood, Jr. |

REPORT OF THE SEMI-ANNUAL MEETING

More than 100 photogrammetrists registered at the Semi-Annual Meeting of the Society held appropriately in the halls of the Institute of Geographical Exploration of Harvard University at Cambridge, Mass., on September 21 and 22. An interesting and educational program, good accommodations, favorable weather, and the New England atmosphere all contributed towards an outstanding and enjoyable meeting well worth attending.

The program was keynoted by Dr. Compton. It was gratifying to know that, great as he is, the broad phases of aerial photography and mapping and this Society hold an interest for him. Dr. Riggs explained stereoscopy from a medical and psychological viewpoint. His paper will constitute an authoritative addition to the Society's scanty literature on this fundamental subject.

Dr. Aschenbrenner spoke of the difficulties of photographic interpretation and the measurement of fine detail with high-altitude photography due to the reduced contrast,

\* Practically all of the papers are included in this issue. It is hoped that the remainder can be placed in the March, 1951 issue—*Editor*.

definition, and parallax differences. Ordinary conditions of overlap and base-height ratio, when applied to high altitudes, do not enable the interpreter to differentiate between relatively small elevation differences. He suggested the use of low-oblique photographs (similar to those used in the U.S.G.S. Twinplex system) as a means of increasing the base length so that sufficient parallax difference would be present to create a three-dimensional separation of ordinary elevation differences, even from great heights. Mr. Middleton continued in the same idea to show how high-altitude photography affects interpretation by reducing the contrast tone of the photographs.

After luncheon on the first day, the group was expertly conducted through the Boston University Optical Research Laboratory under the direction of Dr. MacDonald. Ten different points of interest were aptly explained to each of nine subgroups of delegates. How those attractive young ladies kept the subgroups on the strict time schedule and prevented them from getting all mixed up is more than this reporter can understand! It was sufficient to realize that here a "Buck Rogers" type of photography and electronics was being studied for possible application to the aerial photography of our Air Force. The resolving power diagram was in evidence in every phase of the work. The features of interest included the Electronics Laboratory, the Photo Shop, the Photo Research Laboratory, the Machine Shop, the Optical Testing Laboratory, the Optical Testing Laboratory for Interpretation, the Laboratory for Testing Optical Instruments, the Optical Shop, and the Upper Atmosphere Research Laboratory. Of particular interest was the 240-inch camera that was under construction. With lenses bigger than washtubs and a framework bigger than a modern kitchen, one wondered where the wings are to be attached; it was learned that it is to be flown intact in existing aircraft.

A brief cocktail party and a banquet dinner, featuring filet mignon, prepared the guests for the exciting demonstration of high-speed photography by Dr. Edgerton. Moving pictures were taken on a continuously moving strip of film illuminated by a stroboscopic lamp. Slides of rapidly moving objects were shown which were taken with an instantaneous flash triggered by the impact of acoustical waves created by the object itself. Thus, reproduced for the audience were such things as bullets hitting light bulbs and stopped at any stage of impact, a tennis racket hitting a tennis ball, a ballerina in colorful dress poised in mid-air, and a drop of milk splashing into a saucer to form an intricately beaded crown. A stroboscope was actually demonstrated on a series of rotating objects and diagrams. The speaker's repeated references to micro-seconds and milli-seconds made the 1/200-second exposure of an aerial camera seem like a long time indeed.

The second day of meetings commenced with Dr. Whipple's paper telling how photogrammetry is used in astronomy to determine distances to heavenly bodies, and some of the problems that are involved. In quite another direction, Mr. Owen told of the problems encountered in "Deep Sea Underwater Photography." A pair of cameras with a fixed base were devised with an illuminating mechanism whereby stereoscopic pairs of photographs of the ocean floor at great depths were taken from a few feet to 30 feet away, showing the animal life, the character of the ocean floor, etc. Mr. Calbick told of the electron microscope and showed interesting structures of a number of materials. Mr. McCaffrey attracted a lot of interest as he described the Airborne Profile Recorder, an electronic device that records a profile of the ground directly beneath the airplane. Accuracies as small as  $\pm 10$  feet were experienced on a proposed method to establish vertical control for photogrammetric instruments. The rate of climb of the aircraft, the barometric pressure, and changes in the barometric pressure were taken into account by flying over points of known elevation, at the beginning and end of a strip.

"The Application of Statistics to Photogrammetry" as explained by Professor Sammi pertained to the interpretation and measurement of objects such as trees on aerial photographs. Representatives of the Fairchild Camera and Instrument Corporation announced the establishment of a calibration laboratory for aerial cameras and lenses for general commercial use. The principal subject was the description of the calibrating device which is under construction. It is similar to, but even more elaborate than, that of the Bureau of Standards, described in the September number of the *Journal* (Vol. XVI, No. 4, p. 502). Objectives in the design were extreme precision, rigidity, simplicity of operation, and the characteristic of remaining in fine adjustment, a difficult problem created by ordinary building vibrations and temperature changes.

*The Publications Committee*