

REPORT ON  
MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE  
Rochester, N. Y., June 16-18, 1936.

by  
Colonel C. H. Birdseye

The American Society of Photogrammetry joined with the Institute of the Aeronautical Sciences in presenting a program of Engineering Sections M-2 and M-3 at the summer meeting of the American Association for the Advancement of Science, at Rochester, N. Y.

Due to the unavoidable absence of Leon T. Eliel, who had been designated as chairman of the Section Meeting, Lester D. Gardner, Secretary of the Institute of the Aeronautical Sciences, presided at the meeting and was assisted in introducing the speakers by C. H. Birdseye. The following program was presented:

Lieut. O. S. Reading, U. S. Coast and Geodetic Survey, - Photogrammetry in 1936.

Dr. Walter Clark, Eastman Kodak Company, - Materials for Aerial Photography.

Dr. W. B. Rayton, Bausch & Lomb Optical Company, - Lens Requirements for Photogrammetry.

\*Col. C. H. Birdseye, U. S. Geological Survey, - Map Reproduction.

\*\*Capt. Louis J. Rumaggi, Corps of Engineers, - The Multiplex Aeroprojector.

Charles W. Collier, Soil Conservation Service, - Use of Aerial Maps in Soil Conservation Studies.

Prof. Earl Church, Syracuse University, presented a paper entitled "Aerial Photogrammetry - A New Science" at the meeting of the Engineering Section on the morning of June 17. Major Gardner left our meeting in order to hear Prof. Church's paper and brought him to our meeting later, when Prof. Church presented part of his paper relating to control for aerial photographic maps.

Marshall S. Wright, Soil Conservation Service, was scheduled for a paper on "Planimetric Maps or Contour Maps", but due to the fact that he had just returned from a long western field trip, he did not have time to prepare the paper and rush of official office work prevented his attendance at the meeting.

The visiting members of the American Society of Photogrammetry were cordially entertained in Rochester, through arrangements made by Major Lester D. Gardner.

On the afternoon of June 16, the Bausch & Lomb Optical Company entertained the visiting members with an inspection trip through the Bausch & Lomb plant, with a most interesting exhibition and description of lens grinding and other features of the work of the Company.

On June 17, the Fairchild Camera Corporation and the Bausch & Lomb Optical Company entertained the visiting members at luncheon at the Rochester Club.

On the afternoon of June 17, the Eastman Kodak Company entertained the visiting members at Kodak Park, where the different processes of making photographic film and paper were explained in detail, and a most interesting inspection trip was enjoyed by the members. At the soundproof auditorium in the research department, an interesting demonstration of sound motion pictures was given.

On June 17, the Eastman Kodak Company entertained the visiting members at dinner at the University Club, presided over by Dr. C. E. K. Mees, Vice President in charge of research.

The opening evening session was held in the Eastman Theatre, at which Dr. Mees gave a most interesting and instructive lecture on Color Photography, which was illustrated by colored drawings, lantern slides and motion pictures in a history and explanation of the most recent developments in the use of color photography.

\*In order to give ample time for discussion of the other papers, Col. Birdseye did not read his paper but presented the members present with mimeographed copies with illustrations.

\*\*At the last moment, Captain Rumaggi found that he could not leave Wright Field, but he had sent a copy of his paper to Major Gardner and it was read by Arthur W. Lambert, Jr. of the U. S. Engineer Office at St. Louis.

On the evening of June 17, Dr. Charles Camsell, Deputy Minister of Mines of the Dominion of Canada, gave an address entitled "A 4,000 Mile Flight Over Northwestern Canada in August 1935". Dr. Camsell was in charge of this exploration and illustrated his trip with motion pictures describing the flight from Prince Rupert Island to the Arctic Ocean and return to Edmonton.

The most satisfactory result of the Rochester meetings, from the point of view of members of our Society, was the interest shown in our meeting. Several of our members attended the joint meeting on June 16 of the Section of Physics and the Section of Geology and Geography at which not over 50 were present. At the meeting of the Engineering Section on June 17, only about 15 were present while we had about 85 at our meeting. Reports of any larger section meeting were not available.

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### PHOTOGRAMMETRY IN 1936

by

Lieutenant O. S. Reading

U. S. Coast and Geodetic Survey

(Paper presented before the American Association for the Advancement of Science,  
June 17, 1936)

Photogrammetry in 1936 resembles the automobile industry in 1910 or the radio in 1920. By this is not meant that hundreds of millions of dollars are soon to be made in its development. Rather that heretofore it has been the work of a few enthusiasts and that at present there are indications that photogrammetry may shortly attain a wide general appreciation of its usefulness with a resulting large expansion. Modern airplanes with their dependable engines, their weight carrying capacity, their increased cruising radius and performance at high altitudes have made aerial photographs practicable anywhere, even over Mount Everest. Modern cameras, lenses, and photographic materials, together with present-day airplanes, have made it practicable to obtain in a few hours an extraordinary detailed, accurate, permanent survey record that, to duplicate by ground methods, would take years of work. The photographic record requires considerable office processing for the construction of a first class map but nevertheless it represents a tremendous step forward in surveying efficiency.

For more than three centuries text books on surveying have been hailing the planetable as the ideal instrument for mapping. On the planetable the map is made in the field with the earth before it as a model; the surveyor may measure the position of as much detail as he finds necessary for his particular purpose. Instead of depending on a notebook, he may check his survey against the earth before him until he is reasonably sure his map satisfactorily represents the ground. The planetable, however, has one inherent and unsurmountable weakness - its limited view from the side of objects which must be mapped as if viewed from above. This limited view means many set ups if all objects mapped are measured. Practical considerations usually render necessary a large amount of sketching from a limited number of set-ups thereby limiting the amount and accuracy of the information mapped. Very accurate, highly detailed maps made exclusively by ground methods are quite expensive often costing a hundred or even several hundred dollars per square mile. The extraordinary development of airplanes and air photo mapping transcends this limitation. Instead of laboriously traversing and retraversing the ground for making thousands upon thousands of measurements in the field, modern aerial photographs, with comparatively little ground work, but with a certain amount of processing in the office give highly detailed, accurate, large scale maps at lower cost than the old, generalized, small scale ones from ground surveys.

The photographs themselves differ from maps in that all objects appear as viewed from the point of exposure rather than from vertically above as on maps. The map maker regards photographs as a record of directions from their exposure stations. The intersection of such directions from at least two overlapping photographs is necessary to determine accurately the map positions of a point unless its altitude