Mr. John V. Sharp of Bausch and Lomb Optical Company gave some interesting information on errors introduced by lenses. He described the influence of focal length, flying height, and C factor in the selection of photography for obtaining desired accuracies in mapping.

Following the adjournment of the meeting, a cocktail party with entertainment was held in the evening at the Betsy Ross Room of the Benjamin Franklin Hotel. About 115 members and guests attended the social evening.

On the following day, October 8, a tour of Aero Service Cooperation was held in which were demonstrated the facilities of Aero Service for photographic processing, controlled mosaics, slotted template system, relief maps made of Vinylite, magnetometer surveying, and the Brock photogrammetric system. Approximately 190 visited the plant.

Following the tour of inspection, chartered buses transported the members to the Philadelphia Rifle Club where Aero Service served as host at the luncheon. A bus tour of historic Philadelphia followed the luncheon and completed the events of the day.

The American Society of Photogrammetry extends its cordial appreciation to Mr. Kauffman, Mr. Robert Sohngen, and to many other members of Aero Service for their painstaking efforts in arranging an outstanding meeting.

SIXTH INTERNATIONAL CONGRESS OF INTERNATIONAL SOCIETY FOR PHOTOGRAMMETRY

Edmund S. Massie, Jr., President

THE last International Society meeting prior to that at the Hague was held at Rome in 1938. The usual procedure is to have an International Society meeting every four years. This arrangement would have placed the Sixth International meeting at Amsterdam in 1942. At that time, of course, it was impossible to hold such a meeting. Due to the International meeting being scheduled simultaneously with the coronation of Queen Juliana in Amsterdam, it was necessary to change the place of the meeting to The Hague. When it is considered that the Dutch had a period of only about two years in which to gather up the pieces of the International organization and plan an International meeting, they did a wonderful job. The attendance at the meeting was approximately 350, the largest number of delegates coming from Holland and the neighboring countries of Switzerland, France, Italy and England. The United States had 19 representatives at the Congress.

The meeting was held, more specifically, at Scheveningen, a beach resort and suburb of The Hague. The technical commission meetings and the plenary sessions were held at the Kurhaus Hotel and the exhibit was held in the Palace Hotel only a block away. The official languages of the Congress were English and French.

The exhibit in the Palace Hotel was opened on the first day of the meeting, with a welcoming address by Dr. Schermerhorn, President of the International Society. I am quite sure you will be interested in a short description of what we had the privilege of seeing. The American Society of Photogrammetry sent an exhibit and I should like to report that it was as good as any of the others with the exception of those that also included equipment and instruments. The ex-

NOTE: An informal report of the Sixth International Congress held at The Hague, Netherlands, September 1 to 10, given at the Semi-Annual Meeting of the American Society of Photogrammetry in Philadelphia.

hibit of our Society included material from three commercial organizations with the remainder of the material being supplied by most of the government mapping organizations. I was very pleased with the exhibit that we sent over. Two of our comercial concerns exhibited in addition to the Society exhibit. Sweden, Belgium and Austria each had an exhibit comparable with ours, consisting primarily of photographs, maps and text material. The more interesting exhibits, because of the inclusion of various instruments and equipment, were those of Italy, France, Switzerland and England. Italy furnished two exhibits, one of which was placed there by Mr. Nistri who incidentally is in this country at present, and this morning was in attendance at the meeting. We had hoped to be able to give Mr. Nistri an opportunity to speak before the meeting but unfortunately we are behind schedule and the technical meeting will close this afternoon. However, I am hoping that many of our members will have opportunity to talk to Mr. Nistri during the course of the day. Mr. Nistri exhibited his stereocomparator and also his version of the multiplex. A new and unusual piece of equipment exhibited by him was the electro-coordinatorgraph, the equivalent of the tracing stand moved by controls similar to turning wheels as in the stereoplanigraph, but the movement of the tracing stand is transferred electrically to a coordinatorgraph that may be placed in the next room if desired. The coordinatorgraph moves about by two rollers representing the X and Y direction. It has the ability of preparing a manuscript at a desired scale that may differ from the plotting scale of the multiplex equipment itself.

The other Italian exhibit consisted of instruments developed by Santoni. The equipment included a tri-camera arrangement somewhat comparable to our trimetrogon, with three cameras fixed rigidly relatively and also attached was an elevated structure containing a sun camera. In addition, were two versions of the stereocartograph, both plotting instruments, very recently completed. The larger and more precise instrument, No. 4, which is the one that impressed me more, has a stationary optical system and moving glass plates with very wide adaptability for tilts. They are attached to the moving part of the instrument and kept in contact by a spheroid, the bottom portion of which has been removed and replaced with a new spheroid shaped to compensate the lens distortion thereby removing some of the difficulties that we have due to the inaccuracies of lenses.

The French exhibit primarily included the Poivilliers instruments, together with some rectification equipment designed for urban area mosaics. The plotting equipment consisted of the Poivilliers Type B and Type D, the latter of very accurate construction and completed since the end of the last war. These instruments are somewhat comparable to the Santoni and Wild equipment, being designed by and incorporating the different principles and ideas of the French. The French also exhibited their film and glass plate cameras and a picture of the SE 1010, an airplane especially adapted for aerial photography. The French have underway a large mapping program using the Poivilliers plotting equipment.

Perhaps the largest exhibit and the one with which we are most familiar was the Wild exhibit. They had their usual surveying instruments, the T1, 2, 3, the autograph, A5 and A6, their film camera RC5, and their new glass plate camera the RC7. They had on display some ten diameter enlargements from their new aviatar lens. The normal question to ask was whether or not these were selected. Before we could ask the question, we were told they were random selections. Photographic quality was excellent and definition was better than anything I had seen.

The English exhibit included transits and theodolytes manufactured by

Watts and Company; also, the Williamson multiplex was set up. This instrument is quite comparable to the Bausch and Lomb multiplex. A particular feature that was noted, however, was the that vertical calibrations of the tracing stand were read on a light projected scale. In addition, was included the Williamson Mark II camera with a hood over the magazine making it possible to regulate the temperature of the film. I did not see any means of heating lens elements.

The Dutch did not exhibit equipment at the Exhibition but a tour of the University of Delft made it possible for delegates to view equipment in use in Holland. The principal plotting equipment on display was the stereoplanigraph and the Wild A5 and A6. Many other fine instruments and techniques were illustrated.

All technical meetings were held in the Kurhaus Hotel. Other than the Plenary sessions, the meeting was divided into activities of the six established commissions. In order to cover the various applications of photogrammetry, usually there were simultaneous meetings for two commissions. Accordingly, it was impossible to attend all sessions.

Commission #1 covered photography and its technique. The chairman of this commission was Captain Reading. The meetings of this commission were well attended. We heard descriptions of the various types of plate and film cameras, together with considerable discussion concerning accuracies and methods of testing each. We also heard of Shoran and Decca tie-in with photography and how the British were using slotted templets with a spring adjustable center pin in connection with radar controlled photography. There was also presented much reliable information concerning lens distortions and calibrations.

Commission #2 dealt with the theory, means and results of plotting. Unfortunately for the Americans, most of these talks were in French. Thus it was not possible to get as much out of them as we had hoped. It was possible to note the tendency to design and utilize plotting equipment of extreme accuracy. There were a number of discussions dealing with the different manner in which plotting equipment was designed to take care of problems arising in plotting work. The Dutch presented papers in connection with evaluation and adjustment of accidental and mechanical errors in bridging. It was noted that, for the large scale precision work currently being performed in western Europe, there is a strong tendency towards using glass plate cameras with a format smaller than we use in this country. I inquired regarding what was being done in regard to discrepancies in the flatness of film at the instant of exposure. The Swedes are using film and have increased the pressure against the pressure plate. Also, they are manufacturing a platen for the camera which departs from a plane but is made to match the lens characteristics, thereby taking a big step towards eliminating lens difficulties in the taking camera.

Commission #3 dealt with aerial triangulation and its applications in geodesy. We were able to obtain considerable reliable information from the talks.

We had some very interesting talks in Commission #4 on the application of photogrammetry and aerial photography for surveying the earth's surface. The British to a large extent dominated the first session of that commission meeting and spoke in terms of ordnance survey where they are making a re-survey of Britain, particularly of the urban areas, at the extremely large scale of 1:1,250. You would have been very interested in the discussion regarding the amount of material that the Ordnance Survey places on those maps, using solely photogrammetric methods. It only ranges somewhere between 15% and 25%. The rest is done in the field with the photogrammetric base to orient the plane-table rather than running control. They go to the extremes of refusing to plot a

house unless they can actually see the intersection of the building line with the ground; otherwise they will be plotting the eave line and not the building line. The commercial organizations claim that they can do this same work as economically as the Ordnance Survey and can portray as much as 75 to 80% totally by photogrammetry, leaving only 20 to 25% of the material to be secured in the field.

The 5th Commission concerned itself with the application of photogrammetry in various fields. Principal things discussed in this commission dealt with photogrammetry in medicine and ground photography. It was interesting to note that plans for the restoration of large buildings and cathedrals damaged during the war were made by ground stereophoto methods utilizing photographs previously taken of these buildings.

Commission #6, the chairman of which was George Harding of our Society, took up problems of training, terminology and bibliography. The commission presented a number of resolutions toward collecting and evaluating information from the various countries. Many of the resolutions presented at the final plenary sessions will be of interest to us.

One of the matters presented at the plenary sessions was the revival of *Photogrammetria*, the international publication started by the Dutch in 1938 but discontinued because of the war. They are desirous of bringing the international exchange of information back into existence and are very anxious to be able to count upon a large number of subscriptions. They feel that a minimum of 600 subscriptions would be required to finance the international publication. There must be much work by all the international societies to make it a success in the way of contributing material. We were asked whether we could be counted upon for as many as 300 subscriptions. Of course, we could not make any such guarantee but indicated we would do the best we could to take up the matter of an international publication with our membership.

You will be interested to know that at the final plenary session, honorary membership in the International Society was conferred on Poivilliers of France for his many major contributions to the field of Photogrammetry.

I should mention that in 1938, the American Society of Photogrammetry issued an invitation to the International Society for the next meeting to be held in the United States. At that time, the invitation was declined in favor of Holland. Your Board of Direction this year approved issuing an invitation for the next international meeting to be held in America. I am glad to report that our invitation was accepted, and, if events materialize as planned, the next International Society meeting will be held in the United States in 1952. Captain Reading was elected President of the International Society for Photogrammetry. Bill Cude was elected Treasurer and I have the honor of being Secretary. Schermerhorn as the retiring President continues on the Board of Direction as does Cassinis of Italy; Baeschlin of Switzerland and Oldencrantz from Sweden are the other two members of the International Board.

Interspersed with the technical sessions were several tours that made possible the delegates visiting major points of interest in The Netherlands. Principal among these tours was the visit to Wieringermeer to see the great dikes and the great effort made and successes the Dutch have had in reclaiming land from the sea. We also had opportunity to visit Amsterdam and the Rijksmuseum and to note the great canal system. Another interesting tour was to the nearby city of Delft during which we visited the University and historic, old and well preserved churches. Also the delegates were entertained at two receptions, one given by the Minister of Reconstruction and Rehabilitation and the other by

the Burgomaster of The Hague. Lastly, I should like to say that the Dutch should be commended for planning and conducting the Sixth International Congress. I am sure many of us obtained much reliable information from the Congress and value very highly the opportunity to meet the many people in the field of photogrammetry in the various countries. The official record of the meeting is constituted by the International Archives. Action has been initiated to expedite preparation of these to the extent possible. We will receive more information about progress, costs and availability as soon as possible. When received our members will be notified.

CLEVELAND'S USE OF AERIAL PHOTOGRAPHY FOR CITY MAPPING†

G. Brooks Earnest, Professor of Civil Engineering, Case Institute of Technology; Consulting Director, Cleveland Regional Geodetic Survey

PERHAPS as a consequence of the modes of living and working during World War II, the American people have acquired new habits incorporating alacrity. It certainly can be said that considerable energy has been exhibited within the last decade toward getting results in a hurry. This briskness has manifested itself in many avenues; one particular manifestation is reason for the subject of this brief paper at your 1948 Semi-Annual Meeting of the American Society of Photogrammetry.

Cleveland wanted large scale topographic maps in a hurry. Existing plane table methods were too slow. Studies were made concerning ways and means to procure the much needed mapping in terms of the proverbial time limit, "yesterday."

One item of particular significance respective to fulfillment of the end point, the topographic map, is control. Considerable time is required to provide accurate horizontal and vertical control for an area the size of Cuyahoga County, i.e., 450 square miles. Cleveland has been acquiring that prerequisite for the past 10 years. In fact, the long-range program established in the Cleveland Regional Geodetic Survey effectively permits the short-range spot mapping by photogrammetric means.

The Cleveland Regional Geodetic Survey has been in existence since July, 1937. It is sponsored jointly by the City of Cleveland, the County of Cuyahoga, and the State of Ohio, through its Department of Highways. Inasmuch as accurate control is prerequisite to mapping of large areas, perhaps a few words concerning the Cleveland Regional Geodetic Survey are in order.

The Survey was initiated primarily due to the fact that Metropolitan Cleveland lacked comprehensive and accurate horizontal and vertical control and adequate mapping. The specifications adopted conform to those recommended in the American Society of Civil Engineers' Manual No. 10, Technical Procedure for City Surveys.

The skeleton of framework for the horizontal control, namely the triangulation network, embraces 133 triangulation stations. The area controlled by each station within urban areas is 2.5 square miles and that in rural areas is 4.0 square miles. The triangulation observing is about 90% completed and least squares adjustments have been completed on all field data observed to date.

† Paper read at the Semi-Annual Meeting of the American Society of Photogrammetry, October 7, 1948, Philadelphia, Pennsylvania.