

Report of the Photography Division

THE PHOTOGRAPHY DIVISION's technical program is dependent entirely upon the activities of the technical subcommittees, five of which are active and two inactive. Committee reports for the active Divisions are—

Aerial Photography Committee: Mr. William Tayman, U. S. Geological Survey, Reston, Virginia, Chairman. Bill continued to chair meetings with representatives from the Geological Survey, Soil Conservation, Forest Service, and Agriculture to discuss the development of a common set of specifications. These sessions resulted in a draft set of performance specifications which was presented to the Society at the February 1976 annual meeting under the auspices of the Image Quality Committee. Mr. John Iverson of USDA, Mr. James Dixon of Forest Service, and Mr. Gale TeSelle of Soil Conservation Service were present to discuss and defend the specifications. Final publication of the U. S. Department of Agriculture "Aerial Photography Specification" was scheduled for the end of March. Mailing to contractors on record took place during the month of April. Those interested in receiving a copy of the specifications should contact the Department of Agriculture directly. This committee is also reviewing solid-state technology in order to determine the utility of such devices as a digital, photogrammetric mapping tool. Investigations into the solid-state technology produced two excellent invited papers which were discussed during the February ASP annual 1976 technical meetings. Mr. Irving Hirschberg of Fairchild Camera and Instrument Corporation presented "Technology Advances in Charge Coupled Devices" and Dr. Phillip Slater of the University of Arizona talked about the "Differences Between Film and Solid-State Photographic Systems."

Mr. Tayman reports that planning activities for future work is a matter of record. Committee members are actively pursuing the development of a set of camera specifications that will compliment the Aerial Photography specifications and they are including in these deliberations what impact, if any, solid-state camera sensors will have on camera specifications. Mr. Tayman will continue to serve as chairman.

Coherent Optics Committee: Dr. Robert Leighty, Engineer Topographic Laboratories, Fort Belvoir, Virginia, Chairman. Dr. Leighty was co-editor with Dr. N. Balasubramanian on papers published in

Optical Engineering, Vol. 14, May/June 1975. These papers dealt with the subject of "Coherent Optics in Mapping." In addition to their editorial efforts, a technical paper on that subject was co-authored and published in the same issue. In July 1975, at a symposium on Close-Range Photogrammetry, University of Illinois, two papers were authored by Dr. Leighty. Titles of these papers were "A Short Tutorial on Coherent Optics" and "Potential Applications of Coherent Optics in Close-Range Photogrammetric Systems." For the annual ASP-ACSM 1976 Concurrent Session C of the Photography Division, Dr. Leighty organized and moderated a technical session entitled "Coherent Optics in Mapping." Four papers were presented at this technical session: (1) "Coherent Optics in Mapping at USAETL" by Dr. R. D. Leighty; (2) "Heterodyne Optical Correlation—A New Concept in Correlation" by Dr. N. Balasubramanian; (3) "Laser Scanning—Practical Considerations" by Dr. N. Balasubramanian; and (4) "Simplifying Pattern Recognition via the Optical Power Spectrum" by G. Lukes.

Image Quality Committee: Mr. Ronald Ondrejka, Itek Corporation, Lexington, Massachusetts, Chairman. In order to assess the extent and significance of photographic image quality problems and to solicit guidance from people who routinely deal with these problems as part of their work or business, the Image Quality Committee compiled and selectively distributed an extensive questionnaire late in 1974. This was accomplished under the direction of Mrs. Clarice Norton. The initial compilation of findings from 100 respondees was presented to the Committee at the 1975 Annual Meeting. The analysis and discussion of these findings has been the main concern of the Committee during the past year. A general overview of the major problem areas identified by this activity was presented to the Society by means of a panel of relevant experts at the Fall 1975 Meeting in Phoenix. Further details were presented at the 1976 Annual Meeting as part of a Photography Division Session on Image Quality.

The urgency and importance of the Committee's work is emphasized by the fact that the Departments of Agriculture and Interior are both currently in the process of establishing specifications and evaluation methods for image quality characteristics of photo acquisition equipment and purchased photography. Committee members have been in

contact with USGS regarding their progress and the Department of Agriculture presented a paper on their activities during the Image Quality Session of the 1976 Annual Meeting.

The Chairman has found it very gratifying to have almost 20 highly qualified, interested and active members on the Image Quality Committee and through a balanced membership of photo-producers, photographers and photo R and D people, we hope to be treating real problems and be discussing and presenting usable information and practical solutions.

Multispectral Committee: Mr. T. C. Vogel, Engineer Topographic Laboratories, Fort Belvoir, Virginia, Chairman. From November 11-13, 1975, the Multiband Committee chaired a "Workshop for Environmental Applications of Multispectral Imagery." This workshop was jointly sponsored by the U. S. Army Engineer Topographic Laboratories and the ASP. Judging by the comments received from the more than 100 attendees, the meeting was a complete success. The workshop proceedings are now in final preparation and will be forwarded to ASP for publication. Mr. Avron Hecht, USAETL (664-6477) will assume the Chairmanship of the Multispectral Committee for the year 1976 to the annual ASP meeting 1977.

Color Committee: Mr. Anthony Salerno, U. S. Geological Survey, Reston, Virginia, Chairman. Last year at the request of the Director of the Photography, the ASP headquarters supported and endorsed the Color Committee request to have the Inter-Society Color Council (ISCC) continue its efforts to study the problem of standardization of the measurement and specification of color transparencies, including the standardization of the illuminants for viewing transparencies and standardization of color designations. This study was identified as problem 31. This past year the ISCC problem committee decided to combine the Technical Association of the Graphics Arts problem 32 (which was to define how and when colorimetric measurements should be used) with the ASP problem 31. The ISCC problems committee has redesignated problem 32 with the general title, "Color Problems in Photography and Printing." Mr. Calvin S. McCahey, Chairman. Mr. Salerno organized and moderated the ASP Plenary Session of the Photography Division at the October 1975 ASP-ACSM Fall Convention, Phoenix, Arizona. The session was titled

Color Photography, and participants were—Camera for Color Aerial Film, Robert Spriggs; Color Films in Aerial Photography, Norman Fritz; Processing Equipment for Color Aerial Films, Lee Records; Laboratory Techniques in Color Aerial Products, Lance Bassage; Printers for Aerial Color Films, Martin O'Hare; Minification of Color Aerial Films, Millet D'Angeles; Photomechanical Reproduction of Color Products, Leonard Pimental. The following working groups remain active: Films for Color Photography, Norman Fritz of Eastman Kodak Company; Processing Equipment (Hardware), Lee Records, Photo Technique, Inc.; Laboratory Techniques, Harry Stiller, Precision Processing Laboratories; Cameras for Color Photography, Melvin Kruger, Precision Processing Laboratories; Minification of Color Aerial Film, Milton DeAngeles of GAF; Photomechanical Reproduction of Color, Len Pimental of DMATC. The committee members decided unanimously to discontinue the Multiband Photography subcommittee since this committee is functioning on its own under the Photography Division.

As I terminate my Directorship of the Photography Division, I feel somewhat derelict in my duties. I did not accomplish all that I had planned. The Division, through its dedicated chairpersons, however, has made significant progress in their own committees, serving not only the needs of their working members but the society and industry as well. There remain, however, a number of new questions that seek debate as well as solution. In this regard, I have offered my services and time to your new officers: Mr. Norman Brew—Director; Dr. Roy Welch—Deputy Director and to the winner of the Photography Division election for second Deputy, Mr. Donald S. Ross. Since only a small group of people actively participate in the working committees and avail themselves of the benefits which the Society offers, I challenge the members of the Society to choose a committee in which they can become productively involved. Only then will we find solutions to our yet unsolved problems, past and future.

In summary this director wishes to acknowledge the many contributions, excellent guidance, and assistance offered by Mrs. Clarice Norton, Messrs William Tayman, Anthony Salerno, Theodore Vogel, Ron Ondrejka, Norman Fritz, and Dr. Robert Leighty.

—S. W. Dossi, Director

Report of the Photogrammetric Surveys Division

BECAUSE THE Photogrammetric Surveys Division had completed its two-year administrative cycle, a slate of Division officers was included on the ASP election ballot. Dr. H. M. Karara was elected Director of the Division; Dr. Sanjib K. Ghosh, First Deputy Director; and Mr. Albert K. Heywood, Second Deputy Director. Their terms of office began with their installation at the meeting of the Photogrammetric Surveys Division, held on February 26, 1976 during the ACSM-ASP Annual Meeting, and will terminate in March of 1978.

The February 26th meeting, the only one held by the Division during the past year, was chaired by Dr. Case, the Director. The agenda included reports by the First and Second Deputy Directors, and each Chairman reported on the activities of his Committee. Dr. Karara, the First Deputy Director, who automatically serves as an Associate Editor of *Photogrammetric Engineering and Remote Sensing*, reported that 13 papers had been received for review. In his function of coordinating activities between committees of the Division, he reported that the Close-Range Photogrammetry Committee and the Computational Photogrammetry Committee jointly sponsored the Symposium on Close-Range Photogrammetric Systems, held in cooperation with Commission V of the International Society for Photogrammetry at the University of Illinois from July 28 to August 1, 1975. Sixty-five participants heard some 49 papers. Reports of the Committees for the year follow:

Cadastral Surveys Committee, Dr. Dean C. Merchant, The Ohio State University, Chairman. Two meetings of the Committee were held during the past year, one during the Fall Convention in Phoenix and one during the Annual Meeting. The Committee completed a "benchmark" bibliography and forwarded copies to the Division. A question remains concerning how best to make the bibliography available to potential users. Draft "standards for cadastral surveys by photogrammetry" were prepared and are being reviewed. The Committee is organizing a session for the Fall Convention in Seattle. The incoming Chairman for the Committee is Mr. Maurice Lafferty.

Charting Committee, Mr. Floyd R. Watts, NOAA, Chairman. Only one meeting of the Committee was held during the past year. However, the Committee has been very active in encouraging the preparation of technical papers for the Society's meetings and

has enlarged its membership to ensure perpetuation of the Committee. Mr. Ronald Olson continued active participation as representative to the Committee on Marine Geodesy of the American Geophysical Union. The possibility of sponsoring symposia on photobathymetry and on flood-plain mapping is being pursued. The incoming Chairman for the Committee is Dr. Richard L. Ealum.

Close-Range Photogrammetry Committee, Dr. R. C. Malhotra, Iowa State University, Chairman. The Committee held no meetings during the past year because of the inability to convene a quorum. As noted earlier, the Committee jointly sponsored the Symposium on Close-Range Photogrammetric Systems.

Computational Photogrammetry Committee, Dr. Raymond J. Helmering, Defense Mapping Agency Aerospace Center, Chairman. The Committee is compiling a list of computer programs covering the field of photogrammetry. The Committee also shared in sponsoring the Symposium on Close-Range Photogrammetric Systems.

Extraterrestrial Applications Committee, Mr. Leon J. Kosofsky, NASA, Chairman, was inactive.

Mapping Committee, Mr. Larry N. Muncy, Defense Mapping Agency Topographic Center, Chairman, was inactive.

Transportation and Engineering Surveys Committee, Mr. Chester T. Gray, North Carolina Department of Transportation, Chairman. Well-attended meetings of the Committee were held both at the Fall Meeting in Phoenix and at the Annual Meeting. During the year work continued on the compilation of a bibliography of significant published papers which can be considered as "benchmarks" in the development of photogrammetric applications to transportation and engineering surveys. Planning for future symposia continues apace; however, response has been poor due to severe budgetary restrictions imposed on many state highway departments. A transcript of the Color Symposium, held during the Annual Meeting of March 1975, was forwarded to the Division. Mr. Milton L. Keene is the incoming Chairman for the Committee.

Standards Committee, Dr. Sanjib K. Ghosh, The Ohio State University, Chairman. The Committee completed a draft classification of photogrammetric instruments, which has been distributed for review. Mr. Heywood,

2nd Deputy Director of the Division, automatically assumes the chairmanship of the Standards Committee.

Mr. Wallace Kerr completed his assignment at the Division Coordinator to the ASP Nomenclature Committee. He was responsible for selecting terms related to the areas of responsibility of the Photogrammetric Surveys Division and for preparing definitions of those terms for inclusion in the 4th Edition of the *Manual of Photogrammetry*. Mr. William T. Pryor continued to represent the Division on the ASP Standards Committee.

A major activity of the Division was that of organizing and moderating the technical sessions at the Fall Convention and Annual Meeting. The Fall Convention (Phoenix, Oc-

tober 26-31, 1975) included sessions on Nonconventional Photogrammetry; Analytical Photogrammetry; Mapping Development, Experiment, and Accuracy; and Photogrammetric and Orthophoto Equipment. At the Annual Meeting (Washington, DC, February 22-28, 1976), sessions on Applications of Space Photography; Photogrammetric Equipment and Operations; Photogrammetric Systems and Instrumentation; Theory and Applications of Analytical Photogrammetry; and Orthophotography—Development and Processing (jointly with the Photography Division) were organized and chaired by the Division.

—James B. Case, Director

Report of the Remote Sensing and Interpretation Division

THE REMOTE SENSING AND INTERPRETATION DIVISION has enjoyed another active year with good attendance and support for its activities and technical sessions. During the annual and semiannual meetings, session topics have included geology, water resources, oceanography, geography, land use, education, cartography, agriculture, forestry, instrumentation, automated processing, extraterrestrial applications, Landsat (formerly ERTS), and Skylab. Papers presented are available through the proceedings of the Society.

Several specialty symposia were also sponsored. These included the Symposium on North American Land Use, which was held concurrently with the Fall Meeting in Phoenix. The Canadian Institute of Surveying and CENTENAL from Mexico cosponsored the symposium and contributed papers. All papers are included in the proceedings of the 1974 Fall Meeting. In August in Sioux Falls, South Dakota, another in the series of informal meetings on Color Aerial Photography in Plant Sciences and Related Fields was held. This was the fifth biennial workshop, and plans are already underway to hold the next meeting in Fort Collins, Colorado, during the summer of 1977. Another similar workshop is planned during February 1977 to address the application of remote sensing to range management. It will be held in cooperation with the Society for Range Management and represents transfer of remote sensing expertise developed within ASP to other application-oriented societies. The Division also cooperated with the Photography Division and the U. S.

Army Engineer Topographic Laboratories, in a Workshop for Environmental Applications of Multispectral Imagery. This was held at Fort Belvoir, Virginia, in November 1975. In addition the Society endorsed and publicized many other meetings, short courses, and workshops on remote sensing conducted in the United States by other professional societies, universities, and government organizations.

The Society was a cosponsor in October 1975 of the first William T. Pecora Memorial Symposium. The symposia series has been established by the U. S. Geological Survey, and they will remain a continuing cosponsor. The American Mining Congress had lead responsibility for the 1975 program; it was held in Sioux Falls, South Dakota, and featured Applications of Remote Sensing to Mineral and Mineral Fuel Exploration. The American Society of Photogrammetry will assume responsibility for the program of the 1976 symposium. It will feature the theme, "Mapping with Remote Sensing Data," and will be held from October 25-29, 1976, in Sioux Falls, South Dakota.

An important function of the Division is to review books and articles submitted for publication in the journal *Photogrammetric Engineering and Remote Sensing*. This is the primary responsibility of the Second Deputy Director. During the year one book was reviewed and 23 articles were received from authors. Of these, 13 were accepted for publication, six were rejected, and four have been recommended for revision before publication. Since the journal changed its name from *Photogrammetric Engineering* in

January 1975, there has been increased interest in submitting remote sensing articles and maintaining the high technical quality.

One of the sessions at the Spring Meeting was devoted to education. A major contribution was the results of a survey of remote sensing and related courses conducted in United States universities. It showed that at least 6,000 students per year receive some type of training in remote sensing techniques. The education committee of the Division held an excellent meeting and decided to support the preparation of a special education issue of *Photogrammetric Engineering and Remote Sensing*.

During 1975 the Society, with the assistance of the National Science Foundation, published the *Manual of Remote Sensing*. This project was started in 1969 with the purpose of expanding and updating the scope of the *Manual of Photographic Interpretation* which is now out of print. The two volumes of the new *Manual of Remote Sensing* contain comprehensive treatments of remote-sensing theory, instruments, and techniques with applications of agricultural, earth and environmental sciences, natural resources, and engineering. There are 26 chapters with more than 2,000 pages, including numerous diagrams, half-tones, and color plates. More than 200 eminently qualified contributors helped with the writing, editing, and publication.

During the Spring Meeting a special commemorative session was held to honor all the editors and author-editors who had contributed to the *Manual of Remote Sensing*. They were recognized with Presidential Citations.

The Autometric Award of the Society was presented this year to Dr. Robert G. Reeves for his distinguished contribution as Editor-in-Chief of the *Manual of Remote Sensing*.

The American Society of Photogrammetry has a long-standing position that remote sensing is in most instances part of photo-

grammetry. Since 1968 the Society has had three co-equal technical divisions: Photogrammetric Surveys, Photography, and Remote Sensing and Interpretation. The Board of Directors further reaffirmed this position in 1975 with a resolution opposing the formation of an international society of remote sensing. To further strengthen the position of the International Society for Photogrammetry in remote sensing, a resolution has been presented to the XII Congress in Helsinki recommending the adoption of a definition of photogrammetry which properly includes remote sensing, photointerpretation, and photogrammetric survey activities. The resolution provides for a change in the By-laws to include both a definition of photogrammetry and a description of the major functional areas of photogrammetry. The text suggested by the American Society of Photogrammetry for Section 18 of the By-laws is as follows:

18. Photogrammetry is the art, science, and technology of obtaining reliable information about physical objects and the environment, through the process of recording, measuring, and interpreting photographs and the patterns of radiant energy derived from sensor systems. The major functions of photogrammetry include the use of conventional photography and other imaging systems from space, aerial, terrestrial, and underwater platforms for the purpose of photogrammetric surveys, remote sensing, and photointerpretation. The field of photogrammetry shall be divided into seven fields of major interest, and each field entrusted to a Technical Commission as follows:

(The seven Technical Commissions would remain the same.)

—Roger M. Hoffer, Director

Proceedings of the Commission IV Symposium (September 1974)

Publication of the reports presented during the Paris symposium arranged by Commission IV of the International Society for Photogrammetry (September 1974) has just been completed. They form three special issues of the *Bulletin de la Société Française de Photogrammétrie*. These three issues can be ordered from the Secretariat of the Société Française de Photogrammétrie, 2 Avenue Pasteur, F-94160 Saint-Mandé (France) at a cost of 70 French Francs (postage included).

Report of the Nomenclature Committee

DURING THE YEAR 1975-1976 the ASP Nomenclature Committee has concentrated its efforts on compiling a list of photogrammetric terms together with their definitions. A list of standard symbols for photogrammetric terms is also being developed. This material is to become Chapter 19 of the Fourth Edition of the Manual of Photogrammetry, now in preparation. Paul R. Wolf, Chairman of the Nomenclature Committee has been appointed as the author-editor for this chapter.

The work of the committee has been broken into the five subcommittees listed below, headed by the following chairmen:

1. ASP Photography Division—Mr. Leonard Pimentel
2. ASP Photogrammetric Surveys Division—Mr. Wally Kerr
3. ASP Remote Sensing and Photo Interpretation Division—Mr. David Landen
4. Computers—Mr. Frederick Sieker
5. At Large—Mr. Paul Wolf

Each of the five subcommittees has now completed an initial list of terms related to their areas, and have compiled their definitions. These have been transferred to 3-by-5 cards for filing. The definitions are being carefully reviewed, and a preliminary list is being typed. When completed it will be circulated for review to nomenclature subcommittee chairmen, all chapter author-editors of the 4th Edition of the Manual of Photogrammetry, and other interested members of ASP. Reviewer's comments will then be incorporated and a final list prepared. The scheduled date for completion is the end of summer, 1976.

The committee appreciates the many helpful suggestions provided thus far by ASP members, and will welcome any additional contributions up to completion date.

—Paul R. Wolf, Chairman

CALL FOR PAPERS

The 2nd Annual William T. Pecora Memorial Symposium

MAPPING WITH REMOTE SENSING DATA

Sioux Falls, South Dakota
October 25-29, 1976

Sponsored jointly by the American Society of Photogrammetry and the U. S. Geological Survey

Most remote sensing data is acquired as an array of multispectral samples over a geographic region. The question now is: "How can the data be referenced, interpreted and displayed for effective management decisions?" This symposium will focus on the broad interdisciplinary aspects of mapping and graphic display for portraying dynamic and timely information.

Papers are desired in the following areas:

- The current operational status and management of remote sensing systems
- Interactive display and interpretation of remote sensing data
- Classification of information for various disciplines
- Preparation of image maps, charts, and graphic displays
- Extraction of statistical data for mapping units
- Change detection in defined georeference systems
- Combining remote sensing information with other map information
- Appraisal of costs and time required for interpretation, display, and mapping of remote sensing data.

Titles and a brief abstract should be mailed by June 15, 1976, to:

Dr. Robert B. McEwen
U.S. Geological Survey
National Center, #510
Reston, VA 22092.