Opening Ceremony and Inaugural Plenary Session — Cérémonie d'ouverture et Première session plénière — Eröffnungsfeier und Eröffnungs-Vollversammlung

OPENING CEREMONY

Held on Monday, July 12, 1976, at 10.00 at Finlandia Hall, Helsinki

Program

Ahti Sonninen: Preludio Festivo
The Band of the Helsinki Garrison conducted by
Capt. T. Laine

Opening Address
Minister of Defence
Mr. I. S. Melin

Welcoming Addresses
Deputy Mayor of the City of Helsinki
Mr. A. K. Loimaranta

Rector of the Helsinki University of Technology
Dr. P. Laasonen

President of the Finnish Society of Photogrammetry
Mr. S. Härmälä

Acknowledgement
President of the I.S.P.
Dr. S. G. Gamble

Jean Sibelius: Finlandia
The Band of the Helsinki Garrison

Closing of the Opening Ceremony
Congress Director
Dr. h.c. K. G. Löfström

Programme

Ahti Sonninen: Preludio Festivo
L'orchestre de la garnison de Helsinki sous la direction du
Capitaine (mus.) T. Laine

Allocution d'inauguration
Ministre de la défense nationale
I. S. Melin

Souhaits de bienvenue
Maire adjoint de la ville de Helsinki
A. K. Loimaranta

Recteur de l'Ecole Polytechnique de Helsinki
Dr. P. Laasonen

Président de la Société Finlandaise de Photogrammétrie
S. Härmälä

Remerciements
Président de la S.I.P.
Dr. S. G. Gamble

Jean Sibelius: Finlandia
L'orchestre de la garnison de Helsinki

Clôture de la cérémonie d'ouverture
Directeur du Congrès
Dr. h.c. K. G. Löfström

Programm

Ahti Sonninen: Preludio Festivo
Das Orchester der Garnison von Helsinki unter Leitung vom
Hauptmann (Mus.) T. Laine

Eröffnungsrede
Verteidigungsminister
I. S. Melin

Willkommensgrüsse
Bürgermeister der Stadt Helsinki
A. K. Loimaranta

Rektor der Technischen Universität Helsinki
Dr. P. Laasonen

Präsident der Finnischen Gesellschaft für Photogrammetrie
S. Härmälä

Dankesworte
Präsident der I.G.P.
Dr. S. G. Gamble

Jean Sibelius: Finlandia
Das Orchester der Garnison von Helsinki

Abschluss der Eröffnungsfeier
Kongressdirektor
Dr. h.c. K. G. Löfström

The Band of the Helsinki Garrison, conducted by *Captain T. Laine,* played the Preludio Festivo composed by *Ahti Sonninen.*

Dr. h.c. K. G. Löfström, Congress Director, called upon His Excellency the Minister of Defence, *Mr. Ingvar S. Melin,* to present the Opening Address.

Mr. Ingvar S. Melin:

Mr. Chairman, Distinguished Guests, Ladies and Gentlemen.
The drawing up and approval of basic plans aiming at developing the human society is nearly always the duty of administrators and politicians. For this purpose they need information on the concerned area, its natural resources, its inhabitants and their way of life. A map, where the basic information for planning is presented, is an indispensable means for developing the human environment and for exploring the natural resources.
Only photogrammetry has given mankind the real possibility of mapping the whole earth in detail. Thus it has created the possibility for the vast developing areas to enjoy their rightful share of the riches of the earth.
The Habitat Conference, which was recently held in Vancouver, gave us a very worrying, maybe an even too pessimistic view of the present stage of human environment: the deterioration of large areas into slums, the famine and poverty that prevail in many parts of the world. Quick and wideranging measures of planning and development are needed in order to avoid major catastrophes. It is a pleasure to observe that this congress deals extensively with new remote sensing methods, by means of which the earth can be mapped and the natural resources explored far more efficiently than by using classical methods.
But mapping is not only a necessity for developing human settlements and utilizing natural resources. The pollution of the soil, water and air has increased to the extent that the necessity of strict monitoring and limitations is admitted everywhere. Remote sensing methods have proved to be excellent, often indispensable tools in inventorying and controlling the sources of pollution and in monitoring the current situation.
In addition to mapping many other scientific fields have benefited by the achievements of photogrammetry. Modern forestry or geological research can hardly be conceived without the help of photogrammetry. Nowadays medicine, meteorology, architecture, construction engineering, to mention just a few fields, all use photogrammetric methods in very diverse tasks of measurement and inventory. Many of these problems would be insolvable without photogrammetry.
And the conquering of other planets started by this generation has largely been based on advanced remote sensing studies.
Problems in measuring and mapping are equally independent of national boarders and political groupings. Thus it is natural that international cooperation in the field of photogrammetry is well developed. However, an international society comprising nearly 60 member countries is an achievement which only few scientific fields have reached.
The lack of maps is especially acute in the developing countries, the governments of which face an enormous task in developing quickly their industry and economy. These countries benefit relatively the most by the work of the I.S.P. One of the best forms of help we can give is assistance in carrying out surveying and mapping projects. Thus we give the planners and administrators of the developing countries the necessary basic information on their own resources. In this way they can themselves start developing their economy and utilizing their natural resources, without becoming too dependent politically or economically on their helpers.
As a representative of the Finnish government I am proud and happy that our country has been chosen host of this congress. I consider this an excellent appreciation of the Finnish science and technology. I declare the congress opened and wish you success in your important work.

The Congress Director then gave the floor to the Deputy Mayor of the City of Helsinki, *Mr. A. K. Loimaranta.*

Mr. A. K. Loimaranta:

Herr Minister, Verehrte Kongressteilnehmer, Meine Damen und Herren.
In Namen der Stadt Helsinki habe ich die Ehre, Sie alle in Helsinki und in der Finlandia-Halle willkommen zu heissen. Menschliche Wechselwirkung, Touristenreisen, Zusammenkünfte und Kongresse bilden das Netz der Treffen, auf dem sich die vertrauensvollen und freundschaftlichen Beziehungen zwischen den Bewohnern verschiedener Länder und Städte gründen. Die Ankunft in Helsinki Tausender von Wissenschaftlern und Fachleuten, die bei diesem Kongress alle Mitgliedsnationen der Internationalen Gesellschaft für Photogrammetrie vertreten, ist ein bemerkenswertes Treffen des beruflichen Wissens und Könnens und zugleich eine Begebenheit, die zur Vertiefung der Verbindungen zwischen den Völkern der Welt beiträgt und ihre gegenseitige Verständigung und friedliche Koexistenz fördert.
Dieses hohe Ziel verfolgt auch die aktive Friedenspolitik Finnlands. Helsinki hatte vorigen Sommer die Ehre, Gastgeber zu sein bei einer Gelegenheit, wo sich diese Friedenspolitik manifestierte, d.h. bei der letzten Phase der Konferenz für Sicherheit und Zusammenarbeit in Europa. Ich kann Ihnen versichern, dass wir fühlten, für ein äusserst wichtiges Ziel zu arbeiten, als wir die führenden Staatsmänner der Welt hier in der Finlandia-Halle empfingen.
Während der letzten Jahre hat sich Helsinki zu einer Stadt der Zusammenkünfte und Kongresse entwickelt. Die Stadt ist ein internationaler Treffpunkt geworden, ein Boden, wo sich Leute aus Osten und Westen, aus Norden und Süden versammeln, um ihre gemeinsamen Probleme zu erörtern. Gleichzeitig hat die touristische Anziehungskraft Helsinkis zugenommen. Im vorigen

Jahr reisten mehr als eine Million Menschen über den Hafen Helsinkis, während fast drei Millionen Fluggäste über den Flughafen fuhren. Vor einigen Tagen, als ich um die Mittagszeit die Esplanade entlang spazierte, fiel es mir auf, dass Passanten fast alle anderen Sprachen als Finnisch sprachen.
Die letzten Jahre haben deutlich gezeigt, dass gerade die Finlandia-Halle das Tagungs- und Kongresszentrum unserer Stadt ist. Helsinki hat zum grossen Teil der Finlandia-Halle zu verdanken, dass es eine starke Position als internationale Kongress-Stadt bekommen hat. Im Jahre 1975 wurden in diesem Gebäude insgesamt 120 Konferenzen und Kongresse veranstaltet. Die Gesamtzahl der Kongresstage erhöhte sich auf 250 und ausserdem wurden im Gebäude 150 Konzerte gegeben. Die Zahl der Besucher im vorigen Jahr war 367000.
Ich wünsche dem dreizehnten Kongress der Internationalen Gesellschaft für Photogrammetrie einen erfolgreichen Verlauf. Ich hoffe, dass Sie sich in Helsinki wohl fühlen werden und dass Ihnen die Atmosphäre der Stadt, ihr pulsierendes Leben und ihr Treiben gefallen werden. Ich hoffe auch, dass Sie in reichem Masse berufliche Erfahrungen von Ihrer Kongressreise mitbringen und unsere Stadt in angenehmer Erinnerung behalten werden.

Translation:

Mr. Minister, Distinguished Congressists, Ladies and Gentlemen.
In the name of the City of Helsinki I have the honor to wish you all welcome to Helsinki and to the Finlandia Hall. Human interaction, tourism, conventions and congresses form the network of contacts that is the basis for trusting and friendly relations between the inhabitants of different countries and states. The meeting in Helsinki of thousands of scientists and professionals, representing all the member countries of the International Society for Photogrammetry at this Congress, in a remarkable way brings together professional theory and know-how and offers at the same time an opportunity for strengthening the ties between the peoples of the world and promoting their mutual understanding and peaceful coexistence.
This great aim also complies with the active peace policy of Finland. This past summer Helsinki had the honor to host an event at which this peace policy was made manifest, i.e., the last stage of the Conference on Security and Cooperation in Europe. I can assure you that we felt we were serving a most important cause in receiving the leading statesmen of the world here in Finlandia Hall.
In recent years Helsinki has developed into a convention and congress center. The city has become an international meeting point, a ground for people from east and west, from north and south, on which to meet and discuss their common problems. Meanwhile Helsinki has attracted increasing numbers of tourists. Last year more than a million people travelled via the ports of Helsinki, while close to three million flight passengers passed through its airports. A few days ago, as I walked along the Esplanade at noon, it occurred to me that passers-by spoke almost all languages other than Finnish.
These past few years it is Finlandia Hall that has proved to be the convention and congress center of our city. Helsinki owes to a great extent to Finlandia Hall its well established position as an international congress city. In 1975 in all 120 conferences and congresses were held in this building. The total number of congress days mounts up to 250, in addition to which 150 concerts were given in this building. The number of visitors in the previous years was 367000.
I wish success to the Thirteenth Congress of the International Society for Photogrammetry. I hope that you will enjoy your stay in Helsinki and that the atmosphere of the city, its hustle and bustle will appeal to you. I also hope that your participation in the Congress will bring you a wealth of professional experience and that you will take with you a pleasant memory of our city.

Next the Congress Director called upon the host of the congress site, the Rector of the Helsinki University of Technology, *Dr. Pentti Laasonen.*

Rector Pentti Laasonen:

Your Excellency, Distinguished Delegates, Ladies and Gentlemen.
Now that I have the opportunity to present the address of the Helsinki University of Technology to the International Congress for Photogrammetry being opened, my attention is drawn to the rapidly growing importance and the constantly extending field of activities of photogrammetry as one of the spheres of training and research in our University. Our University has had its Chair of Photogrammetry for only nineteen years, and by last spring it had been occupied by only one professor, the late *Professor Halonen* who so suddenly passed away last summer. Thus it is all the more remarkable that this Chair has gained the firm and esteemed position generally acknowledged in the course of years.
Those working in the directorate of our University have, with great interest, observed how the methods developed by our Institute of Photogrammetry, adjusted to our resources, have found their way to practical surveying. As early as twelve years ago we acquired a precision stereocomparator which was effectively used from the start — first to meet the needs of our own country, and shortly thereafter also to serve the developing countries in the Near East and Africa.
We have been satisfied also to find that certain ideas of our research workers — for example in the field of analytical photogrammetry — when developed into serviceable methods, have been internationally adopted and have in this way continued the tradition begun half a century ago by the ingenious soldier and scientist *General Nenonen.*
We are naturally delighted about the fact that photogrammetry, which originally served mainly the needs of map production and, perhaps in particular, of military security, is now radically expanding its sphere of application. In addition to various measurements of technical engineer-

ing, it is possible, for example, to obtain information necessary for solving problems concerning the inventory and exploitation of natural resources, which are of vital importance for the whole of mankind. An unprecentedly close collaboration between specialists in the fields of electronics, physics, etc., will certainly produce results which we are unable to foresee.
For the elucidation of all of us, both specialists and laymen, I would finally wish to present the basic idea of stereophotogrammetry in a slightly modified form. A picture of our world projected to only one point is flat. But if we look at our world from two differing angles with equal intensity, without prejudice, this picture is given a new dimension, that of depth, and is roused to a life far more realistic than before. In other words, I hope that this Congress, in bringing together participants from some 60 countries, representing varying living conditions and ways of thought, will prove fruitful not only professionally, but also on a purely human level by giving us a less biased picture of the world and by promoting mutual understanding based on the realities of life.

The Congress Director called upon *Mr. Seppo Härmälä,* President of the host society, the Finnish Society of Photogrammetry.

Mr. Seppo Härmälä:

Distinguished Delegates, Ladies and Gentlemen, Mesdames et Messieurs, Meine Damen und Herren.
On behalf of the Finnish Society of Photogrammetry I have the honour to welcome you to the XIIIth International Congress for Photogrammetry.
We welcome you here as our friends, and our friendship has already lasted a long time. It was fifty years ago that our countrymen attended for the first time a photogrammetric congress, the IInd International Congress in Berlin.
Participation in the congress was an indication of the keen interest in photogrammetry felt already at that time. The first modest attempts were made in the field of terrestrial photogrammetry. However, it is only in connection with the aerial photographs that the actual investigations for the development of the field were started.
The first controlled mosaics were completed in the year 1927. The persistant efforts by *General Nenonen* and *Dr. Löfström* resulted in the method of horizon measurements which proved to be extremely successful in the mapping of Finland. The method was ready for presentation in the year 1934 at the IVth International Congress in Paris. There it was presented by *Dr. Löfström,* the present Congress Director.
The great expectations cherished about photogrammetry have not been in vain. Last year the base map of Finland was finished and all our 337000 square kilometres were mapped at least at 1:20000. For a population of 4700000 it has been a great achievement. Without photogrammetry it would not have been possible.
In international collaboration Finland has played an active role as both a receiver and a contributor. Aside from matters of professional and scientific value, we have gained good friends in different parts of the world. At the same time we have had opportunities to visit many interesting and beautiful countries. One drawback they seem to have, in general, they are usually remotely located.
It might appear easier to take part in a congress held in one's own country than abroad. I can assure you, however, that in fact it is quite the contrary. The preparations for a congress are laborious and the result is not economically profitable. The setting is the same as when preparing for a great family celebration: much work and no gain. Nevertheless, in both cases the arrangements are made in an atmosphere of cheerful excitement and expectation.
Now the preparations have been made and the guests have arrived. The celebration may begin.

Welcome, Bienvenu, Willkommen, Benvenuto, Dabró pažálovat, Bienvenido, Changei Simásu, Karibu, Välkommen, Tervetuloa.

On behalf of the International Society of Photogrammetry, the Congress Director called upon the President, *Dr. S. G. Gamble,* to reply to the welcoming addresses.

Dr. S. G. Gamble:

Hyvät Naiset ja Herrat, Mesdames, Mesdemoiselles, Messieurs, Meine Damen, Meine Herren, Ladies and Gentlemen.
On behalf of the International Society for Photogrammetry, its officers, Member Bodies and all participants at this XIIIth International Congress for Photogrammetry, I thank your Excellency Minister of Defence, *Mr. I. S. Melin,* Deputy Mayor of Helsinki, *Mr. A. K. Loimaranta,* and the Rector of the Helsinki University of Technology, *Dr. P. Laasonen,* for your gracious welcomes to your beautiful country and this famous city and the renowned Technical University of Helsinki. I thank *Mr. Härmälä,* President of the Finnish Society of Photogrammetry, for the tremendous work your Society has undertaken in assuming the responsibility for this important gathering of photogrammetrists from the four corners of the world. We are indeed most honoured by having you participate in our Opening Ceremony.
Many of us have looked forward for a number of years to spending a few weeks here at the Congress in the company of our Finnish hosts. For most of us Helsinki is a long way from home and yet Finland occupies a prominent place in the minds of many of us because of the contribution of its people to the arts, sciences and, since this is the year of the Olympics, I hasten to add, athletic accomplishments. When I was somewhat younger, the most prominent name in athletics and that name became identified with the Olympics, was that of *Paavo Nurmi.* I doubt if there is any single person who has achieved the world wide acclaim that he achieved through excellence in athletic performance.
In the world of arts the name of *Jean Sibelius*

immediately comes to mind and we have just enjoyed one of his many compositions. In the field of architecture, I know that the winner of the award for design of the City Hall complex in Toronto was also Finnish, *Viljo Rewell,* a famous architect and known to most of us. One could go on indefinitely, but I shall merely conclude by mentioning the name of the *Field Marshal Mannerheim* and the high regard in which his memory is held throughout the world. In consequence, many of us are delighted to be visiting Finland and try to discover why it is that a moderately sized country has been able to contribute so much to the history and advancement of man.
The first time I had the pleasure of visiting Helsinki was in September 1969 and I was able to report to the Ottawa Congress Committee that the Finns were as well prepared for the 1976 Congress as Ottawa was for the 1972 Congress, even though they had seven more years to go.
We were all saddened to learn of the death of an outstanding and respected photogrammetrist and one whom many of us considered a great friend, *Professor Sakari Halonen.* I shall refer later to his passing as well as that of other prominent photogrammetrists at the Plenary Session, but shall conclude by saying that the Congress Committee, under the leadership of *Dr. Löfström,* has faithfully followed the route laid out by *Professor Halonen.*
Again, on behalf of the I.S.P. I thank you all for your many contributions and the contributions of those whom you represent to the International Society for Photogrammetry.

Kiitos.

The Band of the Helsinki Garrison played Finlandia by *Jean Sibelius.*

Thereafter the Congress Director declared the Opening Ceremony closed.

Audience attending the Opening Ceremony at Finlandia Hall.

INAUGURAL PLENARY SESSION

Held in connection with the Opening Ceremony on Monday, July 12, 1976, at 11.20 at Finlandia Hall, Helsinki

Agenda

1. Address by the President of the I.S.P. — *Dr. S. G. Gamble*
2. Election of Honorary Members
3. Presentation of Brock Gold Medal and von Gruber Awards
4. Introduction of Keynote Speaker — Congress Director, *Dr. h.c. K. G. Löfström*
5. Keynote Address — *Mr. U. V. Helava*
6. Acknowledgement of Address — Immediate Past President of the I.S.P., *Dr. L. Solaini*
7. Closing of the Plenary Session — President of the I.S.P., *Dr. S. G. Gamble*

Ordre du jour

1. Allocution du Président de la S.I.P., le *Dr. S. G. Gamble*
2. Election des Membres d'Honneur
3. Remise de la Médaille d'or Brock et du Prix Otto von Gruber
4. Présentation du "Keynote Speaker", par le Directeur du Congrès, le *Dr. h.c. K. G. Löfström*
5. "Keynote Address" par *M. U. V. Helava*
6. Remerciements par le Précédant Président de la S.I.P., le *Dr. L. Solaini*
7. Clôture de la première session plénière par le Président de la S.I.P., le *Dr. S. G. Gamble*

Tagesordnung

1. Ansprache des Präsidenten der I.G.P. — *Dr. S. G. Gamble*
2. Wahl der Ehrenmitglieder
3. Überreichung der Brock-Goldmedaille und der Otto von Gruber-Auszeichnung
4. Vorstellung des "Keynote Speaker" — Kongressdirektor, *Dr. h. c. K. G. Löfström*
5. Keynote Address — *U. V. Helava*
6. Dankesworte — Ehemaliger Präsident der I.G.P., *Dr. L. Solaini*
7. Abschluss der Vollversammlung — Präsident der I.G.P., *Dr. S. G. Gamble*

Item 1. Address by the President of the I.S.P.

The President of the I.S.P., *Dr. S. G. Gamble,* opened the inaugural Plenary Session and proceeded to give his address.

Dr. S. G. Gamble:

Mr. Chairman, ladies and gentlemen — it is a great pleasure to welcome all participants and accompanying persons to the XIIIth International Congress and to this, our first Plenary Session.
I am sure that we all look forward to two very pleasant and interesting weeks here in Helsinki and its environs. We also look forward to the fine exhibition of modern scientific equipment that has come to form such an important part of our photogrammetric Congresses. A major part of the financing of our Congresses is achieved through the rental of space to exhibitors and we shall be discussing such matters during our General Assembly sessions.
Dr. Löfström and his efficient Congress Committee have conscientiously prepared everything for our convenience and pleasure and, on behalf of all of us, we thank them for the careful planning and many hours of labour they have already expended in getting ready to receive us. I am particularly pleased that several of our Honorary Members are with us today, as well as *President Solaini.*Unfortunately, *Dr. Ing. h.c. H. Härry* and *Prof. Dr.-Ing. h.c. W. Schermerhorn* could not attend and I should like to send them, with your approval, a telegram conveying our good wishes. *Prof. Dr. K. Schwidefsky* also not present, was able to attend a ceremony in Hannover a few days ago and bring you his greetings.

Deceased

During the four year period between our Congresses our Society has suffered a number of losses, including Honorary Members, a Member of Council and a Commission President, all of whom were very well known figures in photogrammetric circles. There are undoubtedly other important photogrammetrists who have passed away, but I feel that I have to confine names to those who have occupied prominent positions in the I.S.P. The Honorary Members who died are *General Hurault* of Paris, France, and *Professor E. H. Thompson* of London, England. The Commission President was *Professor Sztompke* of Warsaw, Poland, and the Member of Council, Congress Director *Professor R. S. Halonen.* I would ask you to stand and observe a moment of silence in their memory as well as others who were supporters of photogrammetry.

Activities

Now, let me turn to the activities of the various segments of our Society. First, the *Archives for the XIIth International Congress,* sometimes called the Ottawa Congress. These were published and distributed in the fall 1975. They appear in six volumes and are available from the Canadian Institute of Surveying for $50.00 (Canadian). I am sure that those concerned with education or research consider our Photogrammetric Archives as an essential tool. I suggest, if you have not already done so, that you make your needs known

to the Canadian Institute of Surveying representative.
Council has met on four occassions apart from meetings held at the Ottawa Congress and this Congress. The first meeting was in 1973 at the I.T.C. in Enschede, the second in 1974 in Paris, the same week of the Symposium of Commission IV. The third meeting was held in Helsinki in May 1975 and the fourth meeting in Enschede, the 1st and 2nd of June of this year. At the Paris meeting, sessions were also held with Commission Presidents, a representative of the Finance Committee, a representative of instrument manufacturers and exhibitors and a representative from UNESCO. On behalf of Council, I wish to thank our hosts for our meetings, for their hospitality and the fine arrangements made for our sessions.

Symposia

Of our seven Technical Commissions, six held their Symposia in 1974 and Commission VI held its session in May 1975. I shall mention them in order.
Unfortunately, I was not able to attend the Symposia of Commissions I and III but other members of Council were in attendance as well as for the Symposia of the other Commissions.

Commission I Primary Data Acquisition
President, Dr. Erik Welander

The major event was the Symposium held in Stockholm, Sweden, August 27 to 29, 1974 and entitled "Remote Sensing and Aerial Photography". A total of 102 photogrammetrists participated from 20 Member Bodies. Thirty-eight technical papers were presented. Chairman of the sessions was *Dr. Carl Olaf Ternryd* who is currently President of F.I.G. The late *Professor Halonen* opened the sessions. *Dr. Welander* introduced the technical program for the three day session.
This was organized under the following headings:

Space Imagery
Underwater Photography
OTF/MTF, Working Group Report
Lens Testing, Camera Calibration and System Evaluation
Remote Sensing, Working Group Report
Environmental Aspects of Remote Sensing
The Geometry of Remote Sensing, Working Group Report
Geometrical Properties of Data Acquisition, Working Group Report
Colour and Multispectral Photography
Holography
Navigation and Flight Systems

The Symposium concluded with determining the program for the Helsinki Congress.
In addition, a Symposium on Image Geometry was held in Ottawa, October 22 to 24, 1975 at the National Research Council Laboratories under the Chairmanship of *Dr. Hartmut Ziemann.* Approximately 40 were in attendance.

Commission II Instrumentation for Data Reduction
President, Prof. Giuseppe Inghilleri

A Symposium on the Role of Digital Components in Photogrammetric Instrumentation was held in Turin, Italy, October 2 to 4, 1974. The full report on the Symposium has been mailed to participants and those interested who may not have received it, should enquire about it from *Prof. Inghilleri.* The Symposium was attended by 53 delegates representing 12 Member Bodies and 12 papers were discussed during the course of the three day session. The meetings were held in the Jiulio Cesare Hall in Turino Esposizioni and we are indebted to the Survey and Geodetic Institute of the Technical Institute of Turin for providing the organization and administrative support for the meetings.
In addition to the foregoing, an International Symposium on Orthophotography was held at the University of Sao Paulo, Brazil, from the 27th to 30 th of July, 1975. I understand that a report on this Symposium will be available during the sessions of Commission II.

Commission III Mathematical Analysis of Data
President, Dr. Friedrich Ackermann

Commission III Symposium was held September 2 to 6, 1974 in Stuttgart, Germany. To date I have not received a copy of the proceedings which were planned for publication early this year. The Commission Board planned to send copies to all participants in the Symposium and additional copies are available upon request from the Commission Board.

Commission IV Topographic and Cartographic Applications
President, Mr. Guy Ducher

The principal activity of Commission IV was the Symposium held in Paris the 24th to 26th of September, 1974, and the theme of the Symposium was "The Revision of Maps by Photogrammetric Methods". In addition to papers on the above subjects, reports of several Working Groups of the Commission were presented and discussed. Also, plans were made for the program for the Helsinki Congress. Approximately 140 attended the Symposium with an average attendance of 80 at the various sessions. Twenty-five Member Bodies were represented and 33 papers or reports presented. In addition, there was a display of technical equipment arranged for this Symposium. The report of the Symposium has been published by the French Photogrammetrical Society and appears in three issues of its Journal. In addition to the Symposium in Paris, a meeting on Orthophoto Techniques was held in Krakow, Poland in September, 1974, and the report of this meeting was distributed last year.

Commission V Non-Topographic Photogrammetry
President, Dr. H. M. Karara

The major event was the International Symposium on Biostereometrics held in Washington, D.C., September 10 to 12, 1974, at the same time as the Congress of F.I.G. and the semi-annual meetings of the American Society of Photogrammetry and the American Congress on Surveying and Mapping. Papers of this meeting were published by the American Society of Photogrammetry. A total of 164 persons from 18 Member Bodies attended this Symposium. Pre-printed proceedings

were distributed at the beginning of the meeting and are available from the A.S.P.
Other sessions of Commission V were the meeting sponsored by the British Photogrammetric Society held in Birmingham, April 18 to 20, 1975, and attended by 114 persons, and the A.S.P.'s Symposium on Close Range Photogrammetric Systems held July 28 to August 1, 1975, at Champaign, Illinois. Sixty-four persons attended this session and, again, pre-printed proceedings were distributed to registrants and can be obtained from the A.S.P.

Commission VI Economic, Professional and Educational Aspects of Photogrammetry
President, Dr. Zbigniew Sitek

The Commission Symposium was held at the University of Mining and Metallurgy, Krakow, Poland, the 15th to 17th of May, 1975. Seventy photogrammetrists participated from 13 Member Bodies and 20 papers and 5 reports were presented. The sessions for the three day meeting were divided into education, research, with special emphasis given to photogrammetric education in Africa, economical and historical problems, bibliography and terminology and concluded with discussion on the utilization of photogrammetric periodicals and, in particular, the promotion of national photogrammetric journals. At the termination of the Symposium, a number of the participants including Chairmen of Working Groups, remained to prepare the program for the Helsinki Congress.

Commission VII Interpretation of Data
President, Dr. L. Sayn-Wittgenstein

The Symposium on Remote Sensing and Photointerpretation was held in Banff, Alberta, Canada, October 7 to 11, 1975. Approximately 200 were in attendance. The proceedings of this Symposium were mailed in July 1975 to those who registered at the Symposium. These were published by the Canadian Institute of Surveying from which additional copies are still available.

Relations with International Organizations

The Presidents of our sister societies were invited to participate in this Congress and I am pleased to see *Dr. Ternryd* here, President of the F.I.G. Unfortunately our good friend, *Professor Robinson,* President of the I.C.A., was unable to be with us. I am not at this time aware of any of the other representatives of international organizations present, but I hope to find out about it shortly. Concerning our relations with F.I.G., we shall continue to press to see if we cannot fit our congress sessions in more smoothly so that there is a proper sequence of meetings that concern a great number of photogrammetrists and surveyors. The President of the International Geodetic Association, *Dr. T. J. Kukkamäki,* is also present.
In Enschede this past June, members of Council met with the Secretary General of the I.C.A., *Professor Ormerling,* and we believe that there are possibilities of joint studies that we shall ask the incoming Commission Presidents to explore. We hope we shall have some message to send to the President of I.C.A. for the Moscow meeting. Our Secretary General has had a number of sessions with UNESCO and as soon as we identify our work program for 1976—1980, we should examine it carefully to determine those projects that might be looked upon favourably by that organization.

Finally,

a word about some of the more important matters that I would ask you to consider prior to our General Assembly meetings. We have attempted to provide you with some background information on some of the points and, if by chance you have not received the papers, we shall attempt to have extra copies available at the time of the General Assembly. Not necessarily in the order of importance, they are as follows:

The position of remote sensing within the I.S.P.
The financing of Council for the period 1976—1980
Improving communications within the I.S.P.
Providing a balance between scientific developments and practical applications of proven photogrammetric procedures
Recognizing the position of manufacturers of photogrammetric instruments and materials within the I.S.P.
Review of the Statutes and Bye-Laws

Item. 2. Election of Honorary Members

The President then continued by announcing the election of Honorary Members.

Dr. S. G. Gamble:

I now turn to the matter of Honorary Membership and it is with great pleasure that I submit to you the names of two photogrammetrists who have served the Society well in the past and one in particular is going to serve it in the future, at least for the next couple of weeks. *Dr. Karl Löfström* is recommended to you as an Honorary Member. Do you accept *Dr. Karl Löfström* as Honorary Member?
Applause.

Dr. K. G. Löfström:

Mr. President, Ladies and Gentlemen.
I am very happy for this great honor. I had not thought that in my old age I should still be of some use to you. However, I am happy that the work that I have done during about 50 years for the development of photogrammetry has in this way been appreciated. Thank you, all, very much.

After a short reply to *Dr. Löfström, Dr. Gamble* proposed to elect a second Honorary Member.

Dr. S. G. Gamble:

In case there is any misunderstanding, there is no suggestion that Dr. Löfström should immediately become inactive. It is our wish that he will continue to be as active in photogrammetric matters as he has been in the past.
The second name we put forward for Honorary Membership is *M. Georges de Masson d'Autume* of the French Society of Photogrammetry. Many of the leading photogrammetrists here know him well and know how he has worked to improve photogrammetry in its various aspects. Do you accept the name of *M. Georges de Masson d'Autume* for Honorary Membership?
Applause.
Unfortunately, *M. de Masson d'Autume* is not present with us, but I would ask a representative of the French Society of Photogrammetry to accept the honor on his behalf.

M. Jean Cruset:

I am sorry that I was unable to get into touch with *M. Carbonnell,* the President of the French Society of Photogrammetry, to ask him to thank the I.S.P. Council for the honor which is paid to the French Society and to *M. Georges de Masson d'Autume.*
So, I thank you very much, Mr. President and all Members of the I.S.P. Council, and you, all congressists. Thank you very much, my dear colleagues.

Item 3. Presentation of Brock Gold Medal and von Gruber Awards

The President then proceeded to the presentation of awards.

Dr. S. G. Gamble:

We now come to the matter of awards, and, as you know, we have two awards. In order, the von Gruber Award will come first, and I am going to ask the Rector of the International Training Center, *Dr. A. J. van der Weele,* who is one of the judges for this award and who has done most of the work that I should have done and with others has judged upon the papers presented. I ask him to spend a moment explaining the award before making the presentation.

Dr. A. J. van der Weele:

Ladies and Gentlemen.
The President asked me in the first place to explain the von Gruber Award. I can do that very shortly by saying that the qualifications for the von Gruber Award shall be that the recipient shall have written within the four years immediately preceeding the Congress, at which the Award is declared, an article of outstanding merit on photogrammetry or photointerpretation, which shall have been judged by the jury to be the best article submitted to them.
It is quite clear that the Award is based on an article of outstanding merit this time. — We will call the name of our candidate now, so that he will be able to come forward: *Dr. Franz Leberl.* — Our candidate has written, in the last four years immediately preceeding the Congress, a number of articles which would merit this Award. And I am particularly glad that his field of activity is the same as that of the founders of this Award. *Dr. Schermerhorn* and *Otto von Gruber,* whose name has been attached to this Award, have both been working in the field of aerotriangulation, in fact, using aerial images for determining positions.
Dr. Leberl has extended the same idea by using remote sensing, that is, scanning techniques, in particular in the field of the radar. He has done this in such an excellent way that the jury was unanimously of the opinion that he should get this Award.
It seems that, for some reason, a misunderstanding maybe, he is not present, so the only thing I can add now is that I will be glad to present this Award consisting of a gold medal and a certificate of honor to him as soon as I meet him, and I thank you for your attention.

The President then proceeded to the presentation of the Brock Award.

Dr. S. G. Gamble:

I think we are going to have more luck with the next person to whom we wish to present an award. We now turn to the Brock Gold Award, and I am going to ask the Secretary General, *M. Jean Cruset,* to announce the winner of that.

M. Jean Cruset:

Conformément au désir du récépiendaire de la Médaille d'or Brock, désireux de bien comprendre mes propos pour pouvoir leur répondre, je ferai cette présentation en anglais. Mes amis d'expression anglaise voudront bien excuser mes erreurs de langage. Quant à ceux qui sont d'expression française, ils me pardonneront d'autant plus volontiers cette attitude que les traductions simultanées sont ici excellentes. The Brock Gold Medal is an award offered by *Mr. Virgil Kauffman,* President of the Aero Service Corporation, the name being given from the late *Brock* brothers, famous pioneers in the field of photogrammetry. The Medal is presented for outstanding contribution to the development of photogrammetry. At its yesterday's meeting, the I.S.P. Council decided to attribute the Brock Gold Medal Award to *Prof. Dr. Friedrich Ackermann.*
Friedrich Ackermann studied physics at the University of Tübingen and geodesy at the University of Stuttgart. From 1954 to 1958, he was a scientific collaborator to Zeiss Aerotopograph, first in Munich, then at Oberkochen. From 1958 to 1966, he was a lecturer and a senior photogrammetrist at the I.T.C., Delft, mainly for aerial triangulation and least squares adjustment. From 1966 till now, he is a full professor at the University of Stuttgart, in the chair of photogrammetry and surveying; he also is the Director of the Institute

of Photogrammetry in the University. In 1964, he received a Doctor's degree for a thesis on the theoretical accuracy of strip triangulation and at the Lisbon Congress, in the same year, he was presented with the Otto von Gruber Award. You will have received, dear *Professor Ackermann,* the only two existing I.S.P. awards. Do not wait for a third one: I.S.P. does not believe in the French proverb: "Jamais deux sans trois", and so far does not attribute more than two awards. Let me give a short review of your main fields of interest, be they personal ones or in collaboration with your assistants in the Stuttgart Institute. Aerial triangulation, combined with least squares adjustment and accuracy studies, was extended when appropriate computers became operational in the field of photogrammetry to numerical photogrammetry and automation. Theoretical accuracy studies of strips and blocks showed the great potential of aerial triangulation. The development of powerful computer programs for block adjustment permitted to treat very large blocks including auxiliary data with minimum control: it was a very important improvement for small scale mapping. On the other hand, applications to large scale work proved to be very successful and opened new ways to cadastral photogrammetry. Parallel with those appilications, refined studies and experimental tests led to further increase of accuracy. The developments, as carried on in Stuttgart, considerably contributed to bringing aerial triangulation up to its present level of economic and accurate performances. May I add that a second line of development in numerical methods concerned digital terrain models and digital contour interpolation and that *Professor Ackermann* has a tremendous activity related to teaching, participating in seminars in different countries and writing textbooks.
Now, *Professor Ackermann,* if you are so kind as to come to the chair.
On behalf of the I.S.P. Council and the Congress, dear *Professor Ackermann,* I have the great pleasure to present you with the Brock Gold Medal.
Dr. Friedrich Ackermann then thanked for the honor:

Members of the Council, Ladies and Gentlemen. When I was told, as late as last night only, that I would receive this Award, this came as a great surprise to me, indeed. Having recovered somewhat from the surprise after a lot of good night's sleep, a deep movement prevails, mixed with some feelings of pride. Perhaps at such an occasion one should not ask which other persons would have deserved this Award more than I, but rather look at the intention of the awarding Council. And, as you have just heard, it seems that my efforts and my activities in the field of numerical photogrammetry, with the intention to promote practical application and to advance the practical level of performance, that this has been the main point for this Award. And, I must admit — and for this perhaps I am a little proud — that has been always my intention, and has been the motivation behind most of my work that I feel in applied science, in engineering science, there is a duty to develop, to apply scientific development as directly and as much as possible for practical work. And, especially during my time at Stuttgart University we tried to develop computer programs, we tried to develop methods which were really of some use in the practice of photogrammetry. Well, we picked the fields of aerial triangulation and of automatic contouring — perhaps we have been somewhat lucky that just these fields more or less awaited this kind of activity. In any case, we are very happy that we succeeded in achieving something. And now, when I say we, this is not a slip of my tongue; it was quite obvious right from the beginning that this kind of effort and this kind of development would not be a one-man performance. It needed and required a team of people, a group of people to help developing such things. And I am very happy to include the members of my institute — also those who have left in the past years — in this Award and to thank them for the enthusiastic way we have all worked together. I am very grateful to them all.
And perhaps it is the right moment also to look back and to thank all other people, friends and colleagues, who have helped and assisted me in my career, in my development, in my scientific attitude, who have helped developing ideas, who have assisted and participated in the work, and who also have helped by criticizing me.
Let me conclude. All I can say finally is that I am, to express my sincere feelings, deeply moved by this Award and consider it a very great honor indeed. Thank you very much.

Item 4. Introduction of Keynote Speaker

The President then asked the Congress Director to introduce the Keynote Speaker, apologizing to him for having taken up rather longer than allotted to him for the earlier part of the Plenary Session.

Dr. h.c. K.G. Löfström:

Mr. U.V. Helava, Consultant Scientist, belongs to the generation of surveyors that studied at the Helsinki University of Technology immediately after the Second World War. He received his Engineering Diploma in the Department of Surveying in the year 1947 and served his first years in the field of photogrammetry with the Finnish Defence Forces. After this he transferred to the National Board of Survey where he concentrated mainly on the preparation of aerial maps to be used in the basic mapping of the whole country. From the times when I had the apportunity to work with *Mr. Helava* and to act as his teacher, I remember his insatiable thirst for mathematical and photogrammetric knowledge. His creative talents especially in the design and construction of new instruments were soon acknowledged, as the well-known firm Carl Zeiss Oberkochen began, in the early fifties, to manufacture an instrument partly based on his idea. To simplify its structure, mechanical analogue computers have been used in this small stereoplotter. On the basis of the principle of the instrument

discussed above, *Mr. Helava* developed the Analytical Plotter when serving, first, at the National Research Council of Canada and working, later on, mainly with the Bendix Corporation. His contribution has resulted in several generations of analytical plotters that are of the highest class in their own field as to their working capacity and versatility.
Despite the fact that *Mr. Helava* has carried out the greater share of his life's work abroad, we here in Finland cannot but be proud of his great success and renown as promoter of a new science. Namely, at the previous, XIIth I.S.P. Congress held in Ottawa in 1972, the highest token of recognition, the Brock Gold Medal, was awarded to *Mr. Helava.*
Finland is now happy that it may give the floor to its own son at this festive occasion, when he will present us with his views on the development of photogrammetry and on its significance in the future.

Item 5. Keynote Address

Mr. U.V. Helava thanked *General Löfström* for his kind words and proceeded to give the Keynote Address.

Mr. U.V. Helava:

Photogrammetry, Mapping, and Remote Sensing
Keystones of Human Progress

We have come here to this beautiful Nordic city from all corners of the world, from over 60 countries, I have been told, to attend the XIII International Congress for Photogrammetry. As we observe the proceedings of this festive opening session, we are doing so in eager anticipation of two interesting and stimulating weeks, filled with papers, discussions, exhibits and various presentations on science and technology, as well as chances to renew old friendships and to make new ones in the numerous social events that have been planned by the organizers of this Congress.
Since our society is primarily a technical and scientific organization, that's where our emphasis must be. We must be up to date scientifically and technically to fulfill our duties in today's world. And today's world confronts us with enormous challenges.
Mankind has been reckless and ignorant in its use of technology and science. For most of man's history he was threatened by nature. Now the direction of risk has been reversed, and the risk intensified. Man threatens nature. Indirectly, he threatens himself by willfully (or accidentally) destroying nature's balances, and by shortsightedly depleting vital, nonrenewable resources.
These negative results touch the lives of all of us today in one way or another. In some cases serious consequences of previous mistakes are obvious today, or exceedingly easy to predict. Many persons, however, tend to complacently consider such results of those previous mistakes only as nuisances; nothing of essential importance. This is where much of the danger lies. These events are not just nuisances, they are indications of a persistent long-term trend which, if left unchanged, will endanger the very life of future generations.
What is our role? The basic resources of mankind are all earth related — air, water, food, living space, shelters, minerals, energy — most everything man needs for his every day life and for his work and endeavors are provided by mother earth. When the earth is involved, so are we, surveyors, photogrammetrists, and people involved in earth resources exploration. Therefore, we must see our responsibilities and our duties against this panorama of the earth, its resources, and the use of those resources in the activities of mankind.
Against this vast panorama, with its enormously important political, social and economic problems, our own role, even our entire activities, may seem insignificant. But this is not so! Certainly major decisions will be made by our political leaders, and by our fellow citizens through various collective actions. However, these decisions and actions may very well lack wisdom and long term validity, if not guided by reliable and timely information — information provided by us. Thus, our role is not insignificant; our role is vital.
Therefore, too, our responsibilities are extraordinary, and very important. We, as a group, are the prime source of information relating to earth and its resources. The information we provide, if reliable and timely, may lead mankind to find answers to the important problems of the world and may help to relieve, if not even undo some of the inflicted damages and existing inequities; at least to the extent that it is feasible within social, economical, political, and temporal constraints.
We, photogrammetrists, as a group, have the means to carry out inventories of basic resources, perform explorations for others, monitor, estimate, measure and produce absolutely essential map products needed for planning and implementation of all those tasks plus all earth related developments. To be the custodian of all these capabilities, so urgently needed to solve some of the most serious problems of our times, is a tremendous responsibility.
How can we best fulfill our duties? We must be timely, we must be economical, we must be sen-

sitive to priorities, but most of all we must see the big picture and perceive our central role in the overall pattern of steps toward solutions of the problems. Many qualities will help us — reason, courage, creativity, aggressiveness, industriousness, persistence. But the best tool is imaginative and thoroughly professional use of our technology. This, of course, brings us exactly to the mainstream of this Congress, namely advances in technology and science.

Technology and science and their judicious applications are the keys to future advancements and these are precisely in the focal points of this Congress. Here we have a chance to translate the abstract concepts about our duties and responsibilities into concrete terms; instruments, techniques, and scientific progress. This is how it should be, because we as a group, are doers. We want, and can get things done. To this effect we will, here in this Congress, learn about new cameras and other sensors, side-looking radars, thermal and multispectral scanners, both airborne and spaceborne, and other emerging sensor devices, both analog and digital. We will study their geometric characteristics to be able to better derive metric data from all these data sources. We will also study extensively and with great emphasis newer and better techniques, both analog and digital as well as manual and automatic, for interpretation of sensor data; for adding those extra dimensions that can and must be added to complete the spectrum of output quantities photogrammetry can provide.

The exhibition, and also invited and presented papers as well as discussions, will bring us information on new photogrammetric instruments, again both analog and digital; more digital than ever before. Similarly, we will see new extensions of photogrammetry into the neighboring field of automated cartography in the form of digitally controlled "smart" plotting tables and digital recording capabilities of photogrammetric plotters and other data processing instruments and systems.

All this represents immense technological capability and promise. It is our duty to bring this to bear on the world's problems — short term, long term — local and global — big and small — large scale and small scale — and all combinations thereof. That is our challenge.

The challenge is enormous, when perceived in its wider scope, as suggested here. It is probably the greatest and the most important challenge ever for our profession. The reason is that we, the photogrammetrists, have a pivotal role to play. We, the photogrammetrists, provide the foundations which must be there before any solutions can be planned, let alone implemented. Inventories and explorations must be completed before plans can be drafted. Planning maps must then be produced. Engineering maps must be ready before anything can be designed and realized. Before anything can be monitored, its past and present status must be known. And so it goes, from fundamentals like food production, availability of water, soil, minerals, energy to roads, canals, railroads, housing, administration, and maintenance.

To succeed we must summon all our reason, courage, creativity, aggressiveness, industriousness, imagination, and all the good qualities mentioned earlier. But above all, we must analyze our technologies so that we can use them most effectively, so that investments of time, efforts, and funds can bring the best returns. In this analysis we must avoid narrow views and short perspectives. We must have the insight to see our technologies and our role in their true and important relation to human and societal needs and requirements as discussed before.

A theme that gives us guidance in this analysis emerges from the previously presented brief outline of the technical contents of this Congress. Undoubtedly you noticed that the word digital came up many times. Digital technology seems to be involved in everything. Not only that, it's becoming more and more omni-present. In so doing it pulls everything together, from geodesy to cartography and even to the use of map information. Out of this emerges the theme of integration by digital technology.

This theme is not unique to photogrammetry or even to technology and science. It extends throughout the fabric of modern society. The reason, of course, is the incredible success and consequent proliferation of computers. Accounting, administration, management, communications, and even education, all join in with science and technology in that they use extensively the same kind of data processing equipment and the same general type of data presentation.

This computer revolution, if I may use that tired expression, continues to be one of the greatest technical forces in the world. Perhaps even in historic perspective, the computer and the consequences of its use in technlogy, science, culture, education, and commerce, is one of the greatest forces that has impacted on human activities since a long time. It is nothing new to photogrammetry. Photogrammetrists have been using computers and digital technologies to their advantage for many years. Already today there are many areas where photogrammetry is using digital technology and computers. We can think about analytical triangulation as an example. Adjustment of the results, computer controlled plotters, analytical stereoplotters, automated photogrammetric systems, digitizing, and automated cartography, cartographic data banks, digital terrain models, digital remote sensing, digital image data transmission, and processing for earth resources exploration, etc. are but a partial list of other examples. But still today, the digital technology and computers possess the power to be an even greater force and even more significant element in the future of photogrammetry.

Obviously, numerous scientific and technical problems involved in all this are a part of the challenge to our profession. The number of such problems is impossible to even estimate. The technology proceeds from day to day, and every week new inventions are made and new techniques appear, with potential applications to the manysided field of photogrammetry.

To solve all these scientific and technical problems is an important part of our challenge. It is, however, obvious that we have to accept this challenge keeping in mind our wider responsibilities. We have to be selective to be effective.

Specifically, we have to look at the potential of all technological tools and the technological devices that we have in our possession for providing the services that are so urgently needed. We must weigh their relative advantages and disadvantages to decide which ones have the best potential for speed, efficiency, and economy.

A look at the technical challenge from that point of view shows clearly that we are rapidly moving to a new era. We are very close to, or perhaps already past a dividing line where on one side of the line we could consider each photogrammetric instrument and device as a separate entity and judge it by its merits within its range of application. On the other side of that line we must consider each part, each device, each element, as a part of a system. A system that is bound together by digital technology. That is where the promise and importance of integration by digital technology originates.

Let us think about it for a moment. We have already today remote sensing devices, cameras and the like, which produce basically a digital kind of output. Therefore, we can talk about a digital sensor as the entrance point into the modern photogrammetric system. Even digital cameras already exist. Some of the newer semiconductor arrays are already used in television cameras and future photogrammetric cameras built on the principle of digital arrays have been already described at the American Society of Photogrammetry. Once the data is received by analog or digital sensor, the processing is already today to a great extent digital. Particularly in the area of remote sensing we have sophisticated computor systems which are used to analyze and process the sensor data in various ways in order to obtain earth resources and other information from multispectral and other remote sensing sources.

Similarly, also aerial photographs even though they arrive to the processing stage in form of an analog record are subject to numerous digital techniques. Digital techniques are used in analytical aerial triangulation as mentioned earlier. In addition, it is entirely feasible today to use facsimile type of scanners to digitize aerial photographs and store the data in a computer readable form. Similarly, again, many advanced photogrammetric instruments, particularly those of analytical and automatic variety, make extensive use of digital techniques today. Furthermore, we are well aware that even analog stereoplotters are digitally assisted in many cases for orientation purposes and almost invariably have, at least as an optional item, a digital recording device. Lately, we have also seen the emergence of digitally controlled output plotters for analog stereo instruments.

Once the data is processed photogrammetrically, it enters into the cartographic phase. This phase is also moving rapidly towards digital techniques. Map digitizing is a very commonly used term these days. Map digitizing is an inherent part of cartography today. It is also an inherently useful and powerful link between digitally oriented photogrammetry and digitally oriented cartography. Because of this link the two can communicate with great efficiency. The results of photogrammetry can be readily transmitted to the cartographic processes.

However, the integrating power of digital techniques does not end there. There are already in use today many cartographic data banks based on digital data storage. Without any doubt, cartographic data banks will become increasingly popular in the future because of their enormous usefulness in many applications. Besides, we can easlily visualize situations where the output data of photogrammetric processes are used by engineering and other professions which employ the data in its digital form. In other words, there are already engineering applications where the map data is very readily accepted in digital form, in addition to the conventional cartographic form. Digital terrain models are very much in the forefront of discussions in photogrammetry, and not only among the photogrammetrists, but particularly among the users of photogrammetrically generated data. Let us not forget, that when we produce a map we undoubtedly produce it for some purpose, and if that purpose itself makes wide use of digital techniques, as more and more of the end users do and will, then it is only natural that we adapt our own techniques to the desires of the users and produce digital outputs. Consequently, when we look at this entire train of events, we can see the binding power of digital techniques. We can see how digital techniques can integrate all the different elements and processes of photogrammetry and mapping into one unified system, that will undoubtedly be more efficient than a hodge-podge system, put together from independently developed and essentially individual technical elements.

Now, what does it all mean? It means first of all that the integrating role of digital technology can be clearly seen today. It also means that many of the devices and techniques, many of the processes that are needed in this integration role are already available. Therefore, the potential for rapid implementation of this integration is already present. Any time now, an explosive evolution may start — in fact, it may already be under way. Unfortunately, as many institutions and organizations implement their plans, much confusion and incompatability will result. As a responsible and responsive international organization, ISP should work toward establishing guidelines and standards to direct this evolution so that an orderly system would emerge. ISP could and should work on things like common languages, formats, data structures, terminologies, and interfaces. Direction and standardization guided by ISP would be an enormous service to photogrammetric and mapping community as years go by.

What has been said, too, means that once the integration proceeds towards its completion, more and more capabilities will be available, and more and more can be done as a result of integration by digital technology. In this process, its economic advantages will become available and obvious to the mapping community and to society at large. One aspect of the economical significance of the integration is more difficult to see. It is speed at which the products can be completed, and services rendered. As has been men-

tioned several times in this address, photogrammetry is basic to all earth-related developments. Many of these developments are of enormous economic consequence. The capital expenditures and the benefits that can be eventually obtained from these projects are very large compared to the cost of producing the basic maps. Yet nothing can be done before the basic earth-related exploratory and other data has been collected and the basic maps produced. Therefore, very often, even a slight reduction in the time required to produce all this data will generate benefits that are many times greater than the entire cost of the mapping projects.

Furtherhore, what is said here means that when you attend this Congress, see the exhibits, enjoy the sessions, and take part in the discussions, you should keep your attention well focused to deeper meanings, and to long-term effects. Keep in mind, that in the future there will be an integrated system and there will be great responsibilities. Whatever is said at invited and presented papers, discussed at sessions, and seen in the exhibits, should be subjected to our own "technology assessment", and evaluated against our wider responsibilities.

But more than that, perhaps much more than that, let us all dedicate ourselves to a concerted effort towards meeting the challenges and meeting the responsibilities that we have toward finding solutions to the problems of our times. We should be encouraged by the enormous advances that have been made in science and technology within our own field, such as the data collection by using various sensors, both air-borne and satellite-borne, and in the processes which are largely based on the power of computers. We should also be encouraged by the vast experience that exists within our society. Many of the problems will be of the organizational nature and the cooperation and experience that exists within the ISP Commissions have unique powers to contribute towards agreements that will help us to better meet and better solve the organizational problems that are involved in the great challenges that we are facing.

Let us also approach the coming Congress days and weeks with an objective of making this Congress a success not only as an exciting and pleasure event, but also as a historically significant event. Let us produce results that will be remembered in the years to come as breakthroughs towards making the contributions of photogrammetry recognized as keystones of human progress.

Item 6. Acknowledgement of Address

The President called upon the Immediate Past President, *Dr. Luigi Solaini,* to thank the Keynote Speaker.

Dr. Luigi Solaini:

I have been asked to thank the Keynote Speaker, *Mr. U. V. Helava.* Now it is very late, and I am not in any position to make comments on the very vital questions concerning our future life. So I limit myself to thanking him very warmly on behalf of all the audience.

With the permission of our President, I wish also to thank very much *Mrs. Halonen* for her presence here at our Plenary Session. With *Mrs. Halonen,* the spirit of our old friend and the organizer of the Congress is present among us. So, I thank you once again, *Mrs. Halonen.*

Item 7. Closing of the Plenary Session

The President thanked *Dr. Solaini* for his words and proceeded to close the session.

Dr. S. G. Gamble:

Now, Ladies and Gentlemen, we have come to the end of the first Plenary Session. I therefore declare this session closed. Thank you very much for your attendance.

Delegates gathering for the General Assembly.