



UNITED NATIONS
REGIONAL
CARTOGRAPHIC CONFERENCE
FOR ASIA AND THE FAR EAST

15-25 February 1955, Mussoorie, India

Vol. 1 - Report of the Conference

United Nations
New York, 1955



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CHAPTER I

TERMS OF REFERENCE, BACKGROUND AND OBJECTIVES OF THE CONFERENCE

Terms of reference

1. The United Nations Regional Cartographic Conference for Asia and the Far East was convened in pursuance of resolution 556(XVIII) adopted on 27 July 1954 by the Economic and Social Council. The text of the resolution reads as follows:

THE ECONOMIC AND SOCIAL COUNCIL,
RECALLING its resolution 476 A(XV) on the subject of holding regional cartographic conferences,

TAKING NOTE of the report of the Secretary-General on the holding of a regional cartographic conference for Asia and the Far East,

NOTING with appreciation the invitation of India to hold the first regional conference for Asia and the Far East in India,

CONSIDERING the satisfactory response of the Governments concerned to the proposal to hold the conference in India,

1. DECIDES to hold a regional cartographic conference for Asia and the Far East at Dehra Dun (India) in February or early March 1955;

2. APPROVES tentatively the list of items for inclusion in the provisional agenda of the Conference as given in Annex I of the Secretary-General's report;

3. REQUESTS the Secretary-General to take the necessary steps for the issue of invitations to the Governments concerned, and to complete the other arrangements for the holding of the Conference after consultation with the competent specialized agencies.

Background of the Conference

2. In February 1948, the Council in resolution 131 (VI) recommended that Governments of Member States stimulate surveying and mapping of their national territories and that the Secretary-General of the United Nations take appropriate action to further such efforts. A Committee of Experts on Cartography was appointed by the Secretary General

to study the problem and advise upon the means of its implementation. The convening of regional cartographic conferences was recommended by the Committee, which met in March-April 1949, as an effective means to attain the objectives set forth in the resolution 131(VI). At its ninth session the Council noted the report of the Committee¹ and requested the Secretary-General to consult with Governments concerning the early calling of such meetings. The results of these consultations indicated a wide measure of support² and a new impetus was given to the project when the Government of India offered to act as host at the first conference for Asia and the Far East, to provide a meeting place, and to be responsible for all the physical arrangements for the conference. In accordance with the Council's resolution 476 (XV), further consultations were proceeded with. Many Governments expressed their desire to participate in the conference for Asia and the Far East, and proposed agenda items for the conference³. The Council, after consideration of this response, adopted resolution 556(XVIII) as quoted in paragraph 1 above.

Objectives of the Conference

3. In accordance with the terms of the report of the Committee of Experts on Cartography⁴, the primary object of regional cartographic conferences, which would be advisory and consultative in nature, should be the stimulation and execution of practical topographical survey, including geodetic controls, to meet the needs of the region in question. To fulfil its tasks, the conference would have to review the mapping programme of the States concerned as related to their need for maps and to consider the programme of regional mapping. The conference would also contribute to the exchange of information on technical data, materials and organization, and to fostering mutual assistance in the field of finance, equipment, personnel and training.

¹ See Modern Cartography, Base Maps for World Needs, Part I [United Nations publication, sales no. 1949.I.19]

² See document E/2362 Annex 1

³ See document E/2622 and E/2622/Add.1 and 2

⁴ See Modern Cartography, pages 28-29

CHAPTER II

ORGANIZATION OF THE CONFERENCE

4. The Conference was originally scheduled to be held at Dehra Dun, India. However, owing to accommodation difficulties in that city, the meeting place was changed to the nearby hill-station of Mussoorie where the Conference took place from 15 to 25 February 1955 inclusive. The Government of India made all the physical arrangements and provided the meeting facilities.

Attendance

5. The following is the list of representatives of participating countries and observers from international organizations:

a) GOVERNMENTS

Afghanistan

Major Amir Ahmed Khan,
Royal Afghan Army,

Belgium

Mr. Raoul Clement Degroodt,
Chief, Cartographic Service,
Ministry of Colonies.

Burma

U Hla Khin Maung,
Director of Survey.

U Ko Gyi,
Superintendent of Survey.

U Lun Pe,
Superintendent of Survey.

Canada

Mr. W. H. Miller,
Director,
Surveys and Mapping Branch,
Department of Mines
and Technical Surveys.

China

Mr. Tsao, Mo,
Adviser,
Ministry of Interior.

Mr. Sun Tang-Hueh,
Director,
Department of Higher Education,
Ministry of Education.

Dr. Tchen Hiong-Fei,
Counsellor,
Chinese Embassy, Paris.

Mr. Tchong Tse-Koei,
First Secretary,
Chinese Embassy, Bagdad.

Mr. Yu Mou-Chiang,
Ministry of Interior.

Finland

Dr. T. J. Kukkamäki,
Finnish Geodetic Institute.

France

M. Georges Laclavère,
Ingénieur en chef - géographe,
Institut géographique national.

Germany (Federal Republic of)

Dr. Ing. Erwin H. Gigas,
Director,
Institut für angewandte Geodäsie.

India

Brigadier I. H. R. Wilson,
Surveyor-General of India.

Dr. S. Gopal,
Director,
Historical Division,
Ministry of External Affairs.

Mr. T. S. N. Murty,
Research Officer,
Historical Division,
Ministry of External Affairs.

Colonel Gambhir Singh,
Director,
Survey of India
(appointed by the Government
of India as the Organizing
Secretary of the Conference).

Mr. P. A. Thomas,
Director,
Northern Circle,
Survey of India.

Mr. M. M. Ganapathy,
Deputy Surveyor-General,
Survey of India.

Mr. B. L. Gulatee,
Director,
Geodetic and Research Branch,
Survey of India.

Mr. R. S. Chugh,
Officer-in-Charge,
Tidal Party,
Survey of India.

Mr. A. N. Ramanathan,
Mathematical Adviser,
Survey of India.

Mr. K. L. Dhavan,
Director,
Map Publication,
Survey of India.

Mr. C. T. Hurley,
Deputy-Director,
Map Publication,
Survey of India.

India (cont'd)

Mr. E. R. Wilson,
Director,
Air Survey and Training Directorate,
Survey of India.

Mr. J. C. Sikka,
Officer-in-Charge,
No. 20 (Photo), Party,
Survey of India.

Mr. S. S. Sundram,
I. N. Commissioned Instructor
Officer,
Naval Hydrographic Office.

Mr. M. M. Srinivasan,
Central Silviculturist,
Forest Research
Institute and Colleges.

Mr. J. P. Mehrotra,
Deputy-Director (Engineering),
Indian Standards Institution.

Mr. S. R. Singh,
Head of the Civil
Engineering Department,
Roorkee University.

Dr. Amarjit Singh,
National Physical Laboratory.

Mr. Prem Prakash,
National Physical Laboratory.

Mr. M. D. Mittal,
Central Water and Power Commission.

Mr. Prem Prakash,
Deputy Collector,
Allahabad, Uttar Pradesh.

Mr. A. K. Sen Gupta,
Deputy Director of Surveys,
West Bengal.

Mr. M. L. Sethi,
Director of Mines and Applied Geology,
Rajasthan.

Mr. S. L. Malurkar,
Director,
Colaba and Alibag Observatory,
India Meteorological Department.

Mr. P. R. Purohit,
Director of Land Records,
Tripura.

Mr. S. M. Karayalar,
Professor of Geography,
Travancore University.

Mr. R. Giri,
Statistician,
Survey and Settlements Department,
Madhya Pradesh.

Indonesia

Lt. Col. Sutarjo Surjosumarno,
Director,
Topographical Survey,
Ministry of Defence.

Mr. Mas Muntaha,
Director,
Cadastre Service,
Ministry of Justice.

Lt. Rudy Edmond Beaupain,
First Assistant,
Photogrammetrical Office,
Topographical Survey,
Ministry of Defence.

Israel

Mr. Joseph Elster,
Director,
Survey Division,
Ministry of Labour.

Japan

Dr. Naomi Miyabe,
Chief Inspector,
Geographical Survey Institute,
Ministry of Construction.

Dr. Kanji Suda,
Chief Hydrographer,
Hydrographic Office,
Maritime Safety Agency,
Ministry of Transportation.

Mr. Hideho Tanaka,
First Secretary,
Embassy of Japan, India.

Netherlands

Dr. W. Schermerhorn,
Dean,
International Training-Centre
for Aerial Survey.

Philippines

Lt-Comdr. Sergio M. Maulawin,
Chief,
Operation Branch,
Coast and Geodetic Survey.

Mr. Mario Manansala,
Chief,
Cartographic Division,
Coast and Geodetic Survey.

Portugal

Dr. Alvaro Brilhante Laborinho,
Counsellor,
Portuguese Embassy,
New Delhi.

Thailand

Mr. Chootragoon Suwankate,
Division of Cadastral Survey,
Department of Lands,
Ministry of Interior.

Thailand (cont'd)

Capt. Chumphon Kulkasem,
Division of Ground Control
Survey Department of the Army,
Ministry of Defence.

Turkey

Major-General Ihsan Saref Dura,
Director,
Geodetic Survey.

Lt. Col. Sevat Goktuna,
Geodetic Survey.

Maj. Eng. Tevfit Ates,
Geodetic Survey.

United States of America

Colonel Frank A. Pettit,
Photographic and Survey Section,
The Joint Staff, U. S. Army,
Department of Defence.

Colonel Robert C. Miller,
Office Chief of Engineers,
Department of the Army.

Captain Philip C. Doran,
Assistant Chief,
Division of Geodesy,
U. S. Coast and Geodetic Survey,
Department of Commerce.

Mr. Charles B. Ferguson,
Geographic Attaché,
American Embassy,
Tokyo.

Mr. Conrad J. Thoren,
Geographic Attaché,
American Embassy,
New Delhi.

b) INTERNATIONAL GOVERNMENTAL ORGANIZATIONS

Food and Agriculture Organization

Mr. F. George,
Agriculture Officer,
Land and Water Use Branch.

International Civil Aviation Organization

Mr. J. Park,
Chief, Aeronautical Information Services and
Aeronautical Charts.

International Hydrographic Bureau

Rear Admiral C. L. Nichols,
President,
Directing Committee.

c) INTERNATIONAL NON-GOVERNMENTAL ORGANIZATIONS

International Organization for Standardization

Shri J. P. Mehrotra,
Deputy Director (Engineering),
Indian Standards Institution.

International Union of Geodesy and Geophysics

Mr. G. Laclavère,
Secretary-General.

UNITED NATIONS SECRETARIAT

Dr. P. S. Lokanathan,
Executive Secretary of the
Economic Commission for Asia
and the Far East (ECAFE),
representing the Secretary-General.

Dr. Te-Lou Tchang,
Chief, Cartographic Section,
Bureau of Economic Affairs,
Economic and Social Affairs Department,
Executive Secretary for the Conference.

Mr. James B. Orrick,
Director of United Nations Information Centre
for India, Burma and Ceylon.

Dr. C. Y. Li,
Chief, Mineral Resources Section,
ECAFE,
Assistant Secretary.

Mr. J. R. Dean,
Cartographic Section,
Bureau of Economic Affairs,
Economic and Social Affairs Department,
Assistant Secretary.

6. The Governments of Egypt, Iran, and Pakistan had indicated their desire to participate in the Conference and had forwarded to the Secretary-General of the United Nations the names of their delegations to the Conference. However, owing to various unforeseen circumstances, their delegations were unable to come to the meeting.

7. The Governments of Albania, Cambodia, Ceylon, Ethiopia, Laos, and Libya, while indicating their inability to participate in the Conference, expressed interest in its deliberations and requested that the documents issued concerning the meeting be sent to them.

8. The Pan-American Institute of Geography and History, under the auspices of which Pan-American Consultations on Cartography have been held, cabled the good wishes of the Institute for the success of the Conference.

Official addresses⁵

9. Dr. P. S. Lokanathan, Executive Secretary of the Economic Commission for Asia and the Far East, opened the Conference on behalf of the Secretary-General of the United Nations, and the Honourable Dr. Sampurnanand, Chief Minister of Uttar Pradesh, India, delivered the inaugural address.

⁵ For the text of these addresses see Proceedings of the Conference (E/CONF.18/7).

Vote of thanks

10. The Conference unanimously adopted the following vote of thanks to the host Government:

The United Nations Regional Cartographic Conference for Asia and the Far East expresses its warmest thanks to the Government of India for the hospitality extended to the Conference.

Adoption of the rules of procedure

11. The Conference adopted the provisional rules of procedure (E/CONF.18/2), prepared by the United Nations Secretariat, as the rules of procedure for the Conference.

Officers of the Conference

12. The Conference elected the following principal Officers for the Conference.

President	-	Brigadier I. H. R. Wilson, Chairman of the delegation of India
Vice-Presidents	-	Dr. Naomi Miyabe, Chairman of the delegation of Japan Major-General Ihsan Saref Dura, Chairman of the delegation of Turkey
Rapporteur	-	Mr. Chootragoon Suwankate, Chairman of the delegation of Thailand

13. Appointed by the Secretary-General of the United Nations, Dr. T. L. Tchang, Chief of the Cartographic Section of the Department of Economic and Social Affairs, was the Executive Secretary for the Conference.

Agenda

14. The Conference had before it the provisional agenda (E/CONF.18/1) prepared by the United Nations Secretariat on the basis of the items proposed by the Governments of Australia, Burma, France, India, the Philippines, Syria, Turkey, and the United States of America and by the Food and Agriculture Organization.

15. The sub-items "Limits of mapping responsibility for the Carte internationale du monde au millionième series" and "Interrelation of ICAO 1:1,000,000 series and C.I.M. series" were withdrawn by the original sponsoring countries, India and Australia, but were subsequently re-introduced by the delegations of Thailand and India respectively. The alternative wording of sub-item 7(i) "Procedure for obtaining from neighbouring countries information, mapping material and the necessary facilities for the operations of the topographical services when border regions are involved or when the zone of international mapping responsibility of one country extends over the territory of another country" was withdrawn by Syria.

16. The agenda as adopted by the Conference on 16 February 1955 and amended on 23 February 1955 was as follows:-

1. Adoption of the rules of procedure
2. Election of officers
3. Adoption of the agenda
4. Report on credentials
5. Brief statements on recent progress and interesting technical developments in the respective countries
6. Technical questions
 - a. Geodesy
 - (i) The application of airborne electronic devices for the connexion with India of outlying islands such as the Andamans and Nicobars
 - (ii) The desirability of measuring one or more standard base-lines in India and other Far Eastern countries with the Väisälä Comparator developed at the Finnish Geodetic Institute
 - (iii) Magnetic and gravity observations in the Bay of Bengal and the Arabian Sea
 - (iv) The maintenance of national magnetic standard instruments and their comparison with European standards
 - (v) First-order triangulation and levelling connexions between neighbouring countries (e.g., Iran, Iraq, Syria and Turkey)
 - b. Topographic mapping
 - (i) Means of obtaining a regular small-scale photographic coverage in the sectors of a region where such coverage does not yet exist or where it appears to be insufficient
 - (ii) The most appropriate instruments and methods to ensure the rapid execution of cartographic surveys of average precision and at a scale of the order of 1/50,000 or 1/100,000 by the use of aerial photographs in countries which are not yet provided with regular maps
 - (iii) Improvement and standardization of cadastral survey methods
 - (iv) Adoption of a standard method of writing geographical names on maps
 - c. Topical maps⁶
 - d. Surveys which form the physical background for a study of natural resources
 - e. Hydrography
 - f. Aeronautical charts
 - g. International Map of the World on the Millionth Scale
 - (i) Standardized specifications for the C.I.M.⁷ series
 - (ii) Interrelation of ICAO 1:1,000,000 series and C.I.M. series.

⁶ Including, inter alia, geology, soils, vegetation and hydrology.

⁷ Carte internationale du monde au millionième

- (iii) Limits of mapping responsibility for the Carte internationale du monde au millionième series
7. Organization of international co-operation
- (i) Procedure for obtaining from adjacent countries information and mapping material in cases where the international mapping responsibility of one country extends over the territory of another country
 - (ii) The establishment of an inter-governmental cartographic organization to work out uniform international cartographic standards and to give the necessary aid to less developed countries, as done by other inter-governmental organizations, so that the survey of the world may be expedited
 - (iii) Questions relating to a central research organization or office to which problems can be referred and from which up-to-date information about various instruments may be obtained
8. Technical assistance
- (i) A study of (a) the difficulties encountered by countries which have not been able to prepare adequate maps of their territories or to carry out adequate gravimetric and magnetic measurements and (b) the possibilities of the provision of technical assistance in this connexion
 - (ii) Facilities for the less developed countries to study new developments in neighbouring developed countries whenever opportunity arises
 - (iii) Technical assistance activities in the field of cartography
9. Adoption of the Report of the Conference

Establishment of Technical Committees

17. The Conference decided to establish four technical committees to deal with the various questions of item 6 of the agenda with the exception of sub-item 6(b)(iv) "Adoption of a standard method of writing geographical names on maps" which was dealt with at a plenary session. The work was allocated to the Committees as follows:

- Committee I [Geodesy and Hydrography] - sub-items 6(a)(i), (ii), (iii), (iv) and (v); 6(e)
- Committee II [Topography and Photogrammetry] - sub-items 6(b)(i), (ii) and (iii)
- Committee III [Special Mapping] - sub-items 6(c); 6(d)
- Committee IV [Global Mapping] - sub-items 6(f); 6(g), (i), (ii) and (iii)

18. Following is the list of Officers elected by the four Committees:

Committee I - Chairman:

M. Georges Laclavère (France)
Vice-Chairman:
Shri B. L. Gulatee (India)
Rapporteur:
Captain P. C. Doran (U.S.A.)

Committee II - Chairman:

Dr. W. Schermerhorn
(Netherlands)
Vice-Chairman:
Lt. Col. Sutarjo Surjosumarno
(Indonesia)
Rapporteur:
Mr. J. C. Sikka (India)

Committee III - Chairman:

Mr. Joseph Elster (Israel)
Vice-Chairman:
Dr. Tchen Hiong-Fei (China)
Rapporteur:
Maj. Eng. Tevfit Ates (Turkey)

Committee IV - Chairman:

Mr. E. R. Wilson (India)
Vice-Chairman:
U Hla Khin Maung (Burma)
Rapporteur:
Lt-Comdr. Sergio M. Maulawin
(Philippines)

Documents

19. The documents issued for the Conference which include technical studies, working papers, summary records of meetings, draft reports, information papers, are listed in the Annex to this Report.

Credentials

20. The President of the Conference reported that the Credentials Committee had found the credentials of the delegations in order. The representative of India stated that "the K.M.T. Delegation now present at the Conference did not represent China", and therefore proposed that their credentials be not accepted by the Conference. The President put the proposal to the vote and it was rejected by 6 votes to 2. He explained that the vote had been called on the issue of whether the Conference supported the findings of the Credentials Committee. The representative of China stated that "his delegation was the only legal representative of the Government of China, which was a Member of the United Nations, and, in that capacity, had been invited by the Secretary-General of the United Nations to attend the Conference".

CHAPTER III

CONSIDERATION OF THE SUBSTANTIVE ITEMS OF THE AGENDA

Item 5: Recent progress and interesting developments in the respective countries.

21. The Conference considered the following communications submitted by the Delegations of China, Germany, Japan, and the United States of America respectively:

"Brief statement on the progress of cartographic work in China" by Dr. Tsao, Mo, (E/CONF.18/A/L.19);

"The Figure of the Earth from the Measurement in China", by Dr. Tsao, Mo, (E/CONF.18/A/L.19);

"Present status of cartography and related surveys in Japan", by Dr. Naomi Miyabe (E/CONF.18/A/L.13);

"New ideas to expedite first order triangulations, by Dr. Erwin Gigas (E/CONF.18/A/L.6 Rev.1);

"The development of procedures to measure distances by modulation of high frequency light waves", by Dr. Erwin Gigas (E/CONF.18/A/L.6 Rev.1);

"Recent United States progress and interesting technical developments in cartography", by Colonel Frank A. Pettit (E/CONF.18/A/L.15);

22. In addition, the Conference heard statements by the representatives of Burma, China, Indonesia, Israel, the Philippines and Turkey outlining recent achievements by their respective countries in cartography relating to surveying methods, technical instruments, training facilities, organization of services, and map reproduction. The representatives also gave some indications of the special problems confronting their countries. In connexion with the consideration of this item as well as during the discussion of several sections of item 6 by the Technical Committees, the Conference also heard statements by the representatives of France, Germany, the Netherlands and the United States of America on recent technical developments in various branches of cartography.

23. The Conference noted with satisfaction that the importance of cartography as an indispensable tool in economic development was recognized by all the participating countries. Experience has shown that investments in cartography were repaid many times over by the tangible benefits derived from this work. However, the Conference regretted that some countries of the region were still behind in the matter of the desirable standards.

24. The Conference believed that the information presented to the meeting and the deliberations which

followed were extremely useful as they provided a background for better international co-operation and therefore wished to place on record the following resolution:

The Conference,

Having taken note of (i) the present state of progress of the various nations of this Region in the cartographic field, as regards the methods in use in each country in the light of the great leeway required to be made up in the various cartographic fields before cartographic self-sufficiency can be achieved, and (ii) the notable recent technical developments being initiated and pursued by the countries experienced in cartography which were represented at the Conference,

Trusts that this mutual interchange of information will prove a solid foundation for improved procedure and practice in the field of technical assistance, in that the advanced countries will be aware of the position and problems facing the various nations of this Region, and the latter, in their turn, will know where to apply for advice and assistance in the various fields of cartography.

Item 6: Technical questions

Sub-item 6(a)(i) - The application of airborne electronic devices for the connexion with India of outlying islands such as the Andamans and Nicobars

25. The delegation of India informed the Conference that the geodetic framework of islands such as the Andamans and Nicobars had not been connected with the main triangulation of India (E/CONF.18/A/L.11). The ordinary triangulation methods could not be applied in this geodetic connexion which involved the measurement of long distances of up to several hundred miles. The establishment of such geodetic connexion was recognized as necessary from two points of view: it would in the first place provide a basis for more accurate cartographic work in India and in addition, constitute a first step towards the linking of the Indian triangulation to that of Australia via Indonesia, an international project contemplated for many years.

26. The Conference agreed that, at the present time, the only practicable method of carrying out the desired connexion was by means of airborne electronic distance measuring devices such as Shoran, Hiran, etc. In this field, both Canada and the United States of America have developed equipment and techniques which have given satisfactory results. While neither country was in a position to make any commitment at this stage it was felt that favourable consideration might be given by them to requests for the loan of electronic equipment to carry out such a project. The Conference adopted the following resolution:

The Conference

1. Recognizes the desirability of connecting the Andaman and Nicobar Islands to the mainland of India, and that the most expeditious method of such connexion is by electronic measuring devices;

2. Observes that the limitations of existing electronic devices necessitate a direct connexion of these islands to the triangulation extending along the coast of Burma;

3. Notes that Canada and the United States of America have highly developed electronic measuring devices and methods of operation;

4. Considers that the connexion with India-Burma of the outlying islands would be a first step towards the realization of the far bigger task of linking the India-Burma triangulation to that of Indonesia and ultimately to that of Australia;

5. Recommends that the Governments having the necessary equipment and experienced personnel for this type of work, such as the Governments of Canada and of the United States of America, should be approached by the interested Governments with a view to determining how this project might be executed.

Sub-item 6(a)(ii) - The desirability of measuring one or more standard base-lines in India and other Far Eastern countries with the Väisälä Comparator developed at the Finnish Geodetic Institute

27. The Conference had before it five communications on the question of the measurement of standard base-lines and related problems; one by the representative of India (E/CONF.18/A/L.17) on the "desirability of measuring a standard base-line in India", emphasizing the need for such base-lines to ensure a uniform scale in the vast triangulation network of India and adjacent countries; two by the representative of Finland, (E/CONF.18/A/L.5) entitled respectively "Measurement of standard base-lines with the Väisälä comparator" and "Measurement of the standard base-line of Buenos Aires with the Väisälä comparator", and two by the representative of Germany (E/CONF.18/A/L.6 Rev.1) entitled respectively "Measurement of standard base-lines" and "The problem of the necessity to repeat base-line measurements in the European triangulation net".

28. The Conference took note that the International Association of Geodesy in 1951 and the International Union of Geodesy and Geophysics in 1954 passed resolutions recommending the measurement of base-lines in various countries by the Väisälä comparator or similar apparatus. During the discussion of technical details reference was made to many publications, including the Bulletin géodésique of the International Association of Geodesy and the publications of the Finnish

Geodetic Institute, in connexion with the description of principles involved, methods adopted and results achieved. Attention was drawn, in particular, to the very high accuracy which had been obtained by the Väisälä comparator. The Conference was informed that the Finnish Geodetic Institute would make available its Comparator as well as operating staff and would do all the preparatory work in Finland, such as calibrating standard metres.

29. The Conference, recognizing the usefulness of measuring standard base-lines by means of the Väisälä comparator in the Asian Countries, adopted the following resolution:

The Conference,

Considering the remarkably accurate results that are obtainable with the Väisälä Comparator of the Finnish Geodetic Institute, which has been calibrated against the international prototype of the International Bureau of Weights and Measures, and the difficulties and uncertainties associated with the physical standards of length for calibration purposes,

Recommends to the Governments of the Asian countries that a few standard base-lines in this Region should be established by means of the Väisälä method with a view to assuring a uniform scale in all networks and to calibrating invar tapes and other equipment.

Sub-item 6(a)(iii) - Magnetic and gravity observations in the Bay of Bengal and the Arabian Sea

30. The delegation of India informed the Conference that the magnetic and gravity work in India and the adjacent countries had so far been confined to the land areas and stressed the need for such observations at sea to bring the isogonal charts up-to-date and to study local gravity anomalies because of their great value in the world study of the geoid as well as in immediate local use.

31. It was also brought to the attention of the Conference that no non-magnetic surface vessel necessary for such a magnetic survey was available nor was there any probability that such a vessel would be built in the near future. This dark picture was made brighter by the fact that there are now under development in some parts of the world a few types of magnetometers, particularly at the Canadian Dominion Observatory, which could possibly be used for these observations.

The Conference believed that the Special Committee for the International Geophysical Year should be requested to take into account the needs of the areas in question when planning the programme of observations in this field and therefore adopted the following resolution:

The Conference

1. Observes that the construction of a non-magnetic ship for magnetic observations on the oceans cannot be carried out as planned because of lack of funds;

2. Notes that instruments for magnetic measurements at sea now being developed in various countries will probably be available for the International Geophysical Year 1957-1958;

3. Recommends to the Special Committee for the International Geophysical Year that it consider in its programme the inclusion of magnetic observations in the Indian Ocean, particularly in the Bay of Bengal and in the Arabian Sea.

32. With respect to the gravity observations in deep sea waters, the countries of this Region generally did not possess adequate equipment such as submarines and gravimeters. Among gravimeters suitable for such observations, the Vening Meinesz instrument was mentioned as the only one available. The countries which can provide their own submarines should approach the Netherlands Gravimetric Committee for the loan of the instrument and it is almost certain that their request would be favourably received. The loan of submarines poses a far more difficult problem. Although the International Gravimetric Bureau might be in a position to assist in the matter, it is believed that the first step to be taken would be the collection of information on the countries which can make available the required submarines. Once this information is gathered the question of the actual loan of equipment could be more quickly and appropriately dealt with by direct consultations between the countries concerned. The assistance of the International Union of Geodesy and Geophysics as well as of the United Nations should be requested in carrying out the project. The following resolution was adopted:

The Conference

1. Recognizes the importance of gravity measurements at sea and the necessity for the countries of the Region, which generally do not possess the adequate equipment, to carry out programmes in this field;

2. Requests the International Union of Geodesy and Geophysics to provide a list of organizations which possess the necessary equipment together with the information as to whether this equipment could be made available to other countries on a loan basis;

3. Requests the United Nations authorities to facilitate the carrying out of any such programme, including information regarding the possibilities of obtaining personnel and equipment, such as technicians and submarines, that Governments might make available for undertaking such a programme.

Sub-item 6(a)(iv) - The maintenance of "national magnetic standard instruments" and their comparison with European standards

33. The Conference was informed that the magnetic observations both for measuring the absolute and differential value of magnetic elements had been carried out in India with various instruments,

but no standards yet existed (E/CONF.18/A/L.11). It was therefore considered desirable to maintain one set of such instruments as the national standards and to arrange for their periodical comparison with European standards. Under this sub-item, a technical paper was submitted by the delegation of Germany (E/CONF.18/A/L.6 Rev.1) entitled "How to organize a magnetic land survey for the purpose illustrated by the example of India".

34. It was made known that Japan was also interested in the maintenance of magnetic standard instruments and that the United States Coast and Geodetic Survey would calibrate magnetic instruments for other nations if such instruments were sent to the United States. It was also made known that any nation wishing to compare its standards with those of The International Service for the Comparison of Magnetic Standards could approach that Service through the International Union of Geodesy and Geophysics. The Conference, believing that these facilities should be used, adopted the following resolution:

The Conference

1. Takes note of the existence within the International Union of Geodesy and Geophysics of a permanent service for the international comparison of geo-magnetic standards;

2. Recommends countries which desire to compare their national standards with a calibrated instrument to apply to the International Union of Geodesy and Geophysics for the loan of such an instrument.

Sub-item 6(a)(v) - First-order triangulation and levelling connexions between neighbouring countries (e.g., Iran, Iraq, Syria and Turkey)

35. The representative of Turkey informed the Conference that the geodetic connexions between his country and Bulgaria, Greece and Cyprus which establish a direct tie to the European network were completed. In order to strengthen further the world geodetic system, his country was ready to connect its triangulation and levelling nets with those of Iran, Iraq and Syria.

36. The Conference noted that the geodetic connexions between various countries had been the subject of several resolutions by international meetings. The triangulation and levelling nets of all the nations had already been connected on the American continent. The question of the levelling connexions between European countries would be discussed at an international conference in France during May 1955.

37. In view of the fact that three of the interested countries had no representation at the meeting, it seems necessary for the four countries concerned to hold preliminary consultations with a view to studying the arrangements that might be made to further the project. The assistance of the United

Nations in facilitating such contacts should be made available. The Conference adopted the following resolution:

The Conference

1. Recognizes the importance of the junction of the triangulations of Iran, Iraq, Syria and Turkey, both for homogeneous mapping and for scientific purpose such as a better definition of the shape of the earth;

2. Recognizes the importance of the junction of the levelling nets for the study of the fluctuations of the sea levels in various parts of the seas surrounding the countries concerned;

3. Notes that the International Union of Geodesy and Geophysics has several times recommended such international connexions;

4. Recommends that the four interested countries meet together to study the arrangements that might be made in this respect;

5. Requests that the United Nations facilitate such a meeting.

Sub-item 6(b)(i) - Means of obtaining a regular small-scale photographic coverage in the sectors of a region where such coverage does not yet exist or where it appears to be insufficient

38. The consideration of this sub-item was based on two communications on the subject submitted by France (E/CONF.18/A/L.16) and the Netherlands (E/CONF.18/A/L.7) respectively. The debate covered a wide range of highly technical questions including the planning of the aerial photography, the network of control points including radar equipment, the type of photographs to be taken and the equipment to be used ranging from aircraft to cameras and lenses.

39. The Conference noted the method of using large units of four aircraft adopted by the "Institut Géographique National" of France; each such unit operated by a team of thirty had covered in several missions 1,200,000 square kilometres a year on the scale 1:50,000 without any auxiliary means. It was also noted that in Canada different methods had been used, often including "Shoran" control of photography with radar altimetry for height control and forward or backward directed oblique camera in order better to assure the azimuth of each strip. It was considered essential that in the case of large units a photographic evaluation team should accompany the photographic operators on missions for the purpose of assuring on the spot the quality of the photography taken so that, if the latter is not up to the required standards, a new flight can be carried out immediately. The Conference realized that at the present stage no solution can be considered as a final answer which can be applied in all cases and therefore each country, according to its state of development, available resources and individual requirements will have to employ the means and the methods

which it finds most suitable. In conclusion, the following recommendation was adopted:

The Conference,
Considering

(a) that topographic maps are made in the most economical way by means of photogrammetry,

(b) that good topographic maps up to the scale of 1:25,000 can be made from air photographs at scales between 1:40,000 and 1:70,000 using modern wide-angle lenses,

(c) that a collection of such photographs constitutes a valuable and economical means which can be used in many development programmes,

1. Recommends to Governments to take adequate measures, adapted to the local conditions, to obtain a regular coverage of high quality small scale photographs of those areas, where such coverage is non-existent or insufficient, taking into account that:

(a) this kind of small scale photography in most cases does not need repetition within the period of one generation;

(b) for large areas without primary triangulation, the necessary control can be obtained either by astronomical measurement or by the use of electronic means. (In the latter case, the choice is between radar controlled photography and the use of radar for the determination of ground control. The radar altimeter can be considered as a promising means for improving vertical control. The choice between the various methods depends largely on local conditions of topography, available means, etc.);

(c) the use of private enterprise can enable a Government to utilize electronic and other highly specialized techniques without the necessity of large investments and expensive training of personnel;

(d) the best results are obtained with modern cameras with high quality lenses of the latest design, used by civilian or military services or by private concerns, which have permanent personnel engaged in aerial photography;

2. Draws the attention of the Governments of this Region to the vital necessity of completing the photographic coverage prior to undertaking any field operations.

Sub-item 6(b)(ii) - The most appropriate instruments and methods to ensure the rapid execution of cartographic surveys of average precision and at a scale of the order of 1/50,000 or 1/100,000 by the use of aerial photographs in countries which are not yet provided with regular maps

40. The Conference had before it a communication on the subject submitted by the delegation of France (E/CONF.18/A/L.14) describing in its main lines

the method applied at present by the Institut géographique national for the production of maps at the scale of 1/50,000 and 1/100,000 and a paper submitted by the delegation of Germany (E/CONF.18/A/L.6 Rev.1) entitled "Suggestions for photogrammetric surveying of average accuracy and for mapping in 1/50,000 and 1/100,000 scales".

41. After a discussion of several points mentioned in these papers, it was found that at the present time no general rules or preference for any particular method could be accepted because of the lack of sufficient comparable statistical data regarding the production achieved by the various methods and using different equipment. The Committee would certainly be in favour of further development of less expensive 3rd order plotting instruments notwithstanding the fact that the productivity per man hour of more costly 2nd order, or even 1st order, instruments might be better, if this development could promote a more rapid and general application of photogrammetry which would not be hampered by the high capital investments as in the case of more precise equipment. The Conference adopted the following resolution:

The Conference

Notes the report of Committee II dealing with the item entitled: "The most appropriate instruments and methods to ensure the rapid execution of cartographic surveys of average precision and at a scale of the order of 1/50,000 or 1/100,000 by the use of aerial photographs in countries which are not yet provided with regular maps", and approves the views expressed therein.

42. Accordingly, the view of the Conference on the subject can be summarized as follows: The Conference, recognizing the successful use of photogrammetry for the production of topographical maps in various countries, decided not to make any recommendation regarding instruments or methods because so far no objective comparison of these exists and several problems remained unsolved, e.g., the productivity of methods using instruments of so called 1st, 2nd and 3rd order still has to be observed, in which connexion the local conditions must also be taken into account.

Sub-item 6(b)(iii) - Improvement and standardization of cadastral survey methods

43. The Conference considered three communications on the subject: a communication by the delegation of India (E/CONF.18/A/L.11) emphasizing the difficulties arising from a cadastral survey not connected with the existing trigonometrical network of the country, a communication by the representative of the Netherlands (E/CONF.18/A/L.7) outlining recent experiments in the application of photogrammetry to cadastral surveys in Austria, Germany, the Netherlands and Switzerland, and a communication by the delegation of Germany

(E/CONF.18/A/L.6 Rev.1) entitled "Principles of establishing a land register", studying various questions concerning cadastral survey such as the functions and qualities of a cadastre and the methods for its establishment, etc. The Food and Agriculture Organization expressed their special interest in this question on account of the importance of cadastral survey in connexion with the use of land and, in particular, in reflecting the changes of land tenure under modern changing conditions.

44. The multiple requirements that a modern land register has to meet were discussed. It should constitute the basic document for land taxation, for the description of real estate in juridical registers and for securing titles to properties. It should be used for planning purposes (town and country planning, agricultural and forestry planning) as well as for statistical and research purposes. Finally it could be used for the preparation and revision of topographic maps.

The question of selection between numerical and graphical cadastre as well as that of application of photogrammetric methods to the establishment of cadastral survey were also debated at length. The conclusions reached by the Conference were contained in the following resolution:

The Conference

Notes the following points which are essential with regard to the improvement of cadastral systems in various countries:

(a) The precision of a cadastral survey should not be higher than necessary for the fulfilment of practical requirements. The system, the method or production and the legal basis should be adapted to local circumstances both social and physical;

(b) In the choice between a numerical and a graphical cadastre, the latter must not, a priori, be considered as inferior and must be recommended in all cases in which it can give the required precision;

(c) Cadastral surveys should in all cases be based on a sound trigonometrical control and connected with the existing national trigonometrical data;

(d) It is inadvisable to represent on cadastral maps any more than the necessary topographic details for identification of the boundaries. If large scale topographic maps are needed for the whole area or for a part of it, they should be made separately on the same or on a smaller scale than the cadastral map. Those maps can be derived either from the cadastral map as far as planimetry is concerned or from the same basic material used for the preparation of the cadastral map, such as air photographs;

(e) Except in the case of densely built up areas where a high degree of precision is necessary, photogrammetric methods, in which high precision equipment is used properly, have proved to be at least as accurate as normal ground survey methods for the determination of

well identifiable boundaries; therefore, the possibility of the application of this modern method should be studied in the light of local conditions. A further advantage of photogrammetry must be taken into account, namely: the availability of the same photographs for agricultural interpretation (soil survey, land use, crop estimates, forest inventory, etc.) and for the production of large scale topographic maps.

Sub-item 6(b)(iv) - Adoption of a standard method of writing geographical names on maps

45. The adoption of a standard method of writing geographical names on maps has been a subject under study by the Economic and Social Council. Consultations on the subject with Governments and inter-governmental organizations were being held by the Secretary-General of the United Nations in accordance with Council's resolution 476(XV). The Conference considered a note by the Secretariat entitled "Replies from Governments on the question of the adoption of a standard method of writing geographical names on maps" (E/CONF.18/A/L.3). The document contained comments and studies submitted by nineteen Governments: Australia, Burma, Canada, Ceylon, Denmark, Dominican Republic, Egypt, Ethiopia, France, India, Israel, Jordan, Liechtenstein, Libya, Norway, Pakistan, Philippines, Portugal and the United States of America. The Conference was also informed of the work carried out in this field by the International Civil Aviation Organization (E/CONF.18/A/L.9), the Universal Postal Union (E/CONF.18/A/L.10), and the International Hydrographic Bureau, and the interest expressed by the International Telecommunications Union in this subject (E/CONF.18/A/L.12).

46. The Conference, while noting the favourable views expressed by various governments on the adoption of uniform methods of writing and transliteration of geographical names, realized the diverse technical problems involved therein, the solution of which seemed so far beyond the competence of a regional conference.

Although the adoption of local spelling for names in language using the roman script had reached a fair degree of agreement, it would nevertheless be difficult to make substantive progress concerning the other languages until a body, which in the opinion of the Conference should be formed by common consent under the sponsorship of the United Nations, had worked out a phonetic script and transliteration rules applying to all the scripts of the world. The Conference favoured the suggestion of the Government of the United States of America relating to the drafting of a general framework for a programme. This would constitute the first step to attain the objective of the Economic and Social Council in achieving uniformity in the writing of geographical names. The Conference adopted the following resolution:

The Conference

1. Commends to the notice of the Governments attending the Conference the suggestion of the Government of the United States of America, in paragraph 6 of page 16 of document E/CONF.18/A/L.3 dated 1 February 1955, viz: "... The United States Government would be willing to cooperate in drafting a general framework for a programme looking toward maximum international uniformity in the writing of geographical names for consideration by the United Nations Economic and Social Council, or by an International Conference called by the Council for that purpose, or in drafting an agenda for such a Conference"; and

2. Recommends that a Committee should be set up under the auspices of the United Nations, on the lines proposed by the Government of the United States of America, and that the Governments of this Region should appoint experts to participate in the deliberations.

Sub-item 6(c) - Topical maps

47. Topical maps may be used for a wide range of subjects and the way in which they are classified differs greatly in various countries. Thus, it was not possible for the Conference to deal with each type of topical map in a detailed manner. It was considered, however, that if a topical map were prepared for international use standard specifications, particularly those relating to the scale and conventional signs, should be adopted only after careful consideration. It was also considered that when the services of a topographer were needed in the preparation of topical maps his functions should end with the preparation of the topographic base and, if required, the supply of photographs. The task of compiling the specific statistical data to be included in such maps should be the responsibility of the specialists concerned.

48. The Conference believed that in the preparation of topical maps involving two or more countries close international co-operation would be necessary. In this connexion, the Conference noted with satisfaction the achievements of the Meeting of Senior Geologists held in Bangkok, Thailand, in 1954, under the joint sponsorship of the International Geological Congress, the Economic and Social Commission for Asia and the Far East and the Cartographic Office of the United Nations, for the preparation of a Regional Geological Map for Asia and the Far East. At that meeting agreement was reached on the scale of the Map, border correlation, tectonic data, stratigraphic scale, topographical background, the limits of the Map and other technical matters. The Conference also believed that it would be to the mutual benefit of the countries concerned if technical information concerning the methods of preparation and production of topical maps could be freely exchanged. The Conference adopted the following resolution:

The Conference

1. Notes the report of Committee III on (a) topical maps and (b) surveys of the physical background for a study of natural resources for agriculture; and

2. Decides to adopt the views expressed therein.

Sub-item 6(d) - Surveys which form the physical background for a study of natural resources

49. The Conference had before it a background paper prepared by the Food and Agriculture Organization entitled "Physical background surveys for a study of natural resources for agriculture" (E/CONF.18/A/L.8) and a communication on the question from the delegation of the Netherlands (E/CONF.18/A/L.7).

50. The Conference noted that in view of the significance of the fullest development of natural resources to meet the needs and opportunities of changing economic and technical conditions, many projects were being launched in various countries of the Region. However, the decisions to be taken on the scope and practicability of a proposed development required, at its inception, a knowledge of the environmental factors, both human and physical, of the Region in which the project might be sited. It was therefore believed desirable to prepare statistics and inventories, usually in the form of cartographic presentation, of the incidence of such physical factors as climate, hydrology, soils, etc., and also of such human factors as were relevant to resource development. Governments should bear in mind that an economy of effort would result from a clear recognition of the interdependence of the various factors and the manner in which any factor might influence the decisions mentioned above. Therefore, the countries of the Region should, whenever possible, make full use of the modern techniques of air photography and photo-interpretation as an aid in the expeditious survey of the physical factors over wide areas and also in the detailed examination of the development site or sites. It would also be desirable for countries without sufficient technical personnel and facilities to obtain, where appropriate, the assistance of international agencies or of other countries in establishing institutions for the execution of such surveys and inventories and in the training of technicians in the field. The resolution adopted by the Conference on this sub-item and the preceding sub-item is reproduced in paragraph 48 of this report.

Sub-item 6(e) - Hydrography

51. The Conference heard a statement by the President of the Directing Committee of the International Hydrographic Bureau describing the purposes, organization and activities of the Bureau. The assistance that may be given by the Bureau

to individual national hydrographic services was particularly emphasized. The efforts made by several countries in the field of hydrography were also brought to the attention of the Conference. In concluding, the Conference adopted the following resolution:

The Conference

1. Considers that the dangers of maritime navigation often occur in waters where adequate hydrographic surveys have not been made and where an effective system of notifying navigators of navigational changes or dangers to navigation is not in operation, and that such conditions exist usually in navigable waters of countries without a hydrographic service;

2. Recommends that such countries establish hydrographic services;

3. Takes note of the statute (11) of the International Hydrographic Bureau which states: "the Bureau will on request tender its advice and assistance to those States which have not yet established hydrographic services or whose hydrographic services are not fully developed.";

4. Believes that it is to the advantage of countries having hydrographic services or which are establishing such services, to become members of the International Hydrographic Bureau.

Sub-item 6(f) - Aeronautical Charts and Sub-item 6(g)(ii) - Interrelation of ICAO 1:1,000,000 series and the Carte internationale du monde au millionième series

52. The Conference decided to consider sub-item 6(g)(ii) in conjunction with sub-item 6(f) because of the fact that the questions to be dealt with in the former could be considered as forming part of the latter.

53. The Conference was informed in general terms of the task of the International Civil Aviation Organization (ICAO) in preparing and promulgating international standards and recommended practices, the uniform application of which contribute to the safety, regularity or efficiency of international air navigation and, in more detail, of the achievements of that Organization in the field of aeronautical charts. The specifications of ten aeronautical charts were already established and their publication is the responsibility of the ICAO contracting States. The need for the ICAO World Aeronautical Chart 1:1,000,000 (WAC) series and the trend of its development were specially studied. Since it is specifically designed for use in air navigation and aims at giving the full aeronautical information required by the navigator, there is a tendency to increase the aeronautical overprints on the WAC and to omit more and more of the topographical details on a geographical map which are not essential for a navigator. Moreover, in view of the rapid technical advancement of aviation the WAC maps would require more frequent revision than the sheets of geographical maps.

54. The International Map of the World on the Millionth Scale (IMW), a project established by International Map Conferences held in 1909 and 1913, is a geographical map which contains, in addition to much topographical information, details of political and administrative boundaries, hydrography, communications, culture, etc., and has fulfilled the requirements of geographers and other users of maps for many years. The scale 1:1,000,000 is considered the one most suitable for general study and several countries have included the IMW series in their national basic mapping programme. A communication by the Chinese delegation outlines the practical use of IMW series in China (E/CONF.18/A/L.18). The co-ordination of the publication of the Map, which was the responsibility of the former Central Bureau, International Map of the World on the Millionth Scale has been entrusted since October 1953 to the Cartographic Office of the United Nations in accordance with the Economic and Social Council resolution 476 B(XV) and the Protocol of Transfer signed between the United Nations and the Central Bureau. The Conference noted from the reports (E/2376/Add.1 and E/CONF.18/A/L.1) prepared by the United Nations Secretariat that significantly large areas of the globe had already been covered by the International Map (IMW).

55. The Conference, realizing that the two series of international Maps had different major specifications, projections, limits of sheets, etc., considered that one basic compilation could be used in their preparation in order to reduce the cost. Furthermore the Conference agreed that both series of maps should be maintained and that their completion should be expedited for the following reasons: the publication of IMW sheets would fulfil the urgent need for basic cartographic data for carrying out general studies of economic development while the completion of the various aeronautical maps and charts would meet the requirements of civil aviation. The Conference adopted the following resolution:

The Conference,

Having agreed that, as the IMW and the ICAO 1/1,000,000 WAC series are designed for very different needs, it is essential to maintain both series,

Having realized that although these two series have very different specifications, projections and limits of sheets, one basic compilation can be used in the preparation of both these series, and

Having considered the usefulness of both these series for national development and aviation,

Recommends

(a) that the Governments of this Region should accelerate progress in completing for their own territories the IMW series, so as to attain as soon as possible world coverage in this series; and

(b) that they should take steps to expedite completion of the various aeronautical maps and charts to meet the requirements of civil aviation.

Sub-item 6(g)(i) - Standardized specifications for the Carte internationale du monde au millionième series

56. The specifications which govern the preparation and publication of the International Map of the World on the Millionth Scale (IMW) were adopted by International Map Conferences in 1909 and 1913 and amended in 1928. In order to meet modern requirements the study of the question of reviewing these specifications was recommended at the 1952 International Geographical Congress and at the VIth Pan-American Consultation on Cartography. In this connexion, consultations with national cartographic agencies adhering to the former Central Bureau, IMW, were held by the Secretariat of the United Nations in 1954.

57. The Conference had before it (a) a communication by the delegation of India (E/CONF.18/A/L.11) giving their views on the various specifications of IMW, (b) a working paper prepared by the Secretariat of the United Nations entitled "Replies received from national cartographic agencies on IMW specifications" (E/CONF.18/A/L.2) and (c) a communication by the International Civil Aviation Organization (E/CONF.18/A/L.9) outlining the views of that Organization on the subject. The report of the Secretary-General of the United Nations on the means for furthering the completion of the International Map of the World on the Millionth Scale (E/2376 and E/2376 Add.1) and the complete text of IMW specifications (E/CONF.18/A/L.20) were also distributed at the Conference. Due to the limited time available, it was impossible for the Conference to deal with the various specifications in a very detailed manner. Nevertheless, agreement on general principles was reached. Taking into account the fact that a large number of sheets of this series has already been produced by various national cartographic agencies and also the fact that local conditions in different countries might require some deviation from specifications, it was considered undesirable to adhere too rigidly to all specifications. Thus, while the major items such as projection, sheet lines, etc. should be made mandatory, a certain flexibility should be allowed in the minor specifications so that the sheets already published would not be affected, and the future production of this series of maps should not be prevented due to specifications that could not be met by the producing agency.

58. As any amendment to existing specifications requires an international agreement, the Conference believed it desirable that the Secretary-General of the United Nations appoint an Advisory

Committee of Experts to study the proposals on the specifications received from countries with a view to facilitating international agreement. The findings of the Committee should be transmitted to Governments for consideration before adoption by an international conference on the subject. The Conference adopted the following resolution:

The Conference

Recommends

(a) that the specifications which govern the publication of IMW series should be such as to allow a certain amount of flexibility so that no change in existing sheets would be required and no country would be prevented from producing this series of maps due to specifications they could not meet. While the major items, such as projection, sheet lines, etc. would be made mandatory, minor deviations from other specifications laid down should be permissible to meet local requirements; and

(b) that it would be desirable for the Secretary-General of the United Nations to appoint an Advisory Committee of Experts to examine proposals on the specifications for the IMW series received from countries. The findings of the Committee should be transmitted to Governments for consideration before final adoption by an international conference to be convened by the United Nations.

Sub-item 6(g)(iii) - Limits of mapping responsibility for the Carte internationale du monde au millionième series

59. The Conference considered the sub-item 6(g)(iii) relating to the International Map of the World on the Millionth Scale (IMW) on the basis of the resolution adopted by the International Map Conference in 1913 in which mention was made of the following: each State which possesses a suitable cartographic establishment shall prepare and publish the IMW sheets which include the whole or part of its territories; nevertheless, as the strict application of the foregoing principles would necessitate a duplication of certain sheets it is desirable that, in such cases, neighbouring countries should come to an agreement as to the respective sheets each shall prepare. No rules were laid down regarding those sheets which cover areas involving countries without a cartographic establishment, or not adhering to the Central Bureau, International Map of the World on the Millionth Scale.

60. The Conference agreed that, when the territories of several countries fall on one sheet of IMW, the countries concerned should come to an agreement as to which country should produce the sheet while the others should supply the producing country with the necessary material concerning their respective territories. The principle generally observed in this connexion should be that the country having the largest portion of

the territory on the sheet should be selected. The Conference further agreed that when such agreement could not be reached the good offices of the United Nations should be used, since the Cartographic Office of the United Nations had taken over the functions of the former Central Bureau.

61. The Conference took note of the future programmes of several countries in connexion with the IMW (E/CONF.18/A/L.1 and E/CONF.18/A/L.21) and adopted the following resolution:

The Conference

Recommends that the following procedure be followed regarding the responsibility for the publication of a sheet covering two or more countries:

(a) Where the territories of several countries, each possessing cartographic establishments, fall on one sheet, duplication of sheets be avoided by the countries concerned coming to an agreement as to which country shall produce the sheet, the others supplying the producing country with the necessary materials as far as their own territories are concerned. The principle generally observed in arriving at these agreements is that the country which has the largest portion of land territory falling on a sheet shall be responsible for the publication of that sheet;

(b) In the event of difficulties arising in reaching agreement, as to which country shall produce a sheet covering two or more countries, the good offices of the United Nations Cartographic Office should be sought.

Item 7: Organization of international co-operation

Sub-item 7(i) - Procedure for obtaining from adjacent countries information and mapping material in cases where the international mapping responsibility of one country extends over the territory of another country

62. The Conference noted that under sub-item 6(g)(iii) the question of obtaining mapping material from adjacent countries for the preparation of IMW, as outlined in a communication by the Indian delegation (E/CONF.18/A/L.11), had already been examined. The resolution dealing with the interchange of mapping material could also be applicable to the interchange of other cartographic information since the channel established for the former would be used for the latter.

Sub-item 7(ii) - The establishment of an inter-governmental cartographic organization to work out uniform international cartographic standards and to give the necessary aid to less developed countries, as done by other

inter-governmental organizations, so that the survey of the world may be expedited.

63. The Conference had before it two communications on the subject, one submitted by the representative of Burma (E/CONF.18/A/L.24) stressing the need for an inter-governmental organization to work out uniform cartographic standards and to provide aid to less developed countries in the field of cartography and the other by the representative of the Netherlands (E/CONF.18/A/L.7 Add.1) outlining some international problems relating to this type of international organization. The International Civil Aviation Organization (E/CONF.18/A/L.9) informed the Conference of its interest in the character and functions of the proposed organization and of its readiness to give detailed views thereon should such an organization be established. During the debate the activities of the International Hydrographic Bureau, the International Union of Geodesy and Geophysics and the Pan American Institute of Geography and History were emphasized and two types of organization that might be established were considered: (a) an organization on a world-wide basis and (b) an organization on a regional basis.

64. The Conference discussed at length the difficulties in the way of international co-operation which had to be faced and recognized the necessity of establishing in the first place inter-governmental organizations on a regional basis so as to emphasize to the countries of each Region concerned the vital necessity of progress in all fields of cartography in accordance with their special requirements and conditions. Each regional organization would deal primarily with the problems with which the countries of the Region were confronted and would refer problems which could not be solved at a regional level to a larger international body. Thus, an inter-governmental organization of a universal character could be established on the basis of the recommendations of the regional bodies. Moreover, such organizations, either regional or universal, would not only be better able to deal with questions such as the lack of uniformity in cartographic standards and practices, but would also help to strengthen the position of national cartographic institutions in their internal relations vis-à-vis matters relating to surveying and mapping. Views were expressed that it would be preferable for regional organizations to come within the scope of the United Nations which, in turn, should facilitate their establishment. The Conference, therefore, adopted the following resolution:

The Conference

Recommends the setting up of:

(a) regional inter-governmental cartographic organizations where these do not exist at present: these would form an authoritative source for advising Governments of the Region on their

cartographic problems and on the vital need for giving primary importance to cartographic self-sufficiency as a pre-requisite to orderly economic development; and

(b) a small Central Advisory Board: this would consist of one representative of each regional organization and of the international technical institutions concerned. The Board may also co-opt such experts as they deem necessary. The Board would act as an authoritative source for advising the United Nations on matters of cartographic policy and related technical matters. The terms of Reference of the Central Advisory Board should be primarily concerned with the production of maps.

65. On the basis of experience gained at this Conference it was agreed that regional cartographic conferences should continue to be held at intervals of from 3 to 4 years. The Conference was convinced that the countries represented had benefited greatly from its deliberations, especially those countries of the Region which had been facing serious difficulties when they had to provide up-to-date cartographic data urgently required in connexion with national development projects. The Conference adopted the following resolution:

The Conference,

In view of the value to the countries of this Region of the deliberations of the Conference, Recommends that a second cartographic conference for the Region be held not later than 1958.

Sub-item 7(iii) - Questions relating to a central research organization or office to which problems can be referred and from which up-to-date information about various instruments may be obtained

66. The Conference had before it a communication by the delegation of Burma (E/CONF.18/A/L.25), outlining the question of setting up a central research organization, the primary functions of which would be as follows:

(a) to collect and collate from national cartographic institutions and manufacturers of cartographic instruments detailed and up-to-date reports on technical developments for the use of member countries,

(b) to serve as a central source of information and advice for the solution of problems, with regard to methods and instruments which, according to the needs in each particular case, can be employed to the best advantage,

(c) to co-ordinate the experimental work carried out in various countries. Communications on the subject were also submitted by the representative of Germany (E/CONF.19/A/L.6 Rev.1) and the representative of the Netherlands (E/CONF.18/A/L.7). During the discussion, the work of the International Society of Photogrammetry and of the

European Organization for Experimental Photogrammetric Research was brought to the attention of the meeting.

67. The Conference, taking into account the special conditions prevailing in Asia and the experience obtained in the field by European countries, felt the essential need for such a body but also realized the difficulties involved in setting it up. Consequently, the Conference favoured, as a first measure, the establishment of a Committee or several Committees, each dealing with a specific field. Should the need arise, the Committee concerned would approach cartographically advanced countries or technical institutions particularly competent in the matter for further expert advice. In concluding, the Conference adopted the following resolution:

The Conference,

While appreciating the need for a Central Regional Office from which advice on all cartographic matters could be obtained,

1. Realizes the many difficulties involved in the formation of such an office; and

2. Suggests that, as a first step, the Governments of this Region should set up a Committee or Committees each covering a certain field, or fields, of cartography, and, where these Committees need more expert guidance, that they should refer their problems to countries or institutions properly qualified in the cartographic field concerned.

Item 8: Technical assistance

(i) A study of (a) the difficulties encountered by countries which have not been able to prepare adequate maps of their territories or to carry out adequate gravimetric and magnetic measurements and (b) the possibilities of the provision of technical assistance in this connexion

(ii) Facilities for the less developed countries to study new developments in neighbouring developed countries whenever opportunity arises

(iii) Technical assistance activities in the field of cartography

68. Since these three sub-items are closely inter-related the Conference decided to deal with them jointly and then considered the following documents: (a) a communication by the delegation of Burma on sub-item 8(ii) (E/CONF.18/A/L.22), (b) a communication by the delegation of the Netherlands on sub-item 8(ii) (E/CONF.18/A/L.7) and (c) notes on the assistance provided by the Technical Assistance Administration in cartography and allied fields prepared by the Secretariat of the United Nations (E/CONF.18/A/L.4).

69. The Conference studied various aspects of the question of technical assistance that had been given by individual Governments, by groups of countries, by international scientific organizations and by the United Nations and, in particular, the

procedure to be followed in making requests to the Expanded Technical Assistance Programme of the United Nations. Some countries outlined the difficulties they encountered in meeting the requirements for obtaining such assistance, especially in connexion with the programme which had to be planned far in advance and which, once approved, had to be limited to a certain period of time, usually less than one year, to conform with the budgetary possibilities of the United Nations. In view of the need for long-term projects to carry out cartographic work the Conference expressed the hope that the United Nations Expanded Technical Assistance Programme would have, in future, a fixed and continued budget to meet this need.

70. It was pointed out that one of the basic causes of the inadequate state of development in cartography was the lack of exchange of experience and of information, not so much between highly developed countries themselves but rather between these and the less developed countries. The provision of facilities to study new developments in more advanced countries proved to be an efficient means to counteract the lack of technical knowledge necessary for carrying out efficiently and economically modern cartographic projects. The difficulties in obtaining highly qualified and specialized experts from abroad was also pointed out and the question received considerable attention. An alternative method was proposed whereby technicians would be sent from under-developed to advanced countries for specialization in questions of particular interest to the country of the trainee.

71. The Conference adopted the following resolution:

The Conference,

(i) In view of the fact that basic self-sufficiency in the field of cartography is an essential pre-requisite to methodical and economical national development in every field, and (ii) in view of the great amount of work to be done in various fields of cartography by the countries of this Region,

1. Trusts that

(a) the clarification given of the methods of procedure for obtaining technical assistance,

(b) the clarification given of the practical difficulties in providing such effective technical assistance, and

(c) the suggestion by the Canadian delegation that the extreme difficulty in obtaining the services of experts in certain fields of cartography could best be overcome by the countries of this Region sending their specialist officers to countries where facilities exist for further study and examination of their country's problems,

will help the Governments of this Region both in formulating their future requests for technical assistance in the field of cartography and in having them met satisfactorily; and also

2. Expresses the hope that it may in time be possible for the United Nations Expanded Technical Assistance Programme to have a fixed and continued budget for the furtherance of a long-term programme in the field of cartography.

Item 9: Adoption of the Report of the Conference 72. At its seventh plenary meeting held on 25 February 1955 the Conference unanimously adopted the resolutions relating to items 5 to 8 of the agenda and approved the Report of the Conference in its provisional form.

LIST OF RESOLUTIONS ADOPTED BY THE CONFERENCE

- | | | | |
|-----------------|---|------------------|---|
| RESOLUTION I | - Recent progress and interesting technical developments in the respective countries (see page 7) | RESOLUTION X | - Improvement of cadastral survey methods (see page 11) |
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| | | RESOLUTION XX | - Second United Nations Regional Cartographic Conference for Asia (see page 16) |
| | | RESOLUTION XXI | - Vote of thanks (see page 5) |

ANNEX

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- E/CONF.18/3 - Agenda of the Conference (adopted 16 February 1955)
- E/CONF.18/3 Rev.1 - Agenda of the Conference (amended 23 February 1955)
- E/CONF.18/4 - Rules of procedure (adopted on 15 February 1955)
- E/CONF.18/5 - Technical resolutions adopted by the Conference
- E/CONF.18/5 Rev.1 - Resolutions adopted by the Conference
- E/CONF.18/6 Vol.I. - United Nations Regional Cartographic Conference for Asia and the Far East. Report of the Conference
- E/CONF.18/7 Vol.II. - Proceedings of the Conference (in preparation)

Series E/CONF.18/A/L...

- E/CONF.18/A/L.1 - Information received by the Cartographic Office on the publication of IMW [sub-item 6(g)], prepared by the Secretariat
- E/CONF.18/A/L.2 - Replies received from National Cartographic Agencies on IMW specifications [sub-item 6(g)], prepared by the Secretariat
- E/CONF.18/A/L.3 - Replies from Governments on the question of the adoption of a standard method of writing geographical names on maps [sub-item 6(b)(iv)], prepared by the Secretariat
- E/CONF.18/A/L.4 - Notes on assistance provided by the United Nations Technical Assistance Administration in cartography and allied fields [item 8], prepared by the Secretariat
- E/CONF.18/A/L.5 - Measurement of standard base-lines with Väisälä comparator [item 6(a)(ii)], by the Finnish delegation
- E/CONF.18/A/L.6 - Communications received from the German delegation to the Conference [sub-items 5, 6(a)(ii), 6(b)(ii), 6(a)(iv) and 7(iii)]
- E/CONF.18/A/L.6 Rev.1 - Ideas concerning the execution of geodetic surveys with due regard to modern developments to simplify classical methods. Communications received from the German delegation to the Conference [sub-items 5, 6(a)(ii), 6(a)(iv), 6(b)(ii) and 7(iii)]
- E/CONF.18/A/L.7 - Contribution to the discussion of a number of items proposed for inclusion in the agenda of the Conference [sub-items 6(b)(i), 6(b)(iii), 6(d), 7(ii), 7(iii), 8(ii) and 8(iii)] by the Netherlands delegation

- E/CONF.18/A/L.7 Add.1 - The establishment of an inter-governmental cartographic organization to work out uniform international cartographic standards and to give the necessary aid to less developed countries, as done by other inter-governmental organizations, so that the survey of the world may be expedited, [sub-item 7(ii)] by the Netherlands delegation
- E/CONF.18/A/L.8 - Surveys of the physical background for a study of natural resources [sub-item 6(d)], by the Food and Agriculture Organization
- E/CONF.18/A/L.8 Corr.1 - The physical background surveys for a study of natural resources for agriculture
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- E/CONF.18/A/L.10 - Communication received from the Universal Postal Union [sub-item 6(b)(iv)]
- E/CONF.18/A/L.11 - Communications received from the Indian delegation to the Conference [sub-items 6(a)(i), 6(a)(ii), 6(a)(iii), 6(a)(iv), 6(b)(iii), 6(g)(i) and 7(i)]
- E/CONF.18/A/L.12 - Communication received from the International Telecommunications Union [sub-item 6(b)(iv)]
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- E/CONF.18/A/L.15 - Recent United States progress and interesting technical developments in cartography [item 5], by the delegation of the United States of America
- E/CONF.18/A/L.16 - Communication prepared by the Institut Géographique National (France) relating to sub-item 6(b)(i), transmitted by the French delegation
- E/CONF.18/A/L.17 - Desirability of measuring a Standard base-line in India [sub-item 6(a)(ii)], by the Indian delegation
- E/CONF.18/A/L.18 - Practical use of the C.I.M. series in China [sub-item 6(g)], by the Chinese delegation
- E/CONF.18/A/L.19 - Communications received from the Chinese delegation to the Conference: Brief statement on the progress of cartographic work in China and the Figure of earth from measurement in China [item 5]
- E/CONF.18/A/L.20 - International Map of the World on the Millionth Scale specifications [sub-item 6(g)], reproduced by the Secretariat

¹The item number given in the agenda of the Conference is indicated in square brackets [].

- E/CONF.18/A/L.21 - Carte internationale du monde au millionième - Map sheet index for Japan [sub-item 6(g)], by the Japanese delegation
- E/CONF.18/A/L.22 - Facilities for the less developed countries to study new developments in the neighbouring developed countries whenever opportunity arises [sub-item 8(ii)], by the Burmese delegation
- E/CONF.18/A/L.23 - Brief statement on recent progress in Burma [item 5] by the Burmese delegation
- E/CONF.18/A/L.24 - The establishment of an inter-governmental cartographic organization to work out uniform international cartographic standards and to give the necessary aid to less developed countries, as done by other inter-governmental organizations, so that the survey of the world may be expedited [sub-item 7(ii)], by the Burmese delegation
- E/CONF.18/A/L.25 - Questions relating to a central research organization or office where problems can be referred to and from where up-to-date information about various instruments may be obtained [sub-item 7(iii)], by the Burmese delegation

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- E/2362 and E/2362/Add.1 - International Co-operation on Cartography, Report by the Secretary-General
- E/2376 and E/2376/Add.1 - Means for furthering the completion of the International Map of the World on the Millionth Scale, Report by the Secretary-General
- E/2619 - Transfer to the United Nations of the functions and assets of the Central Bureau, International Map of the World on the Millionth Scale, final Report by the Secretary-General
- E/2622 - The question of calling a United Nations Cartographic Conference for Asia and the Far East, Report by the Secretary-General
- MODERN CARTOGRAPHY, Base Maps for World Needs (United Nations Publications, Sales No: 1949.I.19)
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