National Research Council Canada
Conseil national de recherches Canada

Division of Physics
Division de physique

File Référence

To: Members and Consultants of Canadian
National Committee of CIE

I enclose the following:

(i) Minutes of the 21st Annual Meeting,

(ii) Secretary's report for 1976,

(iii) Annual Report of the CNC/CIE.

A.R. Robertson
Secretary, CNC/CIE

ARR/lls
Encl.

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Minutes of the 21st Annual Meeting of the

Canadian National Committee of CIE

(Held in the Physics Building,
National Research Council, Ottawa
12 November 1976)

Present

Members: Prof. M.G. Bassett (University of Toronto), President
Mr. W. Budde (National Research Council)
Mr. G.F. Dean (Consulting Engineer, Toronto)
Mr. D.W. Frick (Consulting Engineer, Lakefield, Ont.)
Mr. A. Ketvirtis (Foundation of Canada)
Mr. G.E. Mulvey (Mulvey Engineering)
Mr. A.T. Orr (Orcons)
Dr. H.F.L. Pinkney (National Research Council)
Dr. A.R. Robertson (National Research Council)
Dr. C.L. Sanders (National Research Council)
Mr. Z.S. Subotich (Canadian Standards Association)

Guests: Mr. B. Hicks (Roads & Transportation Association of Canada)
Mr. C. Labrecque (Holophane)
Dr. B. Tansley (University of Waterloo)
Mr. E. Wotton (Consulting Engineer, Toronto)

Absent

Members: Mr. J.M. Chorlton (Harjohn Industries)
Mr. B.N. Clarkson (Philips Electronics)
Mr. G.E. Davidson (Ontario Hydro)
Mr. F.R. Dorward (Edmonton Consulting Associates)
Mr. D.S. Gordon (British Columbia Hydro)
Mr. D. Hoogeveen (Saskatchewan Power Corporation)
Dr. P.K. Kaiser (York University)
Dr. P. Manning (Nova Scotia Technical College)
Mr. S.W. McKnight (Canadian Westinghouse)
Dr. J.D. Moreland (University of Waterloo)
Mr. C.W. Shearer (Canadian Broadcasting Corporation)
Mr. G.L. Snider (British and Overseas Imports)
Dr. D. Stephenson (National Research Council)
Mr. J.M. West (Transport Canada)
Mr. J.C. Wilson (Wilson Lighting)
Dr. G. Wyszecki (National Research Council)

1. Call to order and approval of agenda

The President opened the meeting at 10:05 a.m. The tentative agenda was approved without change.

2. Minutes of 20th Annual Meeting

The Secretary read the minutes. They were approved unanimously on a motion by Mr. Frick, seconded by Mr. Budde.

3. Secretary's report

The Secretary read his report, which is attached to these minutes. It was accepted unanimously on a motion by Mr. Ketvirtis, seconded by Dr. Sanders.

3.a Matters arising from minutes and Secretary's report

(i) The new scale for apportioning CIE dues will result in an increase of Canada's assessment from 22 units to 23 units.

(ii) The next Session of the CIE will be held in Kyoto, Japan, from 20-28 August 1979.

(iii) Following the last meeting Mr. Dorward agreed to serve as delegate to both TC-2.1 (Sources) and TC-4.10 (Mine Lighting), Mr. Mulvey agreed to continue as delegate to TC-3.3 (Physical Environment), Mr. Hoogeveen agreed to serve as delegate to TC-1.7 (formerly 3.7) (Actinic Effects of Optical Radiation), Mr. Snider agreed to continue as delegate to TC-4.7 (Automobile Lighting) and Mr. Gordon accepted appointment as a member of the CNC/CIE.

(iv) Dr. Sanders asked whether the Science Council had replied to the memorandum on "Lighting Research in Canada". Mr. Budde said that the memorandum had not yet been sent, and that he now favoured sending it first to the National Research Council rather than the Science Council. He has prepared a new version of the memorandum which he will circulate to members of the CNC/CIE and other interested persons for one last round of comments. An ad hoc subcommittee of the CNC/CIE (Bassett, Budde, Dean, Frick, Ketvirtis, Kaiser and Orr) will then meet, probably in Toronto in December or January, to formulate a definite proposal to be sent to the National Research Council. The urgency of the question was emphasized.

4. Report from Canadian members of CIE Executive Committee

Prof. Bassett and Mr. Budde reported that there had been no activities of this Committee during the past year.

5. Reports from delegates to CIE Technical Committees and Study Groups

It was agreed that the delegates reports would be duplicated and bound as a single "Annual Report of the CNC/CIE". The Secretary would add an introduction based on the brochure produced by the Committee a few years ago.

Each delegate present then gave his report. Reports from absent delegates were read by the Secretary except for a few that had not been received.

The CIE Statement on "Vehicle Front Lighting used on Urban Traffic Routes" (CIE Bulletin No. 30, p. 6) was discussed. The statement recommends the use of a town beam, but it was felt that there were very few situations in Canada where such lighting would be suitable.

6. Appointments and Re-appointments

TC-1.7 (Actinic Effects of Optical Radiation) - Mr. Hoogeveen has resigned because of his inability to attend meetings. Dr. C.L. Sanders was appointed in his place.

TC-3.6 (Lighting and Architecture) - Six candidates had been proposed - Mr. G.F. Dean, Mr. S. Fraser, Mr. A. Henschel, Mr. S. McIntosh, Mr. G.E. Mulvey and Mr. E. Wotton. After much discussion and a vote, Mr. Mulvey was appointed.

TC-3.5 (Visual Environment) - Dr. Manning will be out of the country on sabbatical leave during 1977. Mr. E. Wotton was therefore appointed as acting delegate during Dr. Manning's absence.

TC-4.8 (Aircraft Lighting) - Mr. J.M. West of Transport Canada was appointed.

TC-4.10 (Mine Lighting) - Mr. Dorward had indicated his willingness to step down in favour of someone who could be more active. The Committee decided to ask Prof. D. Trotter of McGill University if he would be willing to take over.

SG-G (Global Radiation) - This study group has been assigned to Canada, and Mr. W. Budde will be the Chairman.

TC-3.3 (Physical Environment) - In view of his appointment to TC-3.6, Mr. Mulvey resigned from TC-3.3. Mr. C. Labrecque of Holophane was appointed in his place.

Members of CNC/CIE - Mr. G.H. Cornish (proposed by Dr. Robertson, seconded by Mr. Ketvirtis) and Mr. E. Wotton) (proposed by Mr. Orr, seconded by Mr. Mulvey) were appointed members of the CNC/CIE in addition to the new delegates to CIE Technical Committees. Mr. Dean agreed to find out who was

the new Chairman of the CSA Sectional Committee on Illumination and invite him to be a member of the CNC/CIE to replace Mr. J.C. Wilson.

Executive Committee of CNC/CIE - Mr. Frick resigned, and the CNC/CIE voted to recommend Mr. C. Labrecque in his place, with a term of office to expire on 31 December 1980. Terms of office of the other members were set as follows:

W. Budde, F.R. Dorward - expiring 31 December 1977
P. Manning - expiring 31 December 1978
M.G. Bassett, A.R. Robertson - expiring 31 December 1979

7. Other Business

Mr. Ketvirtis said that the new CIE method of assessing street lighting (CIE Publications 12.2 (1976) and 30 (1976)) had been incorporated in the latest manual of the Roads and Transportation Association of Canada, although the recommended levels had been modified. Mr. B. Hicks of RTAC was present to discuss the possibility of joint RTAC-CNC/CIE seminars to explain the new method. Mr. Hicks said that tentative plans called for two seminars, one in Calgary and one in Ottawa or Toronto, each for 20-40 people, to be held in spring 1977. The CNC/CIE agreed to support the seminars and Dr. Pinkney, on behalf of the committee, said he would try to provide a speaker on the measurement of pavement luminance.

8. Adjournment

There being no further business, the meeting was adjourned at 3:55 p.m.

Secretary's Report to the Canadian National Committee of the CIE

November 1976

1. The 1976 annual dues of $1210 (US) for Canadian membership of the CIE were paid by the National Research Council in January 1976.

2. An agreement was reached with the Canadian Institute for Scientific and Technical Information whereby the Institute has recommenced its previous practice of buying CIE Publications in bulk from the Central Bureau and passing them on to the NRC Publications Distribution Office for re-sale to Canadian residents. A list of available publications and annual sales is attached to this report.

3. The membership of the Executive Committee of the CNC/CIE, as proposed at the November 1975 meeting of the CNC/CIE, was approved by the NRC Committee on International Scientific and Technological Affiliations.

4. A letter was received from the Treasurer of the CIE proposing a new scale of assessments for the apportionment of CIE expenses among the member countries. The new scale is based on a scale established by the United Nations and used by many other international scientific and technical organizations. After consultation with the President of the CNC/CIE and with the NRC Committee on International Scientific and Technological Affiliations, the Secretary informed the CIE that the CNC/CIE had no objection to the proposal.

5. At the request of the CIE, comments on the 18th CIE Session were sent to the Central Bureau. These comments were based on the discussion held during the November 1975 meeting of the CNC/CIE.

6. A letter was received from the President of the CIE explaining that the cost of publishing the Proceedings of the London Session had exceeded considerably the £10 paid by delegates as part of the registration fee. To help defray these extra costs, the CNC/CIE was asked to buy at least 8 copies of the Proceedings. This request has been passed on through the usual channels.

7. The Action Committee has established a new Study Group (SG-G) to investigate the feasibility of establishing a Technical Committee concerned with "Global Radiation", and has appointed W. Budde (Canada) as the Chairman.

8. The final drafts of two documents were submitted by the CIE to the CNC/CIE for approval as Official CIE Recommendations. They were: Publication 12.2, a revision of "International Recommendations for the Lighting of Public Thoroughfares" from TC-4.6; and Supplement No. 2 to Publication No. 15, "Official Recommendations on Uniform Color Spaces, Color-Difference Equations and Metric Color Terms" from TC-1.3. After consultation with the appropriate Canadian delegates and other members of the CNC/CIE, the President voted in favour of both documents with some suggestions for editorial changes.

Sale of CIE Publications by NRC Publications Distribution Office

		Price ($)	Sales* 1973-74	1974-75	1975-76
2.2	Colors of Light Signals	11.00	-	9	2
8	Street Lighting & Accidents	2.00	0	9	3
13.2	Colour Rendering	10.00	-	11	1
15	Colorimetry	6.00	14	15	4
15/1	Special Metamerism Index	1.50	6	3	7
16	Daylight	5.00	-	8	2
17	International Lighting Vocabulary	22.00	18	10	7
18	Principles of Light Measurements	3.50	12	15	10
19	Visual Performance	4.00	13	8	4
20	Spectral Distribution of Solar Radiation	6.00	3	10	1
22	Luminance Distribution of Clear Skies	6.00	8	11	0
23	Motorway Lighting	7.00	2	22	2
24	Photometry of Luminaires with Tubular Fluorescent Lamps	11.00	8	7	0
25	Photometry of Discharge Lamps	3.00	13	5	5
26	Tunnel Lighting	8.00	5	6	0
27	Photometry of Luminaires for Street Lighting	7.00	8	12	0
28	Lighting of Sports for Colour TV	6.00	-	13	2
29	Guide on Interior Lighting	5.00	-	-	27
	TOTAL SALES		112	174	77
	TOTAL VALUE		$939.00	$1248.00	$469.50

* Includes some copies distributed for no charge.

LIMITED

CANADIAN NATIONAL COMMITTEE
OF THE
COMMISSION INTERNATIONALE DE L'ECLAIRAGE
(INTERNATIONAL COMMISSION ON ILLUMINATION)

1976 ANNUAL REPORT

Introduction

The Canadian National Committee, founded in 1957, is a member of the International Commission on Illumination. It is sponsored and appointed by the National Research Council of Canada. The purpose of the Committee is to further the science and art of photometry, colorimetry and illumination in Canada, to represent Canada in the affairs of the International Commission on Illumination, to express Canadian views on such subjects as may be brought up for discussion by the International Commission on Illumination, and to disseminate knowledge of the Recommendations of the International Commission on Illumination within Canada.

The officers, members and delegates of the Canadian National Committee are appointed from a variety of Canadian organizations so as to obtain the most effective cross-section possible of professional activities in the fields of photometry, colorimetry and illuminating engineering. The Committee meets annually in the last quarter of the year, to discuss business initiated by the International Commission on Illumination and to develop ways of effectively conveying internationally adopted recommendations to interested Canadian organizations and individuals. Members of the Canadian National Committee are actively engaged in the work of the various Technical Committees of the International Commission on Illumination and in that way are directly linked with the most up-to-date progress being made in the numerous branches of the science and technology of light.

As well as giving the annual reports of Canadian members of the International Technical Committees, this brochure gives an account of the organization and work of the International Commission on Illumination and of the Canadian National Committee. It is hoped that this information will be of special interest to those Canadians who are engaged in scientific and technological problems of photometry, colorimetry and illuminating engineering but who so far have had only little or no contact with the Canadian National Committee or the International Commission on Illumination.

International Commission on Illumination

The International Commission on Illumination - abbreviation CIE from the French "Commission Internationale de l'Eclairage" - is an autonomous organization. It was not appointed by any political or other organization. It has simply grown out of the interest of individuals working in illumination - its origins going back to the beginning of this century. It is generally recognized by many organizations, including some political, as representing the best authority on its subject.

The CIE provides an international forum for all matters relating to the science and art of lighting. It promotes by all appropriate means the study of such matters and provides for the interchange of lighting information between different countries. The CIE agrees upon and publishes international recommendations in the

field of lighting. Plenary Sessions of the CIE are held every four years. The last Plenary Session was held in 1975 in London, England, and the next will be held in 1979 in Kyoto, Japan.

The CIE collaborates closely with other international organizations. Some of these carry on activities similar to those of the CIE but in other closely allied fields. For example, the International Commission on Optics, the International Union of Pure and Applied Physics, the International Committee on Photobiology, the International Civil Aviation Organization, the Inter-Governmental Maritime Consultative Organization, the International Association of Lighthouse Authorities, and the World Meteorological Organization. When the activities overlap, the CIE works closely with the other organizations and to this end has appointed liaison members - as have also these other organizations - to ensure in each case the harmonious working together of the two organizations. Certain international organizations with which the CIE collaborates have somewhat different types of activities. For example, the International Electrotechnical Commission and the International Organization for Standardization are concerned chiefly with the establishment of international standards. The CIE has appointed liaison officers to these organizations and through them offers advice and suggestions from time to time. On the question of standards, the CIE is concerned mainly with preparing the scientific and engineering background and does not make specific proposals. It is the International Committee on Weights and Measures, an inter-governmental body, which draws up definitions and specifications of fundamental units of measurement and then reproduces and distributes the standards of these units to member countries.

A list of the current officers of the CIE is given on page 5 of this report.

Member Bodies

At the present time the CIE comprises 30 member bodies composed of the National Committees on Illumination from 30 countries:

Australia
Austria
Belgium
Bulgaria
Canada
Chile
Czechoslovakia
Denmark
Finland
France
Germany
Great Britain
Hungary
Iceland
Iran
Israel
Italy
Japan
Netherlands
Norway
Poland
Portugal
Roumania
South Africa
Spain
Sweden
Switzerland
United States of America
U.S.S.R.
Yugoslavia

In addition to the national committee members of the CIE, there are several individual "Associates" in countries which have no national committee.

The CIE itself decides when a new National Committee shall be recognized and made a member and when, in the absence of a National Committee, an individual shall be made an Associate. The only conditions the CIE requires of a National Committee are that it is a group of persons who are seriously interested in the science and/or technology of lighting and are sufficiently informed to take part in its deliberations, that this group is in a country where there is no other National Committee, that it fairly represents the lighting interest in that country, and that it has the financial means to pay dues and meet its other obligations.

In many countries the National Committee of the CIE is itself a composite body drawing its members from such organizations as the local Illuminating Engineering Society, the Electrical Engineering Society, the National Standardizing Institutions, the local Society of Physicists, the local Society of Architects, the local Society of Automotive Engineers, etc.

Canadian National Committee

The Canadian National Committee (abbreviated CNC/CIE) is appointed by the National Research Council as a special committee of the Council. The appointment of additional members of the committee can be recommended by the committee to the National Research Council which reserves the right either to approve or disapprove such a recommendation. A list of the present officers and members of the CNC/CIE is given on page 6 of this brochure.

The dues which a National Committee of the CIE must pay are based upon the population and national income of its country. In the case of the Canadian National Committee the dues are presently set at $1210.00 U.S. annually. These are paid by the National Research Council.

Technical Committees & Study Groups

To perform its tasks the CIE assigns special programs of study to its Technical Committees. Wherever possible the CNC/CIE appoints a delegate to each Technical Committee. From time to time, the CIE appoints a Study Group to investigate the feasibility of establishing a Technical Committee on a particular subject, and if requested, the CNC/CIE appoints delegates to these Study Groups also.

A special committee of the CIE called the "Action Committee" supervises the work of all Technical Committees. It ensures that the terms of reference do not overlap, that Committees interested in the same problem collaborate and that problems which appear urgent are given priority, etc. The current Chairman of the Action Committee is Dr. G. Wyszecki, a member of the CNC/CIE.

The Technical Committees undertake the study of those questions in which a close collaboration between experts of the CIE in different countries - and sometimes between the CIE and other international organizations - furthers the solution of common problems. Each National Committee is asked to nominate an individual to each Technical Committee. From these names the Action Committee then selects a chairman. The secretarial work of a Technical Committee is the responsibility of the National Committee of the country to which the chairman of the Committee belongs. He is responsible for the initiation of the work of his committee and directs its course. Thus, for example, in agreement with the members of his committee he draws up the terms of reference and by means of meetings and correspondence arranges for the prosecution of the program. The members collaborate with their own National Committees and with other technical bodies or technologists in their respective countries so that they may become acquainted with the views held by these groups on the problems being studied by the Technical Committee and thus be in a position to make these views known to the other members of the committee. Canada is currently responsible for one Technical Committee (Photometry and Radiometry) and one Study Group (Global Radiation). A list of the Technical Committees and Study Groups currently active is given on page 7. The list includes the names of the Chairman and Canadian member of each committee.

Publications

The results of the work and any ensuing recommendations of the Technical Committees are studied by all National Committees of the CIE and must receive their approval before being published as official CIE documents. Other reports of the work of Technical Committees, which do not require the status of "Official CIE Document", may be published without the formal approval of the National Committees. Many of these CIE Publications are available from the National Research Council. A list is given on page 8, together with instructions on how to order them.

Annual Reports to CNC/CIE

Each Canadian delegate prepares an annual report to the CNC/CIE summarizing the activities of his Technical Committee during the year. The annual reports for 1976 begin on page 9 of this brochure. Some of the delegates have established subcommittees of the CNC/CIE to assist them in their work and the names of members of these subcommittees are listed along with the name of the delegate at the beginning of each report.

International Commission on Illumination

President:	Dr. S.K. Guth (USA)
Past President:	Mr. W.R. Stevens (UK)
Vice Presidents:	Prof. J.B. de Boer (Netherlands) Prof. L. Morren (Belgium) Mr. T. Oleszynski (Poland) Dr. G. Wyszecki (Canada) Dr. K. Yoshie (Japan)
Secretary:	Dr. B. Steck (Germany)
Treasurer:	Dr. J. Terrien (France)
Chairman of Action Committee:	Dr. G. Wyszecki (Canada)
Executive Secretary:	Mr. P. Lemaigre-Voreaux 4 Avenue du Recteur Poincaré 75782 Paris Cedex 16 France

Canadian National Committee of International Commission on Illumination

President: Prof. M.G. Bassett (Department of Electrical Engineering, University of Toronto, Toronto, Ontario, M5S 1A4)

Vice-President: Mr. W. Budde (National Research Council)

Secretary: Dr. A.R. Robertson (Division of Physics, National Research Council, Ottawa, Ontario, K1A 0R6)

Executive Committee:
Mr. F.R. Dorward (Edmonton Consulting Associates)
Mr. C. Labrecque (Holophane Co.)
Dr. P. Manning (Nova Scotia Technical College)

Members:
Mr. J.M. Chorlton (Harjohn Industries)
Mr. B.N. Clarkson (Philips Electronics Industries)
Mr. G.H. Cornish (City of Calgary)
Mr. G.E. Davidson (Ontario Hydro)
Mr. G.F. Dean (Consulting Engineer)
Mr. D.W. Frick (Consulting Engineer)
Mr. D.S. Gordon (British Columbia Hydro & Power Authority)
Dr. P.K. Kaiser (York University)
Mr. A. Ketvirtis (Foundation of Canada Engineering Corp.)
Mr. S.W. McKnight (Canadian Westinghouse Co.)
Dr. J.D. Moreland (University of Waterloo)
Mr. G.E. Mulvey (Mulvey Engineering)
Mr. A.T. Orr (Orcons Co.)
Dr. H.F.L. Pinkney (National Research Council)
Dr. C.L. Sanders (National Research Council)
Mr. C.W. Shearer (Canadian Broadcasting Corporation)
Mr. G.L. Snider (British & Overseas Imports)
Dr. D. Stephenson (National Research Council)
Mr. Z.S. Subotich (Canadian Standards Association)
Mr. J.M. West (Transport Canada)
Mr. J.C. Wilson (Wilson Lighting)
Mr. E. Wotton (Consulting Engineer)
Dr. G. Wyszecki (National Research Council)

CIE Technical Committees and Study Groups

Number	Name	Chairman	Country	Canadian Member
TC-1.1	Terminology	J. Terrien	France	G.E. Davidson
TC-1.2	Photometry and Radiometry	C.L. Sanders	Canada	C.L. Sanders
TC-1.3	Colorimetry	R.W.G. Hunt	Great Britain	A.R. Robertson
TC-1.4	Vision	J.S. Kinney	U.S.A.	P.K. Kaiser
TC-1.5	Lighting Calculations	A.B. de Graaff	Netherlands	M.G. Bassett
TC-1.6	Visual Signalling	C.A. Douglas	U.S.A.	J.D. Moreland
TC-1.7	Actinic Effects of Optical Radiation	L. Thorington	U.S.A.	C.L. Sanders
TC-2.1	Sources	Y. Otani	Japan	F.R. Dorward
TC-2.2	Detectors	J.D. Schanda	Hungary	W. Budde
TC-2.3	Materials	F. Grum	U.S.A.	W. Budde
TC-2.4	Luminaires	P. Massart	Belgium	Z.S. Subotich
TC-3.1	Visual Performance	H.R. Blackwell	U.S.A.	J.M. Chorlton
TC-3.2	Color Rendering	M.B. Halstead	Great Britain	A.R. Robertson
TC-3.3	Physical Environment	E. van Gunst	Netherlands	C. Labrecque
TC-3.4	Discomfort Glare	J.C. Lowson	Australia	J.M. Chorlton
TC-3.5	Visual Environment	W.K. Lumsden	Great Britain	P. Manning
TC-3.6	Lighting and Architecture	K.E. Gow	South Africa	G.E. Mulvey
TC-4.1	Interior Lighting	D. Fischer	Netherlands	G.F. Dean
TC-4.2	Daylighting	R. Dogniaux	Belgium	D. Stephenson
TC-4.4	Sports Lighting	A. Wald	Germany	S.W. McKnight
TC-4.5	Exterior Lighting	R. Grandi	Italy	B.N. Clarkson
TC-4.6	Road Lighting	A.J. Fisher	Australia	A. Ketvirtis
TC-4.7	Automobile Lighting	J.J. Balder	Netherlands	G.L. Snider
TC-4.8	Aircraft Lighting	L.D. Heynemann	France	J.M. West
TC-4.9	Cost-Benefit Relationships	J. Svehla	Czechoslovakia	A.T. Orr
TC-4.10	Mine Lighting	A. Peretiatkowicz	Poland	F.R. Dorward
SG-A	Psychological Problems in Lighting	S. Hesselgren	Sweden	P.K. Kaiser
SG-D	Computers in Lighting	E. Barthes	France	Z.S. Subotich
SG-F	Photochemistry and Agriculture	G.S. Sarytchev	U.S.S.R.	B.N. Clarkson
SG-G	Global Radiation	W. Budde	Canada	W. Budde

CIE Publications

The CNC/CIE has arranged for CIE Publications to be sold in Canada by the National Research Council. The available publications, and their prices, are listed below. Orders should be sent to the Publications Distribution Office, National Research Council, Ottawa, Ontario K1A OR6. Cheques should accompany each order and should be made payable to the Receiver General of Canada, Credit National Research Council.

	Publication	Price
2.2	Colors of Light Signals, 1975	$11.00
8	Street Lighting and Accidents, 1960	$ 2.00
13.2	Method of Measuring & Specifying Color Rendering Properties of Light Sources, 1974	$10.00
15	Colorimetry, 1971	$ 6.00
15/1	Special Metamerism Index: Change of Illuminant, 1972	$ 1.50
16	Daylight, International Recommendations for Calculation of Natural Daylight, 1970	$ 5.00
17	International Lighting Vocabulary, 1970	$22.00
18	Principles of Light Measurements, 1970	$ 3.50
19	A Unified Framework of Methods for Evaluating Visual Performance Aspects of Lighting, 1972	$ 4.00
20	The Integrated Irradiance and the Spectral Distribution of Simulated Solar Radiation for Testing Purposes, 1973	$ 6.00
22	Standardization of Luminance Distribution on Clear Skies, 1972	$ 6.00
23	Motorway Lighting, 1972	$ 7.00
24	Photometry of Indoor Type Luminaires with Tubular Fluorescent Lamps, 1973	$11.00
25	Procedures for the Measurement of Luminous Flux of Discharge Lamps and for Their Calibration as Working Standards, 1973	$ 3.00
26	International Recommendations for Tunnel Lighting, 1973	$ 8.00
27	Photometry of Luminaires for Street Lighting, 1973	$ 7.00
28	The Lighting of Sports Events for Colour TV Broadcasting, 1975	$ 6.00
29	Guide on Interior Lighting, 1975	$ 5.00
30	Calculation and Measurement of Luminance and Illuminance in Road Lighting, 1976	$17.00
31	Glare and Uniformity in Road Lighting Installations, 1976	?
36	Proceedings, 18th Session of CIE, 1975	$75.00

TC-1.1 Definitions and Vocabulary

Delegate: G.E. Davidson

Subcommittee: All Members of CNC/CIE

There has been no direct action by CIE/TC-1.1 arising from its meeting in London in 1975.

IEC/TC34 has established a WG 34 to review and update Sections 45-40 and 45-45 of the ILV.

Several CIE Technical Committees have established Working Groups to propose necessary revisions to the ILV and in due course, these will be reviewed by TC-1.1.

TC-1.2 Photometry and Radiometry

Delegate: C.L. Sanders

Subcommittee: A.R. Robertson
W. Budde
G. Davidson

1) The International Directory of Calibration Services in the Field of Photometry and Radiometry. This directory was completed by C.L. Sanders and published as Report No. PO-121 of the Physics Division of N.R.C. Copies were sent to members and consultants of TC-1.2 and to the laboratories which contributed data for the Directory. A notice of the publication will appear in Metrologia. Four other journals were informed and may provide publicity.

2) HPMV Lamps, Luminous Flux Comparison. The Subcommittee chairman, Mrs. Poppe, has had difficulty in finding stable HPMV lamps for a comparison of luminous flux measurements. It is now expected that this comparison will start in 1978.

3) Terminology. Dr. Bauer, the Subcommittee chairman, has been active on the TC-1.2 submission to TC-1.1 (Terminology). It should be available by the middle of 1977 as required by TC-1.1.

4) Technical Report on Spectroradiometry of Fluorescent Lamps. Another draft is being prepared by the Subcommittee chairman, O.C. Jones.

5) Principles of Light Measurement, CIE 18, Revision. The Subcommittee chairman, W.R. Blevin, will make this revision when the CCPR decides on the new definition for the Primary Standard of Light.

6) Stable Sources for Photometry and Radiometry. The Subcommittee chairman, J. Moore, will continue with this project to improve the sources being used as secondary standards.

7) Light Emitting Diode Intercomparison. J. Schanda, Subcommittee chairman, will arrange an intercomparison to test the ability to measure these devices.

Two Subcommittees were transferred to TC-2.3, Materials, and one was transferred to TC-2.2, Detectors.

TC-1.3 Colorimetry

Delegate: A.R. Robertson
Subcommittee: W. Budde
C.L. Sanders
G. Wyszecki

Dr. R.W.G. Hunt (Great Britain) has taken over from Dr. G. Wyszecki as Chairman of TC-1.3 but no meetings have been held yet under the new chairmanship.

The working program of the Committee is divided into six parts:

(i) Terminology. To propose any necessary revisions of the colorimetric terms, and their definitions, contained in the 3rd Edition (1970) of the C.I.E. Vocabulary; and to propose any necessary new colorimetric terms together with definitions for them.

(ii) Whiteness. After publication of the series of papers on whiteness now being prepared for Die Farbe, to consider whether a C.I.E. Technical Report on Whiteness should be written. Subsequently, to consider whether the C.I.E. should recommend one or more formulae for calculating measures of whiteness.

(iii) Sources. To conduct trials of the modified version of the recent German proposal for a method of assessing the degree to which any source approximates a standard illuminant: this method involves calculating the average Special Index of Metamerism (Change in Illuminant) for ten metameric sample pairs and also calculating the relative quantum absorptions of three fluorescent samples in the ultra-violet.

(iv) Colour Differences. To promote further experimental work on the perceptibility of colour differences, and to compare all available relevant data on colour differences, with a view to the eventual development of a single uniform colour space and colour-difference formula that would provide significant improvements over the C.I.E. 1976 Spaces and Formulae, and would serve most industrial applications satisfactorily.

(v) Chromatic Adaptation. To undertake a study of colour adaptation with a view to developing suitable methods that would predict changes in the appearance of colours encountered in practical situations. Initially, to develop a quantitative method of allowing for chromatic adaptation to various "white" illuminants of equal illuminances in order to predict changes in the appearance of colours viewed in them.

(vi) Fluorescent Colours. To study the problems involved in the colorimetry of fluorescent samples, and to establish procedures that would assist colorimetrists to obtain accurate results in practice.

During the year the final draft of the Recommendations on Uniform Color Spaces, Color-Difference Equations and Metric Color Terms was prepared and submitted to the National Committees for approval as Supplement No. 2 to CIE Publication No. 15.

TC-1.4 Vision

Delegate: P.K. Kaiser

Subcommittee: P. Hallet
D.G. Pearce
J.D. Moreland
B. Tansley
G. Wyszecki

The most significant event during the past year is that the technical report, "Light as a True Visual Quantity: Principles of Measurement", has been sent to the members and consultants of CIE Committee TC-1.4. Copies were also sent to the chairman of the CIE Action Committee, coordinator of CIE Group 1 Committees, chairman of CIE Group 1 Committees and the CIE Central Bureau.

This report was written by a writing committee which was comprised of Adrian-Germany, Ikeda-Japan, Kaiser-Canada, Kinney, Chairman-United States, Palmer-Great Britain, Roufs-Netherlands. Comments on early drafts were received from the 24 members of TC-1.4. Members of TC-1.4 are now asked to indicate their approval or disapproval of the report and return their ballots to Dr. Kinney. A deadline of January 1, 1977, has been set on the receipt of these ballots. Dr. Kinney will assume approval of the report if ballots are not received by that date.

She has already received comments from several sources, most of which constitute editorial changes. At least one set of comments were received by Dr. Kinney and also sent to Dr. Kaiser which contained substantive revisions. Dr. Kinney has replied to the author of these comments but has as yet not received a further reply.

TC-1.4 has also been asked to assist TC-1.1 with respect to the new edition of the CIE Lighting Vocabulary. A request has been made to send Dr. Kinney all suggestions regarding changes for the new edition of this vocabulary.

The next meeting of TC-1.4 will be held on Sunday, July 10, 1977, in Troy, New York on the occasion of the next AIC meeting.

TC-1.5 Lighting Calculations Delegate: M.G. Bassett

Mr. A.B. de Graaff (Netherlands) was appointed chairman of the committee during the summer. A sub-committee meeting had been planned for September 30 in Berlin so the new chairman attempted to arrange a meeting of the entire committee for October 1. Some unfortunate delays in communications prevented the members from making the necessary arrangements in time, so the meeting did not take place.

The sub-committee did meet, however, and a draft Applied Method for the calculation of the illuminances on other room surfaces has been prepared and should be sent to all the members for study and comments by the end of the year. It is hoped that the final version will be decided on at the committee meeting planned for April 21 and 22 in Eindhoven and sent to the Action Committee for their approval as a CIE Technical Report in May 1977. This will be the first technical report on applied methods planned as a supplement to the Basic Method.

A working programme has been initiated by the sub-committee to extend the calculation methods to include predetermination of the uniformity of the illuminances and to develop methods for handling di-symmetrical light distributions.

TC-1.6 Visual Signalling

Delegate: J.D. Moreland

There has been no activity in the past year.

TC-1.7 Actinic Effects of Optical Radiation

Delegate: D. Hoogeveen

The committee is preparing short (2-page) summaries of 12 areas of interest. The summaries should be finished by the end of 1976.

Mr. Hoogeveen has resigned as Canadian delegate and will be replaced by Dr. C.L. Sanders.

TC-2.1 Sources

Delegate: F.R. Dorward

A committee report was received with a request for approval for publication. After review of the report, an affirmative response was given.

TC-2.2 Detectors

Delegate: W. Budde
Subcommittee: L.P. Boivin
C.L. Sanders

This Technical Committee was newly organised at the CIE General Session at London with Dr. J. Schanda, Hungary as Chairman.

A meeting was held on 20 and 21 May 1976 at Braunschweig, Germany which I attended. The following subjects were discussed:

1. The terms of reference and the Working Program were discussed and approved after some modification.

2. Terminology: a Subcommittee was established with Prof. Bauer, Germany as Chairman. A list of terms for inclusion in the CIE vocabulary and a second list of terms for a Technical Report were established.

3. Subcommittee on Characteristics of Photoelectric Detectors (Chairman, W. Budde, Canada). Various details of an international intercomparison on spectral sensitivity and linearity measurements were discussed.

4. A Subcommittee on Color Measuring Instruments was established with Dr. Lukacs, Hungary as Chairman.

5. A Subcommittee on "Problems of measuring laser radiation" was established with J. Geist, USA as Chairman.

6. The Draft of the Technical Report on "Specifying the Performance of Photometers" prepared by Dr. Sanders was discussed and a number of modifications was proposed.

Since the meeting various documents on terminology were received from Dr. Schanda and discussed within the Canadian Subcommittee.

TC-2.3 Materials

Delegate: W. Budde

At the London Session the Secretariat was transferred from Germany to the USA with Dr. F. Grum as Chairman. No meetings were held after the London Session, however several documents and letters were received concerning work in various subcommittees.

1. Subcommittee on Gloss (Chairman: J.S. Christie, USA)
   The membership was established and a Working Program proposed which contained: 1. Terminology, 2. Intercomparison for the correlation between subjective appraisal and physical measurements of gloss, 3. Specifications and Standards, 4. Preparation of a Technical Report. Preparations for item 2 are in progress.

2. Subcommittee on Polarisation (Chairman: R.J. King, UK)
   The working program of the Subcommittee is mainly oriented towards the effects of polarisation of sources, materials and detectors on photometric and colorimetric measurements. An excellent proposal for terminology has been distributed.

3. Subcommittee on Standards and Techniques
   Work on a report on measuring of absolute reflectance has been started. Preparation of a report on the reflectance properties of reflectance-standard materials other than MgO or $BaSO_4$ has been started.

4. Subcommittee on Turbid Media (Chairman: E. Allen, USA)
   This Subcommittee has started to develop a Working Program.

5. Subcommittee on TC-2.3 Technical Report (Chairman: H. Terstiege, Germany)
   Preparation of a Supplement on Standard Materials and Description of Measuring Techniques has been started.

6. Other Subcommittees on "Luminescence", "Colorimetric Aspects of Luminescence" and "Retroreflectance" are also active but no direct communication has been received.

TC-2.4 Luminaires

Delegate: Z.S. Subotich

This activity was a new assignment and not much was done this year.

Most recent documentation and correspondence was read for information purposes.

An invitation to attend the meeting in Brussels was received, but it could not be arranged.

Minutes of the meeting were also received with a proposed working program for a period of four years.

All comments and further activities will be summarized at our next meeting.

TC-3.1 Visual Performance

Delegate: J.M. Chorlton

Subcommittee: M.G. Bassett
G.F. Dean
F.R. Dorward
A.W. Henschel
P.K. Kaiser
C. Labrecque

One meeting was held in the past year, but Mr. Chorlton was unable to attend and has not yet received any minutes.

TC-3.2 Color Rendering

Delegate: A.R. Robertson

Subcommittee: C.L. Sanders
G. Wyszecki

Miss M.B. Halstead (Great Britain) has taken over from Mr. W. Münch (Germany) as Chairman of TC-3.2. The first meeting under the new chairmanship will take place on 11-12 November 1976 but I will be unable to attend. Among the matters to be discussed at the meeting are:

(i) Colour-rendering properties of light sources in colour reproduction.

(ii) Colour-rendering properties of light sources when used with fluorescent materials.

(iii) Practical colour rendering of sources based on 3-wavelength mixtures.

(iv) Relationship between colour rendering and colour discrimination.

(v) Possible new measures combining colour rendering, colour discrimination and metameric effects.

(vi) Effect on colour-rendering indices of colour-difference equations.

Dr. D.H. Alman, a research associate at NRC, has worked on item (ii). He has sent some comments to Miss Halstead concerning the best way to specify the properties of fluorescent materials and has offered to supply the Committee with data if required.

I have written to Miss Halstead in connection with item (iii), pointing out some flaws in some of Thornton's statements on the properties of 3-wavelength sources.

TC-3.3 Physical Environment

Delegate: G.E. Mulvey

There has been no activity in the past year.

Mr. Mulvey has resigned as Canadian delegate and will be replaced by Mr. C. Labrecque.

TC-3.4 Discomfort Glare

Delegate: J.M. Chorlton

There has been no activity in the past year.

TC-3.5 Visual Environment

Delegate: Peter Manning

Chairmanship of TC-3.5 is to be transferred from Great Britain (Mr. K. Lumsden) to USA (Professor John E. Flynn) early in 1977. Mr. Lumsden proposed to use the next few months to complete a Technical Committee report (on three forms of appraisal of the visual environment and a first attempt at postulating "a comprehensive approach to the design of artificial lighting as an environmental element in interiors"). Whereas most of TC-3.5's work until now appears to have been done by the Chairman, Professor Flynn proposes to establish a number of working groups which will consolidate existing research findings within the area of the Committee's responsibilities, improve bases and means for communication, develop guidelines for design, and foster liaison with other organizations concerned with environmental psychological and aesthetic implications of space design.

TC-3.6 Lighting & Architecture

Mr. G.E. Mulvey has been appointed as the Canadian delegate to this Technical Committee.

TC-4.1 Interior Lighting

Delegate: G.F. Dean
Subcommittee: F.R. Dorward
M. Galbreath
A.W. Henschel
D.E. MacPherson
P. Manning
R. Shortreed

Dr. D. Fischer (Eindhoven, The Netherlands) is the new chairman of TC-4.1, replacing C. Dykes Brown. A.B. de Graaff is secretary.

Dr. Fischer sent a letter to the committee dated May 13, 1976, in which he outlined a draft program and proposed that a meeting of the committee be held at Eindhoven in November or December, 1976. His suggestions for the program were:

1. A first draft for a "Guide on Emergency Lighting" to be prepared by the Netherlands.

2. First drafts for monographs on Industrial Lighting to the United States and Canada, Office and School to Germany, Lighting for Selling to France, Museum Lighting to Great Britain or Germany, and Domestic Lighting to the United States.

3. Consideration of coordination with TC-3.1 Visual Performance and a proposal to establish a subcommittee.

4. Terminology to be on the agenda for the next meeting because of revision to Publication 17.

His suggestion for a 1977 meeting was that it should be held in conjunction with the Third European Light Congress in Italy or with the I.E.S. National Conference in New York City.

A second communication dated October 13, 1976, came from secretary de Graaff announcing that a meeting would be held in Eindhoven on November 23 and 24, 1976. There were enclosed with the letter:

1) The proposed agenda.
2) A draft Guide on Emergency Lighting.
3) Proposals for the CIE Vocabulary.

The Guide on Emergency Lighting is very comprehensive. Comments from the CNC will be submitted.

The terms for the CIE Vocabulary are for Section 25: Eye and Vision, Colour Rendering. The 26 terms are attributed to CIE, Great Britain, TC-3.1 and the United States. It should be noted that the terms credited to the United States are also those used by Mexico and Canada since they have been taken from the current handbook of the Illuminating Engineering Society of North America.

TC-4.2 Daylighting

Delegate: D. Stephenson

There has been no activity in the past year.

TC-4.4 Sports Lighting

Delegate: S.W. McKnight
Subcommittee: C.J. Courtney
G.F. Dean
D.S. Gordon
A. Lafontaine
T. Nutt

The 5th meeting of TC-4.4 was held in London on May 18 and 19, 1976, to further prepare drafts on sports lighting. The minutes have been received and the status of each report follows:

(i) TC Report "Lighting for Tennis". The 4th draft has been received April 13, 1976 but further discussions took place on the remarks made by various countries. Some re-wording will take place, and it will then be sent to the Action Committee for release.

(ii) TC Report "Lighting for Football". The 1st draft has been received April 13, 1976 and the remarks received will be incorporated into a second draft in time for the next meeting.

(iii) TC Report "Lighting for Sports Hall". The report was received last year (in German). It is to be shortened and translated into English in time for the next meeting.

(iv) TC Report "Lighting for Swimming". This report (first draft by Mr. Lemons, U.S.A.) is being held as certain tests and lighting measurements are being made in Zurich, to establish more positive data.

Prof.-Dr. H.W. Bodmann was requested to report on the Action Committee's opinion of continuing with CIE sportslighting in general, as many national recommendations already exist in many countries. The Action Committee, "urgently asks TC-4.4 to continue its work in view of the advanced state of the reports under discussion." Details of this are available.

The next meeting of TC-4.4 main committee, is proposed for June 1977 in Hamburg.

Subcommittee members have been kept informed on the activities as they happen, and considerable use has been made of this CIE data.

Requests for lighting data concerning the Montreal Olympics was received from Australia, Japan and England. Slides and photographs have been forwarded.

In April an opportunity allowed Mr. McKnight to present a paper in Melbourne Australia where he used slides taken from CIE Publication #28 as technical recommendations for Sports Lighting for Color TV Broadcasting.

TC-4.5 Exterior Lighting

Delegate: B.N. Clarkson

There has been no activity in the past year.

TC-4.6 Street Lighting

Delegate: A. Ketvirtis

Subcommittee: V. McCullough
E.C. Rowsell
C. Rose
H.D. Nicholson

Dr. A. Fisher (Australia) has taken over from Professor J.B. de Boer as Chairman of TC-4.6.

Two meetings were held by Committee TC-4.6 - November 25-26, 1975, and June 8-9, 1976.

After the Quadrennial Conference in London, 1975, the TC-4.6 Committee was reorganized into six working groups as follows:

Group 1 - Performance	Ch. Dr. Schreuder
Group 2 - Accidents	Ch. Dr. Fisher
Group 3 - Tunnels	Ch. Dr. Narisada
Group 4 - Surfaces	Ch. Dr. Krebschull
Group 5 - Wet Conditions	Ch. Dr. Sørensen
Group 6 - Installation	Ch. Dr. Marsden

Each of the above groups will hold their meetings separately and work on specific areas assigned by the Chairman, Dr. Fisher (Australia). One meeting will be held annually at which time all group chairmen will report on the progress of their work.

The next meeting is planned in Karlsruhe July 5-8, 1977. This meeting will coincide with a symposium on Road Lighting.

The committee is again planning an ambitious programme for this quadrennial and expects to finalize the problems arising from tunnel lighting, appraising wet surface conditions as they affect visibility, review accident and lighting inter-relations, as well as investigating further improvements in roadway lighting design methods.

TC-4.7 Automobile Lighting

Delegate: G.L. Snider

Subcommittee: P.E. Brudy
H.F.L. Pinkney

The CIE has issued a statement on vehicle front lighting used on urban traffic routes. This statement recommends the introduction of a "town beam" intermediate in intensity between that of currently used low beam and side lights (parking lights), with an area similar to that of current headlights. A copy of this statement has been sent to various persons in Canada who might be interested.

A meeting of TC-4.7 was held on 21 October 1976 but no minutes have yet been received.

TC-4.8 Aircraft Lighting

Mr. J.M. West has been appointed as the Canadian delegate to this Technical Committee.

TC-4.9 Cost-Benefit Relationships Delegate: A.T. Orr

Since our last meeting Study Group C has been changed in status and is now designated Technical Committee TC-4.9.

The leadership of the committee has been assigned to Czechoslovakian Ing. Jiri Svehla of Prague. We have been in correspondence with Mr. Svehla on February 26, 1976 and responded to his detailed questionnaire of July 15, 1976.

We have been advised that the first working meeting of TC-4.9 will take place on November 16, 1976, in Paris. The writer will not attend this meeting but is expecting a full report.

It was hoped that in the CIE London session of Study Group C that Mr. D. MacGowan would attend as a Canadian representative, but Mr. MacGowan was unable to attend.

We have had correspondence with Mr. Orf Lalli, P. Eng. of Lightolier Canada Ltd., who has expressed interest in our work and is a possible candidate for committee membership.

TC-4.10 Mine Lighting

Delegate: F.R. Dorward

Subcommittee: D. Hemmings
S. Homulos
A.L. Job
W.V. McKnight

At the London Session, the Executive Committee of the CIE approved the establishment of this new Technical Committee and its assignment to Poland.

The Terms of Reference are to study the basic terms for a proper lighting of headings of mines in general, and of mine faces being under preparation and exploitation in particular.

The preliminary Working Program of TC-4.10 has been drafted as follows:

1. To work out a question form for member countries about existing mine lighting and a need and program (if any) of improvement.

2. To collect, compare and evaluate the required information from interested countries.

3. To determine and discuss the scope of a recommendation for mine lighting.

4. To elaborate the recommendation for mine lighting.

The final working program will be worked out at the first meeting of TC-4.10 scheduled at Katowice, Poland, in Autumn 1976.

SG-A Psychological Problems in Lighting

Delegate: P.K. Kaiser

This Study Group will be combined with TC-3.5 (Visual Environment) when TC-3.5 is transferred to the USA (later in 1976).

SG-D Computers in Lighting

Delegate: Z.S. Subotich

This Study Group will be discontinued in 1976 after completion of its brief report. Further work on computers will be handled by individual Technical Committees.

SG-F Photochemistry and Agriculture Delegate: B.N. Clarkson

A letter of welcome has been received from the chairman of the Study Group (G. Sarytchev, USSR) but there has been no other activity so far.

SG-G Global Radiation

Delegate: W. Budde

At the London Session of the CIE, a strong opinion was expressed that considerable interest on the spectral power distribution of global radiation (solar plus sky radiation as received by a flat surface) exists in various CIE committees. Consequently, the Action Committee established this Study Group (Chairman, W. Budde, Canada).

The terms of reference are: "To investigate the feasibility of establishing a Technical Committee concerned with the determination and collection of spectral power distributions of sun and sky radiation at ground level".

A Working Program has been drafted and will be distributed to interested individuals and committees.