MINUTES OF THE 30TH ANNUAL MEETING OF THE CNC/CIE

October 23, 1986
National Research Council
Ottawa, Ontario.

TECHNICAL SESSION

Dr. Robertson convened the technical session at 9:30 AM. Division Reports are attached to these minutes.

BUSINESS SESSION

IN ATTENDANCE :

A.R. Robertson - N.R.C.
J.A. Chrysler - MBII
B.P. Jordan - P.P.R.I.C.
P.K. Kaiser - York University
I. Pasini - PWC
Robert White - E.L.R.G.
Brian Tansley - Carleton University
Robin V. Myers - Transport Canada
David Moizer - Carleton University
R.E. Jennings - L.S.C. Ltd.
W. Budde - N.R.C.
G. Szeker - Philips Ltg. Div.
M.J. Tsujita - University of Guelph

1.0 CALL TO ORDER 2ND APPROVAL OF AGENDA

Dr. Robertson convened meeting at 13:45. The order of the Agenda as distributed approved.

2.0 MINUTES OF 29TH ANNUAL MEETING

Moved by P. Kaiser, seconded by B. Tansley that the minutes of the 29th annual meeting be accepted. CARRIED

3.0 PRESIDENT'S REPORT

Copies to be distributed with these minutes.

Board of Administration, Executive Commitee has appointed Dr. A.M. Marsden of Hong Kong as interim president.

Mr. R.C. Aldworth has been named Vice President of Publications. W.J.M. van Bommel has been named director of Division 5.

SECRETARY'S REPORT

Copies of 1985 Report were distributed by J.A. Chrysler to all present. Additional copies to be issued with these minutes.

5.0 COMMUNICATIONS WITH CIE

Mr. W. Budde reported on CIE council discussions to improve communications with the CIE, noting that poor communications were due in past to the lack of information received from Division members.

Mr. Budde also noted that the CIE Newsletter would be upgraded to be CIE News and that copies of published reports by division chairmen would be sent to the National Committee so that the National Committees would not have to have members on every Technical Committee merely to receive information.

5.1 Dr. Kaiser reported that communications within Division 1 had been difficult due to the size of the Division. The Division has now been sub-divided into three sections: Vision, Colour, Visual Ergonomics to facilitate communications.

5.2 Dr. Robertson reported that communications within Division 2 were running smoothly.

5.3 Mr. Jennings reported that communications within Division 3 had improved since December '84 and that he had received correspondence from approximately 50% of the Technical Committee Chairmen.

5.4 Professor Tansley reported that communications within Division 4 were running smoothly and similar to Division 1, Division 4 had been split into a Signals and a Lighting Subdivision.

5.5 Mr. Szeker reported that he had recently received notification of a change in directors of Division 5, and that he was awaiting records from S. McKnight to establish communications. Mr. Szeker also noted that to date, he had received no information on Technical Committee Activities.

5.6 Prof. Tsujita declined to comment on communications as he was new to Division 6 and had to date received only the document for balloting.

5.7 Prof. White reported that he had been receiving notices of Division meetings and agendas and reports on Technical Committees directly from Technical Committee Chairmen and not from the Division Director.

5.8 The CNC suggested to Mr. Budde that the CIE publish abstracts of interim reports and journals in technical publications such as Citation Classics, Engineering Index and Physics Abstracts.

5.9 Professor Tansley motioned that the CNC/CIE propose to the CIE to have results of Technical Committee investigations published in the CIE Journal and be available as reprints. Motion seconded by G. Szeker. CARRIED

6.0 COMMUNICATIONS WITH CANADIANS

Mr. Jennings proposed that Canadian Members had a general lack of knowledge regarding the CNC/CIE and suggested that the CNC/CIE prepare a presentation package for local IES Section meetings and further proposed that the CNC/CIE investigate societies and organizations such as IES Sections and the Office of Lighting Research to whom information regarding the CIE can be distributed.

Dr. Robertson suggested that a brief pamphlet outlining the CIE objectives and organization be written and distributed to these societies in order to attract members.

Dr. Robertson also suggested that the Standards Council of Canada be contacted prior to the issuance of any new CIE standards to avoid having CIE standards that are not acceptable Canadian Practices.

Professor Tansley suggested that University and other libraries across Canada should be encouraged to maintain full CIE libraries.

7.0 NEW MEMBERS

Dr. T.H. Nilsson was suggested as a replacement for Dr. Manning as a Regional Representative. The consensus agreed that Dr. Robertson would write Dr. Nilsson to inquire.

Brian Clarksen was proposed as the new Ontario Regional Representative.

George Cornish was proposed as the representative for the Prairies.

8.0 OTHER BUSINESS

Robin Myers of Transport Canada made a proposal to have the GTB Canadian Membership, currently supported by Transport Canada, supported by the CNC/CIE as part of exterior/automotive lighting.

Dr. Robertson noted that the CNC/CIE had no financial structure itself and that CNC/CIE dues were payed by NRC with publications payed by CISTE.

It was suggested that Mr. Myers contact Mr. Gauvreau at NRC International Relations Office for further assistance.

9.0 ADJOURNMENT

Motion for adjournment was made by B. Tansley, seconded by W. Budde. CARRIED

Canadian National Committee/International Commission on Illumination

(CNC/CIE)

Report of the President

October 1985

1. The most significant event of the year for the CIE was the death of the President, Dr. Gunter Wyszecki. Dr. Wyszecki had been a member of the CNC/CIE since its founding in 1956 and its President from 1959 to 1963. He had been President of the CIE since 1983. As I was out of the country at the time of Dr. Wyszecki's death, condolances were sent to Mrs. Wyszecki by our Past-President Marion Bassett on behalf of members of the CNC/CIE.

2. A letter ballot was received in May 1985 from the Central Bureau asking for approval of a document entitled "CIE Standard on Colorimetry". This document had been prepared and approved by the old TC-1.3 (Colorimetry). On behalf of the CNC/CIE I voted in favour of publication of the document.

3. In August 1985 I wrote to everyone on the mailing list of the CNC/CIE explaining the new structure of the CIE and the duties of Canadian members of the Divisions and Technical Committees. I asked everyone to re-affirm their interest by completing and returning a form if they wished to stay on the mailing list. To date I have received no replies.

4. I have written to several people not currently involved with the CNC/CIE inviting them to become more actively involved. I have received several positive replies which I will present to the Annual Meeting of the CNC/CIE.

5. Following the advice of last year's CNC/CIE meeting, I have appointed Prof. J. Tjusita as Canadian member of CIE Division 6.

6. The Treasurer of the CIE, Mr. J. Jewell, asked me to suggest a member of the CNC/CIE to be a member of the CIE Finance Committee. I proposed Mr. A. Ketvirtis, who accepted the position.

7. I made an unsuccessful attempt to obtain partial financial support from the NRC Bureau of International Relations for Dr. B.W. Tansley to attend a meeting of CIE Division 4 in Lausanne, Switzerland in September 1985.

8. In May 1985, at the request of the NRC Committee on International Scientific and Technological Affairs I submitted new Terms of Reference for the CNC/CIE. The changes were editorial rather than substantial. A copy is attached to this Report.

9. Our system of making CIE Publications available in Canada has broken down in the last few years. In an attempt to get it going again I am trying to arrange for NRC automatically to buy 15 copies of each new publication for resale. In the interim I have arranged for the US National Committee to supply Canadians with recent publications. Most publications dated 1982 and earlier are still available from the NRC Publications Distribution Office. A list is attached to this report.

10. A meeting of the Executive Committee of the CIE was held in Lausanne, Switzerland in September 1985. I was not able to attend and delegated my vote to Mr. W. Budde. Important items on the agenda were:

1. The appointment of an interim President
2. A U.S. motion urging better communication within the CIE.
3. The future and recent past of the CIE Journal
4. A U.S. motion suggesting a reduction of CIE dues.
5. The cost of CIE Publications.
6. The location of the CIE Central Bureau after 1987.
7. The application of New Zealand to be a member.
8. Cooperation between CIE and ISO/IEC.

A.R. Robertson
1985-10-21

Canadian National Committee/International Commission on Illumination (CNC/CIE)

Terms of Reference

1. The purpose of the Committee is:

   a) to promote, within Canada, international programs in light and lighting and Canadian participation in international activities sponsored by the International Commission on Illumination (CIE) so as to ensure maximal benefits to Canada;

   b) to promote, within the CIE international activities which are relevant, or of special interest, to Canada and to coordinate all aspects of Canadian participation in discussion and dissemination of the results of such activities;

   c) to formulate Canadian positions with respect to CIE activities and to advise Council* on Canadian participation and on the activities of the CIE and of CNC/CIE;

   d) to act as a channel of communication among the CIE, Council*, Canadian scientific societies, scientists and Canadian industry.

*"Council" is taken here to mean the National Research Council of Canada and should not be confused with the CIE Council.

1985-05-21

National Research Council Canada
Conseil national de recherches Canada

Division of Physics
Division de physique

October 28, 1985

CIE Publications

A list of CIE publications available from the Canadian National Committee of the CIE is attached. These publications may be ordered by contacting the Publications Distribution Office, National Research Council of Canada, Ottawa, Ontario, K1A 0R6 (Telephone (613) 993-2054).

Some recent publications are not yet available in Canada. We hope to rectify this situation soon, but in the meantime the US National Committee has agreed to supply Canadians. A list of available publications and ordering information is attached.

A.R. Robertson
President, CNC/CIE

Ottawa, Canada
K1A 0R6
Telex 053-4322

Canada

October 21, 1985

CANADIAN NATIONAL COMMITTEE OF CIE

LIST OF AVAILABLE C.I.E. PUBLICATIONS

C.I.E. #	TITLE	PRICE (U.S. Dollars)
9	History of the C.I.E., 99 pp (1963)	$ 4.50
12.2	International Recommendations for the Lighting of Public Thoroughfares 51 pp (1977)	24.50
15	Colorimetry Official Recommendations of the C.I.E., 79 pp plus 14 tables (1971)	11.00
15 (Supp. 1)	Special Metamerism Index: Change in Illuminant (1972)	3.00
15 (Supp. 2)	Recommendations on Uniform Colour Spaces - Colour Difference Equations (1978)	15.50
16	Daylight, International Recommendations for Calculation of Natural Daylight 79 pp (1970)	9.00
19/2.1	An Analytic Model for describing the Influence of Lighting parameters upon visual performance Volume 1, Technical foundation	52.00
19/2.2	Summary and Application Guidelines	---
20	Recommendations for the Integrated Irradiance and the Spectral Distribution of Simulated Solar Radiation for Testing Purposes (1972)	11.00
21B	Proceedings of the CIE (Barcelona) 1971	---
23	Recommendations for Motorway Lighting 66 pp (1972)	12.50
24	Photometry of indoor type luminaires with tubular flourescent lamps 65 pp	18.00
26	International recommendations for tunnel lighting, 81 pp (1973)	13.50
28	The lighting of sports events for color TV broacasting (1975)	11.00
29	International Guide on interior lighting (1975)	7.50
32A/32B	Lighting in situations requiring special treatment (1977)	12.50
33A/33B	Depreciation and maintenance of public lighting installation (1977)	11.00
34	Road lighting lantern & installation data - photometrics, classification and performance (1977)	11.00
35	Lighting of traffic signs, 24 pp (1978)	8.00

C.I.E. #	TITLE	PRICE (U.S. Dollars)
36	Proceedings of the C.I.E. 18th (London Session) 1976	82.50
37	Exterior lighting in the Environment (1976)	14.00
38	Radiometric and photometric characteristics of materials and their measurement (1977)	22.00
40	Calculations for interior lighting, basic Methods, 64 pp plus 54 tables (1978)	14.50
41	Light as a true visual quantity: Principles of Measurement (1978)	26.00
42	Lighting for tennis (1978)	10.50
43	Photometry of floodlights (1979)	13.00
44	Absolute methods for reflection measurements (1979)	23.50
45	Lighting for ice sports (1979)	12.00
46	A review of publications on properties and reflection values of material reflection standards (1979)	22.00
47	Road lighting for wet conditions (1979)	30.00
48	Light signals for road traffic control	32.00
49	Guide on the emergency lighting of building interiors	---
50	Proceedings of the 19th Session (Kyoto) (1979)	115.00
1	A method for assessing the quality of daylight simulators for colorimetry	18.00
52	A method - for lighting calculations	30.00
53	Methods of characterising the performance of radiometers and photometers	8.00
54	Retroreflection - Definition and measurements	15.00

US NATIONAL COMMITTEE OF CIE

January 10, 1985

List of Available CIE Publications

CIE Publication No.	Title	USNC Price (U.S. dollars)	List Price (U.S. dollars)
IAU/CIE No. 1-1980	Guidelines for Minimizing Urban Sky Glow Near Astronomical Observatories, 24 pp plus 2 figures (1980)	$ 4.00	$ 5.00
2.2	Colours of Light Signals, 88 pp (1975)	16.00	20.00
9	History of the CIE, 99 pp (1963)	4.00	5.00
12.2	International Recommendations for the Lighting of Public Thoroughfares, 51 pp (1977)	29.00	36.00
13.2	Method of Measuring and Specifying Colour Rendering by Light Source, 83 pp (1974)	22.00	28.00
15	Colorimetry, Official Recommendations of the CIE, 79 pp plus 14 tables (1971)	13.00	17.00
15(Suppl.1)	Special Metamerism Index: Change in Illuminant (1972)	3.00	4.00
15(Suppl.2)	Recommendations on Uniform Color Spaces - Color Difference Equations (1978)	17.00	22.00
16	Daylight, International Recommendations for Calculation of Natural Daylight, 79 pp (1979)	11.00	14.00
17	International Lighting Vocabulary, 3rd Edition; English, French, German, Russian, 359 pp (1970)	44.00	55.00
18.2	The Basis of Physical Photometry	22.00	27.00
19/2	An Analytic Model for Describing the Influence of Lighting Parameters Upon Visual Performance, (1981)		
	Vol. I: Technical Foundations	35.00	43.00
	Vol II: Summary and Application Guidelines	23.00	29.00

January 10, 1985

CIE Publication No.	Title	USNC Price (U.S. dollars)	List Price (U.S. dollars)
20	Recommendations for the Integrated Irradiance and the Spectral Distribution or Simulated Solar Radiation for Testing Purposes	$13.00	$16.00
22	Standardization of Luminance Distribution on Clear Skies (1973)	13.00	16.00
23	Recommendations for Motorway Lighting, 66 pp (1972)	14.00	18.00
24	Photometry of Indoor Type Luminaires with Tubular Fluorescent Lamps, 66 pp (1973)	22.00	27.00
25	Procedures for the Measurement of Luminous Flux of Discharge Lamps, 35 pp (1973)	6.00	7.00
26	International Recommendations for Tunnel Lighting, 81 pp (1973)	17.00	21.00
27	Photometry of Luminaires for Street Lighting, 67 pp (1973)	17.00	22.00
28	The Lighting of Sports Events for Color TV Broadcasting, 32 pp (1975)	13.00	16.00
29	International Guide on Interior Lighting (1975)	9.00	11.00
30.2	Calculation & Measurement of Luminance and Illuminance in Road Lighting, 160 pp plus 38 figures (1982)	30.00	38.00
31	Glare & Uniformity in Road Lighting Installations (1976)	7.00	9.00
32A/32B	Lighting in Situations Requiring Special Treatment (1977)	14.00	18.00
33A/33B	Depreciation and Maintenance of Public Lighting Installation (1977)	13.00	16.00
34	Road Lighting Lantern & Installation Data-Photometrics, Classification and Performance (1977)	12.00	15.00

CIE Publication No.	Title	USNC Price (U.S. dollars)	List Price (U.S. dollars)
35	Lighting of Traffic Signs, 24 pp (1978)	$ 9.00	$ 11.00
36	Proceedings of the CIE 18th Session (London) 1976	82.00	103.00
37	Exterior Lighting in the Environment (1976)	16.00	21.00
38	Radiometric & Photometric Characterics of Materials and their Measurement (1977)	26.00	32.00
39	Surface Colors for Visual Signalling (1978)	10.00	13.00
39.2	Recommendations for Surface Colours for Visual Signalling, 80 pp plus 4 figures and 10 tables (1983)	39.00	49.00
40	Calculations for Interior Lighting, Basic Method, 64 pp plus 54 tables (1978)	16.00	20.00
41	Light as a True Visual Quantity: Principles of Measurement (1978)	29.00	36.00
42	Lighting for Tennis (1978)	12.00	15.00
43	Photometry of Floodlights (1979)	14.00	17.00
44	Absolute Methods for Reflection Measurements (1979)	26.00	32.00
45	Lighting for Ice Sports (1979)	13.00	16.00
46	A Review of Publications on Properties and Reflection Values of Material Reflection Standards (1979)	24.00	30.00
47	Road Lighting for Wet Conditions (1979)	33.00	41.00
48	Light Signals for Road Traffic Control (1981)	35.00	43.00
49	Guide on the Emergency Lighting of Building Interiors (1981)	10.00	13.00

January 10, 1985

CIE Publication No.	Title	USNC Price (U.S. dollars)	List Price (U.S. dollars)
50	Proceedings of the 19th CIE Session (Kyoto) 1979	55.00	$ 69.00
51	A Method for Assessing the Quality of Simulators for Colorimetry, 32 pp with 1 figure (1981)	26.00	32.00
52	Calculations for Interior Lighting, Applied Method, 172 pp with 24 figures and 91 tables (1982)	43.00	54.00
53	Methods of Characterizing the Performance of Radiometers and Photometers, 32 pp with 3 figures and 1 table (1982)	12.00	15.00
54	Retroreflection - Definition and Measurement, 34 pp with 10 figures (1982)	22.00	27.00
55	Discomfort glare in the interior working environment, 43 pages with 6 tables and 18 figures.	23.00	29.00
56	Light and Lighting '83 - the Proceedings of the 20th Session of the CIE/Amsterdam is availaable directly from its publisher: OMIKK-Technoinform H-1428 Budapest P.O.B. 12 Hungary		
57	Lighting for football, 16 pages with 1 table and 7 figures.	13.00	16.00
58	Lighting for sports halls, 12 pages with 1 table.	9.00	11.00
59	Polarization: definitions and nomenclature, instrument polarization, 32 pages, 4 tables.	22.00	27.00
60	Vision and the visual display unit work station, 29 pages.	22.00	27.00

January 10, 1985

CIE Publication No.	Title	USNC PRICE	LIST PRICE
61	Tunnel Entrance Lighting - A Survey of Fundamentals for Determining the Luminance in the Threshold Zone, 80 pages with 29 figures, (1984)	$35.00	$43.00
62	Lighting for Swimming Pools 22 pages with 6 figures, (1984)	13.00	16.00
63	The Spectroradiometric Measurement of Llight Sources, 64 pages with 8 figures, (1984)	26.00	32.00
64	Determination of the Spectral Responsivity of Optical Radiation Detectors, 74 pages with 10 figures, (1984)	29.00	36.00

Ordering Information:

Most CIE publications are kept in stock by the Secretary, USNC. Send order with remittance if possible. Make check payable to "U.S. National Committee, CIE" and send to:

Dr. K. D. Mielenz
Room B-306 MET. Bldg.
National Bureau of Standards
Gaithersburg, MD 20899
Telephone: (301) 921-3864

Mulvey & Banani International Inc. Consulting Engineers, 44 Mobile Drive, Toronto, Ontario, Canada M4A 2P2 Telephone (416) 751-2520

SECRETARY'S REPORT TO THE CANADIAN NATIONAL COMMITTEE OF THE CIE

October 23, 1985.

1. The distribution and sale of CIE Publications is presently being handled by the U.S. National Committee. New CIE Publications announced this year were:

No. 61	Tunnel Entrance Lighting- A survey of fundamentals for determining the luminance in the threshold zone.	$24.00US
No. 62	Lighting for Swimming Pools	$ 9.00US
No. 63	The Spectroradiometric Measurement of Light Sources	$18.00US
No. 64	Determination of the Spectral Responsivity of Optical Radiation Detectors	$20.00US
No. 66	Road Surfaces and Lighting (Joint CIE/PIARC Technical Report)	$15.00US

2. CIE Journals Volume 3, No. 1 and No. 2 and CIE Newsletters #30,31 and 32 were received from the Central Bureau and distributed to members. CIE Journal Volume 4, No. 1 and the 1985 Roster received after October 8, 1985 are being distributed to the CNC Executive at this meeting. Those not in attendance will receive copies by mail. Additional copies of the Roster have been requested from the Publications Office.

3. The 1983 CIE Statutes and By-Laws (Amsterdam) and the 1984 CIE Code of Procedure for Divisions and Technical Committees were received from the Central Bureau and distributed to the CNC Executive and Division Chairmen.

4. The following have expressed an interest in joining and have been added to the mailing list:

Mr. Martyn K. Timmings,
Lighting Products Department,
Canadian General Electric,
165 Dufferin Street,
Toronto, Ontario.
M6K 1Y9

Dr. T.H. Nilsson,
Dept. of Psychology,
University of Alberta,
Edmonton, Alberta.
T6G 2E1

Mr. Paul Young,
Energy Conservation Division,
625 Howe Street,
Vancouver, B.C.
V6C 2T6

Mr. Mits Sumiya,
36 Deerford Road,
Willowdale, Ontario.
M2J 3J4

Respectfully submitted,

J. Allyson Chrysler

Canadian National Committee / International Commission on Illumination

30TH Annual Meeting

23 October 1985

Agenda

Technical Session 9:30 - 12:30

9:30 Introduction, A.R. Robertson
9:50 Vision and Colour, P.K. Kaiser
10:10 Physical Measurement of Light and Radiation, A.R. Robertson
10:30 Coffee
10:50 Interior Environment and Lighting Design, R.E. Jennings
11:10 Lighting and Signalling for Transport, B.W. Tansley
11:30 Exterior and Other Lighting Applications, G. Szeker
11:50 Photobiology and Photochemistry, J. Tjusita
12:10 General Aspects of Lighting, R. White

Lunch 12:30 - 13:45

Business Session 13:45 - 17:00

1. Call to order and approval of agenda
2. Minutes of 29th annual meeting
3. President's report
4. Secretary's report
5. Communications with CIE - are they working?
6. Communications with Canadians - how can we improve them?
7. Appointment of new members
8. Other business - TRANSPORT CANADA
9. Adjournment

CIE

30TH ANNUAL MEETING

IN ATTENDANCE:

I. Pasini	Public Works Canada
J.A. Chrysler	Mulvey & Banani Int'l. Inc.
R.E. Jennings	Lighting Sciences Canada Ltd.
G. Szeker	Philips - Lighting Division
B. Jordan	Pulp & Paper Research Inst. of Canada
R. Plamondon	Optikon Corp., Waterloo
S. Daicos	Optikon Corp., Waterloo
Terry Schmidt	Electrohome Ltd., Kitchener
Robert White	Environ. Lighting Research Group
Ferrers Clark	Division of Building Research, NRCC
Herb Ott	Transport Canada, Ottawa
Jacques Chaurette	Radio-Canada, Montreal
Peter Blatherwick	Biomedical Engineering, Univ. of Toronto
Lyle Davidson	Davis Engineering, Ottawa
A.A. Gaertner	NRC - Physics
Joanne Zwinkels	NRC - Physics
Hirohisa Yaguchi	NRC - Physics
Jim Tsujita	University of Guelph
Peter Kaiser	York University
A.R. Robertson	NRC - Physics
W. Budde	NRC - Physics
Brian Tansley	Carleton University
Jim Lougheed	Davis Engineeringu

ENCLOSED HEREWITH: TECHNICAL SESSION REPORTS
30TH ANNUAL CNC/CIE MEETING

(BUSINESS SESSION MINUTES
FORWARDED UNDER SEPARATE
COVER)

DIVISION 1: VISION and COLOR

Director: H.W. Bodmann (D)
Associate Directors: M. Ikeda (J), Section 1, Vision
C.J. Bartleson (USA), Section 2, Color
P.L. Walraven (NL), Section 3, Visual Ergonomics

Secretary: M.B. Halstead (GB)
Editor: M.R. Pointer (GB)

Canadian Member: P.K. Kaiser

Technical Committees

Section 1: Vision

1-01 **Mesopic photometry**- Prepare a technical report on the determination of mesopic luminance describing techniques to be proposed for study.

Chair- J.A. Kinney (USA)
Members- Bourdy (FRA), Ikeda (J), Meyer (CHE), Sagawa (J), Palmer (GB), Trezona (GB), Van den Berg (NLD), Verriest (BEL)

1-02 **Spectral luminous efficiency functions**- Prepare a a technical report on spectral luminous efficiency functions based on brightness matching for point sources (less than 10 minutes of arc), 2 degree and 10 degree fields.

Chair- M. Ikeda (J)
Members- Boynton (USA), Estevez (NLD), Fuwa (JPN), Kaiser (CAN), Kinney (USA), Kokoschka (DEU), Palmer (GB), Ronchi (ITA), Sagawa (JPN), Verriest (BEL), Yaguchi (CAN)

1-03 **Models of heterochromatic brightness matching**- a) Evaluate an empirically derived method as proposed to the commitee for conversion of luminance into ordinal values of brightness and prepare a recommendation;n on its use, as an iterim solution.

b) Prepare a comprehensive comparative review of existing models of color vision;n in view of a physiologically based mathematical model of color vision capable of predicting a set of visual functions including the brightness luminance discrepancy.

Chair- P.K. Kaiser (CAN)
Members- Bartleson (USA), Bodmann, (GER), Boynton (USA), Cowan (CAN), Estevez (NL), Ikeda (J), Ingling (USA), Mollon (GB), Trezona (GB)

1-04 **Physiologically based system of color specification**- a) Establish a constant luminance chromaticity diagram based on cone action spectra which are consistant with the best possible set of color matching functions. These functions could form the basis for an alternative CIE standard.

b) Determine as complete a set of visual functions (such as color matching functions, luminous efficiency functions, and wavelength discrimination) on a limited number of observers against which to compare color vision models.

Chair- A. Nagy (USA)
Members- Estevez (NL), Fry (USA), McLeod (USA) V. Smith (USA), Valberg (NOR), Richter (DEU), Terstiege (DEU), Vienot (FRA)

1-05 **Brightness-Luminance relations**- Prepare an annotated bibliography from approximately 800 collected references and prepare a review on the following topics for publications in an appropriate format:-

- brightness-luminance relations under static conditions
- brightness-luminance relations under dynamic conditions
- methodology of brightness evaluation
- brightness of point sources
- spatial aspects of brightness

Chair- J.A.J. Roufs
Members- Bourdy (FRA), Meyer (CHE)

Section 2 Color:

1-06 **Chromatic adaptation**- Produce colorimetric transforms that define corresponding colors for commonly used illuminants and means for characterizing departures from color constancy in terms of color appearance.

Chair- C.J. Bartleson (USA)
Members- Boynton (USA), Hunt (GB), Nayatani (J), Pointer (GB), K. Richter (GER)

1-07 **Observer metamerism**- Formulate a standard deviate colorimetric observer for 10^{o} fields that can be used to indicate the degree to which pairs of metameric samples will show color differences for real observers, and to devise means for indicating the ranges of chromaticities of such color differences.

Chair- N. Ohta (J)
Members- Allen (USA), Hemmendinger (USA), McLaren (GB), Nayatani (JPN), Opstelten (NLD), Strocka (DEU), Takahama (JPN)

1-08 **Color difference evaluation**- Derive a color difference formula that is substantially better than the CIELUV and CIELAB formulae.

Chair- A.R. Robertson (CAN)
Members- Billmeyer (USA), Boynton (USA), (GER), Kawakami (J), Kuehni (USA), Lozano (ARG), McLaren (GB), Nayatani (J), Rigg (GB), Seve (FRA)

1-09 **Standard sources for colorimetry**- Prepare a technical report listing sources that are useful approximations to Standard Illuminant D_{65} with particular reference to their suitability for visual assessment of samples and for the spectrophotometry of luminescent samples, and giving their Publication 51 indices.

Chair- D. Gundlach (GER)
Members- Bartleson (USA), Bertrand (FRA), Griesser (CHE), Nayatani (JPN), Robertson (CAN), Terstiege (DEU), Schanda (HUN), Vandermeersch (BEL), Verrill (GB)

1-10 **Colorimetry of self-luminous displays**- Study colorimetric measurements and their correlations with color appearance for self-luminous displays.

Chair- J. Rennilson (USA)
Members- Bertrand (FRA), Cowan (CAN), Fuchida (JPN), Krystek (DEU), Keller (USA), Kokoschka (GER), Kreuger (CHE), Snyder (USA), Schanda (HUN), Tannenbaum (USA), Verriest (BEL)

1-11 **Illumination for color reproduction**- Derive methods for evaluating the color rendering properties of light sources used in color reproduction systems.

Chair- W.N. Sproson (GB)
Members- Chalmers (GB), King (GB), Kohmoto (JPN), Ohta (JPN), Opstelten (NLD), Powell (AUS), Taylor (GB), Terstiege (DEU), White (GB)

1-12 **Relative color rendering**- Derive improved methods of evaluating the color rendering properties of illuminants relative to reference illuminants of similar chromaticities.

Chair- M. Halstead (GB)
Members- Barthes (FRA), De Clerq (BEL), Einhorn (S. AFR), Mori (JPN), Opstelten (NLD), Plaza (SPN), Richter (DEU), Roddewig (DEU), Schanda (HUN), Schultz (DEU), Tanneberger (DDR) Valberg (NOR), Walter (USA)

1-13 **Color appearance analysis**- Derive methods of evaluating the color rendering properties of illuminants based on color appearance

Chair- M. Pointer (GB)
Members- Hunt (GB), Nayatani (J), Schanda (HUN), Seim (NOR), Terstiege (DEU), Tonnquist (SWDN)

Section 3 Visual Ergonomics:

1-14 **Lighting effects on vision**- Prepare a review of the effects of lighting conditions on visual capabilities taking into account present knowledge and measures of visual system performance.

Chair- P.R. Boyce (GB)
Members- Bonnet (FRA), Meyer (CHE), Overington (GB), Rea (CAN), Ronchi (ITY), Takeuchi (JPN), Verriest (BEL)

1-15 **Specification of visibility meter-**

Chair- C.F. Kirschbaum
Members- Blackwell (USA), Rea (CAN), Slater (GB), Yonemura (USA)

1-16 **Lighting needs for the partially sighted-** Prepare a state-of-the-art report covering visual function in the different kinds of partial sight, functional effects in partially sighted of quantitative and qualitative changes in lighting and how to manage practical lighting for the different activities of individual partially sighted, of the partially sighted as a group and of the partially sighted amidst the general population.

Chair- G. Verriest (BEL)
Members- Atwell (USA), Aulhorn (DEU), Bailey (USA), Boissin (FRA), Brunnstrom (SWE), Fonda (USA), Julian (AUS), Kreuger (CHE), Serra (ITA), Stone (GB), van den Berg (NLD)

1-17 **Contrast Metric of Visibility-** Prepare a technical report on contrast visibility metric based on human visual system functions.

Chair- A. Korn
Members- Blackwell (USA), Boyce (GB), Ginsburg (USA), Inditsky (ISR), Meyer, (CHE), Overington (GB)

Progress as of June 1985

TC 1-01 Mesopic Photometry: J A S Kinney

Kinney reported that the outline of the proposed Technical Report had been discussed. This would state the methods which could be used for light measurements in the mesopic region. Data was being collected from a number of people regarding specific applications. It was hoped that the first draft of the TR would be ready by December 1985 leading to an interim report in 1987.

(The annual report is attached as Annex 2 to these Minutes.)

TC 1-02 Luminous Efficiency Functions: M Ikeda

Ikeda stated that TC 1-02 had almost arrived at a final conclusion about the mean spectral luminous efficiency functions of point sources, 2° field and 10° field obtained by heterochromatic brightness matching.

As to the point sources, the CIE V(λ) of Judd's modification would represent the function.

For 2° field, the data from 63 subjects from 4 countries were collected and a function having two peaks at about 540 and 600 nm was derived to represent the mean luminous efficiency function of 2° field.

For 10° field, the data from 76 subjects from 3 countries were collected and a function differing from the 2° function only at short wavelengths from 410 to 540 nm was derived to represent the mean luminous efficiency function of 10° field.

The TC was quite happy to complete the work of deriving these three functions, responding to the old TC 1.4's appeal, made in 1977, whose Chairman was Jo Ann Kinney, for more data for point sources, 2° field, and 10° field. The present TC would prepare a technical report for Division approval as soon as possible.

TC 1-03 Models of Heterochromatic Brightness Matching: P K Kaiser

Kaiser said that the Ware and Cowan report had been discussed as an interim solution to the brightness/luminance discrepancy problem. TC 1-03 had approved the Ware and Cowan conversion factor and submitted a report to the Division. (See Minute 7.3.)

Progress towards the completion of a critical review of colour vision models was currently moving very slowly.

The possiblity of a joint AIC/CIE Symposium on colour vision models had been discussed and would be dealt with later in the meeting. (See Minute 9.)

TC 1-04 Physiologically Based System of Colour Specification: A L Nagy

Nagy stated that the TC had two goals: (1) to establish a constant luminance chromaticity diagram based on colour matching data and (2) to obtain a complete set of visual functions on a limited number of observers. Progress on the first topic was slow; how to attack the problem and the best method for doing it had been discussed. On the second topic, the TC had suggested the functions which should be measured and the methods for doing the work. The suggestions had been passed to Wyszecki's department where experimental work was being done.

TC 1-05 Brightness-Luminance Relation: J A J Roufs

Ikeda said that he had not heard of any progress since the last Division Meeting in Vienna when about 800 references had been assembled.

Plaza commented that since no TC members appeared to have been appointed, the subject status should be that of a reporter and not a TC. Barlteson replied that certain people had been asked to help with the abstracting but so far their names had not been disclosed.

COLOUR: C J BARTLESON

Bartleson took the chair and called his TC Chairmen to present their reports.

TC 1-06 Chromatic Adaptation: C J Bartleson

Bartleson said that his TC had prepared and circulated their report. He postponed discussion until item 7.1 of the Agenda when the report would be considered.

TC 1-07 Observer Metamerism: N Ohta

Ohta reported that a first draft had been prepared and distributed to the TC members three months ago. At the meeting on 14 June, there were comments and discussions on the first draft. The future work is:

1) To edit the first draft and distribute it again for further study

2) To carry out further experiments using actual samples and actual observers to see the validity of the present method

(The annual report is attached as Annex 3 to these Minutes).

TC 1-08 Colour Difference Evaluation: A R Robertson

Robertson said that the task of the TC was to develop the next generation of colour difference formulae. Existing sets of data were not compatible and therefore could not be combined. The available data sets were being analysed to see if there was a pattern of appearance attributes or responses of the visual system. A list of suitable data sets would be published. Robertson suggested that the unpublished data on which the published papers were based should be gathered into a central location.

Bodmann commented that he hoped the TC at the end of the quadrennium would be able to recommend a programme of work or strategy for the next quadrennium. Robertson replied that guide lines had already been published but the TC should be able to set shorter specific guide lines or tasks that should be capable of being achieved. (The annual report is attached as Annex 4 to these Minutes.)

TC 1-09 Standard Sources for Colorimetry: D Gundlach

The Chairman apologised for not being active during the last two years due to severe problems with his health.

Immediately after this Meeting a questionnaire would be sent to all members of the TC. In this, members would be asked to submit spectral power distributions (correct: spectral irradiance distributions) of existing daylight simulators for visual colour matching (inspection booths) and also for colour measuring devices (spectrophotometers and tristimulus colorimeters). The interesting range of correlated colour temperatures would be between 5000K* and 7000K, especially 6500K.

For the assessment of the daylight simulators for (visual) colour matching the existing CIE Publ No 51, A Method for Assessing the Quality of Daylight Simulators for Colorimetry, 1981, should be used because no pure green, yellow, orange or red fluorescent materials would be matched visually. But tristimulus values of such materials would be estimated colorimetrically. Therefore the Chairman thought that an additional method is needed for describing the quality of daylight simulators for colorimeters. The Chairman proposed to define a factor $f_{\eta,N}$ for describing the excitation of fluorescence by the simulator related to standard illuminant D_{65} and a factor $f_{\theta,N}$ for the evaluation of the luminance of the emitted fluorescent light related to the D_{65} luminance of the perfect white diffuser in the same wavelength range.

Both factors could be combined to get a single figure to describe the quality of the simulator. Details of this proposed method would be given in written form to the TC members.

Dr Mori from Japan informed the meeting of a new D65 fluorescent tube which would be on the market in the near future.

Schanda could not see why the method of assessment should differ from that of CIE Publication 51 and Grum said that this TC should liaise with Hengstberger in Division 2.

* Dr Schultz from Germany wished to include 5000K for colour matching in graphic industry.

TC 1-10 Colorimetry of Self-luminous Displays: J J Rennilson

Rennilson reported that seven members and two substitutes were present at the meeting. The following items were discussed.

1) The scope of the technical committee would be changed slightly to include non-self-emitting coloured displays such as liquid crystals. The committee would restrict its effort to multicolour displays (VDU's). The scope would be rewritten and submitted to the Division Directors.

2) An outline for three reports and one recommendation was given. The titles were as follows: -

a) A Review of Publications on the Measurement of Coloured Visual Display Units

b) Methods of Characterizing Parameters which are important for Assessing the Visual Performance of Coloured Visual Display Units

Part I Physical Parameters
Part II Visual Parameters

c) Recommended Colour Space for Evaluating the Visual Performance of Coloured Visual Display Units

d) Characterizing Symbol Clarity (Legibility) of Coloured Visual Display Units

3) Progress on the first report had been made with a series of bibliography lists which would be combined into one draft with comments and anotations before the end of 1985. The complete report would be ready for committee vote and submission to the Division by June 1986.

4) The tentative outline for the second report Par was accepted at the meeting. The outline Part II would be completed in the next few mon for distribution. Work on both parts would be parallel with the aid of additional advis experts in psychophysics (visual evaluation).

5) The committee agreed to accept the responsibil for studying the best colour space for vis evaluation of VDU's and the recommendation colour difference formulation suited to the un characteristics of coloured VDU's.

6) The meeting concluded with reports from vari countries and ISO liaison on organisations a involved with physical and visual evaluation VDU's.

7) The next meeting of TC 1-10 would be following AIC Interim Symposium in Toronto, Canada June 21, 1986.

(The annual report is attached as Annex 5 to th Minutes.)

TC 1-11 Illumination for Colour Reproduction: W N Sproson

The first meeting of TC 1-11 occured on 15 June 1 and was attended by 19 members and guests. The m items concerned the results of the two field tri carried out by Thames TV and the BBC (UK). Th trials and their implications were discussed in s detail and a number of valuable contributions were m during discussions. The second main item concer theoretical and practical aspects of test colour se The final item was concerned with the presentation results to date and the preparation of a final rep of the work of the committee.

(The annual report is attached as Annex 6 to th Minutes.)

TC 1-12 Relative Colour Rendering: M B Halstead

Halstead said that a draft revision of CIE Publicat 13.2, Method of Measuring and Specifying Colo Rendering of Light Sources, 1974, had been circulat prior to the meeting. Discussions had centred on:

1) chromatic adaptation transform where it had be agreed to accept the TC 1-06 proposal applied both test and reference illuminants.

2) colour space where it had been agreed to use CIEL space.

3) reference illuminants where there were two schools of thought favouring a) the existing series and b) a restricted number of reference illuminants respectively.

4) method of calculation of the special colour rendering indices.

5) choice of test colour samples.

Halstead said that further work would take place by correspondence. It was intended that the final draft would be ready for voting by the TC early in 1986 prior to submission to the Division late in 1986.

(The annual report is attached as Annex 7 to these Minutes.)

TC 1-13 Colour Appearance Analysis: M R Pointer

Pointer said that this was an active committee with most of the working members having written papers during the last 2 years.

Seim and Valberg were working on a model based on the electrophysiological data which they were measuring from a monkey.

K Richter was further developing his colour space LABHNU in the light of scaling data that he had obtained using pseudo surface colours.

Nayatani had started field trials using his model especially looking at the brightness dimension. Hunt and Pointer were beginning to apply their model. Thus there was much activity amongst the modellers!

There was some discussion on the acquisition of more data - especially on a grey surround - and it appeared that a few members of the committee would be able to contribute towards this.

(The annual report is attached as Annex 8 to these Minutes.)

Visual Ergonomics: P L Walraven

Walraven took the chair and asked his TC Chairmen to present their reports.

TC 1-14 Lighting Effects on Vision: P R Boyce

Boyce said that the first draft of the Technical Report was discussed in detail at the CIE Division 1 meeting in Paris on 14 June, 1985. The members of TC 1-14 agreed that the first draft formed the basis of a publication that would be useful to practising lighting engineers and ergonomists. Following the discussion in Paris, the intention was to prepare a second draft, incorporating the detailed comments made. This would be discussed in 1986, the aim being to have a final version ready for consideration by Division 1 at the quadrennial CIE meeting in Venice 1987.

Plaza commented that the spectral power distribution of the radiation incident on a task was modified by the spectral reflectance characteristics of materials in the vicinity. Boyce replied that contrast was a spatial phenomenon and data was sparse in these areas. Gaps might have to be left in the report if data were not available.

In reply to Bartleson, Boyce said that the TC had first wanted to see if it was worthwhile preparing a document which was intended not for experts but for those people making decisions about lighting. The second draft of the report would be sent to TCs 1-16 and 1-17 and then to other appropriate TCs and Divisions e.g. Division 4.

(The annual report is attached as Annex 9 to these Minutes>)

TC 1-15 Specification of Visibility Meters: C F Kirschbaum

Walraven said that he had no information regarding this TC.

TC 1-16 Lighting Needs for the Partially Sighted: G Verriest

Verriest siad that the aim of TC 1-16 was to prepare a state-of-the-art report covering visual functions in the different kinds of partial sight, functional effects in partially sighted of quantitative and qualitative changes in lighting, and how to manage practically lighting for the different activities of individual partially sighted, of the partially sighted as a group and of the partially sighted amidst the general population. This TC did not meet in Paris because most members were not connected previously with the CIE and also because the committee was very interdisciplinary and moreover geographically very dispersed, with its principal centre of gravity as far as Australia. The secretary, Mr Warren Julian, was from Australia and as he was coming to Lux Europa in

September Verriest would see him then and they would survey together the huge pile of documents that had already been received. Many people had been asked to send information or statements about specific topics and he had already received many answers while other persons - some of whom were present - promised to answer in the near future. Warren Julian and he would have to decide how the first draft would be made and when it would be distributed to the committee members. He hoped that the definitive draft would be ready for the Venice CIE Congress. Meanwhile it was possible that a committee meeting would be held in England in April 1986 in conjunction with a symposium on lighting for partially sighted.

TC 1-17 Contrast Metric of Visibility: A Korn

Korn said that the committee was established in Vienna last year so it was very new. The goal of this committee was to prepare a technical report on contrast visibility metric based on human visual system functions. Papers and contributions for use in preparing a first draft were being collected. A very fruitful, lively discussion in depth had taken place that morning and the previous afternoon together with TC 1-14. With this committée a close co-operation was established. The first draft of a report would be prepared later this year and would be distributed to interested parties for comments. It was hoped to arrange a committee meeting probably mid 1986 in England or Germany.

Editor: M R Pointer

Pointer said that he had nothing to report since no documents had been received since the Vienna meeting. However it would be helpful to know what form of publication the TCs intended to produce. He identified five different types of output from a committee: -

1) Standard e.g. 1931 standard observer.

2) CIE Journal article e.g. state of the art report or anotated bibliography which might not be worth making into a full Technical Report. This could be published more quickly and circulated more widely than a CIE Publication and therefore was more effective.

3) Technical Report i.e. a guide on how something should be done e.g. Publication 13.2. This needed time to go through the official voting procedure.

4) No document.

5) Committee report for publication in the CIE Journal.

Pointer then asked each TC Chairman to indicate type of document was to be produced. (See Annex 1C these Minutes.)

Grum asked about the status of the revised versior CIE Publication 15.2 Colorimetry. Robertson repl that after considerable delays, the standards on col matching functions and standard illuminants had b combined into one document which had been sent National Committees for voting. The Techical Re which contains the rest of the material f Publication 15.2 was being edited and would soo sent to Schanda for publication.

Kaiser asked what the policy was regarding publica in other journals of material published in either CIE Journal or Technical Reports. Schanda replied the Council had decided that the CIE had copyright both Journal and Technical Reports so it would de on what was to be republished and where. The aim to make the journal into a major one which woul archived. Regarding Technical Reports, he felt two or three pages would not make a Technical Re and no-one would buy it. Consequently he thought a section of the journal should be allocated to material stating the Division or TC provid responsibility for the material.

Bodmann agreed and said that this should be discu by Council.

TOPICS FOR FORMAL VOTE

Ratification of the new Chairman of TC 1- Physiologically Based System of Colour Specificatio

Bartleson proposed and Ikeda seconded that Dr A L be ratified as Chairman of TC 1-04. This was put the vote and approved unanimously.

TC 1-06 Chromatic Adaptation: C J Bartleson

Bartleson reported that the committee had propos provisional, engineering method for predict corresponding colours with changes in chroma adaption. This method was proposed for testing evaluation. The plan was to publish a short comm report, describing the method, in the CIE Jour That publication would call for reactions experiences in attempting to apply the method. Aft period of approximately two years, the committee w consider responses from the tests and evaluatio Until that time, the committee should remain in st by status.

Bartleson said that one negative vote had been received from the TC. Plaza commented that the letter circulated prior to the meeting had said that the TC vote was unanimous and wanted to know about the negative vote. Bartleson explained that the letter had been sent to Bodmann after the deadline for receiving the letter ballots from TC members at which time he had heard from all but two members. Two weeks later he received the negative vote dated two days before the close of the ballot. The person concerned thought that the proposed method was only one of three that ought to be used.

a) Use of CIELAB applied to other illuminants than D_{65}. Supplement 1 to CIE Publication 15 deals with metameric change with illuminant and is a precedent for the (mis)use of CIELAB in illumination other than D_{65}.

b) Another objection was that the transform was a non-linear one to a chromaticity diagram in which the chromaticities could be shifted and a simpler equation might be used.

Bartleson said that the other members of the TC had considered these alternatives and decided to recommend this document.

Brockes commented that in the first trials carried out by Strocka they were astonished that the Helson-Judd effect was so large. The prediction for a neutral grey sample of 2.5% reflectance under Illuminant A did not agree with visual assessments. He was afraid that the formula was not good even for neutral greys and the method should only be proposed for test. Bartleson replied that the proposed transform predicted the Helson-Judd data quite well but they wanted to see how it worked in practice. There were certain constraints on the luminance factor and 2.5% was 10 times below the lower limit. Brockes answered that 20% was the lower limit for the surround but a sample with 2.5% reflectance was not excluded.

Schanda commented that all the references should be available i.e. the personal communication of reference 3. Bartleson said that Hunt and Pointer should publish their transforms or make an explicit copy to the TC. This could be published as an appendix to the report.

Chalmers was concerned that the voting procedure might give the document a higher status than it deserved. Bartleson replied that it would be published in the CIE Journal for testing and this was initiated by TC 1-06. Although this procedure for publication did not actually require a vote by the Division, Bodmann was looking for Divisional support.

Valberg commented that it was not clear exactly how to compute the chromaticities of complex surrounds and Bartleson agreed that this needed further discussion.

Bodmann said that if the document was approved it should be sent to the Editor for publication.

The document was then proposed by Bartleson, seconded by Plaza and put to the vote. There were 20 in favour, none against and 1 abstention so the motion was carried.

TC 1-03 Models of Heterochromatic Brightness Matching: P K Kaiser

The document prepared by TC 1-03 was intended for publication in the same way as the TC 1-06 proposal. The Division could not indicate support by voting on it as it had not been circulated prior to the meeting. It was agreed that the document should be circulated for letter ballot with the Minutes.

8 CIE CONGRESS 16 - 25 JUNE 1987, VENICE

Bodmann said that the next meeting of the Division would be at the Congress. All TCs should indicate their requirements for meetings within the Congress. He felt that what had been available in Paris was the minimum and pointed out that these meetings, although working meetings, would be public with possibly much higher attendances than in Paris. Halstead pointed out that documents for consideration by the Division would have to be circulated three months in advance. Bodmann stated that TC Quadrennial Reports should be sent to the Associate Directors by January 1987 with copies to him and the Secretary as he had to finalise the Divisional Report 4 months before the Congress. The form of the Congress would be similar to that in Amsterdam with a conference and then technical sessions. Each division would be asked to suggest an invited paper.

9 AIC/CIE SYMPOSIUM ON COLOUR VISION MODELS

Bodmann said that both the AIC and CIE had intended to hold symposia on colour vision models and Hunt, the President of the AIC, had suggested that they be amalgamated. Kaiser had been nominated as the Organiser since he was Chairman of TC 1-03 and was also a member of the AIC Executive Committee.

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CIE Division 2: Physical Measurement of Light and Radiation

Report to CNC/CIE, October 1985

Director: Dr. F. Grum
Rochester Institute of Technology
P.O. Box 9887
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USA

Canadian Member: Dr. A.R. Robertson
Division of Physics
National Research Council of Canada
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Terms of Reference

1. To study standard procedures for the evaluation of ultraviolet, visible and infrared radiation, global radiation, and optical properties of materials and luminaires.

2. To study optical properties and performance of physical detectors and other devices required for their evaluation.

This is a very active Division, with 16 Technical Committees. The Terms of Reference, the name and address of the Chairman and the name and address of Canadian member is given for each TC in Appendix 1 of this report.

A meeting of the Division was held in June 1985 in Paris, France. Appendix 2 of this report is extracted from the minutes of that meeting and gives the current status of each TC's work.

New Technical Committees are being considered to deal with retroreflection, luminescent standards and their measurement, measurement of actinic radiation, reflectance of black materials, linearity standards for UV spectrophotometers, correlation of visual gloss assessment with physical measurement, radiometry of flashing lights, luminous flux measurement of high-pressure sodium lamps, photometry of street-lighting luminaires, selection and use of luminance and illuminance meters, and solar cell intercomparison.

Appendix 1: Terms of Reference of Division 2 TC's

TC 2-01: Measurement of high-pressure mercury-vapour lamps

To complete the report on the international intercomparison of luminous flux measurements on HPMV lamps.

Chairman: Mrs. M. Poppe
Tungsram RT Research Center
H-1340 Budapest, Ph. 556
Hungary

TC 2-02: Measurement of luminous flux

To complete the Technical Report on Luminous Flux Measurements started by TC-1.2.

Chairman: Prof. J. Krochmann
Institut für Lichttechnik,
TU Berlin
Einsteinufer 19, 1000 Berlin 10
Fed. Rep. Germany

TC 2-03: Intercomparison of the measurement of LED's

(To conduct an international intercomparison of the measurement of the luminous intensity of light-emitting diodes).

Chairman: Dr. J. Schanda
Res. Inst. for Technical Physics
Hungarian Academy of Sciences
P.O. Box 76
H-1325 Budapest
Hungary

TC 2-04: Secondary standard sources

To prepare a document dealing with the selection and operation of stable optical radiation sources of various kinds for use as secondary standards. The sources to be covered include tungsten filament lamps, Fluorescent lamps, mercury discharge lamps, deuterium lamps and light emitting diodes.

Chairman: Mr. J.R. Moore
National Physical Laboratory
Teddington, Middlesex TW11 OLW
England

TC 2-05: Definitions of distribution temperature and ratio temperature

To formulate precise, technically useful definitions of distribution temperature, ratio temperature, and related quantities in anticipation of a later intercomparison of measurements.

Chairman: Dr. A.R. Robertson
Division of Physics
National Research Council
Ottawa, Ontario, Canada
K1A 0R6

TC 2-06: Absolute spectral responsivity of detectors

(To conduct an international intercomparison of measurements of the absolute spectral responsivity of silicon photodiodes).

Chairman: Dr. R.L. Booker
National Bureau of Standards
Gaithersburg, MD 20899
USA

TC 2-07: Measurement of gloss

To describe the phenomena involved in the appearance sensation called gloss and identify current practice in the measurement of this attribute.

Chairman: Mr. J.S. Christie
Hunterlab
Reston, VA 22090
USA

TC 2-08: Intercomparison of the measurement of luminescence

Complete data reduction and technical report on the intercomparison on the measurement of the total spectral radiance factor of luminescent samples.

Chairman: Dr. F.W. Billmeyer, Jr.
Rennselaer Polytechnic Institute
Troy, NY 12181
USA

TC 2-09: Intercomparison of the measurement of transmittance

To conduct an international comparison of transmittance measurements on glass filters and to analyse data.

Chairman: Mr. L. Fillinger
Orszagos Meresügyi Hivatal
Nemetvölgyi üt 37-39
H-1124 Budapest
Hungary

Canadian Member: Dr. A.R. Robertson
Division of Physics
National Research Council
Ottawa, Ontario, Canada
K1A 0R6

TC 2-10: Photometry of luminaires

(To prepare a technical report on the photometry of luminaires).

Chairman: Mr. G. Vandermeersch
Laborelec - s3
B-1640 Rhode-St-Genese
Belgium

Canadian Member: Mr. Z.S. Subotich
Certification Division
Canadian Standards Association
178 Rexdale Blvd.
Rexdale, Ontario
M9W 1R3

TC 2-11: Gonioreflectometry of standard materials

To study goniospectrophotometric properties of standard white reference materials for reflectometry including a survey of published data (since 1977) and measurements.

Chairman: Dr. W. Erb
PTB, (Postfach 3345)
Bundesallee 100
3300 Braunschweig
Fed. Rep. Germany

TC 2-12: IEC-CIE joint project on the photometry of thermally sensitive lamps

1. To recommend procedures for the correct measurement of ambient temperature and lamp-wall temperature of vapour pressure controlled lamps.

2. To recommend procedures for the measurement of the luminous flux of lamps at temperatures other than 25°C.

3. To consider the practical problems raised by the long stabilization time (4-16 hours) of certain types of thermally sensitive lamps.

4. To define photometric procedures for lamps (practical ballasts and luminaires taken into account) so that the resulting luminaire parameters (photometric characteristics per 1000 lumen) can be correctly applied by lighting engineers in lighting design calculations.

Chairman: Mr. G. Vandermeersch
Laborelec - s3
B-1640 Rhode-St-Genese
Belgium

TC 2-13: Survey of standard reference materials for transmittance and reflectance

To prepare a report on a survey of reference materials for testing the performance of spectrophotometers and colorimeters with particular reference to the following areas of measurement: diffuse reflectance, 0°/45° radiance factor and Helmholtz reciprocal radiance factors, regular reflectance, regular diffuse and total transmittance.

Chairman: Mr. J. Verrill
National Physical Laboratory
Teddington, Middlesex TW11 OLW
England

Canadian Member: Dr. A.R. Robertson
Division of Physics
National Research Council
Ottawa, Ontario, Canada
K1A 0R6

TC 2-14: Geometric conditions for the measurement of transmittance and reflectance

Preparation of a CIE standard on the measurement of reflectance and transmittance of materials, including turbid media.

Chairman: Prof. J. Krochmann
Institut für Lichttechnik, TU Berlin
Einsteinufer 19, 1000 Berlin 10
Fed. Rep. Germany

TC 2-15(16?): Characterisation of the performance of tristimulus colorimeters

(To study methods of characterising the spectral properties of tristimulus colorimeters).

Chairman: Dr. D. Gundlach
Bundesanstalt für Materialprüfung
Fachgruppe 5.4
Unter den Eichen 87, 1000 Berlin 45
Fed. Rep. Germany

TC 2-16(17?): Recommendations for the integrated irradiance and the spectral distribution of simulated solar radiation for testing purposes

(To update CIE Publication No. 20 whose title is the same as that of the TC).

Chairman: Mr. C.J. Kok
NPRL/CSIR, P.O. Box 395
0001 Pretoria
South Africa

Appendix 2: Current Status of TC Work

(Extracted from minutes of Division 2 meeting, 13 June 1985)

Update from Associate Director Hengstberger (South Africa) and TC Chairmen

TC 2-01, Measurement of HPMV Lamps (Ms. Poppe, Hungary). A meeting was held in Paris on 12 June 1985. The measurements of HPMV lamps have been completed by the participating laboratories. The control measurements by the convening laboratory are now underway. It was decided to publish a final report on the luminous flux measurements, listing the participants but not identifying their results, in the CIE Journal by September 1985. A detailed report which is intended for internal use only will be prepared for the participants by November 1985. It will describe the equipment used by the participants, identify their results, and give the results for spectral distribution and chromaticity coordinates insofar as these were provided. A suggestion was made to continue the work with 250W high-pressure sodium lamps provided by Tungsram. If this is approved, an inviation to participate will be sent to member countries. At the 1983 Amsterdam meeting, 18 laboratories indicated an interest to join such an intercomparison. The lamps will be ready for shipment after control measurements have been made. They can be sent to the first participants by the end of 1985.

TC 2-02, Measurement of Luminous Flux (Prof. Krochmann, FRG). The technical report has been edited and will be sent to Division 2 members for balloting.

TC 2-05, Definition of Distribution Temperature (Dr. Robertson, Canada). A meeting of this TC was held on 12 June 1985 in Paris. The Chairman distributed copies of the first draft (1985-05-14) of the TC's report to those who had not already received it. The consensus of the meeting was that ratio temperature should not be defined as an absolute quantity in its own right, but rather as a null method for equalizing the distribution temperature of lamps of the same type. It was agreed that the wavelength range for a full evaluation of distribution temperature in the visible range should be 360-830nm, but that 380-780nm or even 400-700nm would often suffice in practice. Mr. Moore (UK) pointed out that the relative spectral power distribution of tungsten filament lamps with a clear glass envelope typically deviates from that of a full radiator by 5% at 400nm, and that luminance standards with an integrating sphere and/or opal-glass diffusor could deviate by 15%. It was agreed that written comments should be sent to the Chairman by 31 July 1985. The Chairman will then prepare a second draft by 31 December 1985 with a view to completing the Committee's work in 1986. The final report will be a technical report recommending a definition of distribution temperature that is compatible with, but more precise than, the existing one. Because of the brevity of the report, it was suggested to publish it in the CIE Journal rather than as a technical report.

TC 2-06, Spectral Responsivity of Detectors (Mr. Booker, USA). There have been delays in getting this intercomparison started. [Note: Subsequent to this meeting, Dr. Hengstberger met with Dr. Zalewski from the National Bureau of Standards (USA) in order to establish a clear task definition and time table for this TC. The results of these discussions are summarized in Appendix IX.]

TC 2-10, Photometry and Goniophotometry of Luminaires (Mr. Vandermersch, Netherlands). The task of this TC is to prepare a technical report on the photometry of luminaires. The report will contain a general section covering all types of luminaires, as well as sections dealing with special applications (indoor luminaires, outdoor luminaires, and high-frequency operated luminaires). TC 2-10 has met in June 1984 in Berlin and in March 1985 in London. At the 11 June 1985 meeting in Paris, a complete draft (4th revision) with modified sections on "photometric apparatus" and "inventory of errors" was examined. The document obtained general approval, and it was decided to present a final version to all TC members before the end of 1985. This final version will take into account all written comments received by 30 September 1985. Unless fundamental objections are raised, there will be no further meeting of the TC this year.

TC 2-12, IEC/CIE Project on Photometry of Thermally Sensitive Lamps (Mr. Vandermeersch, Netherlands). This TC was established in response to a request made at the 1982 IEC General Meeting in Wiesbaden. Its purpose is to prepare recommendations for flux measurements on thermally sensitive lamps which are to be appended to IEC Standard #81, "Fluorecent Lamps." In conclusion of this task two documents were submitted at the 1985 IEC General Meeting in Montreal. They have been accepted and will now be circulated as Central Office Documents under the IEC six-months rule. If approved, they will be published as an Appendix to IEC Standard #81. A motion carried to dissolve this TC when this approval has been obtained and to appoint Mr. Vandermeersch as Division 2 liason to IEC.

TC 2-16, Characterization of the Performance of Tristimulus Colorimeters (Dr. Gundlach, FRG). The TC discussed different methods for describing errors resulting from approximations to color matching functions. No consensus was reached. After this meeting, a questionnaire will be sent to all TC members in order to resolve the problem. Following that, a second draft of a supplement to the CIE photometer report can be completed in six months.

Technical Update from Associate Director Hsia (USA) and TC Chairmen

TC 2-07, Gloss Measurement (Mr. Christie, USA). The final draft of the technical report has been approved by Division 2. Suggestions by Drs. Robertson (Canada) and Schanda (Hungary) have been included in the revised draft submitted for publication. Dr. Hsia proposed to abandon the committee and to establish a new TC, "Correlation of Visual Assessment of Gloss and Physical Measurement of Gloss." This proposal was approved by Division 2. The formal establishment of the new TC is awaiting approval by the CIE Technical Council in September 1985.

TC 2-08, Luminescence Intercomparison (Dr. Billmeyer, USA). The TC met in Paris on 12 June 1985 with five members and six guests present. It was decided to publish all data tables in a CIE report, and not in the CIE Journal. The data tables are useful for readers who would like to perform further calculations. TC members approved the final draft. The chairman will make editorial changes and then submit the draft for Division 2 balloting. The Japanese intercomparison of spectral radiance factor measurements on luminescent materials was reported to have similar results as that of this TC.

TC 2-09, Transmittance Intercomparison (Mr. Fillinger, Hungary). A discussion of this TC took place on 12 June 1985 between Drs. Billmeyer, Hsia and Schanda. The results of the intercomparison are to be published in the CIE Journal. Dr. Schanda will ask Mr. Fillinger re-write the report for this purpose.

TC 2-11, Gonioreflectometry of Standard Materials for Reflectance (Dr. Erb, FRG). The chairman sent a status report restating his recommendation to disband this TC because of the dependence of the gonioproperties of materials on surface morphology and sample preparation. Others stated a need to maintain the committee, and suggested to change the terms of reference so that surface conditions are included as a measurement parameter.

TC 2-13, Survey of Reference Materials for Transmittance and Reflectance (Mr. Verrill, UK). The final draft of a technical report has been completed by this TC. The Chairman will revise it before submission for Division 2 balloting.

TC 2-14, Measurement of Reflectance and Transmittance (Prof. Krochmann, FRG). The TC met on 12 June 1985 in Paris with 21 members and guests present. Dr. Geotti-Bianchini (Italy) reported on a draft of Chapter 7, "Measurement of Regular Reflectance." Dr. Gundlach (FRG) remarked on measurements of luminance factor and coefficient. Prof. Morren (Belgium) reported on drafts of chapters on "Absolute Methods for Reflectance Measurements" and "Measurement Errors and Corrections". It was decided to include spectral measurements in the report. Other topic discussed were: advantages and disadvantages of single and double beam instruments, standards for reflection measurements, preparation of PTFE (Halon) powder, and illuminants for reflectance and transmittance measurements. Prof. Krochmann will prepare a first draft of the report by 31 August 1985. The next meeting of the TC will be in Berlin, 23-24 October 1985.

Technical Update by Associate Director Rotter (Austria) and TC Chairmen

TC 2-03, LED Measurement Intercomparison (Dr. Schanda, Hungary). One set of LED's is in the USA. A second set was measured by Mr. Moore and is now with Dr. Foerste (FRG). A third set will be sent to other laboratories in October 1985. Technical problems of the measurement of the LED's were discussed in Paris on 12 June 1985.

TC 2-04, Secondary Standard Sources (Mr. Moore, UK). The fourth draft of the document prepared by this TC has been completed and was distributed in May 1985 to the members of the TC and Division 2.

COMMISSION INTERNATIONAL DE L'ECLAIRAGE (C.I.E.)

CANADIAN NATIONAL COMMITTEE

Report to CNC/CIE Annual Meeting
National Research Council
Physics Building, Ottawa
October 23, 1985

Divions 3: Interior Environment and Lighting Design
Terms of Reference

1. To study and evaluate visual factors which influence the satisfaction of the occupants of a building with their environment, and their interaction with thermal acoustical aspects, and to provide guidance on relevant design criteria for both natural and man-made lighting.

2. To study design techniques, including relevant calculations, for the interior lighting of buildings, incorporating the findings and those of other C.I.E. division in lighting guides for interiors in general, for particular types of interiors and for specific problems in interior lighting practice.

Officers:

Directors:	Dr. E. Barthes Centre Technique Mazda 11 Quai de Dion Bouton F-92818 Puteaux Cedex, France
Canadian delegate	Robert E. Jennings, Lighting Sciences Canada Ltd. 480 A Dutton Drive Waterloo, Ontario, Canada N2L 4C6

TECHNICAL COMMITTEES

3.01	Discomfort glare from small and large sources	Dr. H. Einhorn Chairman	9 Bloemendal Road Mowbray 7700, South Africa
		Dr. W. K. Adrian Canadian Member	University of Waterloo School of Optometry Waterloo, Ontario. N2L 3G1 (519) 885-1211 Ext 3777

This committee has developed a program for study of small sources first, with larger sources later. The first task was to explain and reconcile the conflict between the prediction of intolerable glare from small bright sources such as bare filament lamps and their wide acceptance in practice. The subject is also of relevance to HID luminaires.

Most of the work is being handled by correspondence between members.

The committee has met twice, first in Cambridge, on April 18 and 19, 1984 and second, in Lausanne, on September 12 and 14, 1985. Dr. Adrian attended the second meeting.

3.02	Deliberate variability on environmental conditions.	Dr. G. Brundrett Chairman	Electricity Council Research Centre Capenhurst, Chester, CH1 6ES England.

I have not received any correspondence from this committee.

3.03	Selection for illuminances without specified ranges	Dr. R. Begemann Chairman	Phillips International BV Lighting Div. ED2 NL 6500 MD Eindhoven Netherlands
		Mr. I. Pasini Canadian Member	Public Works Canada Riverside Drive Ottawa, Canada K1A 0M2 (613) 998-8166

This committee has produced its first proposal for a system for the selection of the illuminances from the ranges specified in the C.I.E. Guide on Electric Interior Lighting.

Most of the work of this committee is also carried on by correspondence. I did have the opportunity of meeting with the Chairman and discussing the committee's work program in June 1985.

3.04	Subjective response to lighting and shading control systems.	Mr. T.K. McGowan Chairman	General Elec. Company Nela Park Cleveland, Ohio 44112
		Mr. R.E. Jennings Canadian Member	Lighting Sciences Canada Ltd. 480A Dutton Drive Waterloo, Ontario. N2L 4C6

I have not received any correspondence on this committee, however, I was asked by the chairman to be a member of his committee about a month ago and I agreed to do so. I understand the committee will become more active in the future.

3.05 Industrial lighting and safety at work

Prof. H. Henschel
Chairman

Siemans A.C.
Postfach 1520
D8225 Traunreut
Federal Republic
of Germany

No Canadian Member

This committee's assignment, as indicated, is to study and recommend levels of illuminance related to (industrial) work, safety and emergency.

I have received copies of one or two letters only, however, I understand the committee met in Lausanne on September 13 and undoubtedly minutes of that meeting will be available shortly.

3.06 Methods of evaluating the interior visual environment

Mr. J.L. Richard
Chairman

Compagnie des Lampes
Centre Technique
Mazda
92818 Puteaux Cedex
France

No correspondence has been received from this committee.

The next three technical committees are very active and of prime interest to Canada because of their research work and practical approach for coordination world studies and collecting technical data.

3.07 Collection of daylight

Mr. D. Kendrick
Chairman

Dept. of Architecture
University of Adelaide
Box 498 G.PO
Adelaide DS5001
Australia

Mr. R.E. Jennings
Canadian Member

Lighting Sciences
Canada Ltd.
480A Dutton Drive
Waterloo, Ontario.
N2L 4C6
(510) 746-3140

This technical committee is concerned with a Preparation of a Programme of Work for International Collaboration in Daylight Availability Measurements.

During the past several years, considerable interest has developed in several countries for international collaboration and standardization in the measurement, recording, archiving and transferring of data, etc. on daylight availability. It is expected these several countries will actively support the developing international program leading to the proclamation of an International Daylighting Year in 1989.

The committee has held meetings in Cambridge (1984), Sweden (1985) and Lausanne in September 1985. In addition several members have met where the opportunity existed in Australia and Japan.

There is no time to review the overall work of this committee however, I would like to conclude by saying Canada unfortunately, has not supported the worth of these three committees. First, because Canada does not have a solar energy program (daylighting) and consequently lack of expertise in the required areas and interested individuals to serve on these committees.

Hopefully, the transfer of the Solar Energy Program to E.M. & R. may improve the present situation.

3.08 Collection of meterorological data for application to daylight design

Mr. D. Dogneaux, Chairman
Institut Royal Meteorologique
Ave. Ciroulaire 3
B1180 Bruxelles
Belgium

Mr. R.E. Jennings
Canadian Member
Lighting Sciences Canada Ltd.
480A Dutton Drive
Waterloo, Ontario.
N2L 4C6
(519) 746-3140

This committe has increased its activity in the past two to three months. I have copies of correspondence and meterorological data for several countries.

The committee is seeking international coordination in collecting data and is anxious to develop standards for collecting, recording, and transferring such technical information between member countries.

3.09 Average sky as design

Dr. K. Matsuura
Chairman
Department of Architectural Eng.,
Kyoto University
Kakyo-ku, Kyoto 606
Japan.

Mr. R.E. Jennings
Canadian Member
Lighting Sciences Canada Ltd.
480A Dutton Drive
Waterloo, Ontario.
N2L 4C6
(519) 746-3140

This committee has also become very active over the past three months. Meetings have been held in Cambridge, Lausanne, Japan, and Australia.

Time prevents my giving a complete overview of this committee. Its work however, relates very closely with the work of the two previous committees, i.e.: 3.07 and 3.08.

3.10 Maintenance of Lighting Mr. L. Bedocs

Thorn EMI Lighting Ltd.
Jules Thorn Lighting Labs.
Lincoln Road
Enfield, Middx. EN1 1SB
England.

This committee has only recently started to work on its assignment. I hope to appoint a Canadian member very soon.

Mr. Chairman:

I would like to conclude my report by saying, there is an urgent need for individuals with the necessary expertise to serve as Canadian members on these technical committees.

There is also an urgent need for members to serve in equivalent Canadian sub-committees.

If there are any persons present today who would like to serve on these committees, I would be very happy to discuss the work of any of these committees in detail with them.

ANNUAL REPORT TO CNC/CIE
DIVISION IV: LIGHTING AND SIGNALS FOR TRANSPORTATION

Canadian Member of Division IV:

Professor Brian W. Tansley
Department of Psychology
Carleton University
Ottawa, Ontario, K1S 5B6
Telephone: (613) 564-7531

Introduction:

As you will see from the following, CIE Division IV is a large Division. It was amalgamated from a variety of the old Technical Committees including the ones relating to road lighting applications, vehicle lighting applications and visual signals. Since the CIE reorganization in 1982, as the Division IV member for Canada I have tried to attend as many of these meetings as is feasible in a limited time span. Especially in the areas of traffic and road engineering, I would appreciate additional input. If you might be interested in being on the CNC committees or the specific technical committees described below, please write or telephone me at the above address. The more input to these committees from Canada the better represented our interests will be in CIE affairs (and, ultimately, in the standards of the many organizations that base their decisions on CIE work).

I am willing to send you as much information as you need, so please contact me if you want some or would like to involve yourself in the CNC/CIE technical committee that interests you.

The Division has been quite active this past year. At the annual meeting in Washington, D.C. in July of 1984, several new technical committees were established and these and other interest groups (designated by a "reporter"--rather than a technical committee chairman and formal committee per se) have been involved in CIE work on a number of issues falling under the general category of lighting and signals for transportation. Although most of the Division work relates directly to signals and signs for automotive traffic control and issues related to road surfaces such as road markings and roadway lighting applications other areas of interest to the Division include signals for marine navigation, on-board aircraft signals and markings, railway signals, as well as on-board automobile headlights and signals, pedestrian conspicuity, driver performance and other related topics.

I attended the 1985 annual meeting of Division IV, held in Lausanne, Switzerland, September 9-16, in conjunction with the 1985 Lux Europa conference. Also in attendance from Canada at some of the technical committee meetings were Mark Rea, (NRC) and Dr. Werner Adrian (University of Waterloo). The following is a brief summary of the various technical committees, reporters; their terms of reference, working programs and chairmen.

A. TECHNICAL COMMITTEES:

T.C.4.01: Light Signals for Traffic Control (Chairman, Dr. D. Schreuder, Netherlands; Canadian Member, B.W. Tansley)
The terms of reference of this committee was to consider the issues of light signals for Road traffic control and to produce a technical report on this topic. This was done several years ago and we continued with the committee in order to produce a second document that was a shorter version. The final draft of this shorter version was approved during the technical committee meeting in Lausanne and also approved by Division. The committee is to be disbanded as the work for which it was struck is now complete. I have copies of these reports if anyone is interested.

T.C.4.02: Road Lighting as an Accident Countermeasure (Chairman, A. Fisher, Australia (no Canadian T.C. member)
The terms of reference of this committee are to consider the use of road lighting as an accident countermeasure (basically, does providing road surface lighting in various places on the roadway increase safety?). The T.C. is charged with the production of a report on this topic, which includes an extensive literature survey of research on the topic. The final technical report is expected within the coming year.

T.C.4.03: Urban Lighting (Streets and Walkways)(Chairman: R.Yates, South Africa, no Canadian Member).
The terms of reference of this committee are to (briefly) consider issues relating to the specification of Urban Lighting for use by town planners, etc. Some measurement details are proposed to be included and the report should be ready within the coming year.

T.C.4.04: Road Markings (Chairman: G.Schreiber, West Germany, no Canadian member)
This committee has convened over the past 5 years to consider issues relating to the measurement and specification of roadway markings. They have recently completed their technical report, which is now under consideration for acceptance by voting in the Division.

T.C.4.05: Signs (Chairman: P.Walraven, Netherlands, Canadian Member, B.Tansley).
The terms of reference of this committee are to consider the use of reflectance-based signs in road traffic applications.

T.C.4.06: Vision Through a Perturbed Atmosphere (Chairman:P.Blaise, France, Canadian Member: Mark Rea, NRC).
The terms of reference of this committee include the consideration of visibility factors in perturbed atmospheres. This was, up until this year's meeting, taken only to mean "outdoor" perturbations such as fog, sleet, snow, rain smog etc. However, visibility in indoor smoke is now also to be considered. No information is available at this time regarding the production of a technical report.

T.C.4.07: Simple Design Methods for Road Lighting (Chairman: H.Vermeulen, Netherlands, no Canadian member).
Terms of reference are assumed to follow the title, no other information available at this time.

T.C.4.08: Tunnel Lighting (Charman: W. Van Bommel, Germany, no Canadian member, but there should be! Anyone interested?)
Terms of reference include considerations of the optimum lighting patterns for tunnels and tunnel approaches and issues relating to same. A technical report is in the works but I don't have the expected date of production as of yet.

T.C.4.09: Fundamentals of the Visual Task for Night Driving (Chairman: R.Schwab, U.S., Canadian member: B.Tansley)
This is a new committee, struck last year in Washington, D.C. The committee's terms of reference include considerations of the visual task for night driving, culminating in the production of a technical report in two years. As at least some of the visual tasks of night driving are different from those used during daylight driving, various reference reports (such as CIE 19/2 have to be modified to be useful. The task has been broken into a variety of subtasks and each is proceeding independently. One of the most important issues in this committee's deliberations is the issue of what constitutes an appropriate photometric measurement that will correlate well with visibility for nighttime roadway surfaces? This topic included discussion and criticism of a rather lengthy and detailed propossal from H.R.Blackwell (based on the 19/2 formaulations). Alternatives to this proposal were also discussed and considered along with Adrian's model. I have the details of the committee's work if anyone wishes them.

T.C.4.10: Automobile Lighting Systems (Chairman:H. Schmidt-Clausen, Switzerland, no Canadian member) Terms of reference of this committee relate to the specification and design of automobile lighting systems--in particular, headlighting systems. A number of new designs are now being considered in Europe that attempt to optimize illumination in the parts of the field of view most necessary for nighttime roadway viewing (while at the same time not blinding the oncoming traffic...) I have some details of the committee's deliberations from their last meeting...

(Other Technical Committeess that have been recently retired:)

*Properties and uses of Retroreflection at Night (Chairman: M. Dutruit, Switzerland, Canadian Member, B.Tansley) I have final technical report accepted by Div.

*Surface Colours Chairman:unknown at present, no Canadian member) This committee has been retired for some time but only recently published its technical report. I have a copy...

*Effective Intensity of Flashing Lights (committee disbanded for lack of interest (but not lack of needof further work!)

B. REPORTERS

The Division assigns one member as a Reporter where the monitoring of a topic is of interest to the members--but where insufficient interest or technical knowledge exists to warrant a formal technical committtee. The Reporter's task is to keep abreast of the developments of an area and to make them known to the members at the annual meeting.

Visual Responses to Flashing Lights (C. Mortimer, England.)

The topic is of relevance to marine navigation and emergency vehicle conspicuity. Questions of the relationship between the lumninous intensity of a flashing light as a function of time (i.e., the waveform of the pulse) and its percieved flash strength (i.e., its visibility and conspicuity) are covered. This topic relates to a older CIE photometric document on the effective intensity of flashing lights--the hope is that an upgrade will be possible with additional conceptual input from the physiological side of vision research to help predict visual responses to various types of flashing lights. Not much was done on this problem this past year as most of the Division is in the traffic research area and not in either vision or transportation research where this problem is of interest.

Road Surfaces and Lighting (W. Kebschull, W.Germany)

The interaction between road surfaces and road lighting is of concern here. e.g., how photometric characteristics of road surfaces change with road surface specularity, etc. No progress report is available at this time.

Effects of Complex Backgrounds on Visibility (B. Cole, Australia)

The terms of reference of this Reporter is to monitor the literature on research relating to the question of the role of complex visual backgrounds on roadway visibility and driver performance. No report was made at the Division meeting this year. The Reporter has an ongoing research interest in this area.

Daytime Running Lights on Vehicles (K. Rumar, Sweden)

Research on the use of daytime running lights is of interest to northern countries where a substantial amount of driving is done in low-level daylight. The use of running lights as an accident countermeasure is also considered.

Visual Signalling and Lighting in Harbours and Waterways and Off-shore structures (C.Mortimer, England)

Lights used for signals on offshore structures for various applications, including helicopter landing pads. (Relates to the visibilityu, conspicuity and localizability of various signal lights.

No progress was reported in the annual meeting.

Interference with Astronomical Observations due to Street Lighting (D. Schreuder, Netherlands)

Modern city lighting generates significant light "pollution"

by illuminating the sky. This is achieved through reflection of light from illuminated objects, by direct illumination of the atmosphere and by backscatter from the atmosphere from lighting installations. This light interferes with astronomical observations in the visible spectrum. Various solutions are considered.

Cycle and Moped Lights (K. Sorensen, Denmark)

Retroreflective marking and lighting of cycles and mopeds for visibility and conspicuity are considered.

Solid State Signal Lights (B. Tansley, Canada)

At last year's Divisioni IV meeting in Washington, D.C., I introduced the topic of solid state signals to cover new and emerging applications that use L.E.D. and other solid state devices for visual signalling purposes. After a report on some of the work in Canada on the use of LED technology in railway trackside visual signals and interest expressed by a number of other countries on this topic, Solid State Signal Lights has been made into a Technical Committee. I have been designated Chairman and will be working on the terms of reference and establishment of the committee membership within the next few months. Division members from France, Netherlands, U.S.A. and Japan have volunteered to be committee members. CNC/CIE members or others interested in this topic are most welcome to be on the committee. Please contact me as soon as possible.

Next Division IV Annual Meeting:

The next Division IV meeting will be held in Budapest, Hungary, in September of 1986.

THE CANADIAN NATIONAL COMMITTEE

OF

INTERNATIONAL COMMISSION ON ILLUMINATION (CNC/CIE)

DIVISION 5 - "EXTERIOR LIGHTING"

REPORT: OCTOBER 23, 1985 - OTTAWA

1. "Division 5" in Canada is being restructured in order to conform to the general/international structure.

   During the fourth quarter of 1985, recruiting T.C. participants will be carried out. The "target" list of the T.C.'s is as follows:

TC5-01:	Underground Mine Lighting
(TC5-02:	Underground Lighting Measurements)*
	(*Final Text/draft completed)
TC5-03:	Open Cast Mining
TC5-04:	Glare in Outdoor (Area) Lighting
TC5-05:	Lighting for Sport Events for CTV Broadcasting
TC5-06:	Decorative Lighting for Exteriors
TC5-07:	Lighting of Off-shore Gas and Oil Rigs (New TC)

   The list of the participants will be compiled and forwarded to the President of CNC/CIE.

2. The last meeting of "Division 5" was held in York (U.K.) October 1, 1984.

   The Report on this meeting appeared in the CIE Journal, Volume 3, No. 2 (Dec. 1984) issue. (Please refer to enclosed copy.) The meeting was not attended by Canadian delegate(s).

3. Mr. R.C. Aldworth relinquished the post of Director of "Division 5", as he has been appointed "Vice-President Publications"; consequently a new Director has to be appointed. Letter-ballot No. 3 was issued (Sept 1985), proposing the appointment of Mr. W.J.M. van Bommel (NDL) as Division Director. Canada approved the proposal.

4. Next "Division 5" meeting is scheduled for February 10-12, 1986 in Houston, Texas.

George Szeker
"Division 5" - Canada

Att'd

Report on the CIE Division 5 'Exterior Lighting' meeting, York (U.K.), 1 October 1984

G. Hietbrink

On the eve of the Diamond Jubilee Conference of the IPLE at York University about 25 members of CIE Division 5 and representatives of various Technical Committees met for the second time under the effective chairmanship of R. Aldworth, the Division Director. Thanks to the thorough preparations of Division Secretary R.A. Hargroves it was possible to "handle with care" (but without waste of time) many inevitable agenda items such as the approval of minutes of previous meetings.

The most important topics raised at the meeting were:

1. A technical report *Lighting for Swimming Pools*, prepared by the former TC-4.4, is now ready for publication: it has been voted on, finished and handed over to the CIE Editor, A.M. Marsden.
2. Another report ready for publication is *Guide to the Lighting of Exterior Working Areas*, prepared by the former TC-4.5. It was decided, however, in York to omit from this report some paragraphs and recommendations on glare. It is expected that TC 5-04 (Glare in outdoor areas) will finish its work within a reasonable time. Division 5 considers it unwise, therefore, to take now a stand on glare which might be in contradiction with the work of TC 5-04 and cause confusion. The members of the former TC-4.5 will be informed accordingly: the report will be published with a reference to the forthcoming report on glare of TC 5-04.
3. Before the York meeting a postal ballot took place on the final draft of *Guide for the Photometric Specification and Measurement of Sports Lighting Installations*. It was approved by an ample majority: a summary of comments from various countries on this report was discussed and the meeting came to an agreement, so this report also can now be finished for publication.

After these rather satisfying subjects, attention was paid to a stock-taking of the progress of the working programme.

It became clear, that TC 5-02 *'Underground Lighting Measurements'* (chaired by Dr.Weis) has a final draft ready for postal ballot. TC 5-04 *' Glare in Outdoor Areas'* (chaired by Ir. van Bommel) expects to finish its work during this quadrennium. The working programme comprises: factors influencing glare, a basic glare formula, simplified glare formulas, simplified glare formula approximations, choice of observers positions and recommendations for glare restriction limits for various application fields. TC 5-05 (chaired by C.H. Zieseniss) finished the first draft of a report *Lighting of Sports Events for Colour TV Broadcasting*. This draft was discussed during the meeting and suggestions for completion were made.

TC 5-06 (chaired by J. Prieur) has come to an agreement on the range of subjects to be treated in its report *Decorative Lighting for Exteriors*. After all this good news it was somewhat disappointing to hear that no information had been received from TC 5-01 *'Underground Mine Lighting'* (Chairman: Dr. Peretiatcowicz), nor from TC 5-03 *'Open Cast Mining'* (Chairman: M. Whitehead).

The last part of the meeting was spent on the evaluation of the Reporters' comments.

Starting from a report of G. Hietbrink on *The Lighting of Off-shore Gas and Oil Rigs* it was decided to set up a new technical committee to prepare a technical report on this subject. A separate letter will be sent to CIE member countries to nominate members for this new committee.

After an explanation by Prof. Di Fraia of his report on *Outdoor Emergency Lighting*, it was suggested that an extensive article on this subject, preferably published in the CIE-Journal, could be a useful contribution to a discussion on whether and how this difficult subject should be treated by CIE.

The next meeting of Division 5 will be held in 1986; the venue will be decided in due time, but 6-monthly letters from the Division Director will provide information and stimulate work in the various technical committees.

CANADIAN NATIONAL COMMITTEE/INTERNATIONAL COMMISISION ON ILLUMINATION (CIE)

Report on Division 6 - Photobiology and Photochemistry

M.J. Tsujita

The objective of this division of CNC/CIE is to study and evaluate the effects of optical radiation on biological and photochemical systems (exclusive of vision) and more importantly in Canada, foster the terms of reference set forth by the Canadian National Committee (CNC) which are as follows:

a) to promote, within Canada, international programs in light and lighting and Canadian participation in international activities sponsored by the CIE so as to ensure maximal benefits to Canada;
b) to promote, within CIE, international activities which are relevant, or of special interest, to Canada and to coordinate all aspects of Canadian participation in discussion and dissemination of the results of such activities;
c) to formulate Canadian positions with respect to CIE activities and to advise NRC on Canadian participation and on the activities of the CIE and of the CNC/CIE;
d) to act as a channel of communication among CIE, NRC, Canadian scientific societies, scientists and Canadian industry.

The director of Division 6, CIE is:

Lucia Robitani Ronchi
Instituto Nazionale di Ottica
6 Largo Fermi
50125, Florence, Italy
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Division 6 - Photobiology and Photochemistry consists presently of 11 Technical Committees (TC). Some activities of the committees are summarized from reports presented at the third meeting of CIE Division 6 held in Paris, France, June 10-11, 1985.

TC6-01 **State-of-the-art report on actinic effects on man.**
Chairman, Ferenczi (Hungary) reported that letter ballot distributed following the Vienna meeting resulted in a favourable response in accepting the document on this topic. The document will be revised by the editorial board.

TC6-02 **Reference erythema action spectra.**
Chairman, A.F. McKinlay (Great Britian).
A proposal for the reformulation of the CIE Standard Erythemal curve was discussed. It was agreed that the chairman should complete the document for ballot approval.

As you can see, Division 6 covers a very wide area of biology and chemistry where light and lighting can be influential to mankind. It is therefore, most important that as manufacturers, installers, researchers and users of light in our environment and lifestyle, we keep abreast of new information and expedite the dissemination of this knowledge. I will endeavour to do my part in this role for Division 6.

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Groupe de recherche sur l'éclairage de l'environnement
Environmental Lighting Research Group

ANNUAL REPORT FOR DIVISION 7: GENERAL - October 23, 1985
****
Submitted by Robert White, Canadian member of the Division:

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Einhoven
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J. Svehla
CSR

Report on the economic benefits of lighting:

A. B. de Graaf
Phillips Light and Design Center
Emasingel gebouw EM3
Einhoven
NETHERLANDS

Lighting education for architects:
Gabor Debreczeni
A Magyar Tudomanyos
Akademia Vilagitastechnikai
Bizottsaga
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This Division is an umbrella group that includes those issues that do not easily fit under the other Divisions of the CIE or that are new or require short term ad hoc study groups. Current topics before the Division are shown above with the responsible chairpersons.

A meeting of Division 7 was held in Lausanne on September 11 and 12, 1985. Alas, I was not present at the meeting and minutes have not been received as yet. The agenda included reports of TC-7.01 - TC-7.05, discussion of CIE Journal articles, membership and technical programmes.

A final version of "Terminology" has not been published to the writer's knowledge although draft versions have been in circulation for some years. The present version is dated 1970.

I have received no correspondance since last year on vocabulary, sources and glare(s), development of lighting report and the report on the economic benefits of lighting. A letter has been sent inquiring about the status of these items and the results will be reported to the CNC Secretary.

2364 avenue Regent, Montréal, Québec H4A-2R1 tel. (514) 487-5809

A meeting was held at York, UK in Oct., 1984 for TC-7.05.
The terms of reference of TC-7.05 are "to provide information to improve the lighting education for professions which are responsible for lighting design".

The working programme is to improve the lighting education of architects, to find out which professions are responsible for lighting design in each country and to report the results of this work. The working committee also put together lighting syllabuses for various disciplines and a bibliography on the basis of the results in connection with SG-1 which were to be ready by the Sept '85 meeting.

Dr. Debreczeni seems intent on continuing the survey of vision and lighting in various countries at the high school level. Its not at all clear how the information is to be used and, if the past survey is any guide, whether the results will have an effect on lighting education. Of particular relevance are the efforts of the IESNA to educate lighting teachers at seminars during the summer. Mr. Ivan Pasini, PWC attended the recent seminar and can be contacted as to its effectivness.

I would appreciate receiving copies of lighting course notices and programmes for short courses, night courses and the like at whatever educational level. It is my impression that there is an active, if uncoordinated, programme of lighting courses for professional development sponsered by professional organizations and governments across the country. One question we might ask is whether coordination of these efforts is required and if so what type? Those interested should send their ideas to me.

Agenda 8 cont

TECHNICAL UNIVERSITY OF NOVA SCOTIA

Faculty of Architecture

SEMINAR ON

LIGHTING DESIGN

FOR INFO

November 14-15, 1985
TUNS Campus
Halifax, Nova Scotia
(Revised October 7, 1985)

DESCRIPTION

The course will present an overview of the basic requirements of illumination design and its application. On completion of the course the student will be able to produce a lighting design and analyze an existing lighting design.

This course is offered in conjunction with the (Illuminating Engineering Society of North America, Bluenose Section).

OBJECTIVES

* To present a knowledge of artificial and natural light and its relationship to sight, its physical laws and its control and measurement.

* To review electric light sources and their characteristics

* To present design techniques for architectural lighting

* To do cost benefit analysis as it applies to lighting

WHO SHOULD ATTEND

If you are involved in lighting design as an architect, interior designer, or engineer, or if you are participating in design as a technologist, design draftsperson, salesperson, or distributor, come and join us in Halifax.

BENEFITS TO YOU

* A better knowledge of the fundamentals of lighting

* A knowledge of illumination design

* A knowledge of lighting application

FORMAT

The seminar material will be covered by lecture with ample opportunity at the end of each lecture for questions and answers. Participants will solve problems under guidance of the instructor and will work on a project which will be presented to the class. Participation in discussions, design and analysis will be encouraged.

PROGRAM OUTLINE

8:00	Registration
DAY I	John Lynes and Peter Manning
8:30	LIGHTING FOR DESIGNED APPEARANCE
9:30	PLANNING DESIGNED APPEARANCE
10:30	Coffee and Conversation
11:00	LIGHTING DESIGN EXERCISE Participants to develop ideas for the relighting of a TUNS building
12:00	Luncheon Break
1:30	LIGHTING DESIGN IN THE CONTEXT OF THE DESIGN OF THE WHOLE BUILDING
2:30	RATIONAL APPROACH TO COLOR
	Coffee And Conversation
4:00	LIGHTING EFFECTS
5:00	Adjournment
DAY II	Robert White
8:30	DESIGN TECHNIQUES - USE OF INFORMATION AVAILABLE TO THE DESIGNER
9:30	DESIGN TECHNIQUES - THE USE OF MODELS
10:30	Coffee and Conversation
11:00	DESIGN TECHNIQUES - EFFECTIVE CALCULATIONS AND RULES OF THUMB
12:00	Lunch Break

1:30	WORKSHOP II Refinement of Conceptual Lighting Design for a Simple Project including Energy Considerations
2:30	PRESENTATION OF PROJECTS BY PARTICIPANT GROUPS
3:30	Coffee and Conversation
4:00	CHECKLIST FOR EVALUATING LIGHTING DESIGN
4:45	SUMMARY AND WRAP-UP
5:00	Final Adjournment

COURSE LEADERS

Robert White, M.Arch., O.A.Q. has an interest in many lighting problems as a lighting designer for restaurants, stores, museums and offices. He has received an engineering degree at Cornell and a M.Arch. degree from Yale. He has taught at the Centre for Building Studies, Concordia University and has done research in energy conservation in daylight and solar control. Currently he is doing on site investigations of the work of the architect Louis Kahn supported by the Canada Council and is the author of numerous publications.

John Alexander Lynes obtained an M.A. from the University of Manchester where he submitted his Thesis on Architectural Implications of the Luminaire Domain. He held a Fellowship in the Illuminating Engineering Society (U.K.). Mr. Lynes recieved two awards from IES Walsh-Weston for the best paper on lighting research in 1966 and 1971. In the area of "Lighting", Mr. Lynes has published books and many research papers.

Peter Manning qualified as an architect at the Architectural Association in London and later obtained a doctorate from the Faculty of Engineering Science at the University of Liverpool, in England. He has been a professor at TUNS since 1968. In recent years his professional interests have focused upon the methods of ~~waking~~ working of multi-professional groups responsible for managing the inception, including building design, of large projects.

GENERAL INFORMATION

TIME AND LOCATION

The course will be held on the TUNS Campus on October 30-31, 1985, from 8:30 a.m. to5:00 p.m. Registration will begin at 8:00 a.m. on October 30, 1985. Room location can be confirmed by contacting the CED Division.

TUITION FEE

The registration fee of $295 is tax-deductible and includes all materials, registration, and coffee.

TO REGISTER

Complete the attached registration form and mail with fee to:

Continuing Education Division
Technical University of Nova Scotia
P. O. Box 1000
Halifax, Nova Scotia B3J 2X4

OR

Call Simone LeBlanc: (902)429-8300 Ext.362/363

PARKING

The TECHNICAL UNIVERSITY OF NOVA SCOTIA is a downtown campus, and our parking facilities are extremely limited. Therefore, we regret that we cannot offer parking to participants in on-campus courses or seminars between the hours of 8:30 a.m. and 4:30 p.m. For your information, a municipal parking lot is located two blocks west of the University, where daily parking can be arranged. The University solicits your understanding for any inconvenience this policy may cause you.

INFORMATION

For further information, please contact Professor Hira Ahuja, Director, Continuing Education Division, Technical University of Nova Scotia, Telephone (902) 429-8300 Ext. 364.