



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



April 5, 1990

To Members and Advisory Members of the CNC/CIE

Enclosed are 5 items for your information:

1. Minutes of the 34th Annual Meeting of the CNC/CIE held on 1990-January-18, together with the reports received at this meeting.

Notes:

- i) The revised Treasurer's report is not yet available. I have enclosed the original submission.
 - ii) The names of the Canadian Members serving on the committees of Division 4 are not available at this time.
 - iii) Appendix H is the international director's report for CIE Division 5. This may be used in lieu of a report from a Canadian Division 5 member.
2. CIE booklet "Technical Activities and Publications", Central Bureau of the CIE, February 1989.
 3. CIE NEWS, number 12, December 1989.
 4. CIE JOURNAL, Volume 8, number 1, June 1989.
 5. Information concerning the first CIE Seminar on Light Measurement, to be held 1990-September-10 to 14. The international Executive Committee of the CIE is considering the possibility of several types of these seminars, perhaps at different locations around the world. They are looking for response from the national committees of the CIE. Any comments you may have can be sent to me.

A.A. Gaertner
Secretary, CNC/CIE
Division of Physics (M-36)
National Research Council of Canada
Ottawa, Ontario K1A 0R6

MINUTES

34TH ANNUAL MEETING OF THE CNC/CIE

The 34th annual meeting of the Canadian National Committee of the Commission Internationale de l'Eclairage (CNC/CIE) was held on January 18, 1990 in Room 449, Galbraith Building of the University of Toronto, 35 St. George Street, Toronto, Ontario.

1. Call-to-Order:

The meeting was called to order at 10am by A.R. Robertson, President. Ten members were in attendance (see Appendix A). Regrets were received from H.W. Budde, S.M. McFadden, R. White, P.A. Wasney.

The members accepted the president's suggestion that A.A. Gaertner act as secretary for this meeting in anticipation of an item to be discussed later under nominations.

The agenda was accepted as circulated. A.R. Robertson requested that matters arising be held until later in the meeting, after the business had been completed.

2. Minutes of the 33rd Annual Meeting:

It should be added that I.C. Pasini had agreed to write a note concerning the benefits of Canadian participation in the CIE.

Moved by I.C. Pasini, seconded by T. Nilsson, that the minutes be accepted with the above amendment. Passed.

3. President's Report:

A.R. Robertson stated that the main activity has been to attend the CIE Executive Committee meeting in Vienna, Austria on September 29-30, 1989. The summary of this meeting, enclosed as Appendix B, was therefore his report. Discussion followed on several points:

I.C. Pasini commented that because ISO and CIE had a formal cooperation on standardization in the field of light and lighting, it is important that local IES groups get ISO, CIE standards information.

Concerning CIE expenses, P.K. Kaiser pointed out that the CIE should also recognise the volunteer effort and expenses of people who work in the technical committees and on CIE publications.

Item 12, CIE Session 1991 held for Matters Arising.

Item 13, CIE awards. It was moved by M.G. Bassett, seconded by B.W. Tansley that the names of C.L. Sanders and A. Ketvirtis be forwarded to the CIE for consideration. Passed. A.R. Robertson to write the citation for C.L. Sanders, M.G. Bassett to write the citation for A. Ketvirtis. A.R. Robertson was also requested to determine whether the award may be given posthumously in exceptional circumstances. If so, he will nominate the late G. Wysecki.

Moved by P.K. Kaiser, seconded by W.K. Adrian, that the president's report be accepted. Passed.

4. Secretary/Treasurer's Report:

B.W. Tansley presented his report, enclosed as Appendix C. During the following discussion there was some confusion and misunderstanding concerning the financial figures presented, especially their format. A.R. Robertson questioned what portion of the \$4725.19 income from publication sales was to be returned to the CIE to pay for these publications. I.C. Pasini agreed to send B.W. Tansley some information which he had concerning financial formatting. J. Roberge suggested a change in format to show more clearly a profit and loss statement, and a balance statement. M.G. Bassett requested that the year be added to all dates given in reports and announcements. M.G. Bassett moved, P.K. Kaiser seconded, that the secretary/treasurer's report be accepted with the proviso that the financial statement to be circulated with these minutes be modified to clarify the confusion expressed in the discussion. Passed.

J. Roberge moved, M.G. Bassett seconded, that the CNC/CIE financial year end the 30th September. Passed.

5. Division Member's Reports:

A.R. Robertson agreed to request copies of the CIE booklet "Technical Activities and Publications" for distribution to the membership.

DIVISION 1:

P.K. Kaiser presented his report, enclosed as appendix D. Discussion. P.K. Kaiser accepted W.K. Adrian's request to be a member of TC 1-17. A.R. Robertson agreed to take the necessary action for this.

DIVISION 2:

A.R. Robertson presented his report, enclosed as Appendix E.

DIVISION 3:

I.C. Pasini presented his report, enclosed as Appendix F.

DIVISION 4:

B.W. Tansley presented his report, enclosed as Appendix G. W.K. Adrian reported that the minority report concerning tunnel lighting will appear as an appendix to the final report.

DIVISION 5:

No report. A.R. Robertson agreed to resolve the problem of a Canadian member for the division. J. Roberge is willing to serve.

DIVISION 6:

No report. A.R. Robertson agreed to try to resolve the problem of a Canadian member for this division. B.W. Tansley suggested J. Seggie, McMaster University, and agreed to determine whether she would be interested in serving.

DIVISION 7:

No report, possibly due to problems in the mailings.

General Discussion:

It was agreed that the secretary is to send the reports of Divisions 1 to 4 to all members and advisory members. A discussion followed which recommended that all divisional chairmen include in their reports the names of all Canadian members on the technical committees in their division. For the present reports, it was agreed that the above 4 chairmen are to send the secretary this information within 3 weeks of this meeting, so that it may be included with the mailing.

It was agreed that, in addition to the information provided about the international operation of the divisions as was presented in the reports, a Canadian cover note should be included in future reports. A.R. Robertson agreed to provide information concerning a format for this cover note.

It was also suggested and agreed that we request divisional reports early enough that they may be sent out with the announcement of the annual meeting. This would allow members to read them beforehand and be able to ask pertinent questions at the meeting.

The meeting was then adjourned for lunch.

6 . Nominations and Appointments:

There was a general discussion concerning the make-up and appointment to this committee.

A.R. Robertson agreed to determine whether P.A. Wasney was interested in continuing as a member. If he is unable to serve, it was moved by M.G. Bassett, seconded by J. Roberge, that A.R. Robertson ask S. Kaye (University of Manitoba) if he would serve. Passed.

Moved by M.G. Bassett, seconded by P.K. Kaiser, that T. Nilsson be renominated to the committee. Passed.

Moved by M.G. Bassett, seconded by P.K. Kaiser, that the position of Secretary/Treasurer be split into two positions, and that A.A. Gaertner serve as Secretary, and B.W. Tansley as Publications Officer/Treasurer. Passed.

There was some discussion concerning the appointment of advisory members. W.K. Adrian agreed to send the names of some possible members. J. Roberge and M.G. Bassett agreed to check concerning members from Quebec and Alberta, respectively. F. Lin of Lighting Sciences Canada Ltd, Waterloo, and B. Crocker of B.C. Hydro were suggested. Members of the committee were invited to send their suggestions to A.R. Robertson or A.A. Gaertner.

The name of R. Lakowski (UBC) was suggested to B.W. Tansley as a possible member to one of the technical committees in Division 4.

A.R. Robertson agreed to redraft the bylaws of the CNC/CIE within the next 3 months to reflect the current methods of operation.

7. Matters Arising:

i) 22nd Session of the CIE, Melbourne, Australia, 1991-July-2 to 11. The information circulated with the notice of this meeting was discussed. It was agreed that we issue a Call for Papers, with the summary of the papers to be submitted to A.R. Robertson by 1990-April-15. He is then to choose two scrutineers for each paper to decide on the suitability of the paper.

ii) I.C. Pasini's draft article concerning the benefits of Canadian participation in the CIE was received with thanks. It was agreed that A.R. Robertson would edit it and submit it to the NRC Bureau of International Relations.

iii) There was considerable discussion concerning the proposed CIE Seminars. (Information concerning these was circulated with the announcement for this meeting.) Three main points emerged:

1. CNC/CIE encourages the concept, especially if the seminars are financially self-supporting.

2. Similar seminars are already available in some countries.

3. CIE should consider the possibility of holding seminars in places other than Vienna, especially countries where such seminars are not currently available.

A.R. Robertson agreed to pass these comments on to the Executive Secretary (J. Schanda). Information concerning the seminars is to be circulated to our mailing list. J.Roberge has registered for the first seminar to be held in Vienna, Austria, in September, 1990.

iv) Reading lists of CIE publications (see minutes of 1988 meeting).

B.W. Tansley agreed to do an evaluation of our pricing policy for CIE publications, which, together with the list provided to him by A.R. Robertson and I.C. Pasini, would enable him to provide the next meeting with suggestions concerning package prices.

v) Members were asked to consider what they might want done with any extra money which may arise from the sale of CIE publications. Member discounts on publications, a lending library, and travel assistance were some of the ideas expressed.

vi) Next year's annual meeting: It was agreed that the 1990 annual meeting be held during the 4th quarter (as stated in the bylaws), probably in November, and probably at the University of Toronto, which appeared to be the best location for the present committee members. Members were requested to RSVP the host of the meeting after the announcement thereof.

vii) P.K. Kaiser expressed the appreciation of the members present to M.G. Bassett for hosting this meeting, arranging for the excellent lunch, and providing the delightful dessert.

8. Adjournment

The meeting was adjourned at approximately 16:30.

APPENDIX A

ATTENDEES TO 34TH ANNUAL MEETING OF THE CNC/CIE

A.R. Robertson	National Research Council
A.A. Gaertner	National Research Council
I.C. Pasini	Public Works Canada
J. Roberge	Infranor Canada Inc.
M.G. Bassett	University of Toronto
R. Kaufmann (representing S.M. McFadden)	Defense and Civil Institute of Environmental Medicine
T. Nilsson	University of Prince Edward Island
W. K. Adrian	University of Waterloo
B.W. Tansley	Carleton University
P.K. Kaiser	York University



Executive Summary of the Executive Committee Meeting, Vienna 29-30 September 1989

1) Opening and announcements

The President opened the meeting on 29 September 1989 at 9:00 hours.

The Secretary of the Commission requested on behalf of the Board of Administration to permit voting by proxies. The proposal was **accepted** unanimously. The roll-call showed 23 countries present and 4 countries represented by proxies.

2) Approval of the agenda

No amendments were requested and the **agenda was approved** as in annex 2 of the Minutes.

3) Approval of the Minutes taken in Venice.

The **Minutes of the last meeting were approved** as circulated to National Committees in August 1987.

4) Report by the President

The President gave his report on the activities of the Commission during the past two years reviewing in particular the **75th CIE Anniversary** and the acceptance of **CIE as international standardizing body** by ISO.

5) Report by the Treasurer

The Treasurer submitted the balance-sheet reconciliation 1984-1987 for acceptance as circulated before the meeting, together with the Revenue and Expenses-Quadrennium sheets. The **quadrennium financial report was accepted** by the Executive Committee.

The Treasurer reported on the present techniques of internal financial reporting and on the gifts received at the Central Bureau from National Committees.

6) CIE budget for 1990-91

The Treasurer submitted a substitute budget (see annex 5 of the Minutes) and gave some explanation on the single lines of the budget. He pointed out that there had been only very minor changes compared to the circulated budget and that the 1990 budget was balanced, the 1991 budget shows a small excess.

The Executive Committee accepted the substitute budget after a longer discussion in which it was pointed out that despite of the higher final figures the budget is still a very tight one.

7) The future of CIE financing

The Treasurer pointed out that the Commission reached a given maturity and further **long term increase in budget could be due only to inflation and new projects** suggested by the Executive Committee.

The Executive Committee agreed to have **1989 a test year for an audit** and that the audit should be prepared by GRT-ROBOL.

8) Amendments of CIE Statutes and By-Laws

The Secretary reviewed his letter to National Committees on **new proposed CIE Statutes and By-Laws**. He pointed out that there are two drafts: **Draft A** reflecting the present structure but with some changes in terms used for the different bodies and the Executive Secretary, and **Draft B** which combines the present Board of Administration and Division Directors into a single committee.

For both drafts changes are proposed in election having the election of the Officers at the mid-term meeting of the Executive Committee to be called General Assembly. Detailed discussion was conducted on both drafts and the Executive Committee agreed to send **further comments** to the Secretary by **10th December 1989**. The Secretary will then distribute the **revised version** by **January 1990**.

9) Review of membership

The Treasurer quoted his circular letter NC-02-89 and moved to **expel** the nations **Mexico, Pakistan and Peru** due to not paying their membership fee for more than 3 years. The motion was carried with 23 in favour, 4 abstentions and no vote against.

The Executive Committee agreed to have the **uncollectable dues of USD 12 528.- to be written off by 1st January 1990**.

10) Report by the VP-Publications

The VPP gave his report on the question of the Journal proposing that following the issue of **CIE Journal Vol.8 No.1** the publication of **two issues per annum** for free of charge supplied to NCs **should be ceased, and the number of issues of CIE NEWS should be increased from 3 to 4 per annum**. After a long discussion the Executive Committee agreed to **above recommendation**.

The VPP pointed out also that not every National Committee is doing equally well in selling CIE Publications. It is interesting to note that countries like Greece, Saudi Arabia and Taiwan, who are neither CIE member countries nor do they speak English as their mother language, order more CIE publications than quite a few CIE member countries.

11) Report by the VP-Technical

The VPT gave his report on **divisional activities** as seen in annex 7 of the Minutes and introduced the proposed **format of the CIE Session 1991 Melbourne** (see also attached CIE timetable).

12) CIE Session 1991

W J Julian, chairman of the Organizing Committee, reviewed the preparatory work. It was anticipated that the **registration fee** for the two weeks meetings will be **about USD 450 - 500**.

The Chairman of the Organizing Committee assured the Executive Committee that participants coming from all **CIE member countries** will receive the **Australian entry visa** without difficulty.

13) CIE Awards

The President handed out **Awards for 17 distinguished members of the Commission** to the respective heads of delegations of the National Committees.

14)-15) Executive Committee Group Discussions and Group Leaders Report

Topics like **operation of NCs, standardization and liaison, future programmes** were discussed in three groups. After the group discussions the group leaders gave a short summary of the meetings.

16) General discussions and conclusions

Questions like possibility of emergency financing of Division and TC member attendances at meetings, publications that could be used in fund raising, projects interesting for young scientists, cooperation with regional and global standardizing organizations, organizing seminars and workshops at the Central Bureau were raised and discussed.

17) Other business

The Treasurer reported that **one CIE unit** is expected to be worth in **1990 USD 192** and in **1991 USD 210**.

18) Next meeting

Two meetings were planned for the Executive Committee in Melbourne: first meeting **2nd July, pm**; second meeting **6 July am and pm**.

The Meeting was closed at 12:00, 30 September 1989.

Annual Report:

CNC/CIE 1989

Brian Tansley, Secretary/Treasurer

We spent a lot of effort providing for dissemination of CIE information through lending and sales of our technical publications. The financial summary of this year's sales activity is enclosed.

This year we have had CNC/CIE letterhead printed from the profits of sale of CIE publications. Samples are provided at the meeting and Members of CNC/CIE are welcome to a supply of these materials for their CIE business correspondence on request.

In addition to selling CIE Technical Reports, we have attempted to publicize the CIE through a mailing campaign. We sent an information package consisting of a brief cover letter and description of the CIE (What it is and What it does) along with a catalogue of our publications and their prices. This went to a large number of technical libraries at universities as well as to public hydro utilities, etc. More work needs to be done in promoting our "products" to those who could use them.

Profits from CIE publications sales have been used to pay for postage, photocopying of CIE correspondence and the production of the catalogue/mailers in addition to the printing of letterhead.

I received one telephone regret from Sharon McFadden from DCIEM, regarding this meeting and there were no changed addresses or resignations this year.

I wish to bring to your attention:

1. CIE Seminar on Light Measurement, 10-14 Sept Vienna, Austria
2. The call for papers for the 22nd Session of the CIE, July 2-11 in Melbourne, Australia. Information is available from my office should you require more.

Note: This is a provisional report. A revised report is to be produced.

1989 CNC/CIE Publications Sales Summary:

Funds carried over into 1989:	\$2304.69
Income from Publications Sales, 1989:	\$4725.19

Current Balance in the Account:	\$7029.88
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Estimated Expenses (All 1989 bills have not yet been received):

Postage:	\$345.00
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Photocopying:	\$160.00
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Printing:	\$560.00
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Student Assistance:	\$385.00
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Outstanding Encumbrances to CIE Central Office (Estimated):	\$1190.24
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Total Estimated Expenses:	\$2640.24
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Present Balance (Deficit)	\$4389.64
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Annual Report of CIE Division 1
Vision and Colour*
January 18, 1990

To date 25 TCs have been constituted. Of these nine have completed their work although in the case of three of these nine, committee reporters have been appointed. Since the last meeting there have been six CIE publications arising from the work of the Division.

- TC1-01: Mesopic Photometry CIE publication No 81(1989). Mesopic Photometry: History, Special Problems and Practical Solutions.
- TC1-02: Luminous Efficiency Functions CIE Publication No 75(1988). Spectral Luminous Efficiency Functions Based upon Brightness Matching for Monochromatic Point Sources, 2° and 10° Fields.
- TC1-05: Brightness-Luminance Relations CIE Publication No 78(1988). Brightness-Luminance Relations, A Classified Bibliography.
- TC1-07: Observer Metamerism CIE Publication No 80(1989). Spacial Metamerism Index: Change in Observer.
- TC1-11: Illumination for Colour Reproduction CIE Journal Vol 8, No 1, June 1989. A consistency Index for Television Scene Lighting.
- TC1-12: Relative Colour Rendering CIE Publication No 13.2(1974) - Corrected Reprint(1988) - Method of Measuring and specifying Color Rendering Properties of Light Sources.

Other TCs have reports in preparation. The terms of reference of a number of new committees were agreed at the last meeting but in some cases there has been difficulty in establishing the membership because the goal was not sufficiently clear at the beginning or the TC found the task too obscure. The procedures for establishing new technical committees are to be modified to overcome this problem. During the year the Director had asked Yaguchi to report to him on the prospects for setting up a committee on individual variations in heterochromatic brightness matching. A similar period of preparation would now be needed before establishing any new TC in the future.

Reports by Associate Directors

a) Walraven - Vision

Walraven gave a summary of the status of the work of TCs concerned with vision. TCs 1-01, 1-02, 1-03 and 1-05 have been disbanded. Roufs has been appointed Reporter for 1-05, Brightness-Luminance relations.

TC1-04: Physiologically Based system of Colour Specification : G A Gry

This committee met the previous day. There is still some disagreement over the terms of reference. The problem arises over differences between cone spectral data derived from psychophysical measurements and those from microspectrophotometry of individual cones from dissected retinas. Fry is to visit Mollon (Cambridge, GBR) to discuss the problem.

TC1-20: CIE 1988 Modified 2° spectral Luminous Efficiency for Photopic Vision: P Kaiser Discussions between the Chairman and VP Publications have almost reached agreement.

TC1-21: Testing of Supplementary Systems of Photometry: K Sagawa

TC1-22: Engineering Applications of Brightness Scales: K Narisada

TC1-23: Visual Acuity: P Walraven

The membership vote has been completed and two new members added. Landoit C is to be used to standardise visual acuity.

b) Robertson - Colour

A meeting of the colour section of the Division was held in Buenos ares on 11 March 1989. 36 people attended and the minutes of that meeting will be circulated with those of this meeting. Tcs 1-06, 1-07, 1-11 and 1-12 have all been disbanded.

TC1-08: Colour Difference Evaluation: Robertson

Robertson had resigned as Chairman at the Venice meeting but has had difficulty in finding a replacement. He suggested that TC1-08 be disbanded and a number of new committees be set up on different aspects of colour difference.

TC1-09: Standard sources for Colorimetry: Gundlach

The committee met the previous day and the Chairman reported later in the meeting.

TC1-10: Colorimetry of Self Luminous Displays: Rennilson

TC1-13: Colour Appearance Analysis: Pointer

TC1-24: Field Trials of Television Illumination Consistency Index: P King

A committee has been formed but a problem has arisen as King is unable to continue as Chairman and a new Chairman is being sought.

c) Boyce - Visual Ergonomics

Boyce sent a written report to the Director. Unfortunately he is unable to attend CIE meetings at the present time due to the changing status of his institution but could continue as Associate Director by correspondence. He had offered his resignation but this had not been accepted. Ikeda invited Walraven (Associate Director for Visual Ergonomics in the previous quaddrennium) to assist Boyce where appropriate. Walraven accepted and reported to the meeting on behalf of Boyce.

TC1-14: Lighting Effects on Vision: P R Boyce

The third draft is in preparation.

TC1-16: Lighting needs for the Partially Sighted

Following the death of Verriest, Julian, the committee secretary, is to complete the work.

TC1-17: Contrast Metric of Visibility: A Korn

TC1-18: Disability Glare: J Vos

Vos had suggested TC1-18 be changed to Reporter status as he was having difficulty in forming a committee. Rennilson said Blackwell had assured him it would not be a one man committee. It was agreed that TC status should be left unchanged and that Vos should proceed with his work on the report.

TC1-19: Specification of Visibility for Real Tasks: Rea

Progress is slow and a report from the Chairman is awaited.

TC1-25: Fundamentals of Discomfort glare: A L Lewis

A committee has been established and the membership ballot is currently being held.

An annotated bibliography of discomfort glare has been largely completed and the progress of research is being monitored. It is anticipated that a report will be ready for the 1991 meeting.

Proposals for new Technical Committees

a) Individual Variations of Heterochromatic Brightness Matching

The following proposals were put to the vote.

New Technical Committee: Individual Variations of Heterochromatic Brightness Matching

Chairman: H Yaguchi

Terms of Reference: "To analyse existing data on heterochromatic brightness matching in terms of individual variation. To develop a simple test of individual characteristics for brightness matching."

b) Individual Colour Difference Evaluation

New Technical Committee: Industrial Colour Difference Evaluation.

Chairman: D H Alman

Terms of Reference: "To study existing metrics used in industry to evaluate colour differences between object colours in daylight illumination and to develop a CIE recommendation on this subject."

c) Parameters Affecting Colour Difference Evaluation

New Technical Committee: Parameters affecting colour difference evaluation.

Chairman: K Witt

Terms of Reference: "To study and report on the effect of viewing and sample parameters on the evaluation of colour differences between object colours. Parameters to be studied include, but are not limited to, texture, sample size and separation, illumination level, colour of surround and the effect of specular reflectance."

d) Colorimetry of Self Luminous Displays

P Alessi was appointed Reporter in this area with a view to establishing a committee in a few months. Dr. Alessi was asked to recommend terms of reference to the Director. The subjects should include the application of CIELAB and CIELUV to self luminous displays but also be sufficiently broad to permit liaison between ISO and CIE.

e) Colour Difference Evaluation

Pointer suggested that TC1-08 be dissolved and T Maier be appointed as a Reporter. The task is to survey the current state of knowledge and practice in the field of colour difference evaluation and recommend a plan for future CIE work in this field.

Next Meeting

It was agreed that the next meeting of Division 1 should be held on August 31 and September 1 1990 in Berlin, preceding a three day AIC Conference on Instrumentation for Colour measurement.

* The above information was supplied to P.K. Kaiser by Dr. M. Ikeda. Dr. Kaiser edited the information by deleting items deemed not relevant for an Annual Report to the CNC/CIE. Additional information relating directly to the T.C. Chairs reports are available upon request.

Addendum to 1990 Annual Report of CIE Division 1, Vision and Color

Reports from TC Chairmen

a) Vision

TC1-04: Physiologically based system of colour specification: G A Fry.

The appointment of Fry as Chairman and the revised membership of the Committee have both been unanimously approved in postal ballots. The modified terms of reference circulated for postal ballot on 31 December 1988 resulted in 17 positive votes and three negative votes. VP Technical has since written to the Division saying that the negative comments are considered sufficiently serious as to recommend that they be discussed within the Division to see if a further revision could make the terms of reference acceptable to all. TC1-04 met the previous day and this point was discussed in depth. The TC agreed to recommend the following revised terms.

"Establish a constant-luminance chromaticity diagram based on cone action spectra which is consistent with the best possible set of colour-matching functions. Evaluate available cone action spectra in the literature for use in establishing a constant luminance chromaticity diagram.

Basic data needed are:

- (1) Colour-matching functions of normals
- (2) Cone action spectra of normals
- (3) Data from dichromats

- (a) Spectral sensitivity without blue-cone intrusion
- (b) Confusion points
- (c) Spectral sensitivity obtained by flicker photometry
- (d) Ocular media data

These data will be selected from the available literature and from these, if necessary, a new set of cone action spectra will be derived"

The meeting gave full support to this revision but agreed to a postal ballot in order to permit Members to consult their national committees.

TC1-21: Testing of Supplementary Systems of Spectrophotometry: K Sagawa
Sagawa said that the committee is considering four systems for 2° observers and six for 10° observers. Nine sets of experimental data have been received of which four have so far been used. Preliminary results for the 10° field indicate an emerging order of merit between the different systems.

TC1-22: Engineering Applications of Brightness Scales: Narisada

The Chairman has experienced difficulty in forming a committee. The Director recommended that the committee be disbanded and T Takeuchi be appointed Reporter for the subject. This was put to the vote and approved unanimously, 13 for, 0 against, 0 abstentions.

b) Colour

TC1-08: Colour Difference Evaluation

Robertson recommended the committee be disbanded and that the Division consider setting up new TCs to replace it. Possible topic could be

1. Industrial Colorimetry

A number of new colour difference metrics are now in use in industry and there may be a need for a CIE recommendation.

2. Video Displays

CIELAB and CIELUV are now being used for work with video displays although they were not derived from data from that medium. The application of these formulae to displays merits investigation. Schanda referred to the need for liaison with ISO/IEC 86 on displays for office equipment.

3. Non Daylight Adaptation

The purpose would be to study the application of CIELAB and CIELUV to object colours viewed under adaptation conditions other than average daylight. Rotter asked if this would include the mesopic region. Robertson said only photopic. Ponte suggested near Planckian illumination and that the size of the colour difference should be considered. Rotter asked if the use of CIELAB and CIELUV with luminescent colours was a problem. Robertson said he was not aware of problems on the visual side, only of physical measurements and that was in the province of Division 2.

4. Viewing and Sample Parameters

There are some differences between sets of colour difference that cannot be accounted for by statistical variations and these may be due to viewing conditions or the type of sample. Maier said this was a very open subject and could go on for years. Robertson replied that the CIE would expect a report within four years.

5. A Reporter for Colour Difference

Robertson suggested that colour difference was such a complex area that it was not possible to define the subject within a limited number of terms of reference. There may be a need for a database. The Division might consider appointing a Reporter to consider the subject as a whole and advise the Division subsequently.

TC1-09: Standard Sources for Colorimetry: D Gundlach

The Chairman said he had not received data on sources from Committee Members. There have been some reports in the literature on new sources. Daylight simulators are needed for colour matching booths and colour measurement especially of optically brightened materials. There has been problem with xenon flash lamps stimulating fluorescence which is absorbed in triplet states with a consequential shift of the emission spectrum to shorter wavelengths. Recent work has shown the problem can be overcome by short pulses. Gundlach urged members to forward any relevant data on daylight sources with the aim of completing a list by August 1990.

TC1-10: Colorimetry of Self Luminous Displays: J Rennilson

The Chairman informed the meeting that the bibliography of 207 references is now complete. The metrology of displays is now the subject of TC 2-26. The bibliography is in four sections, classical colorimetry as used in colour VDUs, colorimetric measurement, colour design and use in VDUs, and colour perception. Copies of the bibliography have been passed to the Division. Sample pages will be circulated for the postal ballot.

TC1-13: Colour Appearance Analysis: Pointer

The Chairman reported that the TC is working on two models which need to be merged. Verrill suggested that a merged model might be less satisfactory than either unmodified. Pointer replied that each has its own particular strengths so we should attempt to merge them. Ikeda, Referring to 1-06 Chromatic Adaptation, said that Nayatani has prepared new equations. Pointer said that the Committee is not yet satisfied that these are the best equations for the model. However, he felt confi-

dent that we are now close to a good colour appearance model which would include VDUs among its applications. A possible subject for a future TC might be the application of the model to colour rendering.

TC1-24: Field Trials of Television Illumination Consistency Index: P. King Pointer reported for King. This TC met in London on 6 September 1989. All the participants were from the UK. There were some offeres of studio facilities. Unfortunately King is due to retire due to health and the Division must now look for a new Chairman for this TC. Suggestions have been received and Robertson will make enquiries.

c) Visual Ergonomics

TC1-14: Lighting Effects on Vision: P R Boyce

TC1-16: Lighting Needs for the Partially Sighted

The Division now has the most recent draft produced by the late Dr. Verriest. A version on disk is still missing. Ronchi asked to make enquiries with Birth and Moreland.

TC1-17: Contrast Metric of Visibility: A Korn

A new member(from France) has been added. Korn said a revised draft would be forwarded to the Secretary in the next few months for voting.

CANADIAN INVOLVEMENT IN CIE DIVISION 1

Associate Director: A.R. Robertson
Division Member: P.K. Kaiser

TC 1-04	(Physiologically Based System of Colour Specification): P.K. Kaiser.
TC 1-09	(Standard Sources for Colorimetry): A.R. Robertson
TC 1-14	(Lighting Effects on Vision): M.S. Rea
TC 1-18	(Disability Glare): W.K. Adrian
TC 1-19	(Specification of Visibility for Real Tasks): M.S. Rea (Chairman).
TC 1-20	(Judd Modification): P.K. Kaiser (Chairman).
TC 1-21	(Testing of Supplementary System of Photometry): W.B. Cowan, P.K. Kaiser.
TC 1-25	(Fundamentals of Discomfort Glare): W.K. Adrian

APPENDIX E

CIE Division 2 (Physical Measurement of Light and Radiation)

Report to CNC/CIE, 18 January 1990

A.R.Robertson

1. The most recent activity report of CIE Division 2, dated Summer 1989, is attached.

2. Canadian involvement is as follows:

Division member: A.R.Robertson

TC 2-05 (Definitions of Distribution Temperature): A.R.Robertson, Chairman

TC 2-16 (Characterization of the Performance of Tristimulus Colorimeters): A.R.Robertson

TC 2-22 (Luminous Flux of High-Pressure Sodium Lamps): A.A.Gaertner

TC 2-24 (Users Guide for the Selection of Illuminance and Luminance Meters): W.Budde

TC 2-25 (Calibration Methods and Photoluminescent Standards for Total Radiance Factor Measurements): A.R.Robertson

TC 2-28 (Methods of Characterizing Spectrophotometers): A.R.Robertson, J.C.Zwinkels

TC 2-29 (Measurement of Detector Linearity): W.Budde

3. Further information may be obtained from A.R.Robertson, Division of Physics, National Research Council, Montreal Road, Ottawa, Ontario K1A 0R6, telephone 613-993-9347, fax 613-952-1394.



ACTIVITY REPORT

DIVISION 2

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Summer 1989

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- III. TC STATUS
- IV. COUNTRY REPORTS
- V. DIVISION 2 ROSTER
- VI. NEXT DIVISION 2 MEETING
- VII. OTHER MEETINGS OF INTEREST

This report covers the activities of Division 2 since the Summer of 1988. Division members are requested to circulate this Activity Report as widely as possible in their countries, and to ensure also that their National Committees have copies for distribution.

I. CIE MATTERS

The 1989 CIE Board and Council Meetings will be held in Vienna, Austria, as follows:

Division Directors:	September 26
Council:	September 27 & 28
Board of Administration:	September 28
Executive Committee:	September 29 & 30

II. LIAISONS OF DIVISION 2

The following are the International Organization with whom CIE (Division 2) holds liaison:

Comite Consultative de Photometric et Radiometric (CCPR) (Mielenz)
International Commission on Optics (ICO)
International Electrotechnical Commission, TC82 on Solar Irradiance
International Measurement Technical Confederation, TC2 on Photonic Measurements
International Organization for Standardization (ISO), TC6 SC2 on Optical Properties of Paper and Pulps (Robertson)
Organisation Internationale de Metrologie Legale, Luminance & Illuminance Meters (Mielenz)

III. TC STATUS

CP: chairperson; AD: Associate Director; TR: Terms of Reference
ST: Status; ML: Membership List

2-01 Measurement of High-Pressure Mercury Vapor Lamps

CP: M. Poppe, Hungary AD: Hengstberger
ML: TC to be dissolved
TR: Complete the report on the international intercomparison of luminous flux measurements on high-pressure mercury vapor lamps.
ST: Moore is editing the drafted CIE Journal article. (as of August 1988)

2-02 Measurement of Luminous Flux

CP: J. Krochmann, FRG AD: Hengstberger
ML: This TC is to be dissolved.
TR: Complete the technical report on luminous flux measurements started by TC 1.2.
ST: Hengstberger has edited the document according to the comments by Council Members. The complete camera-ready original has been sent to the CIE Executive Secretary in August, 1989.

2-03 LED Intercomparison

CP: J. Schanda, Hungary AD: Moore
ML: Moore, Muray, Sauter
TR: Conduct an international intercomparison of photometric measurements on light-emitting diodes.
ST: Mrs. K. Muray, a post graduate student working for TC 2-03, has made further measurements on the LEDs previously circulated and measured, as well as on a number of new LEDs designed to provide a higher light output and more uniform spatial light distribution. Mrs. Muray has visited PTB (W. Germany) and NPL (England) where she cooperated with the resident staff in measuring the LEDs. She has also made extensive measurements on the LEDs at MTA - MFKI (Hungary). Reports on the results of these measurements have now

been prepared and will be available for discussion at the meeting of Division 2 in Vienna in October 1989.

One of the preliminary conclusions to be drawn from the measurements is that there have been significant changes in the light output of some of the LEDs circulated in the earlier stages of the intercomparison. It is possible that some of the differences and inconsistencies between laboratories which seemed to be indicated by the earlier measurements may have been due to this effect.

2-04 Secondary Standard Sources

CP: J. Moore, UK AD: Moore

ML: Berry, deVeer, Gundlach, Key, Schanda

TR: Produce a technical report on the selection and operation of stable secondary standard sources.

ST: A draft report, which was expected by the TC to be the final version, had been prepared, and it was intended to submit it for Division and Council approval before the end of 1988.

Unfortunately, in November 1988, news was received that the principal manufacturer and supplier of the special tungsten filament lamps used as secondary standard sources, the Hirst Research Centre of the GEC, UK, had decided to close down the production of all hand-made lamps. As a result of this action, much of what is contained in the report concerning the availability and performance of these lamps is now out of date.

The chairman of TC 2-04 has been closely associated with discussions and negotiations to find a company to take over the manufacture of these lamps.

A decision has been taken to defer the publication of the report for one year or until the situation regarding the future availability and price of hand-made lamps is clarified.

2-05 Definitions of Distribution Temperature

CP: A. Robertson, Canada AD: Moore

ML: Azaryonok, Geutler, Hengstberger, Moore, Saunders, Watarai

TR: Formulate precise, technically useful definitions of distribution temperature, ratio temperature, and related quantities, in anticipation of a later intercomparison of measurements.

ST: A final draft of the report will be ready for the Division 2 meeting in Vienna on October 3, 1989.

2-06 Absolute Spectral Responsivity of Detectors

CP: E. F. Zalewski, USA AD: Hengstberger

ML: Armatis, Duda, Futornick, Hughes, Palmer, Parr, Bloembergen, Christy, Corrons, Crommelynck, Goodman, Husse, Jean, Krochmann, Ono, Scott, Shrode, Sporea, Zatkovic

TR: Undertake an intercomparison of silicon photodiode absolute response measurements at the HeNe wavelength (633nm) in order to test the agreement among various commercial laboratories now using the self-calibration technique.

ST: Six US and nine other country laboratories have completed the measurements. The first draft of the report has been written.

- 2-10 Photometry and Goniophotometry of Luminaries
 CP: Vandermeersch, Belgium AD: Hengstberger
 ML: Blochouse, Cazabat, Krochmann, Levin, Petrov, Procter, Sconieczna, Soardo, Vermeulen, Price, Arai, Almassy
 TR: Prepare a report on the photometric characteristics of luminaries and their measurement.
 ST: A joint TC 2-10/2-23 meeting was held 28-29 November, 1988 in London. The committee discussed Ch.7 of the General Part: Sources of Error. Prof. Soardo will revise the document taking into account some CCPR or BIPM papers. A final proposal is scheduled to be voted by TC2.10 members at least at Vienna in October 1989.
- 2-11 Gonioreflectometry of Standard Materials
 CP: J. J. Hsia, USA AD: Bastie
 ML: Berns, Erb, Jungmann, Li, Mashkovskaya, Nanjo, Rossi, Verrill
 TR: Study gonioreflectometric properties of standard white reference materials, including measurements and survey of published data.
 ST: The construction and tests of the 3-D gonioreflectometer in NIM, China has been completed. 3-D angular distribution and $\rho/45$ reflectance factors of matt ceramic and pressed PTFE samples have been measured. The laboratory in RIT, USA has previously measured bidirectional spectral reflectance factors for pressed polytetrafluoroethylene and barium sulfate powder. These data were modeled using principal components analysis to yield requirements on precision for these powders to be used as transfer standards.
- 2-12 Photometry of Thermally Sensitive Lamps
 CP: Vandermeersch, Belgium AD: Hengstberger
 ML: unknown
 TR: Prepare a joint report on the photometry of thermally sensitive lamps.
 ST: This committee has completed its task. A brief summary of the results should be published by the chairman in the CIE Journal and then the committee should be dissolved. (As of August 1988)
- 2-14 Measurement of Reflectance and Transmittance, including Turbid Media
 CP: J. Krochmann, FRG AD: Bastie
 ML: Bostick, Bianchini, Hsia, Mashkovskaya, Morren, Polato, Terstiege, Gundlach, Hisdal, Vaillant
 TR: Define the standard geometric conditions for the measurement of transmittance and reflectance (CIE Standard)
 ST: The 5th draft of the report on "Measurement of Reflectance and Transmittance" is in preparation and may be finished for the October 1989 Vienna meeting.
- 2-16 Characterization of the Performance of Tristimulus Colorimeters
 CP: D. Gundlach, FRG AD: Hengstberger
 ML: Billmeyer, Cogno, Fillinger, Geutler, Hengstberger, Krochmann, Matveer, McLaren, Moore, Nanjo, Nielsen, Robertson, Walker
 TR: Complete a technical report started by TC 2.2.
 ST: Progress is delayed due to loss of document file on the computer.

2-17 Recommendation for Integrated Irradiance and Spectral Distribution of Simulated Solar Radiation

CP: C. Kok, South Africa AD: Moore
ML: Aydinli, Ingatyev, Kasten, Kaase, Kockot, Zerlaut
TR: Revise and update CIE Publication #20 (1972)
ST: The final draft "Solar Spectral Irradiance- A Review of Recent Findings" has been ballotted. The CIE Council approved the draft with minor modification. There was one negative vote from the Division 2 members. The TC chairman will resolve this matter with the member.

2-19 Measurement of the Spectral Coefficient of Retroreflection

CP: N. Johnson, USA AD: Bastie
ML: Brekke, Fisher, Hsia, Hubert, Kurioka, Price, Rendu, Rennilson, Richey, Schreiber, Sugiyama, Terstiege, Vandermeersch
TR: Identify the critical measurement parameters, tolerances, and requirements for, and conduct an international intercomparison of, the spectral coefficient of retroreflection.
ST: General agreement on test method for measuring the spectral coefficient of retrareflection was reached for use in the intercomparison. The addition of a supplemental set of 100 millimeter square panels, finalization of the "hub" program for data analysis and equipment availability in some laboratories have delayed the start of the intercomparison into 1989. A meeting is planned in Vienna on October 3, 1989.

2-20 Visual Gloss

CP: Lozano, Argentina AD: Bastie
ML: Baba, Billmeyer, Czepluch, LaValle, Mihailov, O'Donnell, Seve, Tannenbaum, Taylor
TR: Study physical surface properties of materials which correlate with the visual appearance attribute "gloss," and report the findings.
ST: Circular No. 5 was distributed near the end of 1988. One response was received from Dr. J. Taylor of U.K. The TC chairman wanted to know whether there is really interest in visual gloss.

2-21 Spectroradiometry of Flashing Lights

CP: H. Kondo, Japan AD: Moore
ML: Gavrilova, Gundlach, Lehman, Luminello, Sauter, Vitel, Wychorski
TR: Study and recommend methodology and apparatus for accurate radiometric measurements of flash radiation sources, both of short and long duration.
ST: The fourth draft will be prepared and sent to TC members before the October Vienna meeting. A TC meeting is planned in Vienna on October 3, 1989.

2-22 Luminous Flux of High-Pressure Sodium Lamps

CP: B. Garzo, Hungary AD: Moore
ML: Azaryonok, Bastie, Bertrand, Burghout, Chen Xiaju, Foerste, Gaertner, Gale, Juan, Juntunen, Moore, Otto, Roempler, Rossi, Steindl, van Dam,
TR: Conduct an intercomparison of luminous flux measurements on high-pressure sodium lamps.

ST: Two sets of lamps have been prepared for the intercomparison and measured at the Tungsram laboratory in Budapest. Both sets were sent out from Hungary in March 1988.

The form of the circulation involves the measurement of each set of lamps in succession by five or six different laboratories in various countries, before their return to Hungary. There, the initial measurements will be repeated by Tungsram as a check on possible changes in the lamps. After this, each set is scheduled to be circulated to a further five or six laboratories around the world before finally returning again to Hungary.

Unfortunately, the progress of the measurements has, so far, been rather slow, and neither set has yet completed the first phase of the circulation and returned to Tungsram. If a reasonable adherence to the original time scale is to be maintained, it may be necessary to select and calibrate additional sets of lamps so that the second phase of the circulation programme can be started without waiting for the completion of the first phase.

2-23 Photometry of Street-Lighting Luminaries

CP: Vandermeersch, Belgium AD: Hengstberger

ML: Almasy, Arai, Blochouse, Cazabat, Krochmann, Levin, Petrov, Price, Procter, Skonieczna, Soardo, Vermeulen

TR: Prepare a technical report on the photometry of street lighting luminaries.

ST: TC members met on 28-29 November 1988 in London and devoted to discuss the table of contents of the report on street lighting luminaries.

2-24 Users Guide for the Selection of Illuminance and Luminance Meters

CP: O. Nielsen, Denmark AD: Hengstberger

ML: Budde, Goodman, Krochmann, Rattunde, Sauter.

TR: Prepare a users' guide for the selection and use of illuminance and luminance meters.

ST: The second draft has been completed in the Fall of 1987. The member list was updated in August 1988. No recent report has been received from the TC Chairman.

2-25 Calibration Methods and Photoluminescent Standards for Total Radiance Factor Measurements

CP: D. Gundlach, FRG AD: Bastie

ML: Erb, Griesser, Nayatani, Racz, Hsia, Simon, Verrill.

TR: Prepare a CIE report on methods for measurements of total radiance factors of photoluminescent materials. Recommendations for realizing and calibrating photoluminescent standards by the one and two-monochromator methods will be included.

ST: A meeting will be held in Vienna on October 3, 1989 to give a State of the Art report and to discuss how to proceed.

2-26 Measurement of Color Self-Luminous Displays

CP: R. Berns, USA AD: Moore

ML: DeMarsh, Gavanin, LeGoff, Krystek, Rich, Rochow, Snyder

TR: Formulate a guide to the various methods of measurement of the radiometric, photometric and colorimetric parameters (properties) of color self-luminous displays.

ST: The first phase of this TC is for CRT displays. The outline on how to proceed and the proposed table of contents of the guide have been prepared.

2-27 Interpretations of the Photometric Data of Lamps and Luminaries for Service Use

CP: Vandemeersch, Belgium AD: Hengstberger

ML: unknown

TR: Prepare a CIE guide for the correct application of photometric data in lighting design calculations.

ST: Work will start on completion of the tasks of TC's 2-10 and 2-23.

2-28 Methods of Characterizing Spectrophotometers

CP: J. Verrill, UK AD: Bastie

ML: Andor, Bastie, Berns, Eckerle, McCamy, Robertson, Vlasov

TR: Write a CIE report on the characterization of spectrophotometers by means of reference materials and other methods, with particular reference to linearity, wavelength error, stray light, and integrating sphere errors.

ST: The program of work is now well defined and tasks have been allocated to a number of members. A meeting is planned in Vienna on October 3, 1989.

2-29 Measurement of Detector Linearity

CP: H. Kaase, FRG AD: Hengstberger

ML: Bastie, Budde, Dezsi, Goodman, Mihailov, Mostl.

TR: Prepare a CIE guide on methods for the characterization of the linearity of detectors of optical radiation, including different principles by which the linearity of detectors can be determined and causes of non-linear behaviour, to aid users of optical radiation detectors in the selection and use suitable devices for specific applications.

ST: The status is the collection of data. The first draft should be ready for the Division 2 Meeting in October 1989. A TC meeting will be held in Vienna on October 3, 1989.

2-30 Diode-Array Radiometry

CP: P. Wychorski, USA AD: Bastie

ML: Abasari, Goodman, Mihailov, Mizushima, Pflieger, Sauter

TR: Prepare an annotated bibliography for the CIE Journal on diode array radiometry. Make appropriate recommendations for future work in diode radiometry.

ST: An oral report will be given by the TC chairman at the Division 2 October 2, 1989 meeting.

2-31 Methods of Characterizing Actinic Radiometers

CP: J. Krochmann, FRG AD: Moore

ML: Bastie, Ferenzi, Hughes, Kaase, Kok, McKinlay, Pastiels, Poppe,
Reiter, Sarytchev, Steck, Vaillant

TR: Prepare a CIE Standard on characterizing the performance of
actinic radiometers.

ST: The first meeting of this TC was held in Berlin (West) on October 7,
1988. The second draft was discussed. A third draft will be
prepared by the TC chairman before the end of 1989.

Reporters:

R 2-01 F. Hengstberger, South Africa: Fiber Optics
R 2-02 P. Wychorski, USA: Xenon Flash Lamps
R 2-03 D. Sheffer, Israel: IR Reflectance

APPENDIX F

Annual Report to CNC/CIE

I.C. Pasini, Canadian Delegate Division 3

January 18, 1990

1. The Division met in Budapest, Hungary on October 6-7, 1989.
2. Technical president Hans-Henrik Bjorset informed the Division of the new liason between ISO and CIE. All divisions will be required to prioritize needed international satandards.
3. An International Conference on Daylighting will be held in Moscow on October 9-12, 1990. The conference is organized jointly by the CIE and the Soviet National Committee.
4. Mr. Bedocs will be the divisional reporter onthe ISO newly published standard " Principles of Visual Ergonomics-Lighting of Indoor Work Systems ". Questionnaires will be sent to National Committees soliciting their views/comments.
5. The final draft of the Daylighting Guide should be ready for balloting by early 1990.
6. TC Chairpersons' Reports are attached for perusal and reference.

CANADIAN INVOLVEMENT IN DIVISION 3

TC 3-01	(Discomfort Glare from Small and Large Sources): W.K. Adrian.
TC 3-04	(Subjective Response to Lighting and Shading Control Systems): M.S. Rea.
TC 3-05	(Industrial Lighting and Safety at Work): I.C. Pasini.
TC 3-07	(International Collaboration on Daylight Availability Measurements): R. El Diasty.
TC 3-10	(Maintenance of Lighting Systems): I.C. Pasini.
TC 3-11	(Daylighting Calculation Methods): R. El Diasty.
TC 3-14	(Three-Dimensional Forms of Illuminance): R. El Diasty.
TC 3-16	(Psychological Aspects of Lighting, Review Committee): D. Tiller.

§ 9 TC-CHAIRPERSONS' REPORTS

TC 3-01 Discomfort glare from small and large sources.
H.D. Einhorn, RSA.

Dr Einhorn reported that a draft report on small sources will be ready within months. He pointed out that for very small sources it is not the luminance but the intensity of the source that is important. For solid angles of $\omega < 10^{-4}$ the intensity limit will be given.

When this report is finished the committee will continue to study large sources. It will take some more years especially if windows are to be included.

TC 3-04 Subjective response to lighting and shading control systems.
T.K. McGowan, USA.

Mr Gary Steffy reported for Mr McGowan. The work of the committee has been divided into two parts. Part one concentrated on new lighting control technology. This was reported at the Venice session.

Part two was defined as a report on the organization and development of the subjective factors involved in lighting control application and use. This work will be completed by the 1991 session in Melbourne. If someone not member of the committee knows of research on human reactions to lighting controls he or she is most welcome to contact Mr McGowan.

The activity report is attached as Appendix B.

TC 3-05 Industrial lighting and safety at work.
H.-J- Hentschel, FRG

The draft report has passed the editor and been adjusted. The final draft will be in two parts. The first will summarize the questionnaire including references to national codes on safety at work. The second part will enhance the importance of collecting data etc relating relevant lighting parameters to accidents. It will thus be directed to national authorities giving guidelines on how to make such investigations.

An editing committee will make the final draft before the end of this year. After approval of the TC it should be submitted to the division for balloting by March 1990.

The TC will then be dissolved when the report is published.

A new TC is suggested by Prof Hentschel "Study of lighting and safety at work" with the scope to encourage research on using checklists etc and to collect data leading to better guidelines.

TC 3-06 Methods of evaluating the interior visual environment.
J.-L. Richard, France

The idea is to improve lighting design considering the ergonomical aspects by using questionnaires. M Richard said that the research now is finished and the TC can start on the final method. The committee hopes to have a first draft within approximately one year.

After some questions on the tools proposed Mr Kendrick stressed that a final report must be ready before the session in 1991 as the committee has been working for more than 6 years already.

M Richard said that the committee will have a meeting soon but time and place are not decided.

TC 3-07 International collaboration on daylight availability measurements.
D. Kendrick, Australia.

There is now a formal connection between WMO and CIE for the daylight measurement programme. A joint symposium on daylight and solar radiation measurements will be held in Berlin October 9-11.

At the symposium there will be a supplementary TC-meeting and workshop with CIE and WMO people.

A third draft of "Daylight measurement guide" will be distributed after the TC meeting. Mr Kendrick proposes that further versions, if needed, will be written by an action committee within the TC in order to make the work quicker.

Proposals will also be discussed concerning what is going to happen to the data collected.

There seems to be a lot of success around the world to raise money for participation. It is also important that WMO and CIE people cooperate in countries.

Many have asked why UV measurements are not included in the programme. Mr Kendrick says that this is not the responsibility of Division 3 but of Division 6. If a country can include UV measurements it is of course welcome. Representatives from Divisions 2,3 and 6 will discuss this.

TC 3-09 Average sky as a design standard.
K. Matsuura, Japan.

The work was completed in 1987. After some difficulties the final revised draft report has been approved by the editor and will be prepared in accordance with the prescribed layout for CIE Technical Reports. It will then be sent to the Division Director for ballot.

TC 3-10 Maintenance of lighting systems.
L. Bedocs, GB

The TC has approved the report for editing. Mr Bedocs hopes to have the report ready for balloting summer 1990.

The TC is discussing further work, for instance maintenance of outdoor lighting. The main task is however now to get the first report ready.

TC 3-11 Daylighting calculation methods.
M. Seidl, FRG.

See Activity Report. No further report at the meeting.

TC 3-12 The optimization of daylight and solar radiation data with respects to lighting, and in association with other aspects of building performance.
N Ruck, Australia.

The first meeting of the committee was held the day before. The aim of the committee is to prepare a technical report to describe the optimisation of the use of daylight and solar radiation data with respect to lighting and for instance heat gain and loss using these data.

The committee will be working in close cooperation with TC 3-07 and 3-11.

A draft report is planned for the session in 1991.

Finally the committee suggests a shorter title for the TC:
"Daylight and solar radiation data for building performance".

TC 3-13 CIE discomfort glare evaluation system.
K. Poulton, Australia.

The committee has made great progress in preparing a practical glare evaluation system based on existing knowledge. Mr Bedocs reported from the two meetings that the committee has had.

A "CIE unified glare rating (UGR)" is proposed. It is based on a formula which can be used directly or in simplified forms using tabulated data or glare rating curves.

The report will be a free standing document and edited by a small panel. The object is to produce the final technical report by August 1990.

It was pointed out in the discussion that research on fundamentals of discomfort glare are studied in TC 1-25. This research will probably take many years. However the proposal of TC 3-13 should, if accepted, be a major step forward for the CIE and be an important part in a new CIE guide on interior lighting.

TC 3-14 Three-dimensional forms of illuminance.
K. Cuttle, New Zealand.

No further report was given. The progress of the TC can be seen in The Activity Report. The chairman's aim is to have a final draft report in time for the session in 1991.

TC 3-15 Standardisation of intermediate sky luminance.
K. Matsuura, Japan.

The first TC meeting was held October 5. The investigation of several models for intermediate skies will continue. The work will probably take long time as enough data is not yet available. The work of TC 3-07 will however result in new data.

TC 3-16 Psychological aspects of lighting: Review committee.
B. Collins, USA.

Mr G. Steffy reported for the chairman that two informal meetings have been held, but most of the work has been done by correspondence. Lists of references have been obtained and are now being reviewed.

The committee plans to meet next April in England when a first draft document will be discussed.

Interested persons are invited to join the committee. There is still no representative from Germany.

The need for contacts with Division 6 was again pointed out.

TC 3-17 Standardisation of photometric data for input in (micro-) computers.

W.F. Egger, Austria.

The committee has been dissolved and the work should be a joint committee with TC 4-16.

Unfortunately the chairman of TC 3-17 has not informed the committee members of the decision. Dr J. Schanda has promised to send the information when he gets a list of the members. Mme Chauvel said that she will write to the chairman of TC 4-16 asking that the members of TC 3-17 are put on their list.

Mr Sørensen however reported that the work of TC 4-16 is almost finished. The next meeting of TC 4-16 will be in Lugano the following week.

The TC 4-16 report should also be sent to Division 3 for ballot.

TC 3-18 Rational use of solar radiation in designing energy-efficient systems of daylighting.

A.V. Spiridonov, USSR.

Mr Kendrick reported that all that has happened so far has been within the USSR committee. The meeting planned for Budapest was canceled due to few members attending.

The daylighting conference in Moscow October 9-12 1990 will hopefully progress the work.

TC 3-19 Scale model photometry for interior lighting.

M. Navvab, USA.

Mr G. Steffy reported for the chairman. The content of the report is found in the Activity Report.

Mr Kendrick asks the chairman to sharpen the terms of reference into a firm statement.

§ 10 ORGANIZATION

a) MEMBERS

For Austria Mr P. Dehoff is new representative.

Mr de Clerq has resigned as Belgian member. No new member is appointed.

For China Mr Q.X. Zhuan is the new representative.

b) TC:s

All TC-chairpersons are asked to send updated lists of members with addresse at least once a year to the Division Director and to the Secretary.

The TC chairman shall write to the Director for approval of changes in the TC. A TC member shall be approved by the division member from his/her country.

All TC chairpersons will receive copies of the new FORM A and FORM B about submission of drafts and ballot.

IT IS OF VITAL IMPORTANCE THAT DRAFTS ARE PREPARED ACCORDING TO THE LAYOUT GIVEN IN CHAPTER 5 ETC OF THE "CIE CODE OF PROCEDURE FOR DIVISIONS AND TECHNICAL COMMITTEES".

c) EDITOR

As mentioned earlier Mr K. Cuttle will resign as Division Editor.

Mr Mark Wood-Robinson has been asked to become editor, a suggestion strongly supported by the members. He has asked to have some months to consider the proposal.

§ 11 FUTURE WORK

a) Prof Hentschel raised the question whether the work of TC 3-05 should be continued in a new TC on Studies of lighting and safety at work with the task to encourage new research and give practical guidelines for analysis of studies of accidents in buildings.

In the discussion some doubts were expressed if this was a realistic task and some questions on how such research could be done. Professor Hentschel was asked to prepare a more definite proposal and terms of reference to be discussed at a later meeting.

b) Mr Crisp proposed that the terms of reference for Mr Bedocs' review should be extended to include a proposal for a new model standard. Mr Bedocs agreed to consider an embryo for a CIE

Publication 29.3 (Interior lighting guide) and to indicate a committee for the work.

In the discussion it was pointed out that a CIE guide is broader than the ISO standard for working areas. May be a realistic timeplan for a new CIE Guide is 6 years. Revisions of ISO standards on lighting should be made by CIE. The short time plan for CEN work on European standards must be considered but the work is connected to CIE work through Prof Hentschel and Mr Slater as chairmen of two CEN committees.

The work on a new guide needs help from many experts and for instance TC 3-13 could help in writing the chapter on glare for the new guide.

c) Mr Hans von Malotki. Köln, FRG, has prepared terms of reference etc for a new TC on Lighting and architecture that is proposed to be established within Division 3. The Council has agreed to this and Mr von Malotki presented his proposal. The terms of reference etc are found as Appendix C to the minutes.

It is pointed out that the work shall be in close contact with Divisions 5 and 7. Mr Malotki wants members from more countries and proposals are wellcome.

After the discussion the meeting voted in favour of establishing the TC within Division 3.

§ 12 MISCELLANEOUS

a) Workshops at the session in Melbourne 1991.

The divisions are asked to suggest topics for workshops (and chairmen) by March 1990 to the Council. Some suggestions were spontaneously presented at the meeting:

Interior lighting standards and guide.
How to process daylight data for application.
Lighting and architecture.

Chairpersons could be Mr Bedocs, Prof Ruck and Mr von Malotki. (Comment by the secretary).

b) Proposals for joint ISO/CIE standards.

The division directors are asked to comment on what could become joint standards. Mme Chauvel has considered the standardizations of the luminance distribution of overcast sky and of clear sky published by CIE.

These are of course standards since many years but there are results from new work that may make them obsolete according. Mme Chauvel has to discuss this with TC chairmen.

c) Daylight conference in Moscow 9-12 October 1990.

Mr Spiridonov, member of the organizing committee, has informed that the best address for correspondence is:

Soviet NC of The CIE
VNISI
11106, prospect Mira
MOSCOW, USSR

d) Work at Lawrence Berkeley Laboratory, Berkeley, USA.

Prof Ne'eman told about the work on computer programs going on at LBL. Those interested should contact Mr Steve Selkowitz, Building 90, Room 3111, Lawrence Berkeley Laboratory, Univ. of California, BERKELEY, Cal. 94720, USA.

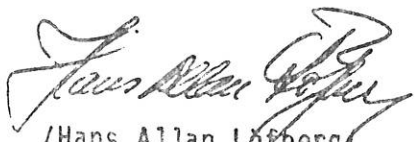
§ 13 NEXT MEETING

It was said that the division needs a meeting in 1990. Different places and times were discussed. Most division meetings are held in connection to conferences mainly dealing with artificial lighting and one members expressed the opinion that it could be good for members to attend a daylight conference some time.

The meeting voted in favour (10 for, 4 against, 3 abstaining) of having the next meeting in connection to the daylight conference in Moscow. The TC meetings and the Division meeting could be October 7-9. Exact dates are to be confirmed by the organizers of the conference.

§ 14 MEETING IS CLOSED

Mme Chauvel closed the meeting with sincere thanks to the Hungarian hosts and especially to Mr Debreczeni for all his help in organizing meeting rooms and refreshments for the TC:s and the Division.


/Hans Allan Lofberg
Secretary of Division 3

**Annual Activity Report for
Division 4:
Lighting and Signalling for Transportation:**

Brief Summary:

Division 4 activity this year consisted mainly of efforts at finishing ongoing TC work in time for the end of the quadrennial.

The discussion over the tunnel lighting report (brought to your attention last year) continues -- although I hope to hear from Dr. Adrian regarding the possible resolution of the matter...

This year the annual meeting of the Division was held in Lugano, Switzerland in conjunction with the Tunnel Lighting Symposium. I was unable to attend but Dr. Ing. W. Adrian from the University of Waterloo attended the tunnel lighting symposium.

I enclose a copy of the Division 4 Activity report.

I regret to report the death of one of the Divisions most active members: Mr. Colin Mortimer of Trinity House, England.



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

ACTIVITY REPORT

DIVISION 4

LIGHTING AND SIGNALLING FOR TRANSPORT

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1. PROGRESS OF EXISTING TC'S AND NEW TC'S

TC 4-01 Light Signals for Traffic Control (Dr. D. Schreuder)

The Technical Report is published under the official title: "A Guide for the Design of Road Traffic Lights" (CIE Publication No. 79).

Congratulations for the chairman and all the TC-members.

TC 4-02 Road Lighting as a Night-Time Counter measure (Dr. A. Fisher)

A new draft of the report was expected this spring but has not yet arrived.

TC 4-03 Lighting of Urban Areas (Mr. R. S. Yates)

The chairman is working on the comments as given by the Division Editor and as discussed during the Division meeting in Trondheim (Sept. 1988). A Technical Committee meeting as well as an extended presentation and discussion during the division meeting is planned for Lugano, October 1989.

TC 4-07 Design Methods for Road Lighting (Ir. J. Vermeulen)

In the near future the report will be typed out on an IBM compatible computer, in order to produce a camera ready copy, including all the figures etcetera.

TC 4-08 Tunnel Lighting (Ir. F. Sarteel)

The TC just met in Paris (30 & 31 May 1989). A short survey of the agenda of the meeting is included in Annex I.

Prior to this meeting a number of the Committee members did visit tunnels in The Netherlands, Belgium and the Northern part of France.

This way especially the delegates coming from other continents got an opportunity to study some Western European tunnels. After finalizing the report voting will be undertaken in the TC, the Division and the Council.

TC 4-09 Fundamentals of the Visual Task of Night Driving (Dr. R. N. Schwab)
The work of the Committee continues steadily. Voting on the report can be expected during 1990. A full day meeting is planned in Lugano (October 1989).

TC 4-10 Automobile Lighting Systems (Prof. H. J. Schmidt-Clausen)
New liaison arrangements have been agreed on since the Trondheim meeting. In accordance with the new procedure the paper: "Definition of the Cut-Off" has been circulated to Division Members.

TC 4-12 Solid State Signalling (Dr. B. Tansley)
There will be a draft report ready before the Lugano meeting. This draft will be distributed to the TC members before the meeting.

TC 4-13 Daytime Running Lights (Prof. K. Rumar)
A new draft report is produced and circulated within the Technical Committee (February 1989). The TC members have given their comments this spring. The TC plans a meeting in Lugano (October 1989).

TC 4-14 Review of the Colours of Signal Lights (Prof. B. L. Cole)
The chairman reports that since this spring a research assistant has been appointed who will as part of her job resume the task of analysing published data on signal colour recognition. An outline of the report has been prepared. Five chapters are proposed:

1. CIE Recommendations for the colours of Signal Lights
2. Conformity to the CIE Recommendations
3. The Empirical Basis for the Recommendations
4. The Problem of Signal Colour Recognition by Colour Vision Defective Observers
5. Factors that Affect Colour Recognition.

TC 4-15 Guide for Lighting of Roads for Motorized Traffic (Mr. R. H. Simons)
A computer program has been proposed to calculate the visibility

level using Adrians method. Computer discs are being circulated for assessment. A first draft of the report will be ready in early 1990. Part 2 of CIE /12 has been redrafted.

TC 4-16 The Transfer of Photometric Data for Road Lighting (Mr.M.Keck)

This TC has been re-named and is now a joint committee with Divisions 3 and 5.

TC 4-17 Visual Aspects of Variable Message Signs (Mr. G. F. Fisher)

A substantial document will be available for discussion at the next TC meeting in Lugano. The chairman has appointed Mr. Joe Collins, a University researcher who has specialised in variable message work for the last 18 month, as secretary of the TC.

TC 4-18 Conspicuity of Objects in Complex Backgrounds (Dr.S.E.Jenkins)

Due to internal reorganisations in the Institute of the chairman and due to the fact that Steve Jenkins is Secretary of the Australian National Committee on Illumination the progress of the Technical Report got somewhat delayed. Meanwhile the early stages of organizing the CIE Conference in Melbourne in 1991 are passed by. The TC will have a meeting in Lugano where a first draft of the report can be expected for discussion.

TC 4-19 Road Visibility in Fog (Mr. J. S. Dubuisson)

The council has approved to install a new TC. This TC will work on a limited number of problems as existing within the disbanded TC 4-06.

2. PROGRESS REPORTS FROM REPORTERS AND REPORTS FROM LIAISON OFFICERS

All new developments will be reported and discussed in Lugano, Switzerland, October 1989.

3. MEETINGS

The International Symposium and Exhibition "ROAD DEVELOPMENT AND SAFETY" will take place in Luxemburg, June 14-17, 1989 (see Annex 2).



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Central Bureau: Kegelgasse 27 · A-1030 Wien · Austria

8 January 1990

To all Division Members
and TC Chairmen

Dear Brian

Mr R W Holmes
Director - Division 4
Department of Transport
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St Christopher House
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London SE1 OTE
England
Telephone: 01-921 4410
Telex: 21352

CIE DIVISION 4 - LIGHTING AND SIGNALLING FOR TRANSPORT

The 1990 Division Meeting and TC Meetings will be held in York, England.

- | | |
|--------------------|----------------------------|
| - TC Meeting | Thursday 13 September |
| - TC Meeting | Friday 14 September |
| - Division Meeting | Saturday (am) 15 September |
| - High Level Event | Sunday, 16 September |
| - Division Meeting | Monday, 17 September |

This letter is a formal invitation to you to attend. Registration forms and more detailed information will be available soon.

I would be grateful if Division Members would copy this invitation to everyone in their country who may wish to attend so that they can reserve the dates in their diary.

Would TC Chairmen please inform the Division Secretary if they will be holding a TC Meeting so that a timetable can be produced and meeting rooms booked.

My best wishes.

Yours sincerely

R W Holmes
Director - Division 4

cc VPT
Executive Secretary
Division Secretary

APPENDIX H

DIVISION 5-DIRECTOR'S REPORT FOR DD MEETING, Vienna, September 1989

Division 5 had its divisional Meeting in Fribourg, Switzerland in February 1989, combined with an international Symposium organised in conjunction with the Swiss Lighting Society SLG.

Twenty six people participated in the Division 5 Meeting. At the Meeting, Division 5 decided to form a new Technical Committee "Obtrusive Light". Some 120 people participated in the International Symposium "Current topics in exterior lighting". Subjects like architectural lighting, lighting of sports for colour television, exterior security lighting were dealt with. The presentations and especially a two hour work shop on "Spill light" were received with much enthusiasm.

The next division 5 Meeting will be held May 15th 1990 in Oslo, Norway.

Although the Division 5 Meeting and Symposium were well-attended and in general the division 5 members and guests radiate enthusiasm the actual work to be carried out lacks behind. The DD wrote one letter to a Chairman to directly ask him whether or not he can finish his TC-work within short. If the answer is not satisfying a change of chairmanship will be proposed to the Vice President Technical.

TC 5-01 Underground mine lighting

The new Chairman, R. Hemp (S.A.) prepared a new draft, number eight. Most future work will be done by correspondence. Mid-october new material will be ready for issue to TC members.

TC 5-02 Mine lighting measurements

Ready; awaiting the report of TC 5-01 for combination.

TC 5-03 Open cast mine lighting

The chairman, Bandyopadhyay from India, expected to have a preliminary report ready in the first half of this year. Because of a transfer of the Chairman from Calcutta to Bombay in a new job, the work has been delayed. Meanwhile he settled down again and progress will be reported in October.

Mr. Bandyopadhyay is still looking for experts in the field of open cast mine lighting.

TC 5-04 Glare in outdoor areas

This report is ready with the exception of one Chapter on observer positions and observation directions. A third Draft has been prepared and will be circulated during the Lux Europa in Budapest October 1989. One last Meeting will be held at the end of this year.

The DD is in contact with the chairman to ensure that work will indeed be finalised soon.

TC 5-05 Lighting of sports events for CTV

The second edition of CIE Report 28, now called "Guide for the lighting of sports events for colour television and film systems" is completely ready. All comments received during the balloting procedure have, as far as possible, been incorporated. Thanks to these comments the report gives more background information. One disapproving vote has been changed in an approving vote, meaning: 25 returned divisional votes, 24 approving, 1 abstaining. The camera-ready original has been sent to the Central Bureau for immediate printing.

TC 5-06 Decorative lighting for exteriors.

The report is ready and now exists in a french and an english version. Editing is being done by our editor. Balloting within the Division and Council can probably be done still this year.

TC 5-08 Lighting and signalling for off-shore gas and oil rigs.

Work is mainly carried out by the Chairman, van Malland. It is expected that off-shore gas and oil rigs will get again more and more attention, therefore the work of this committee is increasing in importance also because many existing lighting installations are in need of renovation. Experts in the field are needed to participate in the work. The Chairman has prepared a first draft of the report (September 1989).

TC 5-09 Illuminance levels for sports

The Chairman, Lemons, expected to have a first draft ready in May. Since February no answers have been obtained on correspondence from the DD.

TC 5-10 Exterior security lighting

It is the aim of this new committee (Venice 1987) to have a final draft ready for the CIE 1991 Session in Australia. Two meetings have been held, a third is planned for November in Oslo.

TC 5-11 Practical design guidelines for sports lighting

This new committee (established in Venice 1987) is very active under the chairmanship of Hargroves. A third Meeting will be held in Budapest in conjunction with Lux Europa, October this year. The report to be prepared by this Committee will give practical design guidelines based on the recommendations of the TC 5-05 Guide.

TC 5-12 Obtrusive light

At the Division 5 Meeting in February 1989 in Fribourg it was decided to form a Technical Committee with the subject "obtrusive light". Preliminary terms of reference: "To study the effects of obtrusive light from exterior lighting, to residents and traffic; and to prepare a Technical Report that gives measure(s) to describe the effect(s), restricting values for these measures and measuring methods".

Division 5 is happy that Prof. Warren G. Julian from Australia is willing to take on the chairmanship. He has however one requirement: he is only willing to take on this task provided that there are active and expert people who can actively participate.

Wout van Bommel
CIE Division 5 Director

Copy: Council members
Ph. Joye