

# DALTONIANA

## NEWSLETTER

### OF THE INTERNATIONAL RESEARCH GROUP ON COLOUR VISION DEFICIENCIES

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#### INTERNATIONAL RESEARCH GROUP ON COLOUR VISION DEFICIENCIES : DECISIONS FROM THE THIRD SYMPOSIUM

1) Directorial Committee. Prof. Jaeger asked to be replaced by Prof. Grützner. No other changes were asked either by the committee itself nor by the general assembly. Accordingly the actual composition of the directorial committee is : François (president), Verriest (general secretary and editor of the newsletter), Lakowski (general treasurer and special secretary for the Western hemisphere), M. Marré (special secretary and treasurer for the socialist countries), Dubois-Poulsen, Grützner, Le Grand, Ohta, Ruddock, Sperling and Walraven (members).

2) Standardization Committee. After hearing the detailed report of J.J. VOS, coordinator of the Working Party on Standardization formed in Edinburgh, the general assembly in Amsterdam decided to create a new standardization committee composed of Mrs. Birch, Graham, Grützner, Hill, Lakowski, Maione, Ohta, Mrs. Paulson, Roth, Verriest and Vos. This new committee elected Mrs. Birch as chairman. - The returned forms of our AO HRR action will be transmitted to Vos, as it is possible that the TNO-IZF should reprint the test.

3) Honorary Members. The directorial committee decided that the title of honorary member is an award reserved to those who fulfil two conditions : to have been prominent in visual science and particularly in the study of colour vision deficiency, and to have been helpful to the Research group. Taking into account these requirements, the directorial committee decided to decern for the first time the title of honorary member to Prof. W.D. Wright and to Mrs. L.L. Sloan.

4) Membership Fee. As the financial statement sent by the general treasurer, Prof. Lakowski, is very satisfactory (positive balance of 2231.17 U.S. dollars at April 30, 1975), the directorial committee decided that the amount of the membership fee should not be modified (that is 10 U.S. doll.).

5) Site of the next symposium. Firstly it must be remembered that the choice of the site of this fourth symposium was in fact not entirely free, as the directorial committee decided in its meeting of 25th June 1971 that the group will meet in an own symposium every two years, alternatively without and with connection with the quadriennial congress of the Association Internationale de la Couleur (AIC), of which our research group is a member. It is for this reason that we met in 1973 in the United Kingdom, our symposium in Edinburg preceeding immediately the congress of the AIC in York. For 1975 there was no AIC congress and the assembly choosed the Netherlands by ballot. In 1977 the AIC meets in the U.S.A., more precisely in Troy in the State of New York, and it is for this reason that it was said already in Edinburgh that the city of Vancouver in Canada should be the site of our 1977 symposium, as it was asked since a long time by Prof. Lakowski. However, the majority of the present members of the directorial committee esteemed that it is a very hard decision to meet for the first time outside Europe and even so far as Vancouver, and that this decision was to be left over to the general assembly after defense of different projects by their promoters. In the absence of Prof. Lakowski, the Vancouver project was defended during the general assembly by the general secretary. Alternative Invitations were made and defended for Waterloo/Toronto (Moreland), for Rochester (Brown), for Parma (Maione) and for London (Fletcher). Moreover, the general secretary said that the symposium was to be held in North America if the sum of the votes for Vancouver, Waterloo/Toronto and Rochester should be greater than the sum of the votes for London and Parma.

The result of the written ballot was :

Vancouver	7	Parma	20	No indication	1
Waterloo	6	London	19		
Rochester	<u>18</u>	Parma or London	<u>3</u>		
North America	31	Europe	42		

As Prof. Fletcher retired afterwards his invitation for London, the directorial committee esteemed that the results of the ballot were not very clear because it was not known if the members who choosed London would not prefer North America in a second choice.

However, the majority of a second general assembly in Leiden voted against a second ballot, so that the choice for Parma was confirmed.

6) Features of the next symposium. It was decided :

a) that the choice of the main themes and of the invited speakers must be submitted to the directorial committee;

b) that the main themes must be announced to all members as soon as possible, so that new experimental work could be achieved in the chosen fields;

c) that the insertion of slides with explanatory text will be obligatory, as in the Netherlands such slides improved greatly the understanding by the non english speaking members;

d) that the symposium should be held in september and no more in june.

7) New contributors for Daltoniana :

Literature survey ; Italy (except. Ist. Naz. Ott.) : Carta

Spain and South-America : Arias

Canada : Graham

Amer. J. Ophthal. : Fletcher

Arch. Ophthal. : Taylor

psychological journals : Yager

Commercially Available Colour Vision Tests and Accessories :

France : Roth

BRD : Grützner

Italy : Carta

Japan : Ohta

Austria : Neubauer

South America : Arias

Furthermore, Dubois-Poulsen suggested that the abstracts of the literature survey should be provided by the gen. secretary of a decimal classification.

New contributors are still needed for the following topics :

Literature survey : Portugal, Yugoslavia, Tchechoslovakia, Hungary, Rumania, Bulgaria, Asia (excepted Japan), journals of traffic medicine.

Official Colour Vision Requirements : Portugal, Spain, Poland, Tchechoslovakia, Rumania, Yugoslavia, Bulgaria, U.S.A. Japan, India, latin America.

Commercially Available Colour Vision Tests and Accessories : U.S.A., the Netherlands, Sweden, Norway, Finland, Spain, Portugal, Canada, all socialist, latin-american, asiatic and african countries.

They who can help are requested to write to Dr. Verriest.

Finally, a List of the Publications on Colour Vision Deficiencies is required from each member who did not send still now such a list.

Guy Verriest.

(Approved by Prof. François, Prof. Lakowski, Dr. Marion Marré).

LITERATURE SURVEY

Establishment and decay of orientation-contingent after-effects of color, by R.A. RIGGS, K.D. WHITE and P.O. EIMAS (Brown University, Providence, Rhode Island 02912), Perception and Psychophysics 16/3, 535-542, 1974.

The orientation-contingent aftereffect of color, first described by McCollough, was measured after alternately inspecting e.g. a green horizontal line grating and a magenta vertical line grating. In achromatic test gratings the horizontal lines appear pinkish and the vertical lines greenish. By a special color-mixing projector variable amounts of green and magenta light were added to the test gratings until they appeared matched and nearly achromatic. The colorimetric purity needed to achieve this null setting is a quantitative measure of the strength of the colored after-effect. Following inspection of the colored patterns ranging from 15 sec to 150 min, 6 subjects showed aftereffects lasting from a few minutes to 7 or more days. The indices of colorimetric purity increase with inspection time and decline with time after inspection. The rate of decay is mainly dependent on the magnitude of the effect built up during inspection. The after-effects show some of the time characteristics usually associated with central adaptability rather than sensory adaptation. - Ingeborg Schmidt.

Curvature detectors in human vision, by C.F. STROMEYER (Psychol. Labor. Stanford University, Stanford, California 94305) and L.A. RIGGS (Walter S. Hunter Labor. of Psychol., Brown University, Providence, Rhode Island 02912), Science 184, 1199-1201, 1974.

Stromeyer experimented with a contrast adapting pattern of curved lines : a concave-up pattern in green and a concave-down pattern in magenta interchanging every 10 seconds for 20 minutes. Also diverse modifications of the experiment were applied. The resulting phenomena are described and interpreted. The curved-line pattern had been used already by Riggs (L.A. Riggs, Science 181, 1070, 1973) in order to demonstrate, that rectilinear arrays (straight lines and edges) are not a necessary feature of pattern that generate color-contingent aftereffects similar to the McCollough effect (C. McCollough, Science 149, 1115, 1965). Stromeyer explains the resulting phenomena by an oriented-line hypothesis. However, Riggs found that these effects strongly depend on the radius of curvature and cannot be attributed to tilt or orientation which is a major factor in generation of contingent after-effects with straight-line arrays as e.g. used by McCollough. - Ingeborg Schmidt.

Responses of the visual system to fluctuating patterns, by L.A. RIGGS (Walter S. Hunter Laboratory of Psychology, Brown University, Providence, R.I., 02912), Amer. J. Optom. 51/10, 725-735, 1974.

In a lecture visual experiments are reviewed emphasizing the techniques that have been developed toward understanding the processing of color and form. In order to cut down effects from scattered light the eye was stimulated by alternating stripe pattern with counterphase alternation by substituting odd-numbered stripes for evennumbered stripes and vice versa at a fixed repetition rate, the two sets of stripes made to differ in wavelength, intensity or any other dimension. This method enables objective determination of the human and animal photopic spectral sensitivity function and has been proven useful in a variety of other ways. Experiments with sinusoidal gratings and with checkerboard patterns are reviewed, concluding with the patterncontingent after-effects known as McCollough effects, which latter are probably a manifestation of perceptual adaptation. Certain visual functions can be separately analyzed by these techniques in conjunction with computer averaging of the response potential waves that can be recorded in the eye or in the visual cortex. - Ingeborg Schmidt.

Influence of accommodation on the chromatic aberration of the eye, by M. MILLODOT and J. SIVAK (Dept. Ophthal. Opt. Univ. Wales Inst. Sci. Techn., Cardiff), Brit. J. physiol. Opt. 28/3, 169-174, 1973.

The effect of accommodation on the longitudinal chromatic aberration of the eye was investigated by having three subjects view a complex target various distances. At each distance the grating was illuminated with different wavelengths. The subject's task consisted in determining the ophthalmic lens which provided the sharpest image. The amount of longitudinal chromatic aberration did not obviously vary with the distance of observation. However, a dramatic shift in the wavelength focused on the retina took place with variation of observation distance, even after paralysing the accommodation. It is suggested that this shift is learned by some central mechanisms to spare the accommodation of the eye. Some consequences of this shift are discussed. - The Authors.

Measurement of the spherical aberration of the crystalline lens in vivo, A preliminary report, by M. MILLODOT and J.G. SIVAK (Dept. Ophthal. Opt. Univ. Wales Inst. Sci. Technol., Cardiff), Atti Fund. G. Ronchi 29/6, 903-908, 1974.

Some preliminary results of the measurement of the longitudinal spherical aberration of the crystalline lens in vivo are presented. This was accomplished by neutralising the dioptric power of the cornea by having the observer place his eye in water. It is found that the crystalline lens is affected by a large amount of spherical aberration whereas the whole eye (as measured in the system but without the water) is practically free of spherical aberrations as is already known. - The Authors.

A two-filter method for dark adaptation study, by P.A. ASPINALL (Dept. of Ophthal., Edinburgh, Scotland), Ophthalmologica 169, 299-309, 1974.

The author succeeded to delineate the portion of dark adaptation process due to rods from the portion due to cones by using a BG-filter (Ilford no. 623) and a Y-filter (Ilford no. 626). This method provides a clearly defined Kohlrausch point. Norms for some parameters in different age groups are established. - A. Pinckers.

On the deviation of Rayleigh equation by the anomaloscope and of luminous sensitivity by the Ichikawa's Colorimeter in unaffected heterozygotic females, by I. IINUMA and M. KAWAGUCHI (Department of Ophthalmology, Wakayama Medical College), Folia ophthal. Jap. 24, 158-163, 1973.

In spite of Waaler's opinion that the deviation of Rayleigh equation in unaffected female subjects may suggest the heterozygots, the authors clarified it less reliable in the anomaloscopic study on 50 unaffected heterozygotic mothers of 16 protans and 34 deutans.

The deviation of Rayleigh equation which may be of use for the detection of unaffected heterozygots was found only in 6(37.5%) proto-deviants and in 14 (41.2%) deuto-deviants. Nevertheless, a reversed deviation which may lead to a confusion was found in 4 (25%) deuto-deviants among proto-carriers and 2 (5.9%) proto-deviants among deuto-carriers.

But, using Ichikawa's colorimeter, the luminous sensitivity of 15 (93%) proto-carriers and 21 (61.8%) deuto-carriers was different from a range of 30 unaffected males and no reversed phenomenon was found.

From the above-mentioned results, Ichikawa's colorimeter is more useful in detecting genetic carriers among unaffected females than the Nagel anomaloscope. - Yasuo Ohta.

Genetic and metabolic disease, by 37 authors, edited by M.F. GOLDBERG, Boston, Little, Brown and Company 1974, 654 p.

A very valuable book for orientation on genetic and metabolic eye diseases containing a tremendous amount of material. Of special interest to the readers of the Daltoniana is the article by A.F. Deutman on macular dystrophies with a short description of affection of color vision by each disease. - Ingeborg Schmidt.

Progressive generalized cone dysfunction, by FRANCOIS J., DE ROUCK A., VERRIEST G., DE LAEY J.J. and CAMBIE E. (Ophthal. Clinic, Ghent, Belgium), Ophthalmologica 169/4, 255-284, 1974.

A selective impairment of photopic activity or absence of photopic activity in cases with an associated involvement were the selection criteria used in this paper. Colour vision was tested with Ishihara, AO H-R-R, Panel D-15, Tritan plate and Nagel anomaloscope.

The authors conclude that colour vision is always seriously affected, even in patients with good central vision. They usually found a type I red-green defect, but sometimes also a concomitant blue-yellow disturbance. It is rightly stated that a type I acquired red-green defect is an indirect proof for scotopization; a more direct proof of scotopization is given by the spectral curve of relative luminous efficiency.

In the literature the authors did find only two patients, described by Goodman, with absent photopic ERG and normal colour vision. In our opinion the cases of Van Lith (Xth ISCERG) and Pinckers & Thijssen (XIth ISCERG) should also be taken in account. - A. Pinckers.

Ocular toxicity of ethambutol (A propos de la toxicité oculaire de l'éthambutol by Cl. DOUCHE (Paris, France), Ann. Oculist. 207/8, 577-661, 1974.

Of 135 patients receiving 20 mg/kg ethambutol 3 patients developed an optic neuritis, two being alcoholics. Colour vision examination : F.M. 100 Hue; 1 case illustrated, showing a tetartan axis. The author conclude that ophthalmological examination in alcoholics is necessary if such patients are treated with ethambutol. - A. Pinckers.

Visual disturbances in optic neuritis (in russian), by N.K. KHACHATUROVA, Westnick Oftalmologie 1973/2, 39-42.

Colour vision deficiencies were found in examination by Rabkin's pigment methods : "lowered function stability of chromatic vision". - Marion Marré.

Submicroscopic and cytochemical changes in photoreceptors of the retina under the action of ultrasound, by R.K. MARMUR, N.E. DUMBROVA and V.P. PLEVINSTEIS, Oftalmologitscheski Journal (Odessa) 1973/8, p. 592.

Electron-microscopic and histochemic studies revealed high ultra-acoustic sensitivity of photoreceptors, stimulating influence of therapeutically admitted intensities of ultra-sound on mitochondrial activity and synthetic processes, and action of increased doses of ultrasonic energy on photoreceptory elements. - Marion Marré.

Utility of several clinical tests of color-defective vision in predicting daytime and nighttime performance with the aviation signal light gun, by J.A. STEEN, W.E. COLLINS and M.F. LEWIS (Aviation Psychology Laboratory, FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma 73125) Aerospace Med. 45(5), 467-472, 1974.

Subjects of varying type and degree of color deficiency were tested on a battery of color tests, including the American Optical Co. Plates (both 1940 and 1965 editions), the Dvorine Plates, the Farnsworth-Munsell 100-hue, the Farnsworth Lantern, The Farnsworth Panel D-15, the SAM Color Threshold Tester, the

Titmus Vision Tester Color Plate, and an anomaloscope. Correlations with a daytime and nighttime practical test of the ability of subjects to discriminate aviation signal red, white, and green were obtained. The results indicate that color-defective people can identify flashes from a signal light gun better at night than during the day. It was also found that the Farnsworth Lantern, the SAM Color Threshold Tester, the two sets of A O Plates, and the Dvorine Plates were among the best predictors of performance on the practical test. - The Authors.

Predictive validities of several clinical color vision tests for aviation signal light gun performance, by K.N. JONES, J.A. STEEN and E.W. COLLIN (Department of Psychology, University of Oklahoma, Norman, Oklahoma 73069, and FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma 73125), Aviat. Space Environ. Med. 45/5, 660-667, 1975.

Scores on the American Optical Company (AOC) test (1965 edition), Dvorine Test, Farnsworth Lantern test, Color Threshold Tester, Farnsworth-Munsell 100-Hue test, Farnsworth Panel D-15 test, and Schmidt-Haensch Anomaloscope were obtained from 137 men with color-defective vision and 128 men with normal color vision. The validity of each of these tests in predicting scores on the aviation signal light gun was assessed by using daytime and nighttime administrations of the light gun as the criteria. Two "best sets" of plates from the AOC and Dvorine tests were selected by calculating a multiple regression equation in a stepwise manner with the nighttime and then the daytime administration of the signal light gun test as the criteria. Based on a graphic presentation of the miss and false alarm rates for each test at various possible cut scores, suggestions were made regarding the use of each test and the selection of optimal pass/fail scores. - The Authors.

A simple and inexpensive method for helping "red-green blind" persons to identify colors, by D. KERNELL (Dept. of Neurophysiology, University of Amsterdam) Review of Sensory Disability, No. 17, p. 9, Sept. 1974.

Description of a filter method for color identification by color deficient persons, similar to that used by Ahlenstiel (Ahlenstiel H. Sachs, E. and H. Streckfuss, Arch. Augenheilk. 102, 271, 1930). The apparent brightness or darkness of an object is compared when looking at it in rapid succession through two different filters. The author used Wratten Kodak gelatin filters, one green No. 57 and two reds, No. 23 and No. 26, all mounted side by side. He himself a protanope, when aided by the filters, could correctly identify 126 out of 127 color-coded resistors; without filters he could identify correctly only 79 at them. The filter method seems to be well suited for the coarse identification of reasonably saturated colors. - Ingeborg Schmidt.



Color discrimination for the color blind, by H.B. ROSENSTOCK And D.A. SWICK (Naval Research Laboratory, Washington D.C. 20375), Aerospace Medicine, 1194-1197, October 1974.

Suggestion of a prosthesis providing color information to the color blind by converting color differences into intensity differences. It consists of spectacles to be placed in front of one eye only and divided into three vertical regions, a red filter on the left, a transparent in the center and a green filter on the right. The color blind observes appearance or disappearance of red, green and "other-colored" sources through the different regions by slight rotation of his head. The filter arrangement does not cause substantial interference with normal vision. The strips are arranged vertically not to interfere with the horizontal separation preempted by the usual bifocal spectacle lenses. The same device works for reflected light-Ishihara charts, colored lines etc. At night, the green filter (Wratten Kodak No. 65) works as well as it does by day, but the red filters do not work as well, the Wratten No. 29 does not wholly obliterate a green traffic light at night, and Wratten 70 absorbs nearly all visible light. See also the preliminary report by H.B. Rosenstock and D.A. Swick, Review of sensory disability No. 16, p. 3, June 1974. (The glasses described above are very similar to those suggested by J. Bouteloup, Cpt. Rend. Acad. Sciences Paris 236, 632, 1953, however he arranges the 3 strips horizontally). - Ingeborg Schmidt.

#### CORRESPONDANCE AND ANNOUNCEMENTS

##### CALL FOR OBITUARIES

Our Research Group has lost two of its most prominent german members : Prof. Herbert SCHOBER, director of the Institut für medizinische Optik in Munich, and Prof. Dr. Ernst HEINSIUS, from Hamburg. I ask to send me short biographies, in order that I could insert obituaries in a next issue of "Daltoniana". - Guy Verriest.

##### MEETING ON COLOUR VISION DEFICIENCIES IN PARIS, NOV. 1975.

The next annual report of the Societies of ophthalmology of France is "The pathology of color sense" by G. PERDRIEL, P. LANTHONY and J. CHEVALERAUD. It will be presented at the annual meeting of the Societies of Ophthalmology of France, Sunday the 16th November 1975, at 9 a.m. in the Faculty of Medicine of Paris (rue de l'Ecole de Médecine, Amphithéâtre de l'Ecole Pratique).

Authors wanting to present a communication about the subject of this report can inscribe their names writing to the general secretary of the Society of Ophthalmology de Paris ; Docteur J.P. BAILLIART, 47, rue de Bellechasse, PARIS VII. The communications are in French. The deadline for the inscription is 1st October 1975. - P. Lanthony.

#### MEETING ON COLOUR SURROUNDINGS IN BUDAPEST, JUNE 1976.

The HUNGARIAN COLOUR COMMITTEE, member of the AIC, working within the scope of the Hungarian Electrotechnical Association, will organize 8-11 June 1976 in Budapest a CONFERENCE OF COLOUR STUDIES with the topic "Theoretical and practical problems of coloured surroundings". Further information on the Conference is available from the Hungarian Colour Committee and from the Secretary of the Conference. Postal address : Magyar Elektrotechnikai Egyesület, MAGYAR SZIBIZOTTSÁG, 1055. Budapest, Kossuth Lajos tér 6-8, Hungary. Telephone : 126-313. - The Organizing Committee.

#### MEETING ON COLOUR PERIMETRY IN TUBINGEN, SEPT. 1976.

The Second Symposium of the International Perimetric Society will be held on 20th September 1976 in Tübingen (BRD). There will be a session of the Research Group on Colour Perimetry. The deadline for submission of communication titles and abstracts is 1st April 1976. The interested people are asked to write to Dr. G. Verriest, chairman of the Research Group on Colour Perimetry, with an additional copy for Dr. E.L. Greve, secretary of the International Perimetric Society. - Guy Verriest.

#### DEANE B. JUDD - AIC AWARD TO BE ESTABLISHED

To recognize work of international importance in the fields of color perception, color measurement, or color technology, a Deane B. Judd - AIC Award is announced. Funds have been provided by Mrs. Deane B. Judd to establish and administer this award in memory of her late husband. This will be done through the Munsell Color Foundation, of which Dr. Judd was president 1942-1972. The present plan is for the award to take the form of a gold medal to be awarded biennially to a suitable candidate, the presentation to take place at a main quadrennial Congress of the Association Internationale de la Couleur and at a mid-term AIC conference, or, when no mid-term AIC conference is held, at some other suitable mid-term conference agreeable to the AIC Executive Committee.

The award is established to recognize important work in color science, with wide latitude given the selection committee, asking only that its choice be accompanied by a citation that

clearly states the merits or achievements of the person named to receive this honor, whether the choice be made for a single outstanding piece of work, for an ongoing program that covers a wide range of co-ordinated studies, for leadership in color science education, or for some other meritorious service in the field of color science. The recipient of the medal may be of any nationality.

The award will be made on the recommendation of a special Awards Committee to consist of, or be appointed by, the AIC Executive Committee. In the event of the AIC being unable to act for any reason, the trustees of the award fund may approach some other body of high scientific international standing in the color field to act in its place. If funds are available the trustees are empowered to assist the medallist with his travelling expenses to the Congress or Conference to receive the award. - A. Brockes, Secretary-Treasurer AIC.

#### ABOUT THE PROCEEDINGS OF THE EDINBURGH SYMPOSIUM

We cannot understand why some participants of the 2nd symposium in Edinburgh did not receive the corresponding volume. Please let us have their names so that we can look into the matter. Sometimes the address has been wrongly indicated and the Post Office did not return the copy, sometimes the participants changed their address and did not inform you or us accordingly, and occasionally copies are lost in the mail. Therefore, if you know of participants who did not receive their copy, kindly give us their addresses and we will be glad to send them a replacement copy. - W. Schöler, Editing Dept. 2, S. KARGER AG, Arnold Böcklinstrasse, 25 - CH-4000 BASEL, Switzerland.

Accordingly the members who have paid the full inscription fee to the Edinburgh symposium and who did not receive the Proceedings volume are asked to write to Mr. Schöler. -  
Guy Verriest.

ADDRESSES OF THE MEMBERS OF THE RESEARCH GROUP

(end - please check and inform the general secretary if uncorrect - a list of corrections and of new members will be given in the next issue)

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