DALTONIANA

NEWSLETTER

OF THE INTERNATIONAL RESEARCH GROUP ON COLOUR VISION DEFICIENCIES

President: Prof. W.D. WRIGHT (U.K.)

Secretary for the Western Hemisphere:
Dr. R. LAKOWSKI
Department of Psychology, University of British Columbia, VANCOUVER 8 (Canada)

General Secretary and Editor of the Newsletters:
Dr. G. VERRIEST
Dienst Oogheelkunde, Akademisch Ziekenhuis
De Pintelaan 135 - B-9000 GENT (Belgium)
(verantw. uitg.)

Secretary for the Socialist Countries:
Dr. M. MARRE
Universitäts-Augenklinik, Fetscherstrasse 74
8019 DRESDEN (D.D.R.)

Tweemaandelijks Tijdschrift

Nr. 42 - 15th march 1981

CHECK YOUR PAPERS FOR THE SIXTH INTERNATIONAL IRGCVD SYMPOSIUM IN BERLIN ON THE LIST AT THE BEGINNING OF THIS ISSUE

SIXTH INTERNATIONAL IRGCVD SYMPOSIUM

Berlin/Steglitz 17th-19th september 1981

I list here the announced papers.

Please check (1) if your paper is included in the list (2) if the names of the authors, the city and the title of the paper are wholly correct (3) if I placed your paper in the convenient session. Send me your corrections by return of mail. Don't forget that you had to send me before 1st april a summary of at most 200 words for each paper (also the invited ones!); in fact I cannot wait longer than 1st may.

The speaking time will be of 30 min for the three invited papers, of 15 min for the special lecture of Prof. W.D. Wright and of 10 min for all other papers. As Adam Hilger Ltd. declined to print again the proceedings, these will be published by Dr. W. Junk in The Hague, who will send instructions to the authors (this of which the name is underlined in the case of several authors for the same paper). On the other hand, Prof. M. Richter will send the definitive inscription and hotel reservation form to all IRGCVD members and to the other people who asked for it. - G.V.

THEME : SPATIAL AND TEMPORAL APPROACHES FOR STUDYING COLOUR VISION

R.M. BOYNTON (San Diego, Cal., U.S.A.) : Spatial and temporal approaches for studying colour vision : A review (Invited paper)

A.K. PATEL and R.W. MASSOF (Baltimore, Md., U.S.A.) : Adaptation and chromatic spatial spread functions.

W. THOMA and H. SCHEIBNER (Düsseldorf, B.R.D.) : Tritanopic saturation and line distinctivity.

M.L.F. DE MATIELLO and A. BIONDINI (Buenos-Aires, Argentina) : Magnitude estimation of lightness spatial variations.

I.E. HOLLIDAY, K.H. RUDDOCK and I.M. HENDRICKS (London, U.K.) : A new effect associated with central colour vision deficiency : Spreading inhibition.

H. ZWICK, BELKIN and O'MARA (San Francisco, Cal., U.S.A.) : Spectral dark adaptometry measured by spectral LED sources thru the visible spectrum.

M.L.F. DE MATTIELLO (Buenos-Aires, Argentina) : Discrimination of grays under different contrast relation.

L.T. SHARPE and J.D. MOLLON (Cambridge, U.K.) : Dynamic changes in sensitivity to long-wavelength incremental flashes.

J.D. MORELAND (Bradford, U.K.) : Spectral sensititivy measured by "apparent-motion" photometry and by using optokinetic nystagmus.

L.R. RONCHI, R. MACII and M. NARDI (Florence, Italy) : Responses to short duration red-green mixtures.

C.R. CAVONIUS and A.J. REEVES (Dortmund, B.R.D.) : Dichoptic flicker photometry.

THEME : PERIPHERAL THRESHOLDS AND CHROMATIC DISCRIMINATION IN OPHTHALMOLOGICAL DIAGNOSIS

E. HANSEN (Oslo, Norway) : Peripheral thresholds and chromatic discrimination in ophthalmological diagnosis : A review (Invited paper).

M.A. JOHNSON and R.W. MASSOF (Baltimore, Md., U.S.A.) : Spatial properties of chromatic mechanisms in the peripheral retina.

THEME : PATHOLOGY OF THE OPTIC PATHWAYS AND COLOUR VISION

A. DUBOIS-POULSEN (Paris, France) : Pathology of the higher optic centers and colour vision : A review (Invited paper).

A. HILL and V. AGNETTI (Oxford, U.K.) : The effect of right and left cerebral hemisphere damage on colour vision.

J. ROVAMO (et al.?) (Helsinki, Finland) : Acquired blindness for achromatic stimuli.

J.A. KEARNS and I.A. CHISHOLM (Saskatoon, Sask., Canada) : Pattern of visual recovery after relief of chiasmal compression.

A. SERRA (Cagliari, Italy) : Visual fatigue related to color discrimination in multiple sclerosis.

THEME : WHY IS THE BLUE MECHANISM MORE LIABLE TO ACQUIRED DAMAGE?

J.D. MOLLON (Cambridge, U.K.) : The psychological anomalies of the blue mechanism.

W.T. HAM (Richmond, Virginia, U.S.A.) : (Formal paper on blue mechanism prior to the panel discussion).

E. ZRENNER (Bad Nauheim, B.R.D.) : The electrophysiological characteristics of the blue sensitive mechanism..

F. ZISMAN, A. ADAMS, S. LEWIS, B. HO and J. CAVENDER (Berkeley, Cal., U.S.A.) : Diabetic control and short wavelength cone sensitivity.

M. MARRE (Dresden, G.D.R.) : The blue mechanism in diseased eyes with eccentric fixation.

H. ZWICK, D.O. ROBBINS and BLOOM (San Francisco, Cal., U.S.A.) : Long term effects associated with acute laser exposure.

PANEL DISCUSSION : P. GRÜTZNER (Darmstadt, B.R.D.), W.T. HAM (Richmond, Virginia, U.S.A.), M. MARRE (Dresden, D.D.R.), J.D. MOLLON (Cambridge, U.K.), A. PINCKERS (Nijmegen, The Netherlands), H.G. SPERLING (Houston, Texas, U.S.A.), D. VAN NORREN (Soesterberg, The Netherlands), B.R. WOOTEN (Providence, Rhode Island, U.S.A.), A.A. WRIGHT (Houston, Texas, U.S.A.), F. ZISMAN (Berkeley, Cal., U.S.A.), H. ZWICK (San Francisco, Cal., U.S.A.).

SPECIAL SESSION ON COLOUR VISION IN ANIMALS AND MORPHOLOGY

G.H. JACOBS, J.K. BOWMAKER and J.D. MOLLON (Santa Barbara, Cal. U.S.A./Cambridge, U.K.) : Protan and deutan colour vision in monkeys : Behavioural and microspectrophotometric measurements on the same individuals.

A.A. WRIGHT and H.G. SPERLING (Houston, Texas, U.S.A.) : Hue discrimination by a rhesus with unilateral induced tritanopia.

D. YAGER and M. ROMESKIE (New York, N.Y., U.S.A.) : Spectral saturation in pigeons, monkeys and humans : Data and a physiological model.

H. ZWICK, E.S. BEATRICE, STUCK and SCHUSCHEREBA (San Francisco, Cal., U.S.A.) : Low level laser effects, Morphology.

SCHUSCHEREBA and H. ZWICK (San Francisco, Cal. U.S.A.) : Striated rootlet system in the rods and cones, Structural evidence for active photoreceptor alignment.

SESSION(S) ON THE METHODS OF EXAMINATION

M. MARRE and E. MARRE (Dresden, G.D.R.) : A comparative study about different examination methods in acquired color vision defects.

A. HILL and P. ASPINALL (Oxford/Edinburgh, U.K.) : Pass/fail criteria in colour vision tests and their effect on errors and decisions in test batteries.

A. SERRA, C. MASCIA, R. CASTI and C. DESSY (Cagliari, Italy) : Diagnosis of acquired color vision defects with the help of decision theory.

P. ASPINALL and A. HILL (Edinburgh/Oxford, U.K.) : Utility functions for decisions in colour vision testing.

A. PINCKERS (Nijmegen, The Netherlands) : Minimal requirements for color vision examination.

J. BIRCH (London, U.K.) : Diagnosis of defective colour vision using the Nagel anomaloscope.

A. ROTH (Geneva, Switzerland) : The need of the blue-green match in clinical diagnosis.

Y. OHTA, Y. IZUTSU, T. MOTOHASHI, E. TANABE and K. SHIMIZU : Trial anomaloscope for detecting the tritan subjects and its clinical use.

G. VERRIEST, J. VAN LAETHEM and A. UVIJLS (Ghent, Belgium) : A new 100 hue test validation.

A. HILL and K. WADE (Oxford, U.K.) : An evaluation of new and used FM 100 hue discs.

A. GONELLA and M.L.F. DE MATTIELLO (Buenos-Aires, Argentina) : Contrast discrimination tests, Clinical applications in acquired diseases.

O. LAGERLÖF (Stockholm, Sweden) : Pseudoisochromatic charts in acquired dyschromatopsia.

J.L. VOLA, P. GASTAUD, J. LEID and J.B. SARACCO (Marseille, France) : Advantage of the two-colour threshold methods, Comparison with an arrangement test in the diabetic.

A. HILL, G. HERON, M. LLOYD and P. LOWTHER (Oxford, U.K.) : The assessment of colour vision in children.

G. VERRIEST, A. UVIJLS, M.F. GANDIBLEUX, P. PIERART, A. MALFROIDT and M.R. DE CONINCK (Ghent/Mons, Belgium) : Colour vision tests in children.

S.R. COBB (Glasgow, U.K.) : The examination of small children for colour vision defect.

R. FLETCHER (London, U.K.) : Children's test, Further applications.

SESSION ON THE CONGENITAL COLOUR VISION DEFECTS

W.D. WRIGHT (London, U.K.) : Dichromatic colour confusions and the spectral sensitivity of the retinal receptors (Special paper).

K. KNOBLAUCH and B.R. WOOTEN (Providence, Rh. I., U.S.A.) : Intensity invariance of the achromatic point in sex-linked dichromacy.

D. JAMESON, L.M. HURVICH and F.D. VARNER (Philadelphia, Pa., U.S.A.) : Discrimination mechanisms in color deficient systems.

I.M. HENDRICKS and K.H. RUDDOCK (London, U.K.), Post-receptoral colour vision mechanisms in congenital red-green anomalous trichromats.

W.A. THORNTON (Bloomfield, N.J., U.S.A.) : Perceived brightness by normal and defectives.

E. WOLF and H. SCHEIBNER (Düsseldorf, B.R.D.) : On the relationship between protanomaly and protanopia.

P. LANTHONY (Paris, France) : Grey's denomination in total achromatopsia.

R.L. KLINGAMAN (San Antonio, Texas, U.S.A.) : Lack of blue mechanism saturation in a blue-cone monochromat.

A. HILL and P. ASPINALL (Oxford/Edinburgh, U.K.) : Tetartanopia in a mixed heterozygote.

G. VERRIEST, F. HAUREZ and P. PIERART (Ghent/Mons, Belgium) : Statistical demonstration of minor colour vision abnormalities.

I. IINUMA (Wakayama, Japan) : Reconsidered classification of congenital colour vision defects.

V.C. SMITH, S.A. BURNS and J. POKORNY (Chicago, Ill., U.S.A.) : Colorimetric evaluation of urine-sugar tests used by diabetic patients.

R. FLETCHER (London, U.K.) : Experiences with assisting daltonics.

SESSION ON THE ACQUIRED COLOUR VISION DEFECTS

Y. OHTA, T. MIYAMOTO, A. SEKI and Y. KAJIGAYA (Tokyo, Japan) : On spectral sensitivity test of the retinal receptor in central serous chorioretinopathy (Masuda).

A. PINCKERS (Nijmegen, The Netherlands) : X-linked progressive cone dystrophy.

F. ZISMAN and A. ADAMS (Berkeley, Cal., U.S.A.) : Spectral sensitivity of cone mechanisms in juvenile diabetics.

A. ADAMS, F. ZISMAN, R. RODIC and J. CAVENDER (Berkeley, Cal., U.S.A.) : Chromaticity and luminosity changes in glaucoma and diabetes.

A. ADAMS and R. RODIC (Berkeley, Cal., U.S.A.) : Use of desaturated and saturated versions of the D-15 test in glaucoma and glaucoma-suspect patients.

R.G. ALKEN and T. SCHNABEL (Frankfurt/Main, B.R.D.) : Color vision deficiencies induced by digoxin in patients and healthy voluntiers.

E. ZRENNER, W. KRAMER, C. BITTNER and M. SCHLEPPER (Bad Nauheim, B.R.D.) : Rapid effects on colour vision following intravenous application of a new positive inotropic substance (ARL 115, a theophylline derivative.

R.G. ALKEN, H. HIPP and H. ALTER (Frankfurt/Main, B.R.D.) : Differences in color vision deficiencies induced by various cardiac glycosides.

C.J. KRÜGER and M. BAIER (Hannover/Bad Nauheim, B.R.D.) : Classification of acquired colour vision deficiencies by electro-ophthalmological findings and spectral sensitivity measurements.

R.G. ALKEN (Frankfurt/Main, B.R.D.) : Drug induced color vision deficiencies - from side effects to clinical pharmacology.

TWO PAPERS OF LAKOWSKI (not yet specified)

PAPERS ONLY FOR THE PROCEEDINGS

L.N. WENT (Leiden, The Netherlands) : Corrections to the paper of L.N. WENT and E.C. DE VRIES-DE MOL "Genetics of Colour Vision" (Colour Vision Deficiencies 3, 96-107, 1976).

L.N. WENT (Leiden, The Netherlands) : Corrections to the paper of S. VAN DE MERENDONCK and L.N. WENT "Two cases of inherited deutan and tritan disturbances in the same person, and a study of their families" (Colour Vision Deficiencies 5, 268-272, 1980).

LITERATURE SURVEY

Enhancement of luminance flicker by color-opponent mechanisms, by P. GOURAS (Eye Res. Div., Columbia Univ., New York, N.Y., U.S.A.) and E. ZRENNER (Max Planck Inst., Bad Nauheim, B.R.D.), Science 205, 587, 1979.

Color-opponent ganglion cells in the monkey retina respond to luminance flicker at high temporal frequencies. Color opponency, which makes these cells so selective of wavelength at low temporal frequencies, is progressively lost at high frequencies. This loss is due to a frequency-dependent phase shift between the responses of spectrally different center and surround mechanisms in the receptive field of each of these cells. Center and surround responses, which are antagonistic at low temporal frequencies, become synergistic at high ones, making these cells most responsive at high frequencies to those wavelengths to which they are least responsive at low frequencies. This phenomenon can explain the differences between chromatic and luminance flicker in human vision. - The Authors.

Blue-sensitive cones of the cat produce a rodlike electroretinogram, by E. ZRENNER (Max-Planck Inst., Bad Nauheim, B.R.D.) and P. GOURAS (Eye Res. Div., Columbia Univ., New York, N.Y., U.S.A.), Invest. Ophthal. Vis. Sci. 18, 1076-1081, 1979.

Two cone mechanisms are identifiable in the strongly yellow light-adapted ERG of the arterially perfused cat eye. One has its maximum spectral sensitivity near 555 nm; the other has its maximum near 450 nm. The former cone system produces a much larger signal with characteristics of a typical cone or inhibitory ERG. The latter cone system produces a small, saturable signal (less than 5 μV) which resembles a rodlike or excitatory ERG. The results imply that the latter ERG is generated by blue-sensitive cones, which form a small fraction of the total cone population and share some physiological and perhaps anatomical properties of rods. - The Authors.

The McCollough effect. An indicator of central neurotransmitter activity, by C.C.D. SHUTE. 149 pages, Cambridge University Press, 1979.

The "McCollough effect" involves phantom colours i.e. colours generated within the visual system of the brain rather than resulting from the character of the light reaching the eye. The original formulation of the effect and subsequent modifications and developments are reviewed. A table demonstrates that the McCollough colour (McCollough complementary) is in general yellower than the true complementary of the adapting colour. Since the colours of the McCollough effect have something in common with interference colours some considerations are given to the different ways in which interference colours can be formed, especially those due to birefringence produced with polarized light. Visual phenomena that resemble interference colours, as also McCollough colours to some extent, namely Maxwell's spot, Haidinger's brushes and coloured shadows are reviewed. Methods measuring the McCollough effect, also its strength and decay, are described. Interocular influences that occur during monocular induction of the effect have important implications relating to amblyopia. The effects of drugs on the McCollough effect show that any procedure which raises the level of central inhibition tends to enhance the effect. Of all drugs tested only caffeine accelerated the decay rate of the effect strongly suggesting a cholinergic factor. The influence of muscular activity, arousal and stress on the McCollough effect were tested. A possible interpretation of the accelerated decay due to muscular acticity is that the increased peripheral cholinergic activity is accompanied by increased central cholinergic activity. A chapter on learning, memory and forgetting in relation to the McCollough effect concludes the book. - Ingeborg Schmidt.

The McCollough effect in rhesus monkey, by W.M. MAGUIRE, G.E. MEYER and J.S. BAIZER (Division of Neurobiology, 4234 Ridge Lea Road, Amherst, New York 14226, U.S.A.), Invest. Ophthal. 19, 321-324, 1980.

Cortical cells sensitive to color and orientation have been found in the visual cortex of rhesus monkey. The McCollough effect of human vision has been attributed to adaptation of cortical cells sensitive to color and orientation. Rhesus monkeys were trained in a discrimination task designed to determine whether they could experience the effect. Humans were tested on the same task for comparison. The judgements of the monkeys and humans were consistent with the McCollough effect, although the aftereffect was larger for humans. These results demonstrate yet another link between human and rhesus visual physiology and performance. - James E. Bailey.

Variation in density of macular pigmentation and in short-wave cone sensitivity with eccentricity, by U. STABELL and B. STABELL (Institute of Psychology, University of Oslo, Oslo, Norway), J. opt. Soc. Amer. 70/6, 706-711, 1980.

Two normal trichromats, observing with the R.E., measured the relative spectral sensitivity on the Wright colorimeter at different eccentricities during the cone plateau of the long term dark adaptation curve. The photopic spectral sensitivity functions were obtained. (1) With the absolute threshold technique, 10 min dark adaptation, 3 min light adaptation to 100 000 photopic td, appr. 2800 K, on a 7° adapting field centered at the fovea of the R.E., then 4.5 min in complete darkness. The absolute threshold was determined once every minute till 7.5 min of dark adaptation, on a 1°x1° test field, at the center of the fovea, using 0.5 s flashes in the 430 nm to 630 nm range, at 10 nm intervals. The intensity was increased in small steps, starting at 0.3 log units below the expected threshold. The procedure was repeated at 1, 2, 3, 5 and 7° temporally. (2) With the flicker technique. After the same adaptation procedure as in (1) subsequent to the 4.5 min in complete darkness the flicker technique was used to obtain a match at 3 photopic td between a monochromatic stimulus and white of 2854 K. The intensity of the monochromatic stimulus was adjusted by a neutral density wedge until absence of flicker was obtained. The 1°x1° colorimeter field was located at the central fovea and also at 1, 2, 3, 5 and 7° temporally. With both techniques the relative spectral sensitivity tended to increase with eccentricity in the short-wave region of the spectrum. The results suggest that with the threshold technique this is due both to variation in density of macular pigmentation and in short-wave cone sensitivity, while when using the flicker technique it is due to variation in density of macular pigmentation alone. The results may serve as a basis for analyzing the variation in density of macular pigmentation and short-wave cone densitivity with eccentricity. - Ingeborg Schmidt.

The color rule : a device for color-vision testing, by P.K. KAISER and H. HEMMENDINGER. Color, Research and Application 5/2, 65-71, 1980.

The Davidson and Hemmindinger (D&H) rule provides a means of testing the similarity of the observer's color vision - how well one light source-observer combination compares with another light source-observer combination. If two observers use the same light source, the color rule provides a means of testing the similarity of the observer's color vision. If one observer uses the color rule under different light sources, it provides a means of testing the similarity of the light sources. The color rule is a rectangular instrument measuring 36.7 x 7.8 cm. Through a rectangular opening 3.2 x 3.5 cm in its center one sees a portion of two colored slides. The observer moves the slides back and forth until both halves visible through the opening look identical or nearly so, i.e. he makes a metameric match. One slide contains samples changing from purple to green through neutral gray, the other samples changing from blue to brown through neutral gray. Under an appropriate illuminant the slides are adjusted back and forth until top and bottom halves match for color. Testing results by using the rule have been published by several authors. The data are combined for reading and availability as a diagnostic aid. Normal trichromats make responses with the color rule that depend on age. An apparent yellowing of the lens was approximately equivalent to the effect of a 50-75-MK^{-1} change in the temperature of the illuminant. - Ingeborg Schmidt.

Observer metamerism, by F.W. BILLMEYER jr. and M. SALTZMAN (Department of Chemistry, Rensselaer Polytechnic Institute, Troy, New York, 12181, U.S.A.), Color Research and Application 5/2, 72, 1980.

Each of 72 observers, 20 to 60 of age and having normal color vision according to the usual tests, was asked to make a match at the D&H Rule (see the preceeding abstract) under each of two standard sources : Macbeth 6500 K Daylight and Macbath Horizon Sunlight (ca. 2300 K) in a "Macbeth Spectralite" booth. The tests substantiated that the variability of observer judgments of metameric color matches is of the same order of magnitude as the difference in match point for any observer when using the two light sources. - Ingeborg Schmidt.

Observer metamerism in college-age observers, by M.A. NARDI (The Rensselaer Color Measurement Laboratory, Rensselaer Polytechnic Institute, Troy, N.Y. 12181, U.S.A.) Color, Research and Application 5/2, 73, 1980.

The subjects were 90 male and female college students, age 17-29 y with normal color vision as determined by the AO H-R-R and the Dvorine plates. The method was the same as that by Billmeyer and Saltzman (see the preceeding abstract). The results show that the spread in settings within the group for either light source is about one quarter of that found by Billmeyer and Saltzman. - Ingeborg Schmidt.

The Coloroid Color System, by A. NEMCSICS (Department of Drawing and Composition, Technical University Budapest 1111, Budapest XI, Hungary), Color, Research and Application 5/2, 113-120, 1980.

The Coloroid Color System, developed at the Technical University of Budapest, is an aesthetically uniform system. The scales of hue, saturation and lightness appear to change uniformly over the entire length when viewed as a whole. The concepts and derivations of the system, also in relation to the Munsell and Osweld systems and the CIE XYZ system are discussed. - Ingeborg Schmidt.

Pupil responses to foveal exchange of monochromatic light, by ROCKEFELLER, S.L. YOUNG and M. ALPERN (Vision Research Laboratory, The University of Michigan, Ann Arbor, Michigan 48109, U.S.A.), J. opt. Soc. Amer. 70/6, 697-706, 1980.

Changes in the pupil of the L.E. were recorded by an infra-red TV pupillometer in a darkened room. The R.E. viewed in Maxwellian view a monochromatic 1° central disc in a 10° white 3.38 log scot. td annular surround of appr. 3000 K, both about the same luminance. The observer adapted to the central disc at some standard wavelength, e.g. 490 nm, for about 8s. The standard was then exchanged for a test wavelength, e.g. 650 nm, for 2 s, then returned to 490 nm. The exchange was accomplished by a linear polarizer. An achromatizing lens before the R.E. minimized the effect of axial chromatic aberration, and the points of pupillary entry of standard and test wavelength were carefully superimposed. The subjects were 3 normal trichromats and 2 deuteranopes. The exchange of a standard light to either shorter or longer wavelengths produced a momentary constriction of the pupil which was the larger the greater the wavelength difference. Chromatic exchanges between lights of equal chromatic aberration do not produce identical pupillary responses. - In the two deuteranopes an exchange of 560 to 650 nm and vice versa did not produce a pupillary response, however 560 nm to 498 nm and vice versa a sizable response, white to 498 nm no response, white to 511 or to 490 nm a sizable response. All stimulus exchanges were equated for luminance by the observer prior to recording. Exchange of equally luminant heterochromatic lights evoked a response with 50 ms longer latency than the same amplitude constriction evoked by a step increase in luminance of a homochromatic light. The homochromatic contrast evoking the same constriction as a given equal luminance heterochromatic exchange closely follow that which matched the residual flicker in flicker photometry of that same wavelength. An alternatinn to existing views is to suppose that the retinal signals to the pupil are triggered both by stimulus luminance and stimulus chromaticity. - Ingeborg Schmidt.

Children's perception of Munsell colors, by I.S. OFFENBACH (Dept. psychol. Sci., Purdue Univ., West Lafayette Ind. 47907, U.S.A.), J. Psychol. 104, 43-51, 1980.

Includes red-green defective subjects. Evidence of cue-learning for improvement of colour difference judgement. - From Sensory World.

Some remarks on the tritan-like anomaly in children, by G. PASSIGLI, Atti Fond. G. Ronchi, 35, 620-625, 1980.

According to some authors, a sort of tritan-like anomaly is often tested, across the first decade of life, in children free from patent ocular pathology. This fact seems to be relevant in the frame of color preferences of children. The data reported in the paper seem to indicate that the said tritan-like anomaly is better detected by the use of the K.B. test than by the use of Farnsworth Tritan Plate. - Lucia Rositani-Ronchi.

Typical and non typical errors in the Ishihara test response (Errori tipici e non tipici nella risposta al test di Ishihara), by G. PASSIGLI (Clinica oculistica dell' Università degli Studi, Firenze, Italy), Ann. Ottal. Clin. ocul. 106, 1079-1094, 1980.

The response to the 10th edition of the Ishihara test and to Farnsworth's F2 plate of 288 subjects of ages ranging between 3 and 30 years are analyzed in terms of typical errors (demonstrating the presence of a classical colour vision defect) and of non typical errors (that are age-related). - Guy Verriest.

Microprocessor controlled colour vision tester, by D.W. PRITTY (Dept. of Computer Sci., Univ. of Strathclyde, 26 Richmond Str., Glasgow G1 1XH, Scotland), Microprocessors and Microsystems 3, 219-226, 1979.

Clinical tests have been successfully carried out. The instrument is in production. - From Sensory World.

Studies on Lanthony's New Color Test. (1) Congenital color defectives, by K. ICHIKAWA, F. TORII, Y. HIRAI and S. TANABE (Department of Ophthalmology, Nagoya University School of Medicine, Japan), Jap. J. clin. Ophthal. 33/11, 1405-1419, 1979.

Thirty three color vision defectives, who were diagnosed by anomaloscope and were classified by Majima's classification, were examined with the New Color Test, and the following results were obtained. (1) The group of strongly abnormal trichromats and dichromats failed the New Color Test. It is not possible to distinguish abnormal trichromats from dichromats with the New Color Test. (2) The calculation of scores has no significance in congenital color defectives. (3) In classification of luminosity, failed buttons are located in the range of value 6 ± 0.5, but protans are likely to see blue brighter than red. - Yasuo Ohta.

A design of double 15-hue test for color defects, by Chun Suk HAHN (Hahn's Eye Clinic, 84-10, Chongro Ku, Seoul, Republic of Korea), Jap. J. clin. Ophthal. 33/6, 785-792, 1979.

This new Double 15-Hue test to classify the types and extent of congenital defective color vision consists of a pair of dichotomous tests, Tests A and B, each containing 15 color chips. Test A is a modified Farnsworth's Panel D-15 for separating subjects with severe defects from those with medium and mild defects. Test B is composed of more desaturated color chips and is used to separate the subjects with mild defects from those with severe and medium defects. The test thus enables the classification of color defective subjects into severe (grade 3), medium (grade 2) and mild (grade 1).

This test was put to clinical trial in 72 color defective high-school students and was compared with Ishihara's and the author's new pseudoisochromatic test plates. It was judged as to be of clinical value because of its accuracy, relative simplicity and objectivity. - Yasuo Ohta. - (This device is thus similar to the combination of Farnsworth's Panel D-15 with Lanthony's desaturated Panel. - Guy Verriest).

Pflügertrident-plates for testing the sense of colour (Pflügerhakens-Tafeln zur Prüfung des Farbensinnes), by K. VELHAGEN, VEB Georg Thieme, Leipzig, 1980. Text in german, russian, english, french and spanish (each 4p.) + 16 pseudo-isochromatic plates + 1 solid Plüger trident for matching the items.

This wholly new series of (printed) pseudo-isochromatic plates is intended for detecting (congenital) colour vision defects in children and illeterates. All digits are E's of which the orientation has to be indicated, e.g. by means of the solid trident.

The text is merely an explanation of the nature of the colour vision defects for non specialists. It mentions that "children already at the age of four, but always at the age of five often quickly understand the test task", that the plates are to be presented in such a way that a diffuse not bright (not specified!) daylight falls on them, and that the two first plates are demonstration ones. There is no nearer specification of the required illuminant, nor of the chromaticities of the colour dots, nor of the axes of the colour confusions; a validation against groups of normal and defective observers of different ages is also not mentioned.

However, the publisher offers me 4 copies of the test that I can give to IRGCVD members who wish to validate the test either colorimetrically or against groups of subjects.

On the other hand, the test can be ordered either to the VEB Gustav Fischer Verlag, Villengang 2, 69 Jena DDR, or to Buchexport, Leninstrasse 16, 7010 Leipzig DDR, or to Erich Bieber, Wilhemstrasse 4, 7000 Stuttgart BRD. - Guy Verriest.

Large-field substitution Rayleigh matches of dichromats, by A.L. NAGY (University of California, San Diego, La Jolla, California 92093, U.S.A.), J. opt. Soc. Amer. 70/7, 788-784, 1980.

The subjects were 4 protanopes and 4 deuteranopes who were dichromatic with standard small-field tests and two extreme anomalous trichromats. The subjects were asked to make large-field Rayleigh matches between two successively presented annular stimulus fields (inner diameter 4°, outer diameter 12°) at a retinal illuminance of 20 photopic td. The observer fixated a point in the center of the darkened inner disk of the test field. One of the fields contained a variable ratio of 662 nm + 546 nm lights, the other contained a 588 nm light of variable brightness. Once every 2s the mixture field was turned off and 100 ms later a 588 nm field appeared at the same location for 300 ms. The observer attempted to match the two fields. Following another 100 ms the mixture field was turned on again asf. until a match was obtained. The results suggested that both normal and color deficient observers were more sensitive to chromatic differences with the substitution procedure than with the side-by-side continuous viewing procedure. Rayleigh matches were made (1) during the cone plateau period after a bleach of the entire retina (2) after the rods had recovered from bleach so that they could contribute to the match (3) on a blue 20° background of 455 nm continuously superimposed upon the test stimuli to give a high ratio of rod to cone stimulation. A conventional four-channel Maxwellian view optical system was used to present the stimulus fields and the blue background to the observer. Interference filters and an interference wedge (for the 588 nm stimulus), combined with neutral density filters and wedges provided the stimuli. Under conditions (1) and (3) rods appear to be unable to contribute to the color match. Seven of the 8 dichromats were then still able to make unique matches. The matches of 6 of these 7 dichromats were consistent with matches for simple protanomalous and deuteranomalous trichromats. The blue background was equally effective in suppressing rods as was the bleach used prior to the cone plateau measurements. Matches made under condition (2) were more nearly consistent with matches predicted for the rods and the remaining normal cone mechanism. The matches of the extreme anomalous trichromats were similar to the matches of the dichromats. - Ingeborg Schmidt.

Effects of reduced illumination on the results obtained with some diagnostic colour vision tests in subjects with congenital red-green defects, by E. AARNISALO (Dept. of Ophthal., Univ. of Turku, Finland), Acta ophthal. (Kbh.), suppl. 142, Scriptor, Copenhagen, 1980. 66p., 19 fig., 6 tables.

One hundred congenitally colour defectives (30 DA, 26 EDA, 13 D, 11 PA, 10 EPA, 10 P, as classified by means of the Nagel anomaloscope) and 30 normals were subjected to the

100 hue test, to the Panel D-15 and to the Boström-Kugelberg II pseudo-isochromatic test under 5 levels of a C-illuminant corresponding to background luminances of 200, 10, 1, 0.1 and 0.02 $cd.m^{-2}$.

The deterioration of colour discrimination with decreasing illuminance level was found to be significantly larger in the colour defectives than in the normal group, scotopic patterns thus being observed at higher levels in the defectives. The author supposes that the blue-yellow opponent colour mechanism should be weakened by a lack of antagonism from the red-green colour mechanism.- Guy Verriest.

Blue sensation in eye disease, by M. YOKOYAMA (Dept. Ophthal., Mie University School of Medicine, Japan), Jap. J. clin. Ophthal. 33, 111-125, 1979.

The electrophysiological and the psychophysical properties of human blue (B) sensitive system are briefly reviewed. The clinical methods of detecting the increment threshold and of recording isolated ERG or VER of B system are described, together with the normal values or normal responses. The comparative observations are made to verify characteristic behaviours of B system with contrast to the green (G) and red (R) system under pathological conditions. Main three problems are considered and discussed here. The first measurement was made on ERG responses recorded from the eyes with relatively large detached area (more than 3/4 of entire retina). Amplitudes of the b-waves were plotted against the intensities of monochromatic light stimuli, 560 nm for R.G. cones and 440 nm for B cones. A significant decay of a.v.i. curve was found only in B system responses obtained from the eyes with retinal detachment. The foveal spectral sensitivity was markedly reduced in blue part of the spectrum and slightly but also significantly reduced in red and green-yellow regions. Secondly, an attempt was made to localize the site of neuronal disturbance in open angle glaucoma. The ERGs of B system as well as RG system were mostly normal even in many glaucomatous eyes with severely affected vision and visual field. In contrast to this, foveal spectral sensitivity of B system was reduced in early stage of open angle glaucoma with only slight changes in vision or visual field. It was concluded that the change in B system threshold was very specific for glaucomatous eyes, but it occured within neuronal structures of retinal ganglion cells. Thirdly, ERGs of B system were compared in rod and cone degenerations. All of photopic b-waves of B or R.G system were reduced in progressive cone dystrophy, but the ratio B/R.G was 1/3 in amplitudes as compared with the normal ratio 1/5. However in a case of retinitis pigmentosa B system response had already abolished whereas considerable amount of R.G responses were still recordable as high as 25μV. As mentioned above, the B system reveals characteristic nature in some pathological processes in the outer or inner layer of the retina. It will be a very significant indicator detecting early change in visual pathway. - Yasuo Ohta.

biophysic médical s.a.

CHROMOPS

COLOUR VISION

AUTOMATION OF THE FARNSWORTH 100 HUE TEST

The ophthalmologist can at last obtain :

- AUTOMATICALLY
- INSTANTLY
- EASILY
- WITH NO RISK OF ERROR

the results of the FARNSWORTH 100 HUE test for diagnosis of congenital dyschromatopsia and the diagnosis and surveillance of contracted dyschromatopsia.

- USE OF EXISTING CAPS

  It is possible to use the caps of the 100 HUE test you have already. The coding system which enables the unit to calculate the patient's errors is fixed under commercially available caps.

- SPEED

  When the patient has put the caps in position in the usual way, the circular diagram is produced in less than a minute. The total score is displayed instantaneously.

- TWO CALCULATION METHODS INCORPORATED

  The results can be obtained either according to KINNEAR or according to FARNSWORTH by simply pressing the selection knob.
  This score is displayed on the digital display.

- STUDY OF PARTIAL SCORES

  Zone selectors enable the operator to know the partial score for a particularly interesting zone. This score is also displayed instantaneously.

For further information, please write to :

BIOPHYSIC MEDICAL S.A., CLERMONT-FERRAND - FRANCE

S.A. au capital de 2 000 000 F. Siège social : 10, rue des Barres 75004 Paris - Tél. 271 35 00 - R.C. 75 B 4585
Correspondance : B.P. 64 Saint-Jean 63015 Clermont-Ferrand Cedex (France)
Adresse : rue Newton - Z.I. du Brezet - 63100 Clermont-Ferrand - Tél. (73) 91 20 71 Telex 990 586 F

Réf. : 012