

DALTONIANA

NEWSLETTER

OF THE INTERNATIONAL RESEARCH GROUP ON COLOUR VISION DEFICIENCIES

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Nr 3 - 25th march 1972

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SEE ON p. 11 THE FIRST ANNOUNCEMENT OF THE NEXT SYMPOSIUM
OF THE INTERNATIONAL RESEARCH GROUP ON COLOUR VISION DEFICIENCIES - EDINBURGH 28-30TH JUNE 1973

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EDITORIAL

Miss Helen M. Paulson (Groton, U.S.A.) suggested, as additional section in Daltoniana, a compilation of the colour vision requirements and the colour vision tests used by the various military services throughout the world.

The editor finds this an excellent idea, but would extend that compilation also to the requirements and tests used for the mean civil purposes, namely aviation, navy, railway, auto-bus, taxi, lorry and private car driving, and also other activities for so far colour vision defectives can be officially discarded.

An example is given below. In order to save time and to avoid duplicata, we ask at once to the members Adam (Israel), Chomiczewska (Poland), Cruz-Coke (Chili), Cvetkovic (Yugoslavia), Greve (Netherlands), Hansen (Norway), Hedin (Sweden), Heinsius (DBR), Helve (Finland), Hong (Korea), Israel (Argentina), Kalberer (Switzerland), Kandemir (Turkey), Koliopoulos (Greece), Konstantinoff (Bulgaria), Luntz (South Africa), Mailath (Hungary), Maione (Italy), M. Marré (DDR), Matta (Libanon), Neubauer (Austria), Ohta (Japan), Paulson (U.S.A.), Popescu (Romania), Rethy (Nigeria), Smith (Australia), Taylor (U.K.) and Vola (France) to send us a similar list, each for his own country.

This would be also an excellent preparatory work for our standardization committee.

OFFICIAL COLOUR VISION REQUIREMENTS

BELGIUM (1972)

	Colour vision requirements	Tests
Private car driving	No limitations	
Lorries	No limitations	
Taxis, busses	Protanopes and achromats excluded	Ishihara + Panel D-15
Railways cat. A, B	Normal	Ishihara
cat. C, D	Normal	Holmgren
cat. E	No limitations	
Aviation profess.	Normal	Ishihara
private	Normal	Beyne
Marine (deck)	Normal	Ishihara
Army aviation	Normal	Ishihara + other tests
career (a.o. gendarmerie)	Protanopes and achromats excluded	Ishihara + Panel D-15
militia	Achromats excluded	

G. Verriest.

LITTERATURE SURVEY

The effects on employment of defects in colour vision,
by W.O.G. TAYLOR, Brit. J. Ophthal. 55, 753-760, 1971.

Dr. Taylor established an advisory clinic for colour defective children in Ayr in 1965. This paper discusses briefly the careers chosen by a group of children with reference to "suitable" and "unsuitable" occupations for colour defectives stipulated in the Careers Bulletin of the Youth Employment Service. Two out of three colour defective boys chose badly although the classification of "suitable" and "unsuitable" occupations needs amplification and in some cases is obviously unsatisfactory. The tests used by Dr. Taylor, although the results are not described here, include the Ishihara, AO H-R-R, T.M.C. and Farnsworth F2 plates, the 100-Hue Test, and the Nagel and Pickford (1966) Anomaloscopes. - Jennifer Birch-Cox.

Colour vision in blue-cone "monochromacy", by ALPERN, LEE, MAASEID VOOG and MILLER, J. Physiol. (London) 212/1, 211, 1971.

A comprehensive study of atypical (blue-cone) monochromats. These subjects show two action spectra when tested by the increment threshold method of Stiles. One corresponds closely with that for rhodopsin (λ_{50}) while other has a peak at approx. 450 nm and has the spectral characteristics of normal blue cones. Under some circumstances such individuals are dichromats with a neutral point in the neighbourhood of 460-470 nm relative to illuminant C. The results for four blue-cone monochromats are compared with ordinary (λ_{50} only) monochromats. Tests include AO H-R-R plates, Panel D-15 and 100 Hue tests, luminosity and increment thresholds, colour matching, dark adaptation, Stiles-Crawford measurements and retinal densitometry. - Jennifer Birch-Cox.

The Florida retinal densitometer, by HOOD and RUSHTON, J. Physiol. (London) 217/1, 213, 1971.

The newly designed Florida densitometer for the measurement of human visual pigments is described. The instrument is of simpler construction and better performance than earlier instruments designed by Rushton and his co-workers. The principles of reflexion densitometry and the interpretation of the measurements are discussed. - Jennifer Birch-Cox.

Stiles-Crawford effect and the bleaching of cone pigments, by COBB and RUSHTON, J. Physiol. (London), 617/1, 231, 1971.

The Stiles-Crawford effect (the efficiency of light entering the eye through various points in the pupil) was studied using two criteria (a) visual brightness judged by flicker fusion, and (b) the rate of cone pigment bleaching measured by reflexion densitometry. Both methods give the same Stiles-Crawford effect confirming that the densitometer measures pigment deep in the outer segments of the cones where light is absorbed for vision. The authors conclude that the foveal cones act as if they all point in the same direction. - Jennifer Birch-Cox.

The independence of the temporal integration properties of individual chromatic mechanisms in the human eye, by KRAUSKOPF and MOLTON, J. Physiol. (London) 219/3, 611, 1971.

Temporal integration properties are shown to be dependent upon the adaptive state of the individual mechanisms of Stiles, and suggests that the Fechner-Benham subjective colours are due to differences in the time constants of the different colour mechanisms in the normal eye. - Jennifer Birch-Cox.

The physics of colour vision, by K.H. RUDDOCK, Contemporary Physics 12/3, 229-256, 1971.

A comprehensive review paper.

Psycho-physical methods for the examination of colour vision are reviewed and the results of such experiments are discussed in relation to the functional organisation of human colour vision. Non-human vertebrate colour vision is also discussed in the light of objective measurements such as electrophysiology. Defective colour vision and the parametric variations in normal colour vision are reviewed. Jennifer Birch-

Basic concepts of color vision (Symposium : Color vision), by J. POKORNY (Eye Research Labor., Univ. of Chicago), Trans. amer. Acad. Ophthal. Otolaryngol. 75/5, 1071-1077, 1971.

After a short review of the basic facts of color vision, the trichromatic and the opponent-process color vision theories and their physiological fundation by recent experiments are discussed. "Current theories of the color mechanism hypothesize three classes of receptors with three photopigments exhibiting maxima near 440 nm, 540 nm and 565 nm. The outputs of these receptors (directly or indirectly) may be either excitatory or inhibitory in their effect on higher order neurons, thus allowing for mutually antagonistic responses". - Ingeborg Schmidt.

Color vision tests in clinical practice (Symposium : Color vision), by A. LINKSZ (Dept. Ophthalm., New York Medical College, New York) Trans. amer. Acad. Ophthal. Otolaryngol. 75/5, 1078-1090, 1971.

The paper contains a list of various equipment which is available to the ophthalmologist for color vision testing. These tests include : 1) the Nagel anomaloscope for diagnosing defects of red-green vision 2) the Ishihara pseudo-isochromatic plates. 17 plates of the 24 plate test would be sufficient. The examiner should pass those only who make no mistakes, not those who make no more than four errors. 3) the AO H-R-R test which gives more information than the Ishihara plates. It also permits following the changes both in red-green and yellow-blue types of acquired color vision defects. It should be added that L. prefers the term "disease-correlated" to "aquired" color deficiency. 4) the Farnsworth-Munsell 100 Hue test is in some ways more sensitive than the Ishihara or the anomaloscope test. It requires time and therefore will be applied rather by those clinicians who are especially interested in color vision. 5) the Farnsworth Panel D-15 test is deliberately lenient, passing persons with "mild" color vision defects. It can be administered in a few minutes. It should be used with increasing frequency in cases of ocular pathology because it will pick up both, red-green and yellow-blue defects. It can be given even when visual acuity is poor and will register the changes in severity of the color vision defect parallel with the disease process. - Another test by Farnsworth, which deserves mentioning is the tritan plate (F2 plate). This is a single plate to which normal observers, red-green color defective persons, and tritanomalous subjects respond in three distinctly different ways. - Ingeborg Schmidt.

Congenital defects of color vision (Symposium : Color vision), by M.L. RUBIN (Departm. Ophthalm., Univ. Florida, Gainesville) Trans. amer. Acad. Ophthal. Otolaryngol. 75/5, 1091-1094, 1971.

The author makes a clear distinction between the improperly used term "colorblind" and the more proper term "color-defective". Inheritance and classification of the congenital color vision defects are reviewed shortly. The author emphasizes that in discussing defective color vision in a given patient one must carefully distinguish between "deficiency" and "handicap". - Ingeborg Schmidt.

Acquired color vision defects (Symposium : Color Vision),
by A.E. KRILL and G.A. FISHMAN (Eye Res. Lab. Univ. of Chicago),
Trans. Amer. Acad. Ophthal. Otolaryngol. 75/5, 1095-1112,
1971.

A number of clinical observations are listed which aid in differentiating between acquired and congenital color vision defects. The results on color vision testing of 140 patients with a variety of retinal and optic nerve diseases are reported. All patients were given a complete ophthalmologic examination. All patients had a visual acuity of 20/200 or better. Pseudo-isochromatic plates were of little value in early diseases and in the classification of various types of acquired color vision defects. However, the Farnsworth-Munsell 100 Hue test and the Nagel anomaloscope were found to be particularly useful. Patients were divided into four distinct groups. The first two groups had color vision defects similar to congenital defects : the last two had acquired color vision defects which appeared to be unique from the congenital types. These groups are listed as follows : 1. Patients with cone degenerations were characterized initially by a deutan axis on the 100 Hue test and a wide range of matches on the anomaloscope. In general, anomaloscope readings showed pure green as the brightest and pure red the dimmest. 2. Patients with hereditary dominant optic atrophy were characterized initially by a tritan axis on the 100 Hue test and a normal performance or only minimal abnormality on the anomaloscope. 3. Patients with macular diseases other than cone degeneration had a tritan axis on the 100 Hue test, a wider than normal Rayleigh equation and required more red than a normal in the matches on the anomaloscope. All red-green mixtures were of normal brightness. 4. Patients with optic nerve disease : a) patients with optic nerve diseases other than the hereditary dominant optic atrophy and glaucoma, were initially characterized by a deutan axis on the 100 Hue test, and a wider than normal Rayleigh equation with widening more towards the green on the anomaloscope. The brightness values of the matches were usually normal. b) patients with glaucoma and visual field loss did not show color vision abnormalities until vision was reduced to 20/40. The color vision defects were qualitatively identical to those described for patients with acquired macular disease. - Patients with amblyopia ex anopsia and congenital retinal abnormalities such as albinism and congenital night blindness with low vision have generally only mild color vision abnormalities. Patients with cone degenerations, chloroquine retinopathy and toxic amblyopia have prominent color vision disturbances even with a minimal abnormality of visual acuity. - Observations of color vision may be useful in early diagnosis, in differential diagnosis and in following the course of certain diseases. - Ingeborg Schmidt.

Studies of conversation with Yoruba children of differing ages and experience, by Barbara B. LLOYD (University of Sussex), Child Development 42, 415-428, 1971.

The red-yellow distinction is unfamiliar to most Yoruba children in Nigeria. The Yoruba word pupa labels red, yellow, and orange, while dudu includes blue and black. - I. Réthy.

Reflection-impulsivity and colour-form sorting, by Judith Milstein KATZ (Ontario Institute for Studies and Education), Child Development 42, 745-754, 1971.

Younger children, because they process impulsively and do not decode all relevant stimulus information, respond to color more than reflective children. Those of the children, ranging in age from 44 to 65 months and with more comparison glances, made more form responses when they had the opportunity to make their choice freely between cardmatching on the basis of similarity of colour or of form. - I. Réthy.

Achromatopsia in Pingelap Islanders, Study of a genetic isolate, by Roland E. CARR, Newton E. MORTON and Irwin M. SIEGEL (N.Y. University Medical Center, 550 First Ave., New York, N.Y. 10016), Amer. J. Ophthal. 72, 746-756, 1971.

In the highly inbred population of the South Pacific Island of Pingelap 6% were found to have congenital achromatopsia. About 80% of the affected individuals had myopia, in the pathologic range in most cases. Data for 26 affected patients show corrected acuities ranging from 20/70 to 2/200. Photophobia, i.e. aversion to bright light, was present in every case, nystagmus in all but four cases. All affected subjects arranged the colors of the D-15 test approximately according to their scotopic reflectances as computed by Sloan. The 24 known carriers tested gave normal responses on the Ishihara and AO H-R-R. - Louise L. Sloan.

Color defective vision and day and night recognition of aviation color signal light flashes, by J.A. STEEN and M.F. LEWIS (Federal Aviation Administration, Civil Aeromedical Institute, Oklahoma City), Aerospace Med. 43/1, 34-36, 1972.

See Daltoniana, nr. 1, p. 5.

LISTS OF THE PUBLICATIONS ON COLOUR VISION
DEFICIENCIES OF MEMBERS OF THE RESEARCH GROUP

10. Papers of Dr. Dobrosav CVETKOVIC (Ocna klinika, Dz. Vasingtona 19, 11000 Beograd, Jugoslavija).

CVETKOVIC D. - Comparative application of different diagnostic methods in congenital colour anomalies, Acta ophthalm. iugosl. 2/4, 217, 1966.

CVETKOVIC D. - Colour vision in glaucoma, Acta ophthalm. iugosl. 5/3, 258, 1971.

CVETKOVIC D. & SIBALIC Lj. - Die Häufigkeit der kongenitalen Farbensinnstörungen beim Autofahrer, II. Symposium Gesundheitsprobleme des Verkehrs, Kragujevac, 1971.

11. Papers of Dr. Gerald A. FISHMAN (1617 East 50th Place Apt. 14-E, Chicago, Illinois 60615, U.S.A.).

R FISHMAN G.A. - Techniques, merits and limitations of some tests for color vision, Survey ophthalm., May-June 1971.

R KRILL A.E. & FISHMAN G.A. - Acquired color vision defects, Trans. amer. Acad. Ophthalm. Otolaryngol. 75/5, 1095-1112, 1971.

12. Papers of Dr. P. GRUTZNER (Universitäts Augenklinik, 78 Freiburg, D.B.R.).

GRUTZNER P. - Beitrag zur Frage der Helligkeitsverteilung am Anomaloskop, Die Farbe 8, 49-54, 1959.

KOHLRAUSCH A., GRUTZNER P., HAENSEL M., KRICK J. & SACHS E. - Das Farbensehen der anomalen Trichromaten und der Dichromaten, Pflügers Arch. ges. Physiol. 270, 28, 1959.

GRUTZNER P. - Typische erworbene Farbensinnstörungen bei hereditärem degenerativen Maculaleiden, v. Graefes Arch. Ophthalm. 163, 99-116, 1961.

GRUTZNER P. & KOHLRAUSCH A. - Der Lichtverlust in der Macula lutea und das Farbensehen von Deuteranomalien, Pflügers Arch. ges. Physiol. 274, 318-330, 1961.

JAEGER W., LUX P., GRUTZNER P. & JESSEN K.H. - Subjektive und objektive spektrale Helligkeitsverteilung bei angeborenen und erworbenen Farbensinnstörungen. In : Neurophysiologie und Psychophysik des visuellen Systems, Symposium Freiburg i.Br. 1960, ed. Springer, Berlin-Göttingen-Heidelberg, 1961 (p. 199-208).

GRÜTZNER P., KIESLICH G. & WEIL K. - Farbens innstörungen bei Opticuserkrankungen, Ber. dtsh. ophthal. Ges. 64, 358-363, 1961.

GRÜTZNER P. - Beitrag zur Frage der spektralen Hellempfindlichkeit bei angeborenen Farbensinnstörungen, v. Graefes Arch. Ophthal. 164, 411-420, 1962.

GRÜTZNER P. - Erworbene Farbensinnstörungen bei Netzhautdegenerationen, Die Farbe, 11, 35-42, Schlusswort p. 44, 1962.

GRÜTZNER P. - Maculäre Form der diffusen tapeto-retinalen Degeneration. Unter besonderer Berücksichtigung der dabei vorhandenen Farbensinnstörung, v. Graefes Arch. Ophthal. 165, 227-245, 1962.

GRÜTZNER P. - Über Funktionsstörungen, insbesondere über die erworbene Farbensinnstörung bei pigmentierter Form der diffusen tapeto-retinalen Degeneration, v. Graefes Arch. Ophthal. 165, 246-258, 1962.

JAEGER W. & GRÜTZNER P. - Erworbene Farbensinnstörungen. In : Entwicklung und Fortschritt in der Augenheilkunde. 3. Fortbildungskurs der DOG, Hamburg 1962, ed. Ferdinand Enke, Stuttgart, 1963 (p. 591-614).

GRÜTZNER P. & JAEGER W.- Anleitung zur Untersuchung des Farbensinnes. In : Entwicklung und Fortschritt in der Augenheilkunde, 3. Fortbildungskurs der DOG, Hamburg 1962, ed. Ferdinand Enke, Stuttgart, 1963 (p. 683-689).

GRÜTZNER P., JESSEN K.H. & LUX P. - La courbe d'efficacité lumineuse photopique des dyschromatopsies congénitales et acquises, déterminée par la méthode de papillotement et par l'électrorétinographie. In : E.R.G. et Champ visuel, Symposium Jubilaire Jacques Daviel 1693-1762), Marseille 1962, éd. Imprimerie, Quercy-Auvergne, Clermont-Ferrand, 1963 (p. 253-261).

GRÜTZNER P. - Achromatopsie congénitale associée à une rétinopathie pigmentaire en secteur, J. Génét. hum. 12, 71-82, 1963.

GRÜTZNER P. - Über Diagnose und Funktionsstörungen bei der infantilen, dominant vererbten Opticus-Atrophie, Ber. dtsh. ophthal. Ges. 65, 268-273, 1963.

- GRÜTZNER P. - Inter- und intrafamiliäre Variationen der infantilen, dominant vererbten Opticus-Atrophie, Ber. 8 Tg. Dtsch. Ges. Anthropologie, Köln 1963, S. 122-126 4. Suppl. HOMO 1965.
- GRÜTZNER P. - Der normale Farbensinn und seine Abweichungen, Ber. dtsch. ophthal. Ges., 66, 161-172, 1964.
- GRÜTZNER P. & KOHLRAUSCH A. - Farbenfehlsichtigkeit oder Maculaabsorption?, Die Farbe 15, 32-38, 1966.
- GRÜTZNER P. - Über erworbene Farbensinnstörungen bei Sehnervenerkrankungen, v. Graefes Arch. ophthal. 169, 366-384, 1966.
- GRÜTZNER P. - Erworbene Farbensinnstörungen, 20. Conc. ophthal. Acta 2, 1208-1209, 1967.
- GRÜTZNER P. & AULHORN E. - Infantile optic atrophy with dominant mode of inheritance, accompanied by an acquired protanopia, Proc. 2. Congr. Neuro-Gen. Neuro-Ophthal. 2, 128-132, 1969.
- GRÜTZNER P. - Acquired color vision defects secondary to retinal drug toxicity, Ophthalmologica, Additamentum ad 158, 592-604, 1969.
- GRÜTZNER P. - Acquired color vision defects from drug intoxication of the retina, Tg. - Ber. Internat. Farbtg. Color 69, Stockholm, ed. Munsterschmidt, Göttingen, 1970 (p. 107-114).
- GRÜTZNER P. - Untersuchungsmethoden des Farbensinnes. In : W. STRAUB, Die ophthalmologischen Untersuchungsmethoden, ed. F. Enke, Stuttgart (in press).
- GRÜTZNER P. - Acquired color vision defects. In : Handbook of Sensory Physiology, Vol. VII, part 4 "Visual Psychophysics" (in press).
- GRÜTZNER P. - Über Farbenanomalie, Farbenamblyopie und Farbenasthenopie, Klin. Mbl. Augenheilk. 158, 89-96, 1971.
- GRÜTZNER P. - Über die Nomenklatur erworbener Farbensinnstörungen, Kongressbericht, VII. Kongr. Ges. Augenärzte DDR, p. 183-188, Magdeburg, 1970.

PREPRINTS OF SUMMARIES OF PAPERS WAITING PUBLICATION

J. KOLIOPOULOS, P. CHATZIS and A. PAPAGEORGIOU :
Acquired disturbances of colour perception in vascular diseases of the retina.

With the use of the 100 Hue test and Panel D-15 of Farnsworth, 61 eyes were examined (19 of them suffering of diabetic retinopathy, 10 from vascular obstruction, 8 of hypertensive retinopathy, 23 of Eales' disease and one of Coats' disease). The results are mainly in accordance with François and Verriest's similar investigations. In early stages of Eales' disease and diabetic retinopathy they could not reveal any colour disturbance. In most of Eales' disease cases a dichromatic defect of tritanopia type was observed. The authors believe that the Farnsworth Panel can be a good functional test to follow up vascular disease of the eye.

PERSONALIA

The Optical Society of America awarded the eleventh Edgar D. Tillyer Medal to Dr. Louise L. Sloan, Associate Professor of Physiological Optics at the Wilmer Ophthalmological Institute of the Johns Hopkins University School of Medicine, in recognition of her many distinguished accomplishments in the field of vision.

Dr. Leo M. Hurvich, Professor of Psychology at the University of Pennsylvania and Mrs. Dorothea Jameson Hurvich have been awarded Warren Medals for 1971 by the Society of Experimental Psychologists for their studies that have given quantitative substance to the Hering model of opponent processes in the visual system.

CORRESPONDANCE

Relative to the abstract dealing with colored lenses and driving (Daltoniana nr. 2, p. 4), I would like to call some data on contact lens tints to your attention. See Precision-Cosmet Digest 11, No. 4, May 1971, p. 2. They report 97.8% of prescriptions for contact lenses were tinted. You might be interested to note that there are no standards established for contact lens tints in this country. This manufacturer is a reliable source of data. Many tints are light, and minus power tends to minimize effect of tint. However, we should be concerned. - Jay M. Enoch.

Addendum. - Excerpt from the above mentioned issue of Precision - Cosmet Digest :

A change of significant importance appears to have occurred in the use of tints. Apparently 97.8% of the (contact) lenses ordered in 1970 were tinted. In 1963, 67% of the lenses were tinted; in 1967, 75%; and in 1969, 92,5% (referring only to minus lenses). From the above we can see that tinted contact lenses have risen in popularity to such point as to

make clear lenses almost a rarity. For the manufacturer of contact lenses, this meteoric rise in demand for tinted lenses has created numerous problems. For instance, in that the desire for tinted lenses shows no definitive trend toward one specific color, the manufacturer is forced to inventory lenses in all tints as well as clear lenses.

Another serious problem presented by this inordinate demand for tinted lenses concerns duplication of color. With clear lenses this was obviously not a problem. With tints, especially Brown and Blues, some laboratories have difficulty in reproducing these shades accurately.

In our survey of 1969, we indicated that the order of preference for tinted minus lenses was : blue, grey, brown and green.

Our most recent (1971) survey indicates a dramatic shift away from grey lenses to the point where this tint apparently is the least used. This is all the more startling in light of the fact that in various studies conducted as late as 1968, grey was the overwhelming color preference.

SECOND SYMPOSIUM OF THE INTERNATIONAL
RESEARCH GROUP ON COLOUR VISION DEFICIENCIES :
EDINBURGH 28th - 30th JUNE 1973.

Our next symposium will be held in Edinburgh (Scotland) from 28th to 30th june 1973 and will be organized by the Scottish section of The Colour Group (Great-Britain) in collaboration with the Department of Ophthalmology of the University of Edinburgh. (This place and these dates were chosen in order that the members could easily participate in the 2nd Congress of the Association Internationale de la Couleur, which is to be held in York from 2nd to 6th july 1973 and on which some details are given below).

The sessions of our Edinburgh Symposium probably take place in the David Hume Tower and the accommodations will be chiefly in the University Halls of Residence.

This symposium will be devoted to the "Recent Advances in Colour Vision Deficiencies" (probably mostly the congenital ones, as the 1971 Symposium in Ghent was solely devoted to the acquired defects). Of course, the methods of examination and the variation in normal colour vision belong also to the chosen general theme.

In order to facilitate the organization, our members and other interested people are asked to announce already on the joined form their probable participation and their eventual papers, which must be in english and of which a 1 of 2 page summary (also in english!) must be sent before 30th September 1972 to the general secretary - in order to be submitted to the committee members (according to the decisions of the com-

mittee during the 1971 Symposium in Ghent) and also in order to be preprinted. The Proceedings of the Symposium will again be edited by Karger.

Correspondence relating to the papers must be addressed to Dr. G. Verriest; that relating to all other aspects of the Symposium must be addressed to Dr. Roy S. Sinclair, Hon. Secretary of The Colour Group-Scottish Section (Chemistry Department, Paisley College of Technology, High Street, PAISLEY, Renfrewshire, Scotland). The second announcement with the preliminary programme (social activities) will be made by the Edinburgh organisers in september or october 1972.

SECOND CONGRESS OF THE
ASSOCIATION INTERNATIONALE DE LA COULEUR

YORK 2nd-6th JULY 1973.

This congress is being organized under the general direction of the President of the AIC, Prof. Y. Le Grand, and of the AIC Executive Committee. The programme concerns all aspects of colour science and it will include specialist sessions and general sessions with invited survey lectures, which will be given among others by Dr. Gall, Dr. Hunt, Prof. Indow, Dr. Lythgoe, Dr. Mac Nichol, Dr. M. Marré, Dr. P.L. Walraven and Dr. G. Wyszecski.

All enquiries should be addressed to Prof. W.D. Wright (AIC Colour 73), Applied Optics Section, Imperial College, LONDON SW 7 2B2, England.