TOPICAL MEETING ON
NONINVASIVE ASSESSMENT
OF VISUAL FUNCTION

MONDAY, MARCH 18, 1985

RUBICON ROOM

6:00 PM–8:00 PM REGISTRATION/REFRESHMENTS

TUESDAY, MARCH 19, 1985

SIERRA ROOM

SESSION I
Robert H. Webb, Eye Research Institute of the Retina Foundation, Presider

9:00 AM TuA1

9:25 AM TuA2
Test of the Decreased Responsiveness Hypothesis in Retinitis Pigmentosa, Vivienne C. Greenstein, Donald C. Hood, Columbia U. Probe-flash data obtained on RP patients at two adaptation levels could not be explained simply by decreased responsiveness of retinal elements.

9:50 AM TuA3
Assessment of Foveal Function in Retinitis Pigmentosa, Kenneth R. Alexander, Lucinda P. Hutman, Gerald A. Fishman, U. Illinois Eye and Ear Infirmary. Foveal absolute thresholds, spatial summation, visual acuity, and Rayleigh matches were measured in patients with retinitis pigmentosa and Usher's syndrome to determine the relationship between these measures of foveal function.

RUBICON ROOM

10:15 AM COFFEE BREAK

SIERRA ROOM

10:40 AM TuA4
Measurement of Color Thresholds, R. D. Gunkel, M. S. Roy, A. Roy, NIH National Eye Institute. Color thresholds, which define the apparent neutral area, are shown to vary characteristically in some acquired disorders and in the congenital color defects.

TUESDAY, MARCH 19, 1985—Continued

11:05 AM TuA5
Macular Function in Normal Aging: Loss of Flicker Sensitivity in Two Individuals, A. Eisner, Good Samaritan Hospital and Medical Center. We are measuring blue cone, flicker, dark adaptation and anomaloscopic sensitivities of healthy older persons. We have found large individual differences and several striking deficits.

11:30 AM TuA6
Development of Blue-Yellow Discrimination Loss with Age, Vivianne C. Smith, Joel Pokorny, Arlene Pass, U. Chicago Eye Research Laboratories. We partitioned Farnsworth Munsell 100-hue error scores into blue-yellow and red-green scores. The data revealed an age-dependent development of a blue-yellow axis.

11:55 AM BREAK

SIERRA ROOM

SESSION II
Raymond A. Applegate, U. of Missouri, Presider

2:00 PM TuB1
Focal Electrooculogram (EOG) in Age-Related Macular Degeneration (SMD), Janet S. Sunness, Robert W. Massof, JHU Wilmer Eye Institute. Seventeen patients with age-related drusen and macular degeneration were tested with focal and ganzfeld EOG methods. The focal EOG is not an effective reflector of damage in SMD.

2:25 PM TuB2
Measurement of the Fast Oscillatory Potential and Light Rise of the Standing Potential Using the EOG, Joel Pokorny, Vivianne C. Smith, Carl Gutterman, U. Chicago Eye Research Laboratories. We describe computer-controlled equipment to measure the fast oscillatory potential and standing potential light rise using an electrooculographic technique.

2:50 PM TuB3
Focal ERG Measures of Temporal Modulation Sensitivity, William H. Seiple, Irwin M. Siegel, Ronald E. Carr, NYU Medical Center. MTF curves were recorded using focal ERGs and rapid electronic scanning techniques. ERG modulation thresholds were compared with psychophysical data obtained on the same apparatus.

3:15 PM TuB4
Stimulator for Localized Electroperimetry: a Prototype, S. Fonda, Clinica Oculistica, U. Modena, Italy; P. Baraldi, School of Optometry, UC-Berkeley. A Rodenstock perimeter was modified to perform either electrophysiological measurements at retinal and cortical level or a classical visual field using the same localized stimulus.

RUBICON ROOM

3:40 PM COFFEE BREAK
TUESDAY, MARCH 19, 1985—Continued

SIERRA ROOM

4:05 PM TuB5
Scotopic Perimetry Test for Early Glaucoma, Bruce Drum, JHU Wilmer Ophthalmological Institute. Scotopic perimetry is potentially sensitive to early glaucomatous defects, both because of selective scotopic sensitivity losses and because of the flatness of the normal para-central scotopic field.

4:30 PM TuB6
Multiflash campimetry as an indicator of Visual Field Loss in Glaucoma, Edward M. Brussell, Olga Overbury, Charles W. White, Concordia U., Canada; Gordon A. Balazsi, McGill U., Canada. Measuring temporal resolution with multiflash campimetry provides a means of detecting visual field loss in glaucoma that is at least as sensitive as conventional perimetry.

4:55 PM TuB7
Visual Field Area Response to Increased Target Intensity as a Method of Detecting Ocular Disease, T. David Williams, U. Waterloo, Canada. Using computer digitizing techniques, visual field area is determined for two normal populations and two abnormal individuals: this analysis facilitates detection of abnormal visual function.

5:20 PM TuB8
Spatial Contrast Threshold Perimetry in Macular Degeneration, Sunanda Mitra, Texas Tech U. A static perimetric technique using grating patches as test stimuli reveals scotoma undetected by conventional perimetry and suggests mechanisms involved with the pathophysiology in macular degeneration.

5:45 PM BREAK

LAKESIDE ROOM

6:00 PM-7:30 PM MEETING DINNER

RUBICON ROOM

7:30 PM-11:00 PM REFRESHMENTS

SIERRA ROOM

8:00 PM
Discussion of Technical Problems in Clinical Vision Research

WEDNESDAY, MARCH 20, 1985

SIERRA ROOM

SESSION III
Mary A. Johnson, Johns Hopkins University School of Medicine, Presider

9:00 AM WA1
Improved Imaging with the Scanning Laser Ophthalmoscope, Robert H. Webb, George W. Hughes, Douglas P. Wornson, Eye Research Institute of Retina Foundation. Our SLO now has double scanning, a means of reducing veils due to ocular turbidities and improving contrast. We have built a fundus tracker.

9:25 AM WA2
Image Processing in Ophthalmology: A New Clinical Noninvasive Diagnostic Modality, Paul G. Rehkopf, Joseph W. Warnicki, U. Pittsburgh School of Medicine; Mark R. Nelson, James L. Cambier, Par Microsystems Corporation; Stuart I. Brown, University Hospital. This paper describes a clinical image acquisition, processing, and archival system designed for ophthalmology. Methods being used for processing the images, and clinical applications with results are presented.

9:50 AM WA3
Ray-Tracing Analysis of the Optics of Paraxial Photorefraction, Christopher W. Tyler, Anthony M. Norcia, MRI Smith-Kettlewell Institute of Visual Sciences. Analysis of pupil size, axial length, and spherical aberration effects on sensitivity and the crescent size/refractive error function in paraxial photorefraction, with empirical validation.

10:15 AM WA4
Effects of Intraocular Lens (IOL) Tilt and Displacement, V. Lakshminarayanan, J. M. Enoch, T. Raasch, R. W. Nygaard, School of Optometry, UC-Berkeley; B. Crawford, Department of Ophthalmology, UC-San Francisco. Cadaver eyes with posterior chamber IOLs show one loop not in lens capsule. Analysis of resultant refractive implications of IOL tilt and displacement are presented.

10:40 AM COFFEE BREAK

SIERRA ROOM

11:05 AM WA5
Hyperacuity: Assessing Visual Function behind Ocular Opacities, Rick A. Williams, Jay M. Enoch, School of Optometry, UC-Berkeley. A noninvasive method of assessing visual function behind ocular opacities, based upon a pair of vernier acuity tests, is described, and examples of its application are given.
Interpreting the Stiles-Crawford Effect in Patients with Cataracts, Raymond A. Applegate, U. Missouri School of Optometry; Robert W. Massof, JHU Wilmer Eye Institute. A model of Stiles-Crawford effect behavior is presented which estimates retinal directional sensitivity separate from cataract density, location, and spread.

Stiles-Crawford Functions Are Not Broader After One Week of Total Light Exclusion, R. D. Hamer, V. Lakshminarayanan, J. M. Enoch, School of Optometry, UC-Berkeley; T. Yasuma, Department of Ophthalmology, Nagoya U., Japan; D. G. Birch, E. E. Birch, Retina Foundation of the Southwest, Vision Research Center. In contrast to previous studies, we find that one week of total light exclusion does not reduce directional sensitivity of the eye.

Cortical Activity Localized by the Laplacian of the Evoked Potential Field on the Scalp, Richard Srebro, Health Science Center at Dallas, U. Texas. The Laplacian of the potential field on the scalp is used to localize cortical activity evoked by several different types of visual stimuli.

Electrophysiological Assessment of Contrast Sensitivity in Human Infants, Anthony M. Norcia, Christopher W. Tyler, Dale Allen, MRI Smith-Kettlewell Institute of Visual Sciences. Fourier analysis of the steady-state visual evoked potential was combined with swept parameter displays to provide an efficient estimate of infant contrast sensitivity functions.

Visual-Evoked Potential Tuning Functions in Optic Neuritis and Optic Neuropathy, Mary A. Johnson, Neil R. Miller, JHU Wilmer Ophthalmological Institute. Visual-evoked potential amplitude and latency tuning functions are affected differently in inflammatory and demyelinating than in compressive optic pathway disorders.

Spatial Frequency Discrimination in Amblyopia: A Comparison of Anisometropes and Strabismics, Dean Yager, Steven Mathews, Kenneth J. Ciuffreda, Ellen Richter Ettinger, SUNY-College of Optometry. Anisometropes had higher discrimination thresholds in their amblyopic eyes throughout the spectrum. Strabismics had regions of normal discrimination alternating with regions of higher thresholds. These results are discussed in terms of a multiple-spatial-frequency-channels model.

Predicting Low-Vision Reading Rates from Measures of Contrast Sensitivity, Gary S. Rubin, Gordon E. Legge, U. Minnesota. We have found that low-vision reading performance can be predicted from properties of the contrast sensitivity function. A simple clinical implementation is described.

Initial Results of Rapid Clinical Screening Using a New Contrast Sensitivity Vision Test Chart, Arthur P. Ginsburg, David W. Evans, Vistech Consultants, Inc. Contrast sensitivity functions obtained in less than one minute using a vision test chart exhibit characteristic losses for amblyopia, multiple sclerosis, cataracts, and glaucoma.

Clinical Measurement of Vernier Acuity, M. Fendick, School of Optometry, UC-Berkeley. Single- and double-staircase methods for clinically measuring vernier acuity are described and their performance is compared using both an ideal observer and normal human subjects.

Discussion of Obstacles to Clinical Vision Research