

BIOGRAPHICAL SKETCH: GEORGE CROW, O.D., PIONEER IN OPTOMETRIC VISION THERAPY

David A. Goss, O.D., PhD

Emeritus Professor of Optometry
Indiana University

dgoss@indiana.edu

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ABSTRACT

George Crow (1901-1978) practiced optometry in southern California. He was active in the Optometric Extension Program and contributed to concepts of optometric vision therapy. Two monographs which he co-authored and his role in the 1944 Baltimore Myopia Project are discussed.

KEYWORDS

Optometric Extension Program, optometric vision therapy, optometry books, optometry history.

INTRODUCTION

A native of Tacoma, Washington, George Crow (1901-1978) graduated from optometry school in 1920 at the Los Angeles Medical School of Ophthalmology and Optometry, the school that two years later became Los Angeles School of Optometry and later Southern California College of Optometry.¹ Crow practiced optometry for many years in southern California. According to Albert Sutton,² Crow was one of the 51 founding members of the Optometric Extension Program (OEP) in 1928. Crow was active in OEP, serving for example as chairman of its research department and an officer in the board of directors.^{3,4}

Arthur Hoare noted Crow's important contributions to optometric vision therapy, stating that "in the late 1930s and 1940s, order was beginning to emerge in visual training, largely as a result of Dr. George Crow's first *Basic Principles*."⁵ Sutton concurred, crediting Crow as the "father" of today's concepts of visual training" by applying principles from experimental and physiological psychology.²

George Crow was co-author of two significant books. He was the second author of *Applied Refraction with Special Reference to the Blur-out Point Technique* (1934). He was the first author of *Basic Orthoptics and Reconditioning* (1937-1939).



Optometric Extension Program Foundation Board of Directors in 1957. Standing left to right: E. B. Alexander, George Crow, A. M. Skeffington, Glenn Moore; seated: Homer Hendrickson. (Image courtesy Optometric Extension Program)

APPLIED REFRACTION

A particular emphasis of *Applied Refraction* was the addition of blur points in fusional vergence range testing. In the Introduction to the book, first author Louis Jaques noted that "the discovery of the technique of Blur-Out Points in a great measure was mine, while the perfection of the technique up to its present understanding as presented in this volume belongs to us jointly, with the greater portion going to Dr. Crow, a true scientist in every sense of the word."⁶ They preferred blur-out over first perceptible blur because they thought blur-out was easier for patients to recognize. The addition of base-in and base-out blur points completed the components of the 21-point examination subsequently published by OEP for decades.⁷

Jaques and Crow also discussed the nature and diagnostic value of subjective refraction, static and dynamic retinoscopy, dissociated phorias, fusional vergence ranges, cross cylinder tests, and relative accommodation. The book included diagnosis, treatment, and a sampling of orthoptic procedures in accommodative insufficiency and convergence insufficiency.⁸

BASIC ORTHOPTICS AND RECONDITIONING

Basic Orthoptics and Reconditioning by George Crow and Harry L. Fuog was first published serially by OEP in 1937 to 1939. It can be viewed as a manual for theory and practice of visual training. Among the basic principles they put forward were the interrelationships of visual, auditory, tactile and balance senses; the importance of maintaining the patient's attention during orthoptic procedures; the fact that visual adaptations can be either positive or negative; and having the objective of improving visual skills and not just achieving visual comfort.⁹

Crow and Fuog emphasized that a patient's progress in visual training should follow a sequential pattern, with monocular visual skills, including pursuits, saccades, and accommodation, reaching appropriate levels before binocular training procedures are initiated. It appears that they were first to stress achieving good monocular visual skills before beginning binocular training.¹⁰



George Crow (Image from Sutton AA. *Our Optometric Heritage*. St. Louis, MO: College of Optometrists in Vision Development, 2005:7. Courtesy College of Optometrists in Vision Development)

BALTIMORE MYOPIA PROJECT

The Baltimore Myopia Project of 1944 came about largely due to the clinical work of George Crow. Among his patients were members of the family of Bruce and Beatrice Gould, co-editors of *Ladies' Home Journal*, a publication of the Curtis Publishing Company. Mrs. Gould and her daughter, who both had myopia, found that they could see better after visual training with Dr. Crow.³ Mr. and Mrs. Gould were so impressed that they arranged for funding and space for a study to see if visual training could improve visual acuity and reduce myopia. An additional motivation may have been concern for the visual capabilities of recruits for the United States Armed Forces, this being during World War II.

The Goulds arranged for measurements of visual acuity and refraction to be taken before and after training by personnel of the Wilmer Ophthalmological Institute of the Johns Hopkins University. They measured visual acuity with a Snellen letter chart, a Snellen number chart, a tumbling E chart, and a Landolt C chart. They measured refraction with cycloplegic retinoscopy.

Optometric plans and staffing were coordinated by H. Ward Ewalt Jr., who would later be an American Optometric Association president. The optometric staff was headed by A. M. Skeffington, and included several prominent optometrists, among whom were Crow, S. K. Lesser, and C. V. Lyons. The training itself was conducted by three visual training technicians. Psychologist observers interviewed subjects during and after the study.³

Training of 111 study subjects, ages 9 to 32 years, began September 1944, and was completed December 1944. It was planned that each subject would receive 39 training sessions, but the actual number of sessions ranged from five to 37, and averaged 25 per subject.^{11,12}

Optometric and ophthalmological reports differed in the evaluations. The ophthalmological report on the project concluded with the statement that "this study indicates that the visual training used on these patients was of no value for the treatment of myopia."¹³ Commentary by Carl Shepard, an optometrist not involved in the study, included the statement that: "As a project to demonstrate that optometric methods in addition to refraction can be of actual benefit to many myopes, it has been a definite success."¹⁴ H. Ward Ewalt concluded in his report in the *Journal of the American Optometric Association* that: "The evidence is conclusive that optometric methods of visual training improve the visual acuity of most myopes... It may well be that optometry's development of the art and science of visual training will be optometry's greatest contribution to the welfare of mankind."¹¹ In addition to presenting visual acuity data, Ewalt quoted psychological observer Glenna Bullis as having found many of the subjects to have had improvements in school grades, sports achievement and powers of concentration.

A report by a psychology professor compared the visual acuity results in the Wilmer data and the data reported by Ewalt. The ophthalmological data showed an average of one line of visual acuity improvement per subject, with a range of five lines improvement to five lines loss, and with about 60% of the subjects improving one or more lines. The optometric data indicated an average of two lines gain in visual acuity per subject, with a range

of five lines improvement to one line loss, and with 90% of the subjects improving one or more lines.¹⁵

A commentary on the project published in 1971 by Arthur Hoare³ included a transcript of an oral history with George Crow, who expressed disappointment in the management of the project. He said that it had been the understanding of the optometric staff that subjects in the study would be individuals who had indications of the need for visual training based on the optometrists' visual analysis. Instead the Wilmer group chose the subjects, and some were in such ill health that Crow said he would have refused them in his private practice until they had received medical attention.³ Hoare believed that the outcome of the project was "foredoomed from the start," that it was "a classical display of professional obfuscation on the one hand, and... a masterly display of professional naiveté on the other hand."³

In 1991, Trachtman and Giambalvo¹⁶ re-analyzed data from the Baltimore project using statistical methods which had come to be considered more appropriate in the intervening years for the type of data involved. They found that the Wilmer data showed statistically significant improvements in visual acuity with all four of their acuity tests. The refraction data showed a statistically significant reduction in myopia in right eyes, but not in left eyes; however, Trachtman and Giambalvo reported that the variability of the changes was too large, possibly due to the use of cycloplegic retinoscopy, to ensure an accurate statistical analysis. They found greater improvement in visual acuity in the optometric data than in the ophthalmological data; they noted that the optometric data was based on measurements with the Clason Visual Acuity Meter, "which allows for a more precise measurement of visual acuity by employing the psychophysical procedure of ascending and descending method of limits."¹⁶ Following the Baltimore Myopia Project there were many studies that showed training can improve unaided visual acuity in myopia.¹⁷

OTHER ACTIVITIES AND RECOGNITIONS

Crow was active in the annual meetings led by Samuel Renshaw, Ph.D., in his experimental psychology laboratory at Ohio State University in the 1940s and 1950s to discuss various aspects of vision. These meetings were sponsored by OEP and were said to have been important in the development of some concepts of vision therapy.^{18,19}

Charles W. McQuarrie, who specialized in vision therapy and was American Optometric Association president in 1977-1978, was employed in Crow's office from 1952 to 1957.²⁰ Donald J. Getz, who had a large vision therapy practice, purchased Crow's practice. Getz said that Crow was an important influence on him.²¹

Crow received an honorary D.O.S. degree in 1935 from Northern Illinois College of Optometry.²² In 1974, he received the G. N. Getman Award from the College of Optometrists in Vision Development.²³

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