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**ON THE WEB**

The article relating to this commentary is available free to subscribers at *JVIB Online*: <[www.afb.org/JVIB/jvib001102.asp](http://www.afb.org/JVIB/jvib001102.asp)>. Nonsubscribers may purchase a copy of the article from the *JVIB Classics* area of AFB's ePublications web site: <[www.afb.org/jvibclassics/jvib700807.asp](http://www.afb.org/jvibclassics/jvib700807.asp)>.

# A Look Back

## 100 Years of Literature on Low Vision

*Duane R. Geruschat and Anne L. Corn*

Those of us who entered the field of visual impairment and blindness in the 1970s experienced the “low vision movement”—that is, the shift in philosophical focus from “sight saving” to sight enhancement. During the first half of the 20th century, children with low vision were encouraged to not use their vision, but to “save” it. This philosophy was so pervasive that some schools for the blind still have photographic evidence of children with low vision reading braille with cloth over their hands so they could not use their vision to read the dots. In the second half of the century, in contrast, sight enhancement was encouraged, and specific curricula were developed to teach children with low vision

how to use their remaining vision. This fundamental change created a host of developments, including the subsequent emphasis on the development of visual skills in children with low vision, introduction of university courses on the topic of low vision, development of an interest group on low vision within our professional organization, growth of entire conferences dedicated to low vision, inclusion of the category of “low vision therapist” for certification, and the increased appearance of manuscripts in the *Journal of Visual Impairment & Blindness (JVIB)* on the topic of low vision.

In this centennial essay, we offer details of the volume of manuscripts published in the 100-year history of *JVIB* and its predecessors on this single topic, thus illustrating the journal’s dedication to the topic of low vision. According to research presented in 2005 by Goodrich and Arditì, in the years 1999 to 2003, *JVIB* featured more manuscripts on low vision (18%) than any other journal in the field of visual impairment and blindness. (In second place was the *American Journal of Ophthalmology*, which published 6%.)

After poring over 100 years of material for this overview of the literature on low vision, we decided to organize this essay according to the model of the public health continuum of care, which has three phases: prevention, treatment, and rehabilitation and education. We believe this model will not only allow us to capture the broad themes of the literature on low vision, but also reflects our strong philosophical belief that the best low vision service is interdisciplinary.

**PREVENTION**

The goal of public health practitioners is to prevent disease. Looking through the journal, we found that the information published in the early 1900s provided a fascinating glimpse into the state of health care, specifically eye care, during that time period. For example, two of the leading causes

of blindness and visual impairment in the United States in the early 1900s were ophthalmia neonatorum and trachoma. Ophthalmia neonatorum—a form of conjunctivitis caused by untreated venereal disease that is contracted by the unborn infant as he or she traverses the birth canal—was first mentioned in *Outlook for the Blind* in 1908. The second cause, trachoma, was also a type of conjunctivitis. We were somewhat stunned to learn that trachoma was once endemic in North America and Europe. Although trachoma remains the leading cause of blindness in the world today, it is extremely rare in developed countries. However, in 1910 a physician reported on incidences of trachoma in western Pennsylvania to “draw attention to its practically ignored ravages among certain classes” (Harris, 1910). Dr. Harris wrote:

Much has been accomplished by skilled medical and surgical measures, in addition to certain hygienic directions, but we are very far from the desired goal, inasmuch as we have yet failed to discover the exciting cause of the disease or find a remedy that is in a strict sense curative (p. 113).

Perhaps in an attempt to raise awareness, the opening of the Autumn 1915 editorial, entitled “The Trachoma Problem,” was:

“Why have you given so much space to Trachoma in this issue of the *Outlook for the Blind*?” This is the question that many of our readers will ask and it is not easy to give a satisfactory answer unless the seriousness of this situation can be brought home. (p. 45)

We were surprised by the editor’s response to this question, in which he explained that the U.S. Public Health Service estimated that there were 33,000 cases of trachoma in eastern Kentucky alone in 1915, and revealed that little attention had been given to trachoma

“until 1912, when Congress appropriated money . . . to make examination as to its prevalence. . .” (p. 45). Editor Charles F. Campbell underscored the importance of prevention and treatment:

Many of these individuals will not become totally blind, but most of them will be seriously handicapped, and *all of them*, until their eyes are cured, *are a menace to their communities*. (p. 45)

Unfortunately, it is not made clear in the annals of the journal when trachoma became much less of a significant health issue for the United States and other developed countries.

Evidence of the continued presence of ophthalmia neonatorum among newborns was still being reported in the 1930s and 40s. However, in 1938, schools for the blind reported a decrease in the percentage of students with this condition (Kerby, 1938). According to data presented by Kerby in 1942, 11% of cases of visual impairment in that year were caused by ophthalmia neonatorum, and 5% of cases were caused by syphilis; overall, 24% of new ophthalmia neonatorum cases were caused by preventable infectious disease.

What is striking in these early articles is the importance of prevention of visual impairment as part of the journal’s historical record. Our predecessors understood that effective prevention was the best approach. A second interesting finding is the apparent confusion over the causes of these infectious diseases and the struggle within the medical community to find treatments for them. Today, we know both the causes and the treatments for these types of infectious diseases, but, sadly, have been unable to eliminate diseases such as trachoma across the world.

As the medical and public health community became more effective in the treatment of infectious diseases, they were confronted with a new challenge, retrolental fibroplasias

(RLF), now known as retinopathy of prematurity (ROP). In the late 1930s, *Outlook* included in its News Briefs a comment that some scientists believed RLF was caused by problems with nutrition. The condition was the focal point of the October 1953 Editor's Page, entitled "Retrolental Fibroplasia and School Enrollment Problems," which stated:

The name by which this scourge is known is retrolental fibroplasia and though it is still new in the field of ocular disability it is nevertheless so rampant as to cause serious alarm among all persons concerned with services to the blind and with prevention of blindness. (p. 219)

The medical understanding of RLF and its impact on the population of children that we serve was reported in May 1956 in an article that provided a description of the rise and fall of RLF in New York State (Yankauer, Jacobziner, & Schneider, 1956):

In 1942, retrolental fibroplasia was established on the medical horizon as a new disease of premature infants. By 1949 it was the leading cause of blindness in children under five years of age in New York State. (p. 165).

The authors then reported on an 18-hospital cooperative study completed in 1955 that established the relationship between exposure of premature infants to concentrations of oxygen in excess of 40% and the development of the disease. We now know that the understanding of the underlying cause of RLF resulted in a dramatic reduction in the number of children with RLF. Dissemination of public health and medical information continues in the journal to this day with the inclusion of manuscripts from physicians and medically oriented pieces on conditions such as cortical visual impairment (Groenveld, Jan, & Leader, 1990; Jan & Groenveld, 1995; Alexander, 1990).

## TREATMENT

Visual impairment is treated in various ways throughout the field of visual impairment and blindness. Low vision clinics, for example, seek to integrate medical treatment with rehabilitation and education. Eye care specialists provide treatment of ocular pathology and refraction. Low vision specialists (ophthalmologists or optometrists with specialties in low vision) prescribe optical devices. Rehabilitation and education specialists provide functional assessments of vision, instruction with and without optical devices, and lessons on environmental modifications (for example, lighting and contrast enhancement). In the past 100 years, the journal has included descriptions of many of these treatment scenarios.

One of the earliest manuscripts that specifically discussed treatment appeared in October 1965. An article by Austin Lowrey, entitled "Plan for a Low Vision Clinic," described the development of a low vision clinic. This article could easily have been published in 2006, since the problems and challenges that were highlighted by Lowrey in 1965 are still relevant 41 years after its publication. Lowrey identified "poor leadership by the medical profession, and [problems with] the financing of clinics." He suggested that low vision clinics be part of eye care centers, and he commented on the challenges of providing more services than optical devices alone:

Ideally, a low vision aids clinic should be designed not just as a place where optical hardware is prescribed but where the severely visually handicapped can have a thorough examination in every respect. It should provide facilities for a complete medical, psychological, psychiatric, ophthalmological, optometric, and socioeconomic evaluation for clients of all ages. (p. 275)

Clearly, Lowrey's model eye care clinic is a goal that has yet to be universally achieved.

Optical devices play an important role in the provision of services to people with low vision. The first major article on optical devices appeared in the journal in 1925. Entitled “Telescopic Spectacles and Magnifiers as Aids to Poor Vision” (Gradle, & Stein, 1925), the paper was written by two ophthalmologists and was excerpted from a presentation given at a meeting of the American Medical Association. It was interesting to realize how little things have changed since 1925, since the basic optical principles of magnification (for example, field of view and working distances) defined in the article are still valid, and even the sizes and shapes of many of the magnifiers shown in this article could be sold today. Certainly, from a cosmetic point of view, there are now more choices and styles of optical devices, but the concepts discussed in 1925 are very similar to the concepts presented in the writings of today.

#### REHABILITATION AND EDUCATION

One of the main historical purposes of the journal has been, and continues to be, the publication of new information related to education and rehabilitation of people with visual impairment and blindness. In fact, much more was written on the education and rehabilitation of people with low vision than on the topics of prevention and treatment.

Although the importance of rehabilitation for individuals with low vision was not recognized in the 1920s, the past 25 years have seen the publication of an extensive body of literature on specific techniques and instructional strategies that can be used to improve functional vision, with or without optical devices. A few examples include: “The Efficacy of Comprehension Training and Reading Practice for Print Readers with Macular Loss” (Watson, Wright, & De l’Aune, 1992); “Visual Cues for Enhancing Depth Perception” (O’Donnell & Smith, 1994); “Effects of Training on CCTV Reading Rates of Visu-

ally Impaired Students” (LaGrow, 1981); and “Low Vision Rehabilitation: A Comparison of Traditional and Extended Teaching Programs” (Scanlan & Cuddeford, 2004). One of the early acknowledgments that optical devices could be used in educational settings was an article that appeared in 1961, entitled “Optical Aids Services and Its Implications for Education” (Mann, 1961).

The contribution of psychological counseling in the rehabilitation of people with visual impairments was highlighted by Hoffman in 1955. Discussing the importance of counseling a client with low vision, he wrote:

There is often a real discrepancy between the client’s actual “use of vision” (as the client discusses with the counselor what use and how much use he feels he is able to make of his impaired vision) and his potential visual ability as indicated by the ophthalmologist’s report. (p. 49)

Thompson, Goldhaber, Amaral, and Ringering (1992) described the psychological barriers that may interfere with low vision rehabilitation of older adults, recognizing that vision loss is more than a medical issue, and may need to be addressed as a psychological challenge as well.

The 1920s saw an emphasis on sight saving and the advantages of separate classes for people with low vision. The titles of these articles describe the educational philosophy and teaching approach of the articles on this topic. For example, “The Value of Separating the Myopic Cases from the Low Vision Cases in Sight-Saving Classes” (Coffin, 1924); “Sight-Saving Classes—Their Contribution to the Field of General Education” (Hartman, 1924); and “Sight-Saving Classes in a Public School” (Hayes, 1927) are a few examples of the tone of the discussion. Coffin’s (1924) article provides a unique insight into the educational philosophy of the concept of sight saving of the time. He describes “. . . the

goal of establishing the *habits* of sight saving, with no individual music lessons, emphasis on ear training, and no fine handwork” (Coffin, 1924). In the 1920s, educators believed that preventing children with low vision from abusing their remaining vision was the only way to avoid further vision loss.

It was especially fascinating to read another article from 1924 on the contribution of sight saving to general education, in which Hartman provided one of the earliest acknowledgements in the journal of the importance of the environment in terms of maximizing functional vision. Making the point that a good visual environment for a student with low vision is also a good visual environment for all sighted children, Hartman wrote, “The duty of the sight-saving class administrator is to convince the public that conservation of vision is a general problem of education.” He expressed concern regarding the construction of buildings, especially in regard to the source and amount of light:

While it is impossible to remodel buildings extensively in order to correct faulty spacing and window sizes, it is within the financial limits of the school systems to make more light available through the use of translucent shades instead of the opaque ones now so prevalent. (pp. 51–52)

This article also discussed wall decorations and the color of ceilings, the use of window shades to adjust light, and the application of a dull finish on furniture to reduce glare. Proper care of blackboards was also emphasized. The author concluded the article by commenting that:

[These] principles are trite and obvious to every teacher of Clear Type Classes. They are not as familiar to the teacher in the regular classrooms, and yet—they are of great importance to every school child.” (p. 53)

Since these early offerings appeared in print, the journal has continued to publish on the important topic of the visual environment and the importance of lighting and contrast. For example, 1980 saw the publication of “Development of Lighting Standards for the Visually Impaired” (Lehon, 1980), in which the author detailed the history of lighting standards for public schools. The “acceptable standard” for classroom lighting in the 1930s was first described by Coffin in 1924. The acceptable standard provided so little light that fully sighted students most likely experienced visual fatigue because of the poor lighting conditions. The importance of lighting, contrast, and the visual environment have been emphasized by the authors of such articles as “Color Contrast as an Aid for Visually Impaired Persons” (Sicurella, 1977); “Assessing Optimal Illumination for Visual Response Accuracy in Visually Impaired Adults” (LaGrow, 1986); and “Visual Environmental Adaptation Problems of Partially Sighted Children” (Kalloniaitis & Johnston, 1994).

The major event in the annals of the journal on the topic of the education of children with low vision occurred in 1964 with the publication of the first of many pieces by Natalie Barraga, currently professor emerita of the University of Texas. Dr. Barraga’s seminal research demonstrated that children with low vision could improve their visual functioning through a short-term, intensive teaching procedure (Barraga, 1964). Her research, combined with the acknowledgement of the medical community that “the use of the eyes will not cause damage nor decrease the degree of remaining vision” (Barraga, 1964, p. 323) changed educational philosophy. Suddenly, the picture of a child with low vision with black felt over his or her hands while reading braille evolved to that of a child reading standard print with a magnifier; the idea of an adult with low vision being dependent on others for transportation evolved to the reality of an adult using spectacle-mounted telescopes to legally drive

a car. (This seminal piece of literature is available online through *JVIB* Classics: <[www.afb.org/jvibclassics/jvibclassictoc.asp](http://www.afb.org/jvibclassics/jvibclassictoc.asp)>.)

Dr. Barraga's work motivated an entire field to develop new curricula and expand her teaching philosophy to students with multiple disabilities, resulting in generations of children having an opportunity to maximize their visual potential. For example, teachers looking for creative ideas on developing the visual skills of their students might read Beth Paul's (1992) "High Vision Games Net Low Vision Gains," or O'Donnell and Smith's (1994) "Visual Cues for Enhancing Depth Perception." To learn more about access by people with low vision, a few good articles on this subject include "Least Restrictive Access to the Visual Environment" (Corn & Koenig, 1991); and "Access to Print for Students with Low Vision" (Corn & Ryser, 1989).

The positive effect of the philosophy of developing visual abilities has been extended to students with severe low vision through the belief that even small amounts of visual information can be useful for learning. Many children with severe low vision are not exclusive readers of print or braille. The notion that children need to read in one medium only has been challenged by the work of Corn and Koenig (2002) and Lusk and Corn (2006), who advance the concept of dual media learners. The concept of utilizing a variety of sensory inputs to maximize performance is also applied to the areas of rehabilitation (for example, in activities of daily living) and orientation and mobility (a successful traveler often uses a cane while also using a telescope to preview the environment, for example).

Teachers with an interest in students with low vision and other disabilities can find assessment strategies in an article by Langley and Dubose (1976), entitled "Functional Vision Screening for Severely Handicapped

Children." Learning objectives and teaching strategies are outlined in Jose, Smith, and Shane's 1980 article, entitled "Evaluating and Stimulating Vision in Multiply Impaired Children."

The journal has published models of rehabilitative care for people with low vision and has offered explanations of comprehensive rehabilitation programs. A partial list of articles on these topics includes "Development of Efficiency in Visual Functioning: Rationale for a Comprehensive Program," by Barraga and Collins (1979); "The Role of Education and Rehabilitation Specialists in the Comprehensive Low Vision Care Process" by Lueck (1977); "Visual Function: A Theoretical Model for Individuals with Low Vision" by Corn (1983); "A Model for Training Vision Functioning" by Hall and Bailey (1989); and "A Model Project to Provide Outreach Low Vision Services to Children with Deaf-Blindness" by Brennan, Miller, Ryu, and Lolli (1992).

One of the more interesting topics for readers of the journal has been driving by people with low vision. The journal has recognized the unique value and importance that society places on driving and its impact on quality of life and employment. Kelleher (1979) introduced the concept of driving with low vision, and technical descriptions of drivers' training for people with low vision has been provided by Jose and Butler (1975); Jose, Carter, and Carter (1983); and Huss and Corn (2004). An evaluation of the driving records of people with low vision was completed by Lippman, Corn, and Lewis (1988), and legal issues and case law of driving with low vision was discussed by Marta and Geruschat (2004). The impact of nondriving was the concern of Corn and Sacks (1994) and Rosenblum and Corn (2002). These few examples demonstrate the importance that society, and, by extension, this journal, has placed on the topic of driving by people with low vision.

**SPECIAL ISSUES**

Special issues have become an important part of the journal's yearly publication schedule. The topic of low vision was the theme of a special issue in 1992 and in 2004. The October 1992 and October 2004 special issues on low vision offer a host of interesting articles that are all related to low vision. (Single copies of special issues are available from Subscriber Services, AFB Press; phone: 800-232-3044 or 412-741-1398; e-mail: <afbsub@abdintl.com>.)

**FUTURE PROGRESS**

As the population ages and in the advent of improved medical care for infants and young children, the number of persons with low vision is expected to increase dramatically. The journal, through the hard work of the authors, and the dedication of its readers, is positioned to lead the effort to provide education and rehabilitation for persons with low vision for the next 100 years. In what direction will progress be made? What new developments in educational and rehabilitation philosophy for low vision will carry the day? What new medical treatments and low vision devices will be developed? We know there will be advances in prevention, treatment, and rehabilitation and education practices. We are left to wonder what they will be.

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(Continued on p. 703)

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## JULY 2007

**1-6 ♦ National Federation of the Blind National Convention.** Atlanta, GA. **Contact:** National Federation of the Blind, 1800 Johnson Street, Baltimore, MD 21230; phone: 410-659-9314; e-mail: <nfb@nfb.org>; web site: <www.nfb.org>.

**2-6 ♦ 2007 Lions Clubs International Annual Convention.** Chicago, IL. **Contact:** Lions Clubs International Headquarters, 300 West 22nd Street, Oak Brook, IL 60523; phone: 630-571-5466; web site: <www.lionsclubs.org>.

**18-22 ♦ 18th Argentine Congress on Ophthalmology.** Buenos Aires, Argentina. **Contact:** Congress Secretariat, Ana Juan Congresos, Malasia 884, C1426BNB, Buenos Aires, Argentina; phone: +54-11-4903-7072; e-mail: <secretaria@oftalmologia2007.com.ar>; web site: <www.oftalmologia2007.com.ar>.

**30-August 4 ♦ National Federation of the Blind Youth Slam: A 2007 STEM Leadership Academy.** Baltimore, MD. **Contact:** National Federation of the Blind, 1800 Johnson Street, Baltimore, MD 21230; phone: 410-659-9314; e-mail: <youthslam@nfb.org>; web site: <www.blindscience.org/ncbys/Youth\_Slam.asp>.

## SEPTEMBER 2007

**25-30 ♦ 14th World Conference of Deafblind International.** Perth, Australia. **Contact:** Jacquie Liddiard, Senses Foundation, P.O. Box 14, Maylands, WA

6931, Australia; phone: +61-8-9473-5400; e-mail: <conference@senses.asn.au>; web site: <www.dbiconference2007.asn.au>.

## A Look Back

(Continued from p. 652)

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