

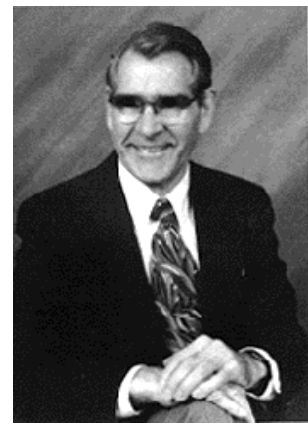
The 1995-1996 American Optometric Foundation Annual Report

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From the President

Last year, in the first annual report of the American Optometric Foundation (AOF), I provided a historical perspective to the AOF's establishment and its long running program of providing Ezell Fellowships to graduate students at American schools and colleges of optometry. In this year's report we continue to acknowledge our newest Ezell Fellows, prominent former Ezell fellows, 1996 AOF sponsored award winners, and our friends and contributors who make our programs possible. It is the contributors, as well as AOF membership, that my comments specifically address.

Next year will be the fiftieth anniversary of the founding of the AOF. Our theme throughout the year will be to communicate with our present members, attract new members from the optometric community, reach out to patients, and seek out more corporate friends both in the eyecare and local communities. The board will finalize a plan for increasing membership in the fall of 1996.



Bert Corwin, O.D.
President

This plan which is still under discussion, calls for encouraging members to contribute a level above what they have done in the past, e.g., move from a sustaining member to a research member. All Ezell Fellows will be encouraged to become Ezell Club Fellows to create a new category of Ezell Fellowship directly funded by the former Ezell fellows. In a joint venture with the Association of Schools and Colleges of Optometry, we will inform faculty members at the schools and colleges of optometry about AOF's mission and goals and encourage them to become contributing participants.

In this coming year the Board will play an active role in informing all its optometric colleagues about the mission and goals of the AOF. We will encourage new Fellows of the American Academy of Optometry to join and support the AOF. We will challenge Academy sections to persuade their diplomates and members to become contributing members of the AOF. This challenge will reach out to our colleagues who are members of American Optometric Association and international optometric bodies, such as the Canadian Optometric Association and the World Congress of Optometry.

The AOF has established an endowment fund with generous help from some of its contributors and has received considerable support from its members and corporate friends. The largest gift to the AOF endowment fund, a contribution of \$425,000, came from the Jackson estate. I would like to acknowledge this substantial gift that will allow us to continue the AOF's mission to support research. William Reginald Jackson, Jr., O.D., F.A.A.O., of Kansas City, Missouri, who died on February 23, 1991, at the age of sixty-four left 10% of his

residuary estate to the American Optometric Foundation. This endowment has enabled the AOF to strengthen its Ezell Fellowships program.

It is now time, after fifty years, to ask all of us who have benefited from the work of those who came before us to help build a sound future for optometric teaching and research. Our profession has given us a standard of living established by our predecessors. Let us now help put together a substantial endowment that will ensure continuing support for the development of young people who will lead our profession into the future. I hope all of you will either join the AOF for the first time or if you are already a contributor, you will contribute at the highest level. Your ideas and time are important to us, please let us know if you wish to volunteer your time for a worthy cause.

Bert Corwin, October 1996

Board of Directors

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Sidney Greenberg, O.D.

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Anthony Adams, O.D., Ph.D. Academy Liaison

David Lewis Executive Director

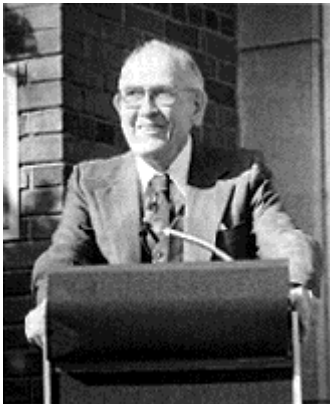
Glenn A. Fry: A Remarkable Scholar and Gentleman

by **Richard M. Hill, O.D., Ph.D.**

Dean and Professor Emeritus of Optometry
College of Optometry, The Ohio State University

Over his eighty-seven years, Glenn A. Fry interacted with, and clearly influenced, literally hundreds of individuals within and outside his profession—students, colleagues, university administrators, standards participants, as well as neighbors in his home community. Virtually all who enjoyed his friendship are prone to use the word "remarkable" to describe him. Such an accolade, if applicable to even one dimension of a person's life, is noteworthy. What is unusual about Glenn is that the term "remarkable" can be applied to so many dimensions of his life.

For those of us who were his faculty colleagues, one major dimension of Glenn's life was his role as graduate degree advisor to a corps of M.S. and Ph.D. degree recipients. These beneficiaries of his guiding influence have had an impact on research, teaching, and administration greater than is traceable back to any other single individual in our profession. Their accomplishments range from deanships, leadership roles in NIH, and textbook generation, to authorship of international ophthalmic standards—much of this work in the image of their mentor and influenced by his early guidance.



Glenn A. Fry

Glenn published some three hundred research reports and several books ranging from the clinically applied to the most mathematically challenging frontiers of eye movement and the sensory processes of vision. His last paper, titled "Color of Maximum Saturation," appeared in *Optometry and Vision Science* just a few months before his death. Honorary degrees from six educational institutions, the Tillyer Medal of the Optical Society of America, and the Prentice Medal of the American Academy of Optometry are just a few of the recognitions his research work attracted. His own college at The Ohio State University struck a medal in his name, The Glenn A. Fry Medal in Physiological Optics. It has been given to researchers who aspire to similar levels of research excellence, including two Nobel Laureates.

His professional students, too, in the course of their optometry studies, saw him as remarkable, but in quite a different way. They saw him as a teacher of nearly every course in the optometry curriculum at one time or another

and as a leader of the optometry program, and then school, from 1935 to 1966. Although challenging in the classroom, even for graduate students, he was

always patient and understanding of the struggling professional student, and spent as much of his time as was needed to bring any earnest student through the most difficult subjects.

In the ophthalmic standards communities, national and international, he was again seen as remarkable, not only for his patience and endurance at the conference table, but more often over the decades as the hardest working member of such groups, i.e., as their recording or corresponding secretary.

This past January at the memorial ceremony held for Glenn in Columbus, another group of people, largely unknown to his academic colleagues, joined them to reveal how revered he was as a neighbor. He and his beloved wife, Martha, were known for their caring natures and generosity within their neighborhood and church—another remarkable dimension revealed. Both communities, academic and neighborhood, agreed that Glenn was the rare and consistent model of a gentleman, having genuine concern for all those with whom he interacted.

Glenn A. Fry will truly be remembered by his many friends and colleagues as a remarkable scholar and gentleman.

**Ezell Fellows who studied
under Glenn A. Fry:**

Neal J. Bailey

William L.
Brown

Kent M. Daum

Jess B. Eskridge

Ronald Jones

Vincent King

Dennis L.
Sawyer

John P.
Schoessler

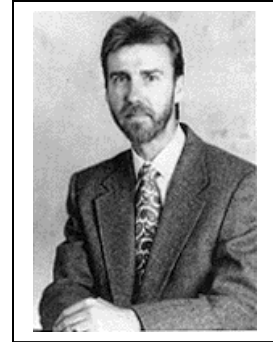
William W.
Somers

Charles R.
Stewart

1996 Glenn A. Fry Lecturer Award

Earl L. Smith III, O.D., Ph.D.

Greeman-Petty Professor of Vision Development; Chair, Basic Sciences University of Houston College of Optometry



Since learning that he was to receive the Glenn A. Fry Lecturer Award, Earl L. Smith III says that he has "been walking on air." From a personal point of view he says "this award has great meaning because of the type of scientist that Professor Glenn Fry was" and because of the respect that Smith has for the previous Fry Award winners. Smith described Fry as a dedicated, tireless, hands-on scientist and characterized Fry's work as creative, thoughtful, precise, and absolutely reliable. Smith's academic history and research and teaching activities show that he shares many of these same characteristics with Fry.

Smith entered the University of Texas at Arlington, just outside his hometown of Dallas, Texas, in the summer of 1967. He became interested in the profession of optometry via his sister, who was dating a University of Houston optometry student at the time. He was admitted to University of Houston College of Optometry (UHCO) in 1968 as the youngest member of his class and graduated with his O.D. degree in 1972.

In 1971-72, Smith saw the development of UHCO's new graduate program in physiological optics and was impressed by the opportunities the program offered for a career in research and teaching in optometry. He completed his M.S. degree in physiological optics in 1975 and continued in the doctoral program, working on his dissertation in Dr. Steven Cool's laboratory. Smith's doctoral work was supported by an Ezell Fellowship from the American Optometric Foundation and a postdoctoral fellowship from the National Eye Institute (NEI) of National Institutes of Health (NIH). He received his Ph.D. in physiological optics in 1978.

Smith joined the faculty of UHCO as an assistant professor in 1978. He currently holds the rank of professor and is the chair of the College's basic sciences department. In 1988, he became the Greeman-Petty Distinguished Professor in Vision Development, a position he still holds.

Throughout his career, Smith has been involved in a broad spectrum of research activities, including studies on neural anomalies associated with environmental toxins and behavioral and neurophysiological investigations of experimental glaucoma in monkeys. However, his primary research program, which began in graduate school and continues today, is centered on the effects of normal and abnormal visual experience on visual system development. This program involves three somewhat separate lines of research that have each resulted in significant findings.

The first line of research involves psychophysical studies of normal and abnormal binocular vision and was conducted in collaboration with Ronald Harwerth (Smith's longtime collaborator, who will introduce him at the Academy's upcoming award ceremony and who received the Fry Award in 1980). This research has yielded important insights into the nature of the vision anomalies associated with amblyopia and strabismus.

A parallel series of neurophysiological investigations, conducted in collaboration with Dr. Yuzo Chino, a professor of optometry at UHCO, has concentrated primarily on binocular interactions in the visual cortex of animal models for amblyopia and strabismus. They have identified the key elements of early abnormal visual experience that disrupt cortical binocularity and recently uncovered a high prevalence of residual suppressive binocular interactions in the visual cortex that may be responsible for many of the vision deficits in strabismus.

Smith's third line of research, and the one that is currently receiving most of his attention, focuses on the role of visual experience in the process of emmetropization and the genesis of refractive errors. His studies in infant monkeys have provided insight into the types of abnormal visual experience that can disrupt emmetropization and lead to abnormal refractive errors. His most recent work provides the first clear evidence in primates that, early in life, ocular growth and the emmetropization process are regulated by visual feedback associated with optical defocus.

Smith's research activities have been supported by funds from the American Optometry Foundation and the Greeman-Petty Professorship. He is the principal investigator of a research grant from the NEI, which is in its fifteenth year of funding. Smith is also a co-investigator on two additional research grants from the NEI and a co-principal investigator on a research grant funded by Alcon Laboratories, Inc.

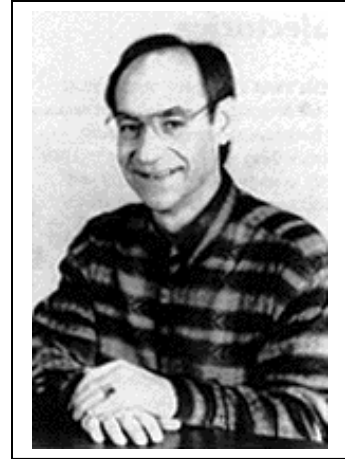
Although Smith has a very active research program, he has continuously taught a diverse range of courses at UHCO. He believes that to be successful lifelong learners, optometry students must be well grounded in the basic vision sciences. Since he teaches vision science, he feels that it is his responsibility to provide the foundation for this lifelong learning. One of his primary goals in this regard is to make vision science relevant to clinical practice. He tries to focus his classes on fundamental issues that are key to understanding current diagnostic and therapeutic strategies. Smith thinks that it is particularly critical that students learn how to use basic vision science to solve clinical problems, so he challenges students to apply vision science principles to determine the best clinical management regimens for their patients.

As a measure of Smith's success as a teacher, he received his college's Beta Sigma Kappa Teaching Excellence Award in 1980 and 1986 and its Outstanding Graduate Faculty Teaching Award in 1987 and 1989. In 1994, he was awarded the University of Houston Amoco Teaching Excellence Award in a university-wide competition.

Prominent Ezell Fellow

Dennis M. Levi

When Dennis Levi arrived in Houston on a steamy August day in 1970, the idea of an academic career had not even crossed his mind. Levi had completed his optometric training in Johannesburg, South Africa, and, after two years of practice, interspersed with visits to the London Refraction Hospital (to study contact lenses) and the Optometric Center of New York (for a residency), he was planning to spend one year in Houston, obtain his O.D. degree, and qualify for licensure in the United States. Twenty-six years later, he's still there! Levi stayed in Houston due to his involvement in research during his O.D. year. Together with his Longtime friend, Dennis Bader, and Chris Kuether, Levi developed a videoretinoscope, which could be used for teaching and research. The research experience was so fulfilling that Levi entered the graduate program at the University of Houston, completing his M.S. and Ph.D. there, with a good deal of help from the AOF.



Levi joined the faculty at the University of Houston College of Optometry, initially as an instructor, and progressed through the ranks to professor of optometry and physiological optics, and associate dean for research and graduate studies. This summer, Levi was awarded the Cullen Distinguished Professorship, the University of Houston's most prestigious and highly competitive, lifetime, endowed professorship.

Levi's accomplishments as a scientist and as a citizen of the scientific community are exemplary. Levi served as chair of NIH's Vision Science B Study Section and Association for Research in Vision and Ophthalmology's (ARVO) Psychophysics Section, and he is now serving on the National Eye Institute (NEI) Special Evaluation Panel. His research has been continuously funded by NEI for twenty years. He is a section editor of Vision Research and serves on the editorial boards of Ophthalmic and Physiological Optics and Investigative Ophthalmology and Visual Science. Dennis Levi has published about 130 scientific papers, and was recently elected Fellow of the Optical Society of America for his research contributions in the areas of amblyopia and spatial vision. He has received numerous awards including the Glenn A. Fry Award and the Garland Clay Award from the American Academy of Optometry, and was recently honored as a Fellow of the Optical Society of America.

Levi is an effective teacher who has had an unprecedented influence on both undergraduate and graduate education. In the professional program he has taught seven different lecture and laboratory courses, ranging from pediatric optometry

to the basic science of monocular sensory processes. He has also taught in six different clinics in the College, including vision therapy and electrodiagnosis. In the College's graduate program in physiological optics/vision science Levi has taught twelve different courses. These courses range from scientific writing and ethics to visual psychophysics and visual neurophysiology.

For his teaching in the professional program Levi has received the Beta Sigma Kappa Outstanding Teaching Award. For his teaching in the Graduate program Levi was recognized by the graduate students with the Outstanding Graduate Faculty Award in 1990 and 1993. One measure of his teaching effectiveness is the number of people who have selected him to supervise their research. How many? Eight masters students, eleven Ph.D. students, six post-doctoral students, and five visiting scholars have selected Levi.

Levi believes that the AOF Ezell Fellowship was a central and significant factor in his development: "The AOF Ezell Fellowship that I received as a young graduate student at the University of Houston had a very strong impact on me. It demonstrated the commitment of my chosen profession to research, by investing precious resources to support the training of young researchers. The profession recognized the importance of research to its continued growth and development, and was prepared to back up this belief in the most concrete way possible-by supporting the training of young scholars."

A Legacy of Excellence

Ezell Fellows & Their Long-term Contributions to Vision Science and Optometry

Since its inauguration in 1949, the American Optometric Foundation's Ezell Fellowship program has provided significant financial and symbolic support to young vision scientists. The five Ezell Fellows profiled here, **Merton Flom, David G. Kirschen, Thomas Raasch, Thomas F. Freddo, and Earl L. Smith III**, exemplify the AOF's commitment to outstanding optometric research and education. While each researcher investigates a different dimension of vision science, all five embody the AOF's goal to "further the visual welfare of humanity." Combined, these scholars have authored or coauthored over 250 articles, made over 300 public research presentations, won over fifty research awards and grants, and received eight teaching awards. Each fellow recognizes the AOF's contribution to the development of their distinguished career. Their long-term accomplishments are a testament to the importance of AOF's role in recognizing and cultivating young scholars' potential.

Educational Backgrounds and Career Trajectories

Investigations of binocular vision provide the basis for two fellows' research efforts. Merton Flom held an Ezell from 1952 to 1956 while working on his doctorate in physiological optics at the University of California-Berkeley. Following graduate study, he spent twenty-nine years on its faculty, ultimately as professor of physiological optics and optometry and as assistant dean and faculty chair. In 1980 Flom joined the faculty at the University of Houston College of Optometry as professor of optometry and vision science; he has also served as associate dean for graduate studies and research and as dean of the college.

David G. Kirschen, O.D., Ph.D., also specializes in binocular vision research. The AOF awarded Kirschen an Ezell Fellowship from 1972 to 1974, as he completed doctoral work in physiological optics at UC Berkeley. He completed his postdoctoral research at UC-Berkeley under Flom's supervision. He subsequently joined the faculty at the Southern California College of Optometry, where he serves as an associate professor of basic and visual science.



Merton Flom

Since 1981, Kirschen has provided research consultant services to the Jules Stein Eye Institute at the University of California-Los Angeles School of Medicine. The Institute appointed Kirschen the chief of binocular vision and orthoptic services in 1984, and in 1989 it appointed Kirschen lecturer in ophthalmology. Kirschen also conducts private practice in Brea, California.

While Flom and Kirschen investigate binocular vision, Thomas Raasch, O.D., Ph.D., specializes in low vision and is particularly interested in evaluation of clinical outcomes, clinical

care to low vision patients, and related research in low vision and visual optics. Raasch holds an assistant professorship at The Ohio State University College of Optometry, where he teaches courses in clinical visual field testing and in visual optics. From 1984 to 1986, Raasch held an Ezell at UC-Berkeley School of Optometry, where he investigated such areas as the optics of low vision devices and of ophthalmic instruments, problems in clinical low vision, visual optics, and psychophysical assessment of spatial vision. Upon completion of his Ph.D. in physiological optics in 1988, Raasch was awarded an H. Charles Greene Foundation postdoctoral research fellowship at the Johns Hopkins University School of Medicine's Wilmer Eye Institute.

Raasch notes that his "activities were primarily directed at research in visual performance of individuals with impaired vision, particularly with respect to reading performance and binocular visual performance." He collaborated with Robert Massof (also a former Ezell Fellow and a graduate of the Indiana University School of Optometry), for instance, to develop head-mounted video displays as assistive devices for patients with low vision. Thomas Freddo, O.D., Ph.D., received his O.D. from the University of Massachusetts College of Optometry in 1976; the AOF awarded him an Ezell the following year. In January 1982 Freddo earned his Ph.D. in anatomy from Boston University, the same month that the university honored him with a fellowship in ophthalmic pathology. Freddo is an associate professor of ophthalmology, pathology, anatomy, and neurobiology at the BU School of Medicine and an adjunct professor of optometry at Boston's New England College of Optometry (NEWENCO). He also directs the Eye Pathology Laboratory for the BU School of Medicine and serves as associate director of the Massachusetts Lions Eye Research Laboratories. He chairs the Visual Sciences-A Study Section for the National Eye Institute, was a clinical instructor for the NEWENCO's Contact Lens Service from 1977 to 1979, and has conducted a hospital-based private practice in general optometry since 1989.

Earl L. Smith III, O.D., Ph.D., is a professor of optometry and physiological optics for the University of Houston College of Optometry (UHCO). Smith held the Ezell from 1973 to 1976 while he completed his doctoral studies at UHCO. In 1987 the university honored Smith with the Greeman-Petty Distinguished Professorship of Vision Development. Since 1990, he has also held the chair of basic sciences at UHCO. Smith teaches visual optics and developmental neurophysiology. His research investigates early visual development, particularly in the areas of ocular growth and refractive development.

Current Research and Teaching

Each Ezell Fellow has contributed to the advancement of vision science and to the profession of optometry through outstanding research and teaching. Flom, for instance, is most proud of two particular research areas. First, he mentions the research that found the

"ability to see a letter is degraded by surrounding contours at greater separations from the letter in amblyopia than in normal eyes, but that this separation is proportional to the acuity for the isolated letter." Second, he alludes to work that found that "strabismic amblyopia differs from the anisometric type in that the former is due primarily to spatial uncertainty and distortion (cortical phenomena) and the latter is due to reduced resolution from neural blur (also a cortical phenomenon)."



Thomas Raasch, O.D.,
Ph.D.

Kirschen identifies his own investigations of visual acuity, begun during graduate study, as important to the advancement of vision science. He is also pleased with his contributions to the five-year, fourteen-institution investigation of prism adaptation's role in acquired esotropia. His binocular vision research includes investigation of infant acuity development, computer-related vision problems, and analysis of the aspects of vision that may be related to sports performance. Kirschen's research interests transfer to the classroom, where he teaches courses in binocular vision and space perception, as well as perceptual aspects of motion.

"Perhaps my most significant contribution" to vision science, Raasch notes, "has been in low vision research and the care of low vision patients. My advisor in graduate school was Dr. Ian Bailey, and my association with him and with others involved in low vision has fostered an ongoing investment in low vision research." This program of research is particularly important because, as the population of the United States ages, "the public health implications are huge. A goal of mine is to further develop a research program that will contribute to our understanding of clinical care of the low vision patient, the clinical outcome of low vision care intervention, and in the definition of its proper role in the health care environment of the future."

Freddo counts the research which "discovered a pathway for proteins from the bloodstream" (and which earned him the Glenn A. Fry Award in Vision Research in 1992) as his most important contribution to the field. His lecture, reprinted in *Optometry and Vision Science* in 1993 (pp. 263-70), emphasizes specifically that an "interior diffusional pathway" in mammalian eyes (including human eyes) "contributes nearly all of the plasma-derived protein present in anterior chamber aqueous humor. We also have reason to believe that more protein actually reaches the iris root via this pathway than enters the anterior chamber aqueous humor" (p. 269). In addition to his award-winning research, Freddo devotes substantial energy to teaching. His experience includes directing courses in the Biology of the Visual System in Health and Disease (at BU), Ophthalmic Pathology and Pathophysiology, and Human/Ocular Anatomy (at NEWENCO). Since 1980, Freddo has been the chief instructor of ophthalmic histopathology for BU, and chief of the Specialty Contact Lens Service for the Gundersen Eye Center of Boston University Hospital.

Smith's current research centers on how conditions such as myopia are affected by

visual experiences early in life. Early ocular growth can be manipulated by the use of spectacle lenses, a finding illustrated in Smith's research with infant monkeys. In one particular study, for instance, Smith and two colleagues hypothesized that "early in life, eye growth is regulated by visual feedback associated with optical defocus. Specifically, we used spectacle lenses to simulate nearsightedness or farsightedness in one eye of infant rhesus monkeys and measured the effects of the spectacle lenses on the eye's growth." The results of the investigation were particularly exciting to Smith because the outcomes indicated "eye development in higher primates is regulated, at least in part, by visual feedback." (Nature Medicine 1 [1995]: 761-65). Smith stresses the need for further research to determine whether human ocular growth can be manipulated through similar means; although he notes that the study's finding may have some applicability to infants and toddlers.

Professional Service

In addition to conducting research and teaching, each Ezell Fellow dedicates a significant portion of his professional life to service activities. Flom's professional service includes fellowship in the American Academy of Optometry, for more than forty years, during which he has served on the executive council, as president, and as editor of its journal. Flom's work for the American Optometric Association (AOA) includes service on the California Long-Range Planning Commission, the Crippled Children's Services Committee, and the Research Committee. He has served as a member of the board of directors for the American Optometric Foundation, a member of the Vision Committee of the National Research Council/National Academy of Sciences, and holds memberships in the Association for Research in Vision and Ophthalmology (ARVO), the Prentice Society, and Sigma Xi National Scientific Research Society.

Kirschen's professional service includes the presidency of the California Chapter of the AAO (1992-93), membership on the AAO's Long Range Planning Committee (1991-92), the chairmanship of the AAO's Papers Committee (1988-94), and the position of Co-Program editor since 1992. From 1987 to 1994, Kirschen served as a consultant to the California State Board of Optometry in Binocular Vision. Kirschen's other professional associations include membership in the AAO, the ARVO, Beta Sigma Kappa, and the Association of Optometric Educators.

Raasch's professional service includes membership on the OSU Biomedical Sciences Human Subject Review Committee, the Committee on Women and Minorities for the OSU Faculty Senate, and the OSU College of Optometry's Graduate Studies, and Research, and Computer Committees. From 1994 to 1995, Raasch functioned as president of the postdoctoral and graduate student subcommittee of the Committee on Education at the Johns Hopkins Department of Ophthalmology. Other service activities include reviewerships for Optometry and Vision Science, the Journal of Refractive and Corneal Surgery, and Current Eye Research. Since 1981, Raasch has been a fellow of the AAO. He also holds memberships in the Optical Society of America and the ARVO.

Freddo's professional affiliations include memberships in the American Association of

Ophthalmic Pathologists, the AAO, the ARVO, the International Society for Eye Research, the Prentice Society, and the New England Council of Optometrists. Freddo is also a Fellow of the AAO. Freddo has refereed for such journals as Investigative Ophthalmology and Visual Science, Archives of Ophthalmology, Experimental Eye Research, and the British Journal of Ophthalmology.

Smith's professional service activities include membership in the ARVO, the AAO, the Society for Neuroscience, and the College of Optometrists in Vision Development. Smith also serves on the AOF's board of directors and is a member of the research committee for the AAO.

Honors and Awards

The sheer number and variety of awards bestowed upon these Ezell Fellows during their careers emphasizes further their vital contributions to the optometric profession. In addition to winning several grants from the National Institutes of Health, Flom has won research grants from the National Aeronautics and Space Administration, the U.S. Public Health Service, the NEI, and the U.S. Army. The AAO honored Flom with a Life Fellowship in 1993. In 1995 he received an honorary doctorate from the State University of New York College of Optometry. Flom also is the twenty-seventh recipient of the Prentice Medal, the highest honor the Academy confers. He is the ninth optometrist and the first Ezell Fellow to receive this award.

In 1977 the NEI of the NIH awarded Kirschen a three-year postdoctoral fellowship for his work in the area functional amblyopia; the NIH has also funded Kirschen's co-investigation of acquired esotropia. Other work in the area of visual acuity has been supported by the Hearst Foundation. Kirschen's efforts as a teacher have also been recognized, as the Second Year Class of the Southern California College of Optometry has designated him "Teacher of the Year" six times since 1989. In addition to the Ezell, Raasch has won research grants from the AAO, from the U.S. Public Health Service, the Helena Rubenstein Foundation, the Veteran's Administration Office of Rehabilitation and Development, and the Ohio Lions Eye Research Foundation.



Thomas F. Freddo,
O.D.,Ph.D.
with associate
Dr. Haiyan Gong

Freddo's honors include the National Research Service Award from the NEI (1979-81), the 1977 Dean's Trainee Fellowship in BU's Department of Ophthalmology, the William Troendle Award from the Massachusetts College of Optometry (1976), the Raymond I. Myers Award from the American Optometric Student Association (1976), and nomination to the Beta Sigma Kappa Scholastic Honor Fraternity (1976). The NSF awarded Freddo its Undergraduate Research Award in 1969 for his work at the University of Connecticut.

More recently, Freddo has held a grant from the NEI of the NIH in anterior uveitis (1982-present); the grant was recently renewed for another four years. Since 1992, he has also held an NEI/NIH grant for research in glaucoma.

Smith's distinguished research and teaching have been recognized with a variety of honors, including the Ezell Fellowship (1973-76), an NIH postdoctoral fellowship (1977-78), and membership in the Phi Kappa Phi Honors Fraternity (1976). As a graduate student at the University of Houston, Smith won the Contour Comfort and Syntext Awards for distinguished research.

The Ezell Legacy

Each of the featured scholars acknowledges the Ezell Fellowship's important role in reducing the financial burden of graduate study. "Making the decision to return to graduate school was difficult," Raasch notes, and the Ezell's patronage "bridged a gap that otherwise would have been very difficult to manage." Furthermore, "the prospect of competing for an Ezell Fellowship helped to make that decision easier. During grad school, the Fellowship allowed me to concentrate more exclusively on my research activities." Smith recalls that the Ezell "gave me the freedom to pursue my education on a full-time basis," and that it functioned as an important source of encouragement and credibility for future research efforts. Kirschen concurs, characterizing the Ezell Fellowship program as a "key" source for support of graduate student research, especially as other funding sources for graduate study diminish.

Raasch continues, noting that the fellowships "are an important source of much needed funds to support promising young researchers in optometry. I'm sure the financial support plays a critical role during the graduate school years of many. Perhaps just as important is the symbolic role these Fellowships play: these funds, coming as they do primarily from practicing clinical optometrists, demonstrate in a very tangible way to young optometric researchers that the practicing O.D. has a stake in optometric research. While that symbol may not pay the bills during grad school, it pays dividends for years (and perhaps for careers) to come afterwards. The young Ezell Fellow remembers that practicing O.D.'s invested in optometric research, and those fellows do repay that investment to the profession of optometry."

In addition to providing financial assistance, the Ezell Fellowship program plays a crucial role in shaping young scholars' professional lives. Freddo notes that the honor of the Ezell represented "moral support for me and my profession." The BU School of Medicine did not have a direct connection to ophthalmology during Freddo's fellowship, and the award thus "provided an important link" in the early stages of his career. Freddo believes that the Ezell can play a critical role in graduate education and the development of junior faculty, "particularly as dollar amounts of support increase." He is particularly interested in encouraging the AOF to "target areas in which our faculty needs are most

critical, such as in the basic medical sciences."

As more students opt for graduate and professional study, the role of extra-scholastic financial patronage will become increasingly important. "The good news," Smith says, is that "things are beginning to look good for the growth of the AOF. Its endowment is growing, and we can expect stable growth, which will help expand support for graduate education. At the same time, we can have an additional impact by developing junior faculty, which will require further AOF efforts." Flom states that the "AOF should continue its support of graduate students in their quest to become vision researchers, either by direct financial support or by support of their research projects," and he encourages former fellowship holders to join the Ezell Fellows Club.

These five researchers have contributed significantly to vision science and the practice of optometry. Their work demonstrates what they are capable of achieving, and as former fellowship holders, they appreciate practitioners' contributions to the Ezell legacy.

Ezell Fellowships

Since 1949, the American Optometric Foundation has annually awarded postgraduate fellowships to students pursuing graduate degree programs in vision science. The AOF established the Ezell Fellowship Program to provide incentive and opportunity to talented students to pursue careers in optometric research and education. The goal of the program is to invest in the future of the optometric profession by providing a pool of excellent educators and researchers. The program's successes illustrated by the many top faculty members and administrators at the seventeen schools and colleges of optometry and the excellent clinicians who are former Ezell recipients.

The 1996-97 Ezell Fellows

Michael J. Giese

My research interests are aimed at investigating how Gram-positive bacteria produce intraocular infections. The interaction of bacteria with host structures (e.g., endothelium) plays an essential role in disease pathogenesis. Bacterial infections induce the infiltration of inflammatory cells and the production of inflammatory mediators at the site of bacterial colonization. In ocular infections, the components of Gram-positive bacteria (cell wall, toxins, etc.) which induce these findings are not well defined. Along with this line of research, my other research interests are related to defining how the host responds to intraocular bacterial infections. The nature of the inflammatory response may play a role in tissue destruction associated with some intraocular infections. Because of the sensitive nature of the intraocular structures, having a better understanding of the pathogenesis of intraocular infections will help in the development of more effective treatment strategies, thus preventing the devastating consequences of these diseases.



T. Rowan Candy

My primary research interest is the development of vision in human infants. I was initially drawn to this area by work describing the dramatic cortical effects of visual deprivation. This work demonstrated the importance of post-natal visual experience in the anatomical development of the brain and, to



me, appeared to point to an important role for optometry-the prevention of permanent anatomical defects and visual impairment by optimizing infants' visual experience. In a research setting, my goal is to correlate normal functional development with the development of underlying anatomical structures. From this work, I wish to devise tests for very young infants that will be more informative in detailed diagnosis of pathology and define clearly the critical components of "normal" visual experience. It seems that much of current knowledge regarding visual deprivation has been derived from studies that perturbed the visual system into unnatural states, often without a clinical equivalent. To move into truly preventative health care, clinicians require a comprehensive list of the components of visual experience that are required for normal development. This question is of added interest in that the role of activity-dependent plasticity in the brain is currently a fundamental question in basic neuroscience research.

Suresh Viswanath

Currently, my primary research project involves using both non-invasive and invasive techniques to study the contribution of different inner retinal neurons (ganglion and amacrine cells) to the light adapted ERG responses in cats, monkeys, and humans. These studies will help us develop better electrodiagnostic techniques for the clinician and also aid the understanding of normal retinal functions, like light adaptation and quantal signaling. In animal experiments, our lab employs techniques of corneal/intravitreal ERG recordings combined with intraretinal field potentials recordings at different retinal depths. These recordings are performed both before and after the injection of pharmacological agents that are known to render selective groups of retinal neurons unresponsive to light stimulation. We also record corneal ERGs in monkey models of experimental glaucoma, Parkinsonism, and unilateral optic atrophy-all of which are known to selectively compromise specific inner retinal neurons. In the future, I hope to extend these studies to humans with inner retinal problems.



Luke Mahon

The broad outline of my present research is to investigate higher order perceptual models of color vision processing. Standard models of color vision begin with a first stage whereby incoming light signals are processed by the three cone types. This is followed by a second stage that additively or subtractively combines the signals from the cones to form



opponent and nonopponent channels. In a model recently developed in our lab (DeValois & DeValois, *Vision Research* 33, [1993]: 1053-65) a third stage of color vision processing is postulated to account for the perceptual shifts of the geniculate color vision axes. This involved modulation and rotation of the opponent color vision axes, both of which are formed by M/L cone inputs, by S cone signals. Recent work in our lab has focused on a series of color naming experiments designed to analyze and quantify the associated characteristics and asymmetries perceptually found at this third stage (DeValois, DeValois, Switkes, & Mahon, 1996, in press). My research involves both psychophysical and physiological investigation into higher order color mechanisms in support of not two independent systems, namely a red/green system and a blue/yellow system as in the standard models, but rather four independent systems, each with its own characteristics, corresponding to the perceptual color axes: red, green, blue, and yellow. My current psychophysical work is looking at the effects of stimulus size, background adaptation level, and eccentricity on the perceptual color axis asymmetries we have previously observed. I also want to investigate the effects of luminance and saturation interactions in relation to perceptual hue naming. For my physiological research, I plan to complement the psychophysics with a detailed and complete functional analysis of extrastriate neuronal areas (V2/V4) associated with higher order color processing.

The COIL Excellence in Low Vision Award

Funded by Combined Optical Industries, Ltd., the COIL Excellence in Low Vision Award was established in 1996 to promote the practice and development of the field of low vision by providing incentive and support to talented graduate students who demonstrate a passion and commitment to practice, research, and education in this field.

Awardee: Kuang-Mon Tuan (1996-97)

Currently, I am working with Dr. Ian Bailey and Dr. David Grisham at the School of Optometry, University of California-Berkeley on studies of reading performance of dyslexic and macular degeneration patients using video display terminals with modified modes of display. We are studying the effects of tinted lenses, colored displays, and highlighting on reading speed, comprehension, and visual symptoms of subjects with dyslexia. I am also working to develop the experimental design along with the protocol development and the calibration and debugging of the software.



In clinical optics research, Dr. Bailey and I have designed and developed new optical instruments to measure equivalent power of high plus lenses, image distance, and enlargement ratio of stand magnifiers, the magnification of Keplerian and Galilean telescopes, and the convergence demand with low vision reading spectacles. My responsibilities include the calibration and validation of the new apparatus with which I collect, compile, and analyze data from the measurement of low vision aids. I assist in the development of systems to facilitate the clinician's access to and application of the technical information that comes from these measurements. In addition, I am supervising the calibration of the Reichert Contrast Sensitivity test and will be conducting a prospective clinical evaluation of its use.

In the areas of optics, epidemiology of cataract and other age-related eye problems, and clinical psychophysics for testing for retinal function, I am planning work on studying the human eye with intraocular lenses. I intend to study the effects of both spherical and aspherical lens configuration, position, and tilt on image quality and size. I will also use psychophysical methods to evaluate the optical performance of pseudophakic eyes, while considering light scatter and optical aberrations and comparing manifest visual acuity with the resolving capacity of the retina.

American Optometric Foundation Awards

Gary Gross, O.D. Memorial Scholarship (1996)

Steven A. Kinzer (Indiana University School of Optometry)

Vincent Salierno Scholarships (1996-97)

Rena L. Ries (Pacific University College of Optometry)

David S. Bell (Indiana University School of Optometry)

Nadine G. Humen (The Ohio State University College of Optometry)

Linda Squillace-Gilligan (New England College of Optometry)

Toby D. Vallance (University of California School of Optometry)

Corning Scholarships (1996)

First Prize: Stacy Underwood (Southern College of Optometry)

Second Prize: Scott Michael Carlson (Northeastern State College of Optometry)

Henry W. Hofstetter Award (1996) (Sponsored by Vistakon)

Debbie Fitzgerald (Indiana University School of Optometry)

Vistakon Award of Excellence in Contact Lens Patient Care (1996) (Sponsored by Vistakon)

Established in 1993, this award recognizes students who have provided outstanding clinical contact lens patient care during their tenure as an optometric student.

Norah L. Krol (University of Alabama College of Optometry)

Chris Wilmer (University of California School of Optometry)

Michael Hill (Ferris State University College of Optometry)

Gina C. Kim (University of Houston College of Optometry)

Dominick Opitz (Illinois College of Optometry)

Ron Bound (Indiana University School of Optometry)

Heriberto Vasquez Sanchez (Inter-American University School of Optometry)

Brenda Catherine Hutchison (University of Missouri School of Optometry)

Kirsten Jones (New England College of Optometry)

Orly Maslavi (State University of New York College of Optometry)

Gregory J. Nixon (The Ohio State University College of Optometry)

Earlena F. McKee (Northeastern State University College of Optometry)

Carlos Sanchez (NOVA Southeastern University College of Optometry)

Christine Chatten (Pacific University College of Optometry)

Kelly Ann Malloy (Pennsylvania College of Optometry)

Teri M. Tsuchiya (Southern California College of Optometry)

Stephanie Bailes Willet (Southern College of Optometry)

Antonio Canuto (University of Montreal School of Optometry)

Matthew Craig (University of Waterloo School of Optometry)

The Jackson Estate

William Reginald Jackson, Jr., O.D., F.A.A.O., of Kansas City, Missouri, died on February 23, 1991 at the age of sixty-four. His professional emphasis was in contact lenses, in which he was active internationally, and vision development. The terms of his will left the bulk of his residuary estate to various charities, including 10% to the American Optometric Foundation. Although a final distribution was pending as of mid-August 1996, the AOF already has received \$425,000, which has been placed in the Endowment Fund. Earnings on the distributions to date have enabled the AOF to strengthen its Ezell Fellowships program.

Vistakon

Vistakon has been a great supporter of the American Optometric Foundation in the past year, leading the charge in providing funds for three research grants. These competitive grants will be awarded to fund basic or clinical research in the soft disposable contact lens area. There will be three one-year awards: one of up to \$25,000 and two of up to \$5,000 each. The proposals for these awards will be reviewed by the Research Committee of the American Academy of Optometry.

1995-96 Donors

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