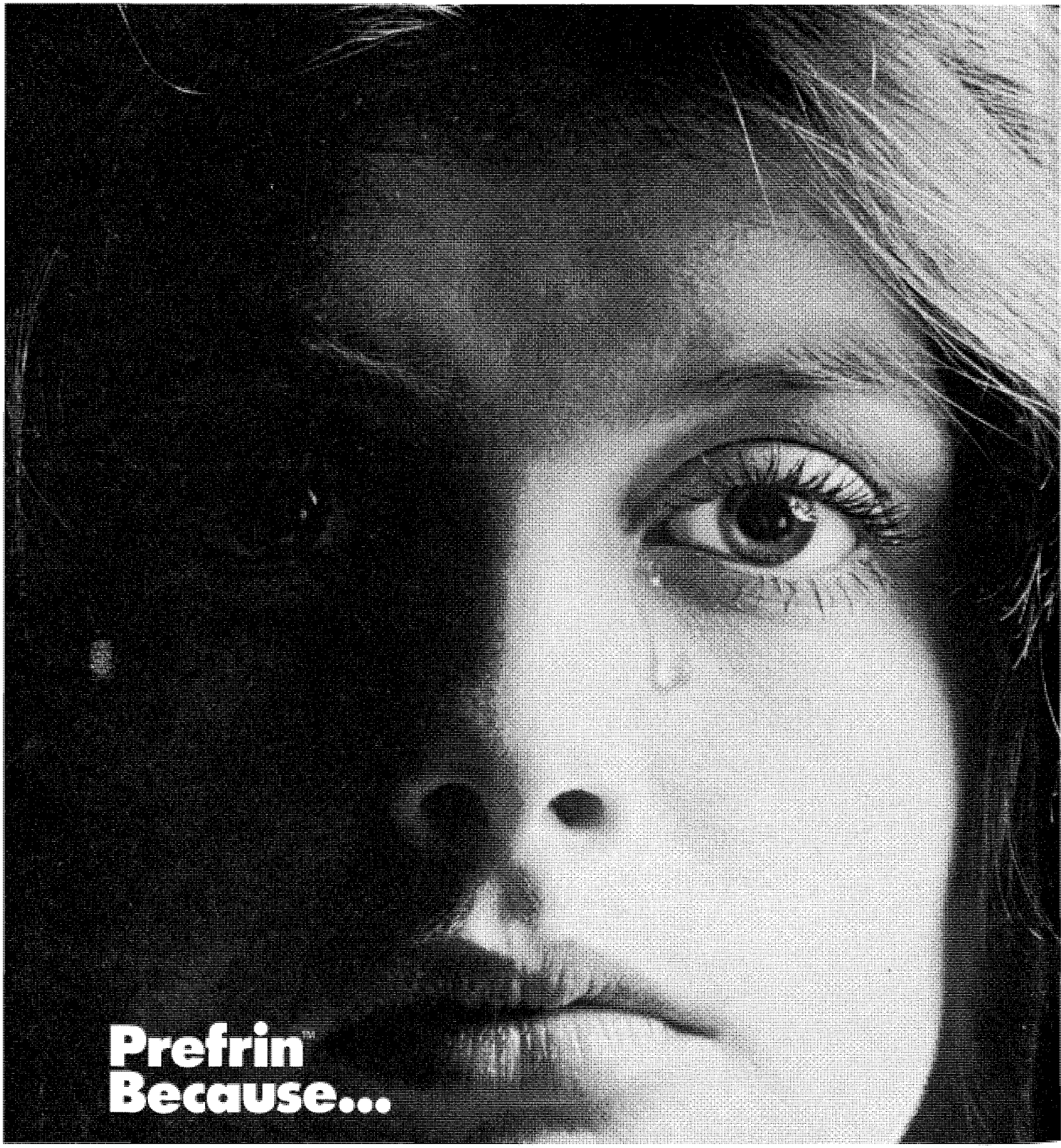
Volume 2, Number 1
Spring, 1976



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JOURNAL OF OPTOMETRIC EDUCATION

Volume 2, Number 1
Spring, 1976

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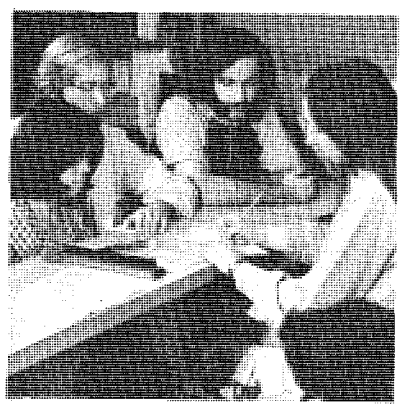

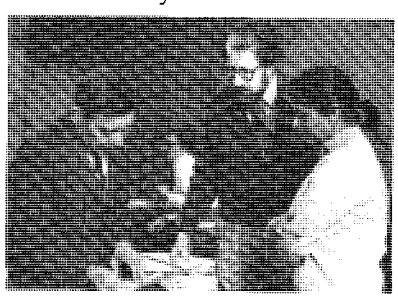

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EDITORS' PAGE

With this issue, the *Journal of Optometric Education* enters its second year of publication. This anniversary finds us with much to be proud of: fine articles by distinguished scholars, quality layout and graphics, plus a growing response from JOE's audience who are becoming increasingly aware of its value as a vehicle of communication.

In the coming year, the *Journal* seeks to permanently establish its place in the optometric community. With this goal in mind, the editors will continue to encourage optometric educators, students and practitioners to use the *Journal* as a forum for discussion of the trends, issues and problems in the schools and throughout the profession (see Editorial Page).

The *Journal* also intends to focus on fresh ideas and approaches to optometric education. As one example of what creative thinking can accomplish, this issue's profile examines the accelerated program for Ph.D.'s at the Massachusetts College of Optometry. Patricia Butterfield shows how excellent results can be achieved when high caliber students are combined with dedicated instructors and an intensive learning experience.

The theme of excellence in optometric education continues through several of the other articles in the first issue of Volume Two. Dean Haffner of S.U.N.Y. offers an overall survey of the factors involved in achieving excellence, while Lester Janoff returns to the subject of whether such excellence is best nurtured in the setting of an academic health center or a free standing school.

Two contributions from the University of Houston's College of Optometry describe training programs that serve as useful models for optometric faculty and students alike. Both articles deal with the special challenges of pediatric optometry, stressing the need for cooperation between optometrists, teachers and parents in order to maximize benefits for the child. In outlining the structure of Houston's new course offering "School Consultants", Gordon W. McKee emphasizes the role of the vision care specialist in the improvement of children's learning abilities in a school environment.

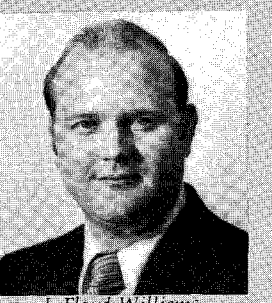
Concentrating on the sometimes difficult situation of a parental consultation, J. Floyd Williams provides specific instructions and recommendations on increasing communication between optometrist and parent. Readers may also wish to refer to a valuable chart of relationships of behavior patterns to optometric diagnoses.

Finally, **JOE** carries an article by Mildred E. Katzell on characteristics of OCAT applicants. Anyone harboring pre-conceived notions on this subject may well be surprised at the results of the statistical research that Ms. Katzell conducted.

In closing, we want to thank our readers for their past support but wish to emphasize that future success of the publication depends on their continuing commitment not only to its existence, but to its improvement. That commitment is best expressed in writing: through letters to the editor, scholarly articles, commentary or any other format that contributes to optometric education. Give us the benefit of your ideas, comments and suggestions and we'll be glad to pass them on.

In this issue:

Gordon W. McKee



J. Floyd Williams

Mildred E. Katzell

Alden N. Haffner

Lester E. Janoff

Elements of Excellence: The *Journal* as a Forum

The number of years are few since the almost exclusive goal of optometric education was the production of optometrists. Optometric faculty were primarily concerned with teaching, or teaching and practice, and had little time or resources to engage in the production of new knowledge. Innovations and developments were produced largely by the practicing optometrist or educators not associated with a school or college of optometry. In addition, the number of optometrists dedicated to education were few and the institutions were (and still are) very much dependent on part-time faculty.

Through the early 1960's optometric education was not well organized and was literally embattled on one side by the profession and on the other by the state boards. These schisms have been closed by interactions such as the Schools and State Board meetings at the Southeastern Congress, the Williamsburg and San Francisco meetings of the AOA and ASCO Boards, plus the interactions of many concerned individuals within the profession.

Optometric education had not been able to maintain peace with the profession—it lacked the resources and the climate required. Federal health manpower legislation, the growing prestige and recognized need for optometric health care, recognition by the profession that its future is dependent on its educational institutions and the increase in self-esteem of optometric educators have provided more adequate resources and a far more favorable climate.

Even as late as 1970, optometric educators had relatively little interaction. During the '70's, we have witnessed the formation of numerous groups of educators—as those instructing courses in practice management, low vision, contact lenses and vision therapy. While one or two groups have developed a vehicle of communication, most have not. Optometric educators in general have not had a forum in which to discuss their problems or to inform their colleagues of their developments. Especially has there been no place to discuss such aspects of optometric education as those presented by Dean Haffner in this issue.

In his article on elements of excellence, Dr. Haffner introduces a number of questions facing education today. Who can disagree that excellence in optometric education in the final analysis is determined by the faculty. Dr. Haffner outlines the "nature and construction of a faculty" but leaves unanswered the questions as to relative value or how to measure these qualities. For example, the old canard that all researchers are good teachers and a teacher cannot be good if he does not conduct research is just that. However, if excellence calls for both quality teaching and research, faculty possessing these qualities might well be sought to the exclusion of others. If teaching and research are equally important for promotion and tenure, does not the FTE need to be increased by at least 50%? Is this practical? affordable? Are the educators available? Is the holder of an O.D. degree qualified to be an educator or is the M.S. or Ph.D. required?

Haffner states that too many part-time professionals on the faculty translates into a lower quality endeavor. Studies are certainly needed to determine what level of part-time faculty is too great; what qualities should part-time faculty possess; what is an optimal balance of part-time and full-time equivalent faculty?

These and many other questions are truly a proper study for optometric educators and JOE is the proper forum.

Chester H. Pheiffer

Optometry and Elementary Education

By Gordon W. Mckee

Awareness of the special educational and clinical needs of the learning disabled child is growing rapidly in most of the educational and para-educational specialties in the U.S. school system. However, none of the education-related professions have dealt specifically with "perception" and necessary skills for academic achievement. *Psychology* continues to address itself primarily to clinical testing, behavioral observations and behavior modification techniques. *Special Education* appears to have zeroed-in on methodical approaches to academic skill areas. *Physical Education* continues to be game and strength oriented, and *Counseling* has been given the sorry task of dealing with the resulting frustrations of children, parents and educators which are daily resulting from a continuation of failure by learning disabled children.

No single profession has all the answers to the multiple problems of learning disabled children. A truly interdisciplinary approach is needed to identify these special children early, provide appropriate clinical and educational intervention, and to get them back into the mainstream of education as successful, fulfilled students.

The expansion of special services available to elementary school children has contributed to a greater demand by educators for professional consultants. Among the services being sought outside the traditional elementary education family are those of the optometrist, knowledgeable in the field of visual perception and the relationships between vision and learning. The Section on Binocular Vision and Perception of the American Academy of Optometry reports 14 Fellows who have satisfied their stringent requirements for Diplomate status in Binocular Vision and Perception. This system of peer review, however, does not identify those optometrists who are especially adept at working with schools on programs for the identification and remediation of children with visually related perceptual disorders who are academically at-risk. Such a professional is presently in demand by many of the 16,515 school districts in the U.S.

Innovative courses are being provided at the University of Houston as electives to better prepare future optometrists to serve as consultants in education. By 1977-78 all students will rotate through this program. In the absence of certification in this important optometric service, and as peer review develops, the optometrist looks to his academic and clinical training in the field of perception, vision development, vision therapy and school consultancy as evidence of his ability to deal with vision as it relates to childrens' learning.

The UHCO optometry students have had the opportunity to work with children in public educational settings since 1970. As techniques for dealing with large numbers of children in schools have improved through the years, so also have the opportunities for the optometry students to interact with the educational professionals. Most students in the past were assisting with some form of research dealing with the efficacy of screening and therapeutic procedures for learning disabled children.

The newest course, "School Consultants," is designed to provide guidelines on how to serve as a school consultant. These include setting up screening and remediation programs in elementary schools (or for school districts), information on organization and utilization of educational specialists and their assistants, programming for the perceptual needs of identified children, and specific remediation routines in each of the primary readiness skill areas.

Each of the students in the classes in the 1975-76 year has had the opportunity to write at least ten specific developmental or remedial routines in the areas of Gross Motor, Visual Abilities, or Visual Perception. These routines have been compiled in their three respective sections in the order of difficulty for the children. The optometry students have then had an opportunity to apply *their own* activities to the needs of children by teaching these techniques (and those of their classmates) to the teachers and aides working with the learning disabled children.

Upon completion of the one semester course, each student will possess a copy of the complete therapy program developed by his class (at least 100 routines), an outline for establishing a screening and remediation program for an elementary school, statistical data on the efficacy of perceptual screening and educational intervention, and many hours of valuable experience in screening, in-service, and remedial contact with educators and children. Students may continue in this Consultants program for additional semesters for elective credit.

It should be emphasized that the role of the optometric consultant to public education has not been con-

Gordon W. McKee, O.D., is associate professor at the University of Houston College of Optometry.

ceived as providing optometric services for all children in the district. Quite the contrary! The optometric consultant should not compete with the community optometrists or ophthalmologists for specialized vision-care services. A vision-perception screening program in a public school should be conducted by educators as much as possible. Some school districts may request that more specific vision skills screening be conducted by the consultant or his aides, but this must be left to the option of the district. The UHCO screening has been divided into two specific areas: Visual Abilities and Perception. All of the perceptual screening can be performed by trained educators and their aides. Most of the Visual Abilities screening can be conducted by specially trained educators. Some of the more technical tests require the services of the consultant optometrist *or* the cooperation of the community optometrists and ophthalmologists. By providing the school district with the results of their screening and/or diagnostic tests when the children are referred to their offices, the local practitioners can contribute to the educational programming of their patients.

If the Visual Abilities Screening is conducted within the school setting, it is to determine if the children fall into one of three categories: (1) Those who have at least the minimum visual abilities to be expected to perform adequately in the classroom; (2) Those who could benefit from some additional visual experiences such as pursuits, saccadics, accommodative flexibility, or binocular ranges which could be provided by educators in a school setting; and (3) Those who require additional diagnostic/remedial professional assistance from the community optometrists or ophthalmologists. It is further recommended that if a child is referred to his community vision care specialist, he only be allowed to benefit from the school-provided visual abilities training with the express permission of the parents after consultation with their practitioner. This would not apply to the remediation of visual perceptual, auditory perceptual or motor skills. Involvement in these experiences would be governed by the parents' approval for special educational services which may also be provided by the school for their child.

The University of Houston College of Optometry has provided optometric consultant services for the area school districts for several years. The results which have been achieved for the elementary academically at-risk children have been significant. The optometry students have been fortunate to have had these experiences. An expansion of these opportunities to all of the optometry students in U.S. colleges could provide approximately 1200 potential school consultants per year to serve the needs of our nation's children. The increasing concern of elementary educators for the success of all children and the inherent skills of optometrists to aid the educators, places a responsibility on optometric educators to provide the training to supply this needed manpower. ●

Communicating with Parents:

Some Procedural Guidelines in Vision Development Evaluations

By J. Floyd Williams

During the last five years great progress has been made in improving clinical tools and procedures for vision development evaluations. However, parent consultations continue to be difficult for our vision therapy clinicians to master. In order to provide and accelerate the practice and experience necessary to develop communication skills, the following recommendations and instructions to students of vision development and vision therapy are provided. Vision Therapy Clinicians of the University of Houston, College of Optometry have also found these suggestions and examples helpful in writing interprofessional reports and other communications. These aids provided to our students have been so helpful that they are being made available so that other colleges may use them to whatever advantage they desire.

At the University Optometry Clinic, all patients are first seen by student clinicians of the Vision Analysis Clinic. If learning disabilities are reported, or suspected, the patient is referred for vision therapy services and a Vision Development Evaluation is administered. A single student examines the patient under close supervision of the clinical faculty. Following this evaluation, an appointment is scheduled to discuss the patient's problems with the patient and/or parents. Students receive detailed step-by-step instructions to aid them in their preparation for the parent consultation as follows:

Pre-Consultation: The student prepares the written Vision Development Evaluation Report (see exhibit A) including raw data, diagnosis, behavioral relationships, and recommendations. This is submitted to the faculty supervisor for review prior to the parent consultation appointment. The student and instructor review the case, denoting which aspects of treatment are to be emphasized. The recommendations are likewise reviewed and agreement is reached between student and instructor prior to the parent's arrival. The consultation visit usually follows the Vision Development Evaluation by one week.

Consultation: During the summer session, faculty perform all consultations with the student observing. Beginning in the fall semester, students give the consultation with the faculty advisor present to assist. Each student prepares a brief outline of his consultation for easy reference. The following outline is suggested. However, students are introduced to various styles of consultation as they observe during the summer.

I. Introduction

A. Purpose of consultation:

1. *This is an oral report for the patient and/or parents.* Written reports are also prepared for parents. In addition, a technical report is prepared and is released to all professionals involved in the case, including teachers, *with the parent's written permission. The presence of both parents is encouraged.*

2. *Two-way communication is highly desirable.* We have the child for approximately two hours. His behavior may well be different at home and at school. The parents can provide important feedback relative to the child's behavior. Such communication has often shed a great deal of light on an otherwise cloudy diagnosis.

B. A review of our clinical program:

1. The student should relate briefly what was ac-

Dr. Williams is Assistant Professor of Optometry at the University of Houston, College of Optometry.

complished during the Vision Analysis on the initial visit.

a. Basic refractive data to determine presence of myopia, hyperopia, astigmatism, etc.

b. Detection of ocular pathology.

c. Assessment of binocular vision.

2. The student then summarizes the Vision Development Evaluation.

a. Its primary function is to evaluate and quantify visual perceptual motor abilities. A simple definition of perception for the parents is presented at this point. Most parents can best equate "perception" with "understanding". In summary, the Vision Analysis tells how well the child sees, while the Vision Development Evaluation tells how well he understands and utilizes what he sees. In addition it should be emphasized at this point that the visual system does not function in isolation, but that vision functions as an integral part of all sensory and motor systems. For this reason screening and/or evaluations of perceptual motor and auditory motor abilities are also performed.

b. The student is then ready at this point to go into the details of the Vision Development Evaluation. It is good practice to emphasize both strong and weak points of the child's performance. It is also important to tell the parents early in the consultation that we do have some positive recommendations relative to the child's problems. Most parents know that a problem exists. What they don't know and want to know most is, "What can be done for the child?" Please do not let the parents suffer through a lengthy list of problems without letting them know beforehand that you do have some possible solutions.

II. Summary of Diagnosis

The student's basic requirement during the parent consultation is to present a diagnosis of the child's problem to the parents in an organized and understandable way. Most find it helpful to utilize the Summary of Diagnosis in the Vision Development Evaluation Report as a guideline for this portion of the parent consultation.

Communication is most apt to occur using the Diagnostic Summary plus understandable behavioral relationships. The diagnosis *must be related to the child's home and school behavior. This must be expressed in terms the parents can understand.* Some basic examples are presented in Exhibit B.

III. Recommendations

Every consultation should include:

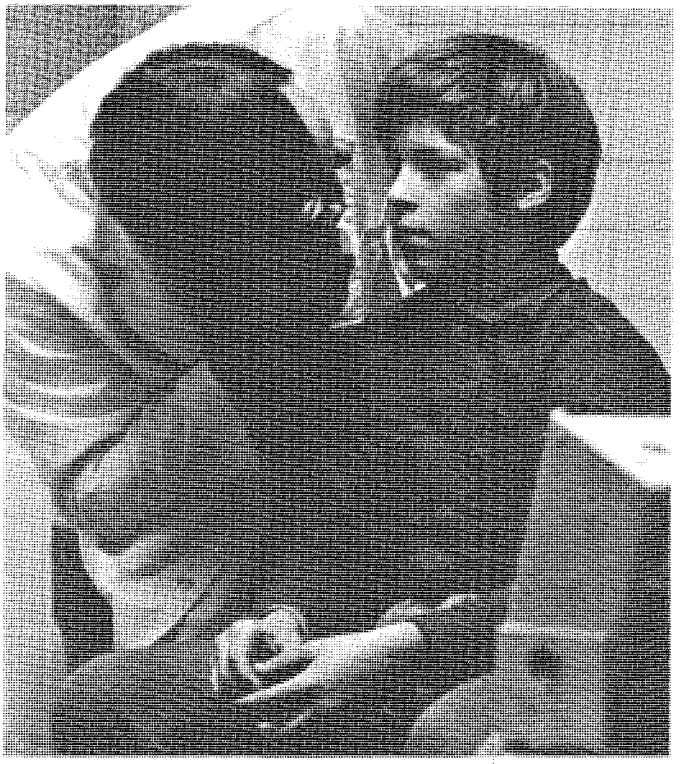
a. Statement whether spectacles are needed or not needed.

b. Statement relative to vision therapy
   1. In clinic and/or
   2. Home and/or
   3. Parent Guidance Clinic

c. Referral out
   1. Optometrist
   2. Pediatrician
   3. Psychologist/Psychiatrist
   4. Neurologist
   5. Language specialist
   6. Others

d. Statement when next Vision Analysis to be performed

e. Statement when next Vision Development evaluation to be performed.



IV. Prognosis

The prognosis should be discussed thoroughly with the faculty supervisor prior to the parent consultation. Parents often want this information. Such information can best be provided by the faculty member who has more clinical experience than the student.

Post Consultation: Following the consultation, all additional case history details gathered during the discussion are recorded in the patient file. The student clinician may wish to discuss with his or her instructor the final disposition of the patient or any modifications in the written report made necessary as a result of the communication with the parents. A critique of the student's consultation technique may also be reviewed.

Summary

While the preceding outline is simple and basic, the need for organization and confidence during parent consultation is critical to the development of the vision therapy clinician. We should continue to arm our students with standard and valid clinical evaluative tools and guide our students in performing a careful differential diagnosis. However, if this knowledge cannot be translated and transmitted to parents, patients, and other professionals in simple behavioral terms, the performance skills our students develop will not be utilized in their practice of optometry. There is a great need for this form of optometric vision health care and consequently for optometrists to provide it. We as educators must increase the effectiveness of our instruction in this area so that more students are "turned on" to provide such services to their community.

EXHIBIT A

TEST PERFORMANCES

VISUAL ACUITY UNAIDED: Distance: O.D.____ O.S.____ O.U.____; Near: O.D.____ O.S.____ O.U.____

Rx:

O.D. _____ V.A. _____ ADD_____ V.A._____

O.S. _____ V.A. _____ ADD_____ V.A._____

Binocular V.A._____ ADD_____ V.A._____

Stereopsis: Titmus, Seconds of Arc _____; Keystone, _____%

Near Point of Convergence: Break _____ cm. Recovery _____ cm.; Amplitude of Accommodation _____ D

Near Range of Fusion: Convergence _____ prism diopters; Divergence _____ prism diopters

Far Range of Fusion: Convergence _____ prism diopters; Divergence _____ prism diopters

Retinoscopy:

Static:

O.D. _____ O.S. _____

Near: O.D. _____ O.S. _____

M.E.M.

O.D. _____ O.S. _____

Bell O.D. _____ O.S. _____

Flexibility of Accommodation: _____ changes per minute (+2.00/−2.00 Binocular)

Eye Health:

Tachistoscopic: Span _____ Digits; Speed _____ sec. Form R.S. _____

Eye-Trac: Ocular Tracking: O.D. _____ * O.S. _____ * O.U. _____ *

Fixations: O.D. _____ * O.S. _____ * O.U. _____ *

Dynamic Reading: Grade _____ Fixations _____ Regressions _____ Average Span of recognition _____ words/fixation; Ave. duration of fixation _____ sec.; Rate with comprehension _____ words/minute; Comprehension _____ % Relative efficiency _____ Grade; Directional attack _____ % (inefficient if 25% or more).

M.K.M. Control lens

_____ Sph. Binoc.	Time _____	Errors _____	
_____ Sph. O.D.	_____	_____	
_____ Sph. O.S.	_____	_____	
_____ Sph. Binoc.	_____	_____	

Marianne Frostig Developmental Test of Visual Perception: Perceptual Quotient _____

Percentile Rank _____

	RAW SCORE	AGE EQUIVALENT	Scale SCORE
Eye-Motor Coordination			
Figure-Ground			
Constancy of Shape			
Position-in-Space			
Spatial Relationships			

Southern California Figure-Ground Visual Perception Test: R.S. _____ S.D. _____ Age Level _____

Bender Gestalt Visual Motor Test:

Koppitz Score _____; Expected Score _____ ± _____ S.D.

Slosson Drawing Coordination Test: R.S. (errors) _____ Accuracy Score _____ %

(Accuracy Score below 85% indicates significant drawing distortion)

Perceptual Copy Forms (Winterhaven): Total Score _____ (63 or less inadequate)

Rutgers Drawing Test (Rosner): 1) Pencil grip R.S. _____ *; 2) External Configuration R.S. _____ *

3) Internal Detail R.S. _____ *

Monroe Visual III: R.S. _____ Perceptual Age _____

Auditory-Visual Integration (Rosner): R.S. _____ *

Tactual-Visual Integration Rosner): R.S. Shape _____ * R.S. Size _____ *

Auditory Analysis Test (Rosner): R.S. _____ Expected Score _____ ± _____ S.D.

*** 3 = Adequate performance**

2 = Partial performance or performance with difficulty

1 = Inadequate performance

SUMMARY OF DIAGNOSIS*

Gross Motor Performance: Differentiation _____ Symmetry _____ Balance _____
Integration _____ Ryhthm _____
Synchrony _____ Posture _____

Self-Awareness: Body Image _____ Laterality _____

Auditory-Motor Functioning: (Screening): _____

Visual-Motor Functioning:
Form Perception _____ Visual Memory
Spatial Organization _____ Speed of Recognition
Figure-Ground _____ Span of Recognition
Size Constancy _____ Directionality
Spatial Relations _____ Eye-Hand Coordination

Visual Abilities:
Ocular Motility: Binocular _____ Monocular _____
Accommodative Amplitude _____ Flexibility _____
Convergence Sufficiency _____ Divergence Sufficiency _____
Relationship between Accommodation and Convergence _____
Stereopsis _____
Binocular Integration: Distance _____ Near _____

Inter-Modal Integration:
Tactual-Visual _____
Auditory-Visual _____
Visual-Kinesthetic _____

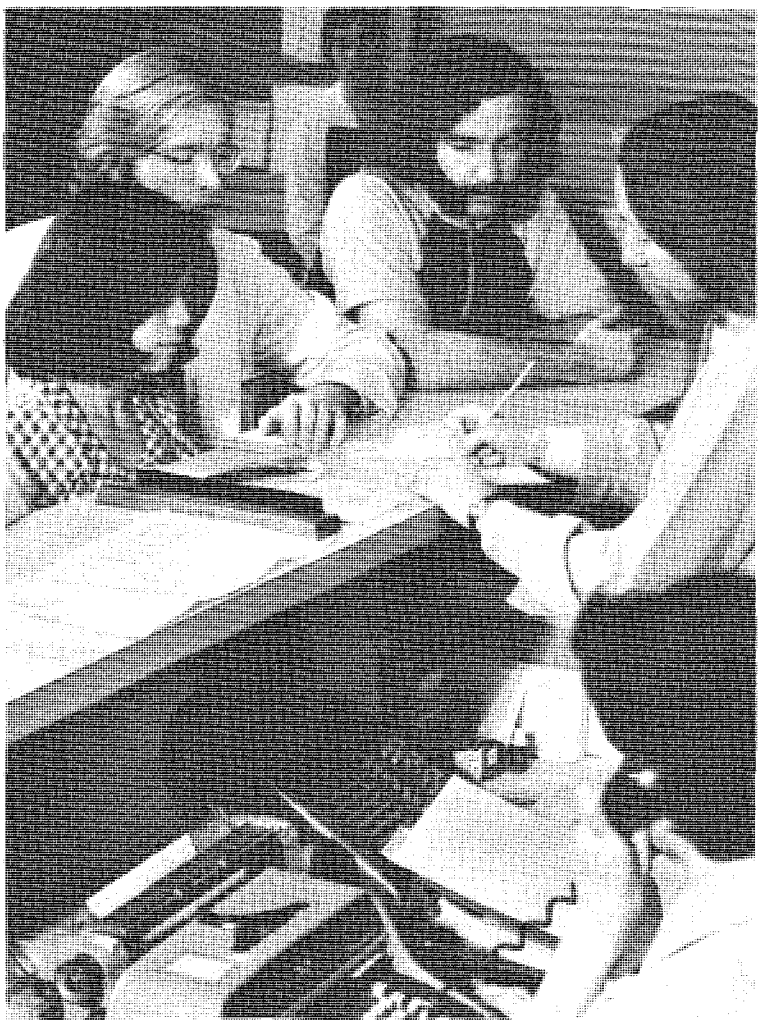
*** 3 = Adequate performance**
2 = Partial performance or performance with difficulty
1 = Inadequate performance

EXHIBIT B

Behavioral Relationships/Optometric Diagnosis

BEHAVIOR	SUSPECT ABILITIES
1. Skips words or sentences	1. Ocular Motility; Binocular Integration
2. Rereads lines or phrases	2. Ocular Motility; Binocular Integration
3. Reads too slowly	3. Ocular Motility; Binocular Integration; Refractive Error
4. Uses finger or marker to guide eyes	4. Ocular Motility
5. Says words aloud or moves lips	5. Auditory/Visual Integration
6. Reverses words or letters	6. Laterality; Directionality
7. Poor ability to remember what is read	7. Visual Memory; Vocabulary
8. Unusual fatigue or restlessness after maintaining visual concentration	8. Binocular Integration; Refractive Error; Accommodative Flexibility; Relationship between Accommodation and Convergence; vertical imbalance
9. Complains of letters or lines "running together" or "jumping around"	9. Binocular Integration; Refractive Error; Accommodative Flexibility; Relationship between Accommodation and Convergence; Convergence Sufficiency; Divergence Sufficiency; vertical imbalance
10. Complains of blur while reading or writing	10. Accommodative Flexibility; Refractive Error; Convergence Sufficiency; Divergence Sufficiency; Relationship between Accommodation and Convergence, vertical imbalance
11. Comprehension poorer as reading continued or loses interest quickly	11. Visual Abilities; Vocabulary
12. Blinks excessively	12. Refractive Error; Accommodative Flexibility Photophobia
13. Frowns, scowls, or squints	13. Refractive Error; allergy; mild infection; vertical imbalance
14. Holds reading closer than normal	14. Accommodative Flexibility; Relationship between Accommodation and Convergence; refractive error
15. Moves head while reading	15. Binocular Integration; Midline problem; Laterality
16. Covers or closes one eye	16. Binocular Integration; Strabismus
17. Avoids close work	17. Visual Abilities; refractive error

Continued on page 34



Characteristics of OCAT Applicants

By Mildred E. Katzell

"Thirteen applicants followed in the mother's footsteps."

Each year in November, January, and March, the Professional Examinations Division of The Psychological Corporation administers the Optometry College Admission Test (OCAT) to applicants to colleges of optometry throughout the country. The OCAT comprises measures of Verbal Ability, Quantitative Ability, Biology, Chemistry, Physics, and Study-Reading. During 1973-74 and 1974-75, applicants also completed a questionnaire designed to obtain information about the backgrounds of applicant populations.

Mildred E. Katzell, Ph.D. is with The Psychological Corporation, New York, N.Y.

This report, based on responses to that questionnaire, is presented in four parts. The first is a narrative description of applicant populations, derived from the responses in the two year period. Second, some observations are offered concerning apparent changes in characteristics of the applicant populations from the first year to the second. Third, an analysis is presented of the test performance of applicants in relation to their questionnaire responses. Finally, a table giving some of the data from which the other sections were derived is reproduced for the reader.

Description of Applicants

In 1973-74, the number of applicants responding to individual questions ranged from a low of 3103 to a high of 3276, and in 1974-75, from 3832 to 4043. The most complete responses were obtained in answer to very specific factual questions, such as present marital status, number of brothers, sisters, and dependent children. Most omissions occurred at the end of the questionnaire in response to items having to do with applications for admission to other health-related schools and completion of their respective entrance examinations.

Over three-fourths of the applicants were not married at the time they filled out the questionnaire, and

nearly three-fourths did not expect to be married by the time they entered optometry school. Fewer than 8% had any dependent children. About a third had no brothers, while over a third had one brother and one-fifth had two brothers. About a third had no sisters, two-fifths had one sister, and less than one-fifth had two sisters. No question was asked about the total number of siblings.

The highest level of education completed by one-fifth of the applicants' fathers was high school. On the other hand, nearly a fourth of the fathers had completed graduate or professional school, and another one-third had attended college, though only about half of those had completed college. By comparison, high school was the highest level of education completed by the mothers of nearly two-fifths of the applicants, and less than 10% had completed graduate or professional school. Again, about one-third of the mothers had been to college, but less than half of those had graduated.

The most frequent occupations of the applicants' fathers were:

- owner, manager, or proprietor of small business;
- professions other than optometry and other health professions;
- skilled worker or craftsperson;
- executive in a large business or government agency.

The fathers of less than 10% of the applicants were optimetrists, but, interestingly, seven applicants reported in 1973-74 that their mothers were optometrists and six the following year, representing 0.2% and 0.1% of the total applicant group in the respective years. The mothers of half the applicants were homemakers, with the largest other employment category of mothers being "clerical or sales".

The combined gross annual income of over one-fourth of the parents was $20,000 or more, with another fifth between $15,000 and $20,000, indicating close to half of the applicants from families whose incomes exceeded $15,000. At the other extreme, 2-3% reported incomes under $5,000, while 13-14% did not know the family income, and another 7% chose not to respond to that question in each year. Coupled with the income figures, a later question established that over half of the applicants anticipated receiving financial support from a loan or scholarship in order to complete their optometry education.

Half of the applicants spent their youth in what they considered to be suburban communities, the remainder being evenly divided between rural and urban. In a parallel question, a fourth said they spent their youth in communities under 10,000 population, and a fourth spent theirs in communities with populations in excess of 100,000.

Not surprisingly, almost all of the applicants were American citizens, with only 1% from Canada and 2% from other countries, White applicants were the clear majority, followed by orientals, and blacks. The fourth ranked group in size was composed of those who chose not to respond to the question on ethnic background. In terms of religious affiliation, over one-third were Protestant, about a fourth were Catholic, 15% Jewish, 11% had no preference, 7-9% observed some other religion, and 5-6% said they preferred not to answer the question.

Most applicants did not expect to serve in the military, but 11-13% had already served or were currently serving either on active duty or in the reserves.

In describing their own educational backgrounds, almost half of the applicants had attended large undergraduate institutions, and less than one-fifth had attended small colleges (under 1,000). Most had cumulative undergraduate grade-point averages of C+ or B, and only 1% had averages of A. Two students in 1973-74 and three in 1974-75 reported having averages of D or less.

Most applicants indicated the high school diploma as the highest academic degree they had earned, possibly because they were still in college when they answered the questionnaire. Another 29-30% had completed a bachelor's degree, 8-9% an associate degree, 2% a master's, and 1% or fewer some form of doctorate.

Besides the applicants with a parent who was an optometrist, 14% had another relative in this field. An optometrist unrelated to the applicant was most often the major influence in the applicant's career choice, followed by an optometrist relative, persons in health occupations, and those in the "other" category. Chief among the reasons for choosing a career in optometry were a desire to work for and with people and an interest in the content of the profession.

Over a third of the applicants were uncertain as to the *type* of community where they expected to practice, but nearly a third were able to say they expected to practice in suburban communities. On the other hand, less than a third were uncertain as to the *size* of the community in which they expected to practice, while nearly a third said they expected to practice in communities of 10,000 to 50,000.

"The larger the undergraduate institution attended, the higher the OCAT scores tended to be."

From 2% to 15% of the applicants had applied or planned to apply for admission to educational programs of other major health professions, and as many as 16% had taken the relevant entrance examinations. It should be noted, however, that even if each application to another program represented a different individual (which is not the case), considerably fewer than half of optometry applicants had applied or planned to apply to other health professions' educational programs. Clearly, optometry was not "second choice" for the majority.

Trends

For the most part, the applicant groups in 1973-74 and 1974-75 were remarkably similar. A relatively small number of questions showed changes of 2% or more from one year to the next. However, when one is dealing with 3000 to 4000 students, a change

of 2% or more represents a large number of individuals.

Declines of 2% or more were noted in the following areas, from 1973-74 to 1974-75, usually with an associated increase in one or more alternative choices in the same question:

— married
—expect to be married at time of entrance
—mother's primary occupation is homemaker
—white
—have served in active military duty
—undergraduate school of 1,000-2,000
—undergraduate grade-point average of C or C+
—undecided as to location of practice
—undecided as to size of community for practice
—applying to medical school.

Increases of 2% or more were noted in these areas, from 1973-74 to 1974-75, usually with an associated decline in one or more alternative choices:

—family income $20,000 and over
—spent youth in community of 10,000 to 50,000
—oriental
—"other" religions
—undecided about military duty
—undergraduate grade-point average of B or B+
—expect to practice in rural area
—expect to practice in communities under 10,000
—expect to practice in communities of 10,000 to 50,000
—expect to need financial assistance
—not applying to medical school

The changes mentioned here have been identified so that subsequent analyses may establish whether they represent trends in the applicant populations or merely chance variations.

OCAT Results

Of major interest to those who use the OCAT, are applicant characteristics that relate to test performance and ultimately to performance in colleges of optometry. Some data in relation to the biographical characteristics of these applicants and their test performance have been identified in the present study.

There were no differences in the test performances of applicants who were married and those who were not, those who expected to be married and those who did not. Parents' educational level, family income, and need for financial assistance were also unrelated to test results, as were military service, and type and size of community in which applicants expected to practice.

Nevertheless, many interesting relationships were identified. Applicants with four or more brothers or sisters tended to have lower scores in all parts of the OCAT than those with fewer. Those whose fathers or mothers were business executives, clerical, and sales personnel tended to have higher scores, while those whose fathers were optometrists or unskilled workers and those whose mothers were unskilled workers generally achieved lower scores.

Applicants who had spent their youth in communities of over 100,000 population tended to have higher scores, while those from suburban communities generally exceeded those from both urban and rural.

American citizens had higher scores than Canadians, who in turn exceeded "others". Interestingly, those who indicated that they preferred not to respond to the question on ethnic background had the highest mean scores in all areas of the OCAT except Chemistry and Quantitative Ability.

In relation to religious preference, those claiming none and those who chose not to respond to the question generally achieved the highest mean scores; those designating "other" religious preferences typically had the lowest scores.

The larger the undergraduate institution attended, the higher the OCAT scores tended to be. In every instance, too, the higher the undergraduate cumulative grade-point average, the higher the test scores. In relation to highest degree held, those holding an associate degree achieved the lowest mean scores. Otherwise, the higher the degree, from high school through the doctorate, the higher the mean scores in all areas of the OCAT.

Applicants who had a relative other than a parent who was an optometrist achieved lower mean scores than those who did not. With respect to persons who influenced career choice, those who had been influenced primarily by a counselor or friend achieved the highest mean scores, while those whose choice was influenced by an optometrist-relative were lowest for that question. Those who chose the field of optometry for monetary or prestige reasons generally had the lowest mean scores; the highest were achieved by those who gave as their reason for choosing the field the fact that they thought they had a better chance of getting into a school of optometry than into some other professional school.

Applicants who were applying to other health professions' educational programs tended to exceed those who were not, with the highest scores being achieved by those applying to medical school, followed by dentistry, osteopathy, and veterinary medicine, each ranking second after medicine in some areas. Those who had taken the Medical College Admission Test exceeded those who had not, and those who had taken the examinations for dentistry or veterinary medicine exceeded those who had not in most areas of the OCAT. In contrast, those who had taken examinations for pharmacy or podiatry generally had lower scores on the OCAT than those who had not taken those two examinations.

Summary and Conclusions

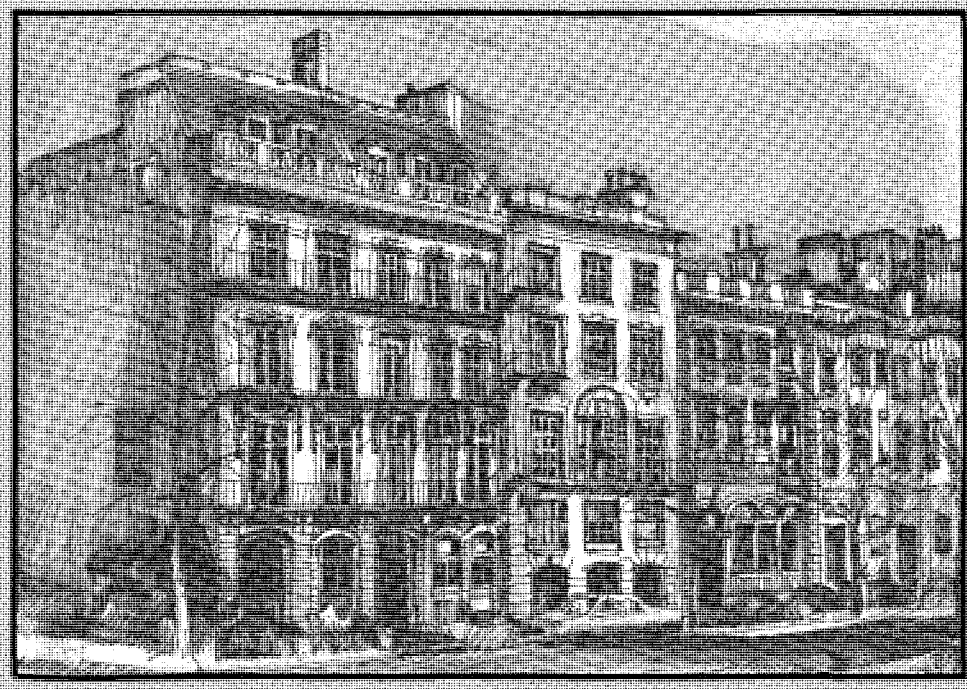
It would be premature indeed to draw conclusions from these preliminary data, and colleges of optometry have been advised to use them with caution, if at all. For the present, the Professional Examinations Division of The Psychological Corporation is continuing to collect and analyze test results, grades, and biographical data pertaining to applicants and students in colleges of optometry, in an effort to assist those colleges to achieve their multiple goals of improved selection, retention, and development of the students who will be tomorrow's optometrists. ●

MEAN OCAT PERCENTILES OF APPLICANTS TESTED IN 1973-74 AND 1974-75 IN RELATION TO SELECTED QUESTIONNAIRE RESPONSES

	APPLICANTS TESTED IN 1973-74							APPLICANTS TESTED IN 1974-75						
	Percent*	Biology	Chemistry	Physics	Verbal Ability	Quant. Ability	Study-Reading	Percent*	Biology	Chemistry	Physics	Verbal Ability	Quant. Ability	Study-Reading
Father's Primary Occupation														
Executive-Bus., Govt.	13	50	50	45	55	50	50	14	50	50	60	55	60	55
Optometrist	7	35	30	30	40	40	45	6	35	30	35	40	45	45
Mother's Primary Occupation														
Unskilled	3	45	40	30	35	35	45	3	40	35	35	35	40	35
Executive-Bus., Govt.	1	45	50	40	55	45	45	1	50	50	55	60	50	60
Self-Description														
Afro-American, Black	3	25	10	10	20	15	20	3	20	15	15	25	10	20
American Indian, Native American	1	50	25	25	30	30	35	1	40	35	35	40	30	35
Caucasian, White	87	45	45	40	45	45	50	83	50	45	35	50	55	55
Mexican-American, Chicano	1	30	25	15	20	30	25	1	25	25	25	35	25	30
Oriental, Asian-American	4	45	50	35	35	60	40	6	50	55	55	40	70	45
Puerto Rican (Mainland)**	**	—	—	—	—	—	—	**	—	—	—	—	—	—
Other	2	45	35	25	40	40	40	2	50	45	40	40	45	40
Prefer Not to Respond	2	60	50	55	70	50	60	3	60	55	60	70	60	60
Undergraduate Institution Size														
Less than 500	1	30	30	25	35	40	45	1	40	30	35	45	40	40
500 to 999	4	35	30	30	35	35	40	4	40	35	40	45	40	40
1,000 to 1,999	12	45	40	35	45	40	45	10	40	40	40	50	45	45
2,000 to 4,999	15	45	40	35	45	40	45	15	45	40	40	50	45	45
5,000 to 10,000	20	45	45	35	45	40	45	20	50	45	50	50	50	45
More than 10,000	47	50	50	40	50	50	50	48	50	50	55	50	60	55
Undergraduate Average														
A (4.0)	1	50	60	60	80	75	85	1	50	70	75	55	85	70
B+ (3.5-3.9)	11	50	60	55	55	70	65	13	50	65	70	55	70	60
B (3.0-3.4)	37	50	50	40	50	55	50	43	50	50	55	55	60	55
C+ (2.5-2.9)	42	45	40	35	45	40	45	37	40	35	40	40	40	40
C (2.0-2.4)	9	30	25	25	35	30	35	6	30	25	30	40	30	35
Highest Earned Academic Degree														
High School Diploma	58	45	45	35	40	45	45	59	45	45	50	40	55	45
Associate Degree	9	40	35	30	40	35	40	8	35	35	40	35	40	40
Bachelor's	30	50	50	40	55	45	60	29	50	50	55	60	50	55
Master's	2	50	50	55	70	55	50	2	50	50	60	80	60	60
Doctorate	1	70	60	60	85	70	80	**	—	—	—	—	—	—
Other	1	35	35	30	25	40	45	1	30	25	25	35	30	40
Primary Reason for Choice														
Better Chance of Admission	1	70	55	55	60	60	65	2	65	60	65	65	65	60
Prestige	1	35	30	40	40	40	40	1	45	40	55	50	55	45
Monetary	1	40	45	40	55	45	40	1	40	35	50	50	55	55

*Percent of the applicant group selecting each response.
**Number of applicants represented less than 0.5%.

Massachusetts College of Optometry 1894-1976



New England College of Optometry June, 1976

Recently published results of the Health Sciences Research Project, sponsored last year by the New England Board of Higher Education reveal some dramatic recommendations for the Massachusetts College of Optometry. The HEW-funded study recommends the eventual creation of a regional academic health center, including a college of optometry, supported by the six New England states. Its most immediate recommendation calls for transforming the independent Massachusetts College into a regional multi-state supported New England College of Optometry.

As a first step in this effort, the MCO Board of Trustees, on August 16, 1975, voted to change the name of the College following graduation of this year's senior class. On July 1, 1976, the New England College of Optometry will officially come into being. A second significant step in the changeover process occurred when the MCO Board agreed to add a trustee appointed by the Governors of each of the participating states to the College Board of Trustees. In addition, legislation to produce public support funds has been introduced in most of the New England states.

In the near future, it is anticipated that the University of Massachusetts will seek a contract with the U. S. Department of Health, Education and Welfare to develop a plan to implement the regionalization concept in health education. It is expected that this development plan will include optometry and possibly one or more other health professions.

Illustration by William P. Durkee

PROFILE

The Second Time Around: A Look at MCO's Accelerated Program for Ph.D.'s

By Patricia Butterfield

A computer-derived profile of the "average" student enrolled in the Massachusetts College of Optometry's two-year O.D. program for students who have earned Ph.D.'s in one of the sciences would read something like this: 35-year-old American male, married, 4/5 of a child (you know how computers think), Ph.D. in physics, previously employed as a research physicist, personally disenchanted with research, and extremely eager to be his own boss.

The program, the only one of its kind, was started in the summer of 1972, has turned out 22 O.D.'s so far, and currently enrolls fourteen (five in their second year and nine in their first). Each of the 36 students obviously deviates from our statistical "norm" in one way or another, but similarities of background and motivation are apparent. Despite the trauma attached to a shifting of career gears in mid-life, none of these students expressed any second thoughts about their decision. For a select population, the unique program fills a real and important need.

The program was initially designed by Dr. William Baldwin, MCO president, and Dr. Norman Wallis, then a faculty member at MCO and now president of the Pennsylvania College of Optometry. The impetus for creating a two-year program seems to have come from several sources. First, the qualifications of applicants to the regular four-year program had been steadily improving over the years and each year saw an increase in the number of matriculating freshmen who already had a master's degree. There were eight such students in 1972, and it was decided to establish an accelerated three-year program for them. The experiment was repeated with the class entering in 1973, but abandoned the next year because by this time too many entering students held master's degrees to make small, accelerated classes practicable.

Secondly, the shortage of optometric educators and researchers was becoming increasingly acute. The route typically followed by such professionals is to acquire an O.D., perhaps practice briefly, enter graduate study and earn a masters or a Ph.D. in a related science, and then enter teaching or research. This is an extremely time-consuming process, and it does not produce enough qualified people to fill the need.

Dr. Baldwin wrestled for some time with the dual problems of a dearth of optometric teachers and researchers and an abundance of highly qualified students entering the four-year program. He and others at MCO were, of course, aware of some of the accelerated programs designed to allow Ph.D.'s to obtain an M.D. or a D.D.S. in two years.

About this time, a young psychology professor at Memorial University of Newfoundland, dissatisfied with the value of continued work in his area of psychological research, wrote to the MCO admissions office to inquire if, in view of his background, arrangements could be made for him to acquire the O.D. in less than four years. A similar letter followed from another Ph.D., and then a young assistant professor of physiological optics and psychology at MCO expressed *his* desire to get an O.D. The necessary program authorizations from the Council on Education of the American Optometric Association were sought and granted, and the two-year program was under way. A brief classified ad was placed in *Science* magazine and, with no more notice than that, a charter class of eleven Ph.D.'s was admitted.

According to Dr. Paul Lappin, who now directs the two-year program (he is also director of the Visual Science Division and professor of physiological optics), the program takes full advantage of the students' intensive backgrounds, their ability for concentrated independent study, their previously developed educational skills, and their exceptional motivation. In short, it fully tests the intellectual and physical stamina of both students and faculty. It covers two full calendar years. Students begin in early July and receive their O.D.'s exactly two years later with almost no days off, except weekends.

A Tough But Rewarding Curriculum

The first-year curriculum is custom made for them and consists primarily of seminars, which cover an impressive amount of material in great depth in very little time. Some students complain a little that the program is not fully spelled out for them in advance. They are unlikely to know in any given month exactly what they will be doing the following month. The absence of rigid structure is not, however, without reason. The composition of each year's class is so unique that a flexible program is deliberately maintained in order to capitalize on students' collective strengths and accommodate their weaknesses.

Faculty (who think one of the primary benefits of the two-year program may be the stimulation it provides *them*) find they can proceed more quickly in these classes. The students are expected to do a substantial amount of independent study, and, partly because they are mature and partly because they are incredibly single-minded in pursuit of this degree, they can be fully relied upon to do this study.

Because of the wide variety of backgrounds among the students (there have been ten physicists, six psychologists, five biologists, five chemists, four biochemists, two electrical engineers, one biophysicist, one physiologist, one metallurgist, and one fluid mechanics expert), there's always someone around to help someone else fill in the gap in his background. This ability of each person in the class to bring his or her own expertise to bear on the problem at hand, to think of that problem in terms which relate to existing know-

Dr. Paul Lappin (left), director of the two-year program, discusses a curriculum modification with two first-year students, Dr. Ernest Loewenstein (center), a physicist, and Dr. Veena Saini (right), a biochemist.

"In any event, I know I'm not going to be somebody's employee again."

ledge, is one of the program's principal strengths. It is, of course, too early to say whether such cross-fertilization will result in new advances in vision theory, but certainly it can be said that students emerging from this course of study have been given an opportunity to develop extraordinarily broad perspectives on current theory and instrumentation. (As an example, an engineer currently enrolled in the program has developed an optometric slide rule designed to simplify some of the analyses involved in ophthalmic optics.)

The Ph.D. students spend three of their four second-year quarters with the regular senior class—two in clinical rotation and one in didactic work. (The fourth quarter is spent in seminar work.) They earn as many performance credits in their two years as regular students earn in four. They also see as many patients—about 500 by the time they graduate. One of the reasons the first summer is so rigorous (the students say that experience makes the rest seem easy) is the need to get the two-year students into a clinical setting by October of their first year so that they will have as many patient exposures as possible. During holidays, while four-year students vacation, the two-year students staff the clinics exclusively.

What motivates people to undergo such a rigorous regimen? Almost all of the students were gainfully employed, many of them in highly enviable positions. Half of them were employed in research capacities, a third were college teachers, and others were corporate officers and consultants. Students who have enrolled in the program usually cite two primary motivations: the opportunity the optometric field offers for individual freedom, and the chance to work directly with people at a task which provides direct feedback.

Optometry: Individualized and Creative

Dr. Ernest Loewenstein, now in his first year of the program, serves as a case in point. Dr. Loewenstein holds a Ph.D. in physics from The Johns Hopkins University. He was employed for fifteen years as a research physicist with the Air Force Cambridge Research Laboratory in Bedford, Massachusetts, where he performed atmospheric measurements of infrared radiation. He is 44 years old, married, and the father of two children. Dr. Loewenstein says he was not exactly bored with his research job, but he was disappointed with the low degree of creativity involved in his duties. Partly because of his dissatisfaction with his research position, he became involved in a number of community-based groups interested in environmental issues, ultimately being elected a Sierra Club officer. He specialized in politics concerning transportation issues and began writing a transportation column for a local newspaper. Through these activities, he found that he enjoyed working with people and regretted the paucity of personal interaction in his job. The Air Force's announcement of its intention to move the laboratory to New Mexico was the incentive Dr. Loewenstein needed to make a move.

"I was pretty disenchanted with research," he says. "Also, the Department of Defense is the prime customer for research in physics these days, and that simply involves a more transient life than my family and I are willing to lead. But it's not easy to switch careers when you're over forty, regardless of how personally flexible you may be."

Dr. Lowenstein's father, a physician, suggested he look into some paramedical fields. A friend of Dr. (Ernest) Loewenstein's had taught at MCO several years ago and had invited him to give a guest lecture once. So one day when he was in the vicinity, Dr. Loewenstein revisited the school and asked for some literature. The receptionist told him about the two-year program.

Dr. Loewenstein saw an opportunity to make a profound change and he took it. He's looking forward to being a private practitioner and is especially interested in the educational function an optometrist can perform. He wants his patients to know, for instance, what sunglasses are all about and to better understand their refractive conditions. "When I refract and prescribe for a patient," he says, "I will have done something for him that he and I can both lay our hands on. It's not ephemeral like research or teaching. I think it will profoundly affect my view of myself—in a positive fashion."

"I haven't totally thrown research to the winds," he says. "I know I have the background and credentials to set up a small research effort, and eventually I'd be interested in looking into environmental illumination needs. But first and foremost I want to practice."

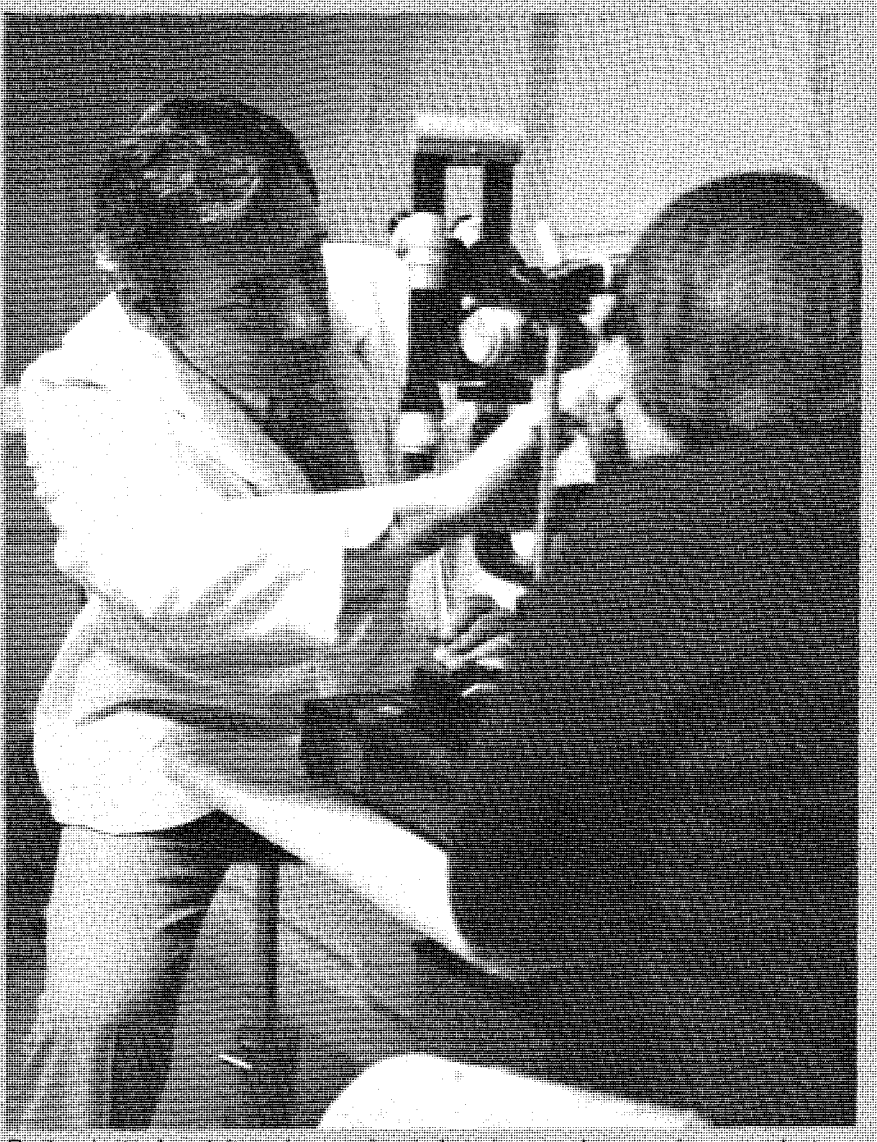
"In any event," he says with emphasis, "I know I'm not going to be somebody's employee again."

From Engineer to Optometrist

Dr. Laurin Fischer—the electrical engineer who devised the optometric slide rule and is now working on a new type of retinoscope—echoes those same sentiments. Dr. Fischer, 53, holds an Eng. Sc.D. from Columbia University, and prior to enrolling in the two-year MCO program, he was Vice President of Engineering at Computer Sciences Corporation in Falls Church, Virginia. He had worked very hard at his engineering career for thirty years, had really enjoyed it ("I couldn't wait to get to the office in the morning"), and had been extremely successful (he supervised a staff of 400 at CSC and he is the holder of seventeen patents). But he found that his working hours were increasing to sixty to seventy each week, that the field was becoming incredibly competitive, that his forward progress had meant more administrative responsibility but not necessarily more fun, and, in short, that his psychic income was becoming dangerously low. He was too young to retire; in fact, one of his concerns about corporate life was the mandatory retirement age ("in my family everyone lives to be a zillion"). He decided to plan for a second career and, being a systems analyst, he did a systems analysis on himself.

That analysis immediately discarded two possibilities: doing nothing ("I'd probably be dead in six months") and entering teaching and research (as crowded and competitive as the field he was planning to leave). It also revealed that thirty years of corporate identity had been enough; by contrast, he wanted to be self-employed. The health professions immediately suggested themselves, but Dr. Fischer had had his fill of continuous crises, of being on call at all times, so the possibility of becoming a medical doctor also got scratched early on. On the other hand, he had a good friend who was an optometrist, so he spent some time quizzing him. He enrolled in a few biology and microbiology courses at Northern

"Nineteen months ago," Dr. Fischer says, "I couldn't even spell optometrist. I've now learned five times as much as was necessary for my undergraduate degree in engineering; I've examined 300 patients; and I've taken and passed half of the national boards."



Dr. Laurin Fischer (left), a former electrical engineer and a second-year student, examines a patient in one of MCO's clinics.

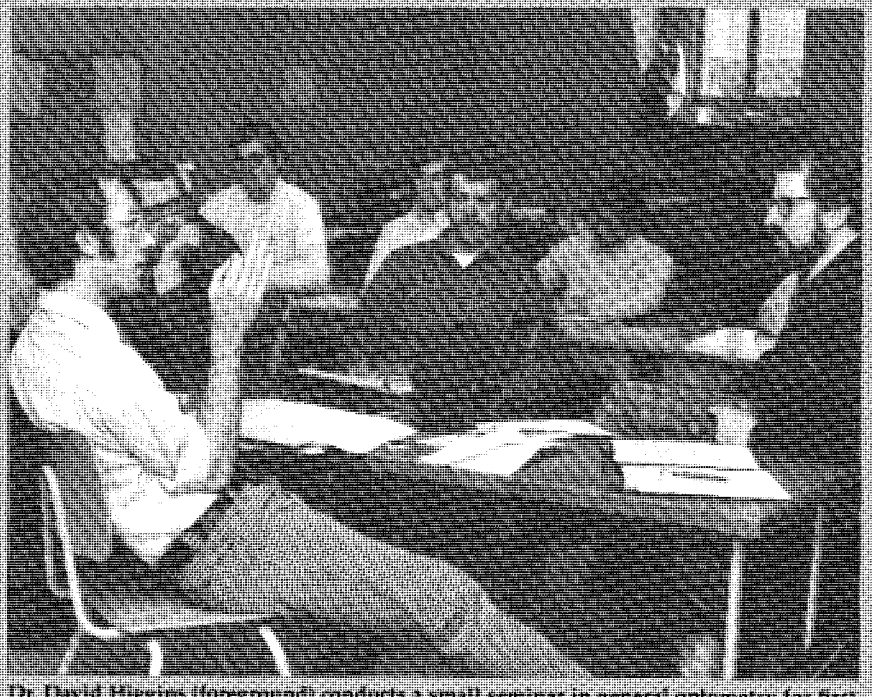
Virginia Community College just to see if he could still hack student work. When he pulled all A's, he decided to apply to every college of optometry in the country. He got two letters back in a week: one from MCO telling him about the two-year program and another from Pacific, also referring him to MCO's two-year program.

A few months later, Dr. Fischer and his wife had sold their home in Virginia, she had landed a job in Boston in educational administration, and they were launched on a new adventure.

"Nineteen months ago," Dr. Fischer says, "I couldn't even spell optometrist. I've now learned at least five times as much as was necessary for my undergraduate degree in engineering; I've examined 300 patients; and I've taken and passed half of the national boards. I had no background in the health sciences and the program has been a real mind expander for me. I'm up till 1 or 2 every morning, and I love every minute of it."

Dr. Fischer is aware of the irony of his working as hard now as he was at the career he left "because I was working too hard." The difference, he feels, is that his time is now his own, as it was not in a corporate environment. In addition, he is prepared to work hard for the next five or six years in order to be able to moderate his activity later and to continue it into his eighties. He plans to be a private practitioner, preferably in California, and is also interested in engaging in some teaching and research.

"Students who have enrolled in the program usually cite two primary motivations: the opportunity for individual freedom and the chance to work directly with people."



Dr. David Higgins (foreground) conducts a small seminar in general optometry for first-year students in the two-year program. Dr. Higgins, a psychology Ph.D., graduated from MCO's accelerated program in 1974.

Listening to His Stomach

Dr. Fischer's scientific approach to making a decision about his career provides an extreme contrast to the "method" Dr. David Higgins employed. Dr. Higgins, the former psychology professor who wrote MCO the first innocent letter of inquiry about an accelerated program and was perhaps the first student to be officially enrolled in the program, says, "I always believe what my stomach tells me at 2 o'clock in the morning." Despite his success (he was receiving grants and publishing papers), Dr. Higgins' stomach told him one morning that he was tired of the competition, had profound doubts about the significance of the research in which he was engaged, and needed more personal freedom.

Today, the 32-year-old Dr. Higgins—married and the father of three—lives and practices in York, Maine but travels to Lawrence, Massachusetts two days a week to work with an ophthalmologist. He is also a part-time faculty member at MCO, teaching in both the regular curriculum and the two-year program of which he is a product. Working about seventy hours a week, Dr. Higgins admits the profession has not bought him the personal freedom he thought it would. But he is confident that situation will change as his practice expands. There have been more lucrative, less time-demanding offers elsewhere, but they would involve his leaving Maine and, more importantly, working for someone else. Neither is acceptable. He enjoys his practice enormously, likes to teach, and would like to do some research in the field of optometry. His timetable for all this, however, has to be his own.

Twenty-two people have graduated from MCO's two-year program to date. Twelve are in private practice; five are teaching; two are engaged in research; two hold administrative posts in the field of optometry (as chief of optometry for the Veterans Administration and as the founding dean of the University of Benin School of Optometry in Nigeria), and, one, Dr. David Higgins, is engaged in both practice and teaching.

All of them are individualists who have been unafraid to make bold changes in their personal lives. Though some at the College had initial misgivings about the two-year program, these 36 individualists have made believers of most. The ad in *Science* will appear again this year. ●

Patricia Butterfield is principal associate of Butterfield Communications, MCO's public relations agency.

Communique's

The following letter was received by Dr. Norman E. Wallis, President of ASCO, and is reprinted here for students who may be interested in joining the American Public Health Association.

Dear Dr. Wallis:

As a member of the Public Health Committee I have been charged with the task of convincing more optometric students to join American Public Health Association.

We feel that student participation in APHA would be beneficial to the students as well as optometry. The programs within APHA would provide a larger spectrum of employment in the Public Health field, and more exposure of optometry.

The APHA is an organization of health care professionals in which optometry has been trying to gain sectional status. The major problem we have, presently, is not enough members in APHA and if we can obtain a number of student members, sectional status would be much closer to realization.

Tony Q. Chan, O.D.
Public Health Committee of AOA

On encouraging the liberal arts applicant ...

Dear Dr. Hofstetter:

I just finished reading your article, An Educator's Trilogy, in the winter issue of the Journal of Optometric Education. While I enjoyed the entire piece, I was particularly struck by the section on "Is Foreign Language Important to Optometric Education?" Your point is well made, and, indeed thought-provoking.

As an optometric admissions officer, I find I can extend your train of thought to many of the other so-called "liberal arts" areas as opposed to the sciences and mathematics where we tend to place so much emphasis. I am encouraging the Admissions Committee here at the State College of Optometry to read your article as a prelude to some deep rethinking about our admissions criteria.

It is ironic, and somewhat alarming, to realize that, in addition to not being proficient in a foreign language, many of our applicants have difficulty in handling their native tongue.

Optometry can only profit by seeking to broaden the backgrounds of those entering the profession as well as to seek those whose backgrounds are less narrow in scope. Recent statistics indicate that over 80% of applicants to optometry programs are Biology majors. How much is that due to our own admissions criteria?

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Elements in the Achievement of Excellence in Optometric Education

By Alden N. Haffner

Excellence in any educational endeavor inevitably rests upon the quality considerations of those aspects of the enterprise which, as a composite, constitute the institution. Optometric education is no exception. But one must hasten to offset any discussion of excellence against the possibility, all too real in the '70's, of being charged with elitism.

> **"Competence, intellectual superiority, and leadership in the sense of excellence are as necessary to democracy as they are to any other form of civilized life. To confuse the competent with the elite is to befuddle. Excellence cannot be discredited, either by a simple ad hominem argument or by a not-so-simple confusion."**[1]

The elements of excellence in optometric education can be related to a host of factors. This author would like to propose the inclusion of the following, obviously among others, as constituting those of more critical importance:

- **A.** The nature and construction of a *faculty* into which are built the issues of quality;
- **B.** An *educational program* endeavor which can be evaluated and measured as attempting quality proportions;
- **C.** An educational *facility* and *academic and teaching resources* which strive to support a quality atmosphere;
- **D.** Quality of the *student population* measured in objective terms;
- **E.** Quality of the *graduates* who are the sum total of the educational experience;
- **F.** Quality elements of the *support structure* of the educational enterprise;
- **G.** Considerations of the *peer judgment* of that which constitutes quality optometric education;
- **H.** An evaluative process leading to a *public opinion* judgment of quality values of optometric education.

Inevitably, in any discussion of the various elements of an educational enterprise, perhaps a missing ingredient is the balance which exists or is built into the endeavor, between and among the various elements of quality.

This paper will not treat the question of leadership which surely is yet another essential aspect of any consideration of quality. Suffice it to state that it deserves recognition, appropriate and extensive, as a key cementing value among the others mentioned above. The author hastens to mention that its importance assuredly is not diminished by its non-inclusion in these discussions.

A. *Faculty.* A faculty is a fluid and dynamic body, sta-

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ble in its ability to achieve its goals with consistency, yet constantly changing in improvements, both by additions or changes and by self-improvement of existing professionals. Faculty numbers must be sufficient in size to carry the educational goals and objectives of the institution. But numbers themselves may be meaningless as factors of stability and quality. Another intrinsic balance exists between full-time faculty, the core faculty, and part-time professionals. Full-time equivalents (FTE), cannot but be translated into a less stable, less efficient, or lower quality endeavor when translated into a host of too many part-time professionals. In any health program of professional education, the clinical portions traditionally have been staffed more predominantly, though not exclusively, by part-time clinician-teachers. An examination of the rationalization for the balance between full-time professionals on a faculty in relationship to the overall full-time equivalent numbers always is in order.

No element of quality in consideration of a professional on the faculty is more important than his background, degrees, and accomplishments, as matters of his own educational development. While it is of great importance, instructional accountability is not discussed very much.

Entierement, a quality faculty member constitutes a quality person. But there are still other considerations. Is there adequate compensation for the faculty member consistent with the standing which he maintains and in recognition of comparable standards for compensation? What is the nature, scope, and consistency of his research and professional interests, and to what extent has he pursued them, been encouraged to pursue them, and been supported by the institution in the pursuit of them?

Quality faculty members are judged by virtue of the responses of their peers to papers which are submitted to various journals and then judged for publication. Quality faculty have exposure and are evaluated during their presentations at scientific meetings and at conferences where speeches and presentations are made. Quality faculty also are assessed by virture of evaluations which are made—evaluations at various stages in their careers, with respect to their development. These factors only in part relate to issues of upward mobility for individual faculty members. Various committees on professional qualifications or tenure at an educational institution rigorously review the standing, performance, and qualifications of an individual to be granted a continuing or tenured appointment. The nature of the rigor of these investigations by tenure committees and the reliability upon them constitute another measure of the quality of faculty. Included in such tenure evaluations, but not exclusively limited to them, are evaluations by students who are taught by faculty members, evaluations by alumni, and evaluations by those in the same field of expertise who are considered to be peers.

"One of the reservations raised by faculty in assessing student evaluations of them is that students are really not qualified to evaluate the content, comprehensiveness, or accuracy of what is taught. Such a reservation may partially account for the lack of consistent empirical relationships between student performance and the student's satisfaction with the experience.

Implications of the above led the authors to compare teacher effectiveness as rated by students with the evaluations made by faculty members from the same field as the particular instructor. It was reasoned that the faculty members, who also had expertise in the subject material being taught, were in a substantially better position to evaluate the course contents and the comprehensiveness and accuracy of the presentation than were the students. The faculty could also include observations as to how the personality and delivery style of the instructor were reflected in the presentation. In addition, the authors investigated the relationship between student satisfaction and examination grades."[2]

Illustrations by Chuck Steacy

Undoubtedly, in health profession schools, the questions of service orientation is frequently an issue in the judgment of the quality of faculty. Clinical professions such as dentistry, optometry, medicine, podiatry, have as the primary thrust of their educational enterprises, the preparation of service clinicians, practitioners who will devote their lives to the ministrations of their respective disciplines. Therefore, the service orientation of members of the faculty, even those who are not members of the professional discipline of the school, becomes and important consideration. Finally, one other aspect in judging the quality of a faculty member inevitably is the extent and degree to which he has made himself available to his students outside the classroom, for the purposes of counseling and advice. The availability of the faculty member to other members of the faculty and to non-teaching professionals for similar purposes also constitutes issues in determining the quality of a faculty member.

All of these considerations, among others, taken as a composite, are those which judge and measure the quality of a faculty and, particularly so, in a service oriented professional school such as a school or college of optometry. In this author's opinion, they are generic in nature and particularly relevant to the health profession schools.

B. *Educational Program.* Essential to any quality educational endeavor is clearly outlined and carefully defined objectives and goals which are both academic in substance and behavioral in outcome. These should hold for each and every program track, as well as for each course offering which is a part of it.

> **"Learning can be defined as a planned change in student behavior over a period of time. In the minds of most educationists, educational objectives which specify the performance expected at the end of the time period are the cornerstone of planning for such change."[3]**

The organized course offerings within the framework of a track, or department, or division, (whatever the institution may call it) should be so constructed as to be cohesive and consistent with departmental or divisional objectives. A quality educational experience would seek to avoid undue overlap or excessive duplication. This author holds that some duplication and overlapping may, indeed, have educational benefits but they must not be duplicatory of major substantive thrust.

> **"The necessary negotiation between faculty groups to resolve these overlap problems is better done in the arena of objective setting than on the curriculum battlefield."[4]**

Moreover, it is evident that the course material, to the extent possible, should be integrated in order that new material should not be presented in advance of prior material upon which substantive knowledge would be based. The quality of the educational endeavor, thereby, depends upon those efforts which strive for integration and meaningful interrelationships between and among course offerings and consistent with departmental goals.

No educational program achieves a high degree of quality unless quality faculty members are appropriately and meaningfully deployed for the teaching of core subjects which utilize their maximum expertise. Not infrequently, an excellent instructor may be asked to present a course offering in an area for which another may have greater and more pervasive background. Team teaching of materials within the framework of a course offering may be divided in order to allow maximum expertise in the various segments thus tending to improve the quality of the overall offering. Where such a team effort is made, care must be taken that the course offering has an overall coordination which inhibits the course from being fragmented.

Every course offering in every program endeavor should have an adequate and up-to-date reading and referral list, realistically supported by library availability and, as well, by the availability of such supplementary educational materials (be they for clinic, laboratory or lecture demonstration). The extent to which these reading lists and course materials are available and, more important, integrated within the framework of the course offering bespeaks the quality of the pedagogical effort. Simply presenting material which must be "covered" in a particular course offering does not assess it as a quality teaching effort. The nature and extent of that pedagogical process are in part determined by the dynamism and imagination of the pedagogy as well as the substantive expertise.

Particularly in courses in the schools of the health professions, where so much material of a didactic, laboratory and clinical nature must be presented, it is also important to provide the student with a variety of elective courses and programs. These should spur his intellectual curiosity and, provide a rounded educational experience to satisfy particular and important educational needs. Elective course offerings provide a sense of academic flexibility within a curriculum and their importance cannot be underestimated.

A professional school is very different from that of one teaching the liberal arts because the fabric of the education is so profound and intense. Appropriate class size undoubtedly also becomes an issue in the determination of what constitutes a quality educational experience. Inevitably, therefore, the ratio of the number of students to each teacher must be a varied one, in the lecture hall, in the clinical environment, in the laboratory, in the seminar room, and in counseling sessions. That the ratios differ from one educational environment to another is evident. However, the quality educational effort will seek to rationalize, in a very meaningful way, the reasons for the various ratio modifications from one educational environment to another. Moreover, some course materials lend themselves, indeed demand, more individualized contact between faculty members and students. The recognition of these factors as they relate to all aspects of the curriculum are determinants of the quality of the educational experience. Individualized instruction is the most expensive kind of educational input. However, program and course offerings which attempt to individualize the instruction, no matter what the environment for the course, tend to achieve a higher level of educational experience.

No program of education is ever replete in the determination of its quality distinctions unless there is a good balance of evaluations by students, by alumni, by peers offering similar educational activity and, as well, by a thoroughgoing and pervasive accreditation process.

> **"The publication of a set of behavioral goals has already achieved a number of efforts that are perceived as good. Students know what is expected of them at any phase in school; the diverse subgroups of the faculty can determine that they are expected to help the students learn; innovative examination methods can be (and have been) developed to test for specific behavioral objectives; external bodies can decide whether the faculty is aiming for what they perceive as appropriate goals; and all participants are stimulated to consider what is and what is not important to the average physician in the plethora of medical information available today."**[5]

Not infrequently is the accreditation process the provocateur of an examination (frequently a "self-examination") of the nature of the quality aspects of an educational program. That institution which awaits the accreditation process in order to evaluate or self-evaluate the nature of its quality performance inevitably places a lower priority on the concern for the quality of its educational endeavor. Examination and reexamination by the institution is an ongoing process, internally generated, and with a sense of constancy and deliberateness.

> **"Generally, the results of the course were positive and the students reacted favorably. Some specific weaknesses were identified through the evaluation, but it can be concluded that clearly stated teaching objectives, relevant practice and the accomplishment of objectives, an individualized instructional approach, and concern about students' attitudes and performance are successful as educational strategies which foster learning. A systematic evaluation design was essential in enabling the faculty to arrive at these conclusions and to suggest necessary improvements."**[6]

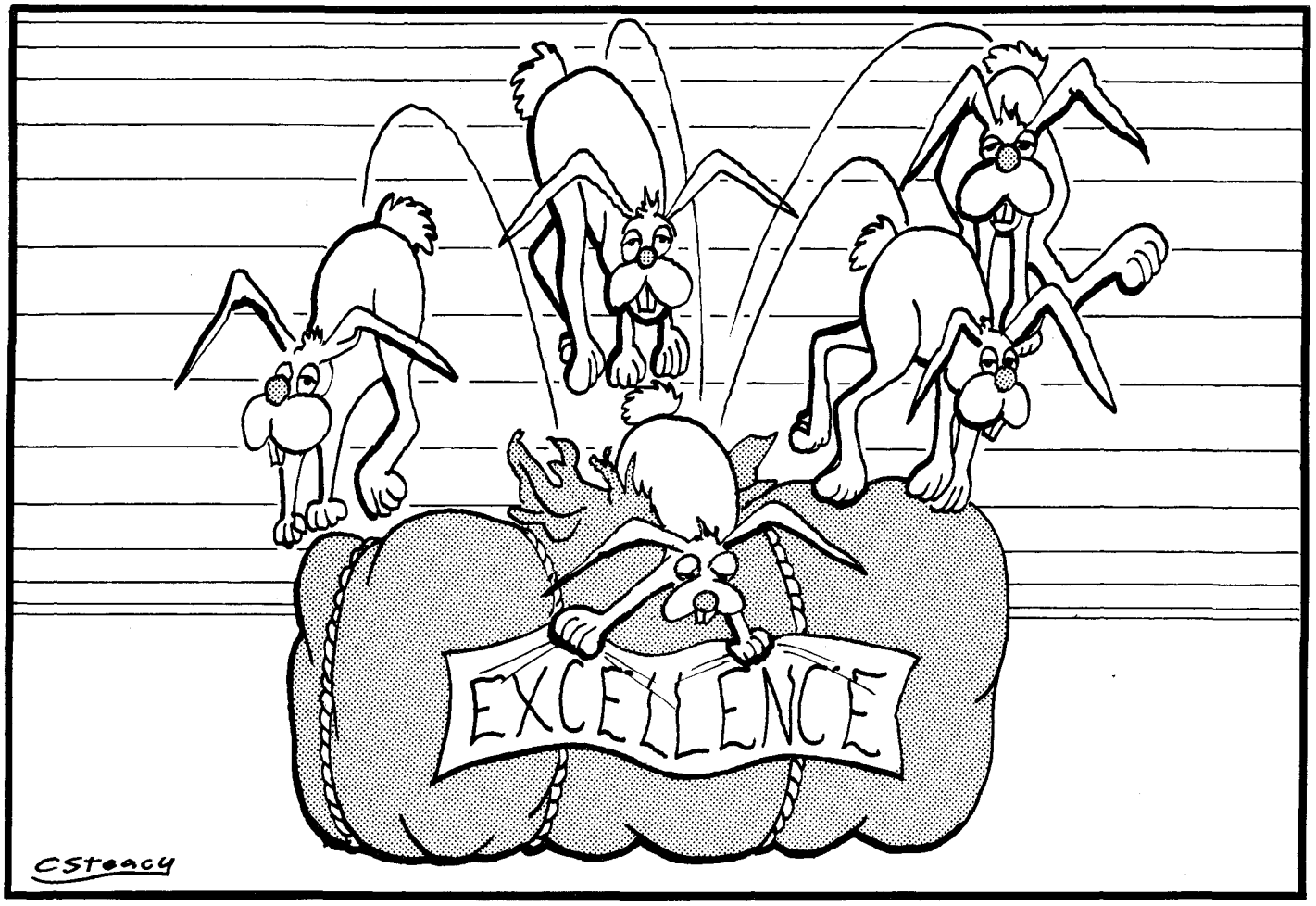
These serve as the internal institutional watch-dogs of quality performance.

As part of the evaluative effort by the institution, there must be a responsiveness, clearly defined and outlined, to those aspects of community needs upon which the very life of the institution is based.

> **"The curriculum of the School of Medicine has a performance-based goal-attainment format in which students must learn the skills, knowledge, and attitudes that will prepare them to practice within a health care delivery system responsive to the needs of the people. The faculty of the School of Medicine has been assisting communities and groups in central and southern Illinois to develop programs of health care delivery, which have been used for student education."**[7]

The leadership roles of the officers of the institution, and particularly that of the dean, must sharply come into focus. This does not relate solely to community involvements in terms of clinical needs. Also, it speaks to the adequacy of the scientific and research endeavors in all aspects of the programs offered by the institution as being appropriate components of scientific concerns.

Finally, the quality of the educational program is also measured in part by the extent to which substantive materials of recency and the nature of up-to-date research evidence to support course offerings are utilized. This has special meaning particularly in the health sci-



ences. No institution would achieve quality in the educational experience which it offers to students (and in the academic and scientific interactions between and among its faculty members) were it not current in its scientific and academic standing and knowledge. The educational program that is a quality experience must have as its fundamental foundation and goal the achievement of an inquisitive scientific institutional community. The student must be given a sound basis for life-long learning—that learning which continues throughout the professional life of the alumnus which enables him to continue to build a host of educational experiences upon fertile scientific, professional and academic educational bases. To do otherwise might cause the professional school to be labeled a "finishing school."

C. *Facility and Academic and Teaching Resources.* It seems trite to suggest that space allocations for an institution should reflect accurately the needs of the faculty, the teaching and non-teaching professionals, as well as the support personnel involved in the educational program. Moreover, it seems self-evident that space should be sufficient. to adequately house the student population and administration. However, a quality educational enterprise should have a rationalized space program delineating why areas are so designated for faculty, for students, for support personnel and for the administration of the institution. A quality program should provide that kind of allocation which permits alteration in the allocation of space in order to reflect changing priorities, changing research needs, the acquisition of new projects and programs, as well as the phasing out of some existing programs.

That there should be a periodic review of the space allocations and, more than that, the proximity of specific space to the various functions of the institution.

Quality facilities and resources take into account not only the proximity of one function to another but, as well, the flow of students, patients, faculty, support personnel, etc., throughout the facility. The concentration of certain functions in particular areas may be for the protection of patients, human subjects, protection of animal subjects, prevention of accidents, concentration of patient resources in a particular area to prevent wandering throughout the whole facility, and for the security of students, faculty and staff. The quality of a facility for teaching, clinic and research cannot be separated from its cleanliness, its wholesomeness, and its very sense of dignity to reflect the educational enterprise.

With an educational facility having a patient access resource, it may be necessary to exercise additional cautions in terms of safety, public protection, and prevention of theft and public destruction.

One of the key facility areas which is frequently seen as an index of the quality of an educational enterprise is the nature of its library, the reading rooms, the learning laboratories and the accessibility of the library materials. The use of periodicals in the library is of particular importance.

"The results of the analyses presented here lead to the following conclusions:

1. Medical student periodical use does tend to increase each year through the fourth year and then fall off in the fifth year. This effect appears to be attributable both to an increasing number of students using periodicals each year and to increases in the number of periodicals used by individual students.
2. Research-oriented students are significantly more active periodical users than are nonresearch-oriented students. This effect is most pronounced during the first two years of medical school, but it does hold across all five years. Looking across all five years, there does not appear to be a significant difference in the ratio of users to nonusers among research-oriented students as compared with nonresearch-oriented students.
3. Clinical students are far more active periodical users than their preclinical colleagues. This effect stems from an increase in the ratio of users to nonusers and from an individual increase in the number of periodicals used by individual students."[8]

The utilization of the library and of the research facilities of the institution likewise become an issue of some significance.

In this era of the 1970's, few educational facilities have been built without the use of public funds. The use of public funds means that the institution must have public orientation and community flavor. One of the indices to measure the quality of a facility is the extent to which such facility resources for teaching, research and public service are made available to the many communities who might have use for them.

D. *Student Population.* There are many factors which are used to make judgment values about the quality of students enrolled. Part of these relate to their educational backgrounds, their prior educational achievements such as grade point averages (GPA), achievements on standard aptitude tests, Optometric College Admission Tests, Graduate Record Examinations, letters of recommendation, and, particularly, group recommendations of preprofessional counseling units. These items are fairly obvious in terms of their importance as predictors of future academic professional success.

Other and more subtle factors concerning the quality of students enrolled are associated with demographic factors, the number of minority and women students, and the general mixture of the geographic locations from which the students come. All of these taken as a composite affect the nature of the quality of students enrolled.

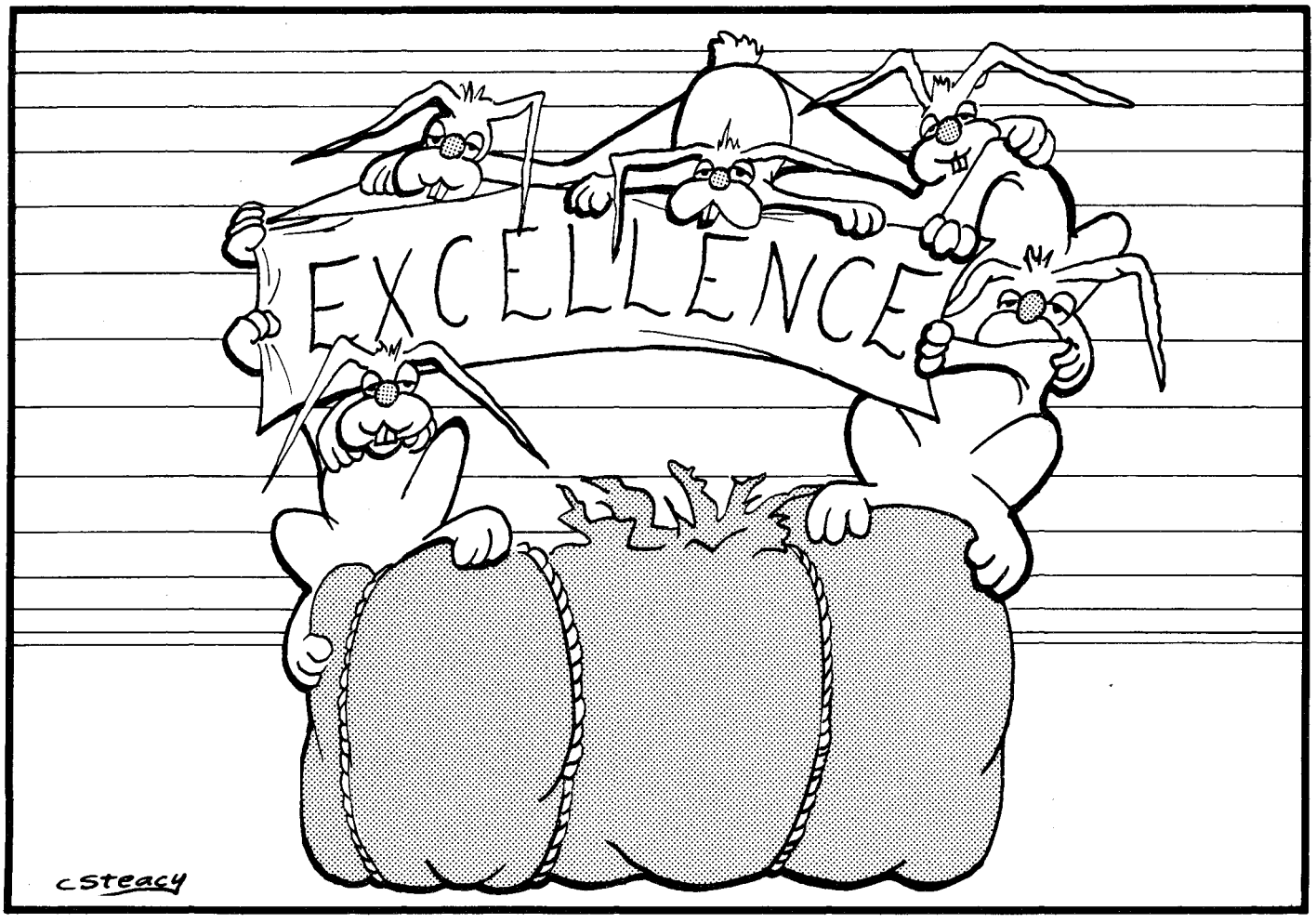
In any discussion of the quality of the student population of a school or college of optometry, there must be a consideration of the quality of the selection process, the importance assigned, and the limits of the selection criteria and the selection process. Students do not simply find their way into a school or college of optometry. They are recruited, selected and differentiated from a mass of other applicants. That set of selection criteria and the very process by which the student is selected must, perforce, influence the quality of students admitted. Not only is the prior academic achievement of the student important but, so too, is his non-academic background—his attitudes and his outlook upon the nature of the services he will perform as a practitioner. Student selection is a complex process. This author believes that there should be a two-tier system of student selection with broad representation from among members of the faculty (optometrists and non-optometrists) as well as students.

Recommendations are then made to the chief officer of the college for the purposes of final determination. In the selection process, a strict GPA criterion should not exist for the reason, among others, that a 3.5 GPA at one college may have quite different meaning than a 3.5 GPA at another college. Criteria such as tests as a result of independent study, research papers, theses, extracurricular activities, etc., also are important. The extent to which the student-applicant has participated in student body activities, the extent to which he has had community interests, also are measures of the quality of the individual. Finally, it must be suggested that a well-rounded education is always desirable in the background of the individual who is applying for admission. A narrow focus has to be measured against one who has a greater breadth in terms of academic and other liberal arts interests.

With a wealth of applicants in the schools of the health professions, committees on admission have enormous responsibilities to select the kinds of students with diverse backgrounds, diverse training, origins from various geographic areas, and balancing minority students, women, etc. Their prime responsibility is to make an ad hoc estimation of the future achievement of the individual both in his professional school career and, more important, his achievement as a potential professional in the community in which he will serve.

E. *Graduates.* It cannot be assumed that the quality of a graduate is equal to the quality of the student. Indeed, the quality of a graduate is a product of professional activity over the period of a lifetime of a career. Indices of these quality activities include the development of attitudes as a consequence of practice, the maturation as a consequence of age, as well as the response to a whole host of environmental and professional factors. Not all good students make good practitioners. There is a high positive correlation between the excellence of a student and the excellence of the practitioner but, surely, there are behavioral factors which significantly alter this assumed equation. The evaluation by alumni and their continued participation in the life of the college are aspects to judge the quality of the graduate. Evaluation by alumni of faculty, of program, of the adequacy of the educational experience and, as well, a self-evaluation of the development of the alumnus from the time of his graduation must be considered. With respect to this factor, a critical one, the alumnus must make a value judgment of the soundness of his educational experience upon which he was able to build a good professional career. Was there increasing professional development over the years as well as an increasing concern for the continuance of one's knowledge?

In the final analysis, the quality of the graduate must be measured against his continued effective performance in the professional practice. Effective performance is related to the level of the quality of the care he renders, the nature of his professional concerns, his con-



tinued educational development, the extent of his community participation, the leadership which he brings to his community as a citizen, and the standing he holds, not only among his peers, but among the citizens who judge him in the community. Inevitably, the quality and excellence of a college cannot be immediately judged. Judgment is, in part, based upon what its graduates do and how they contribute over the period of their professional careers.

E. *Support Structure.* A key element in the evaluation of a school or college of optometry is the nature of its internal and external supports. If it is an independent institution, the question must be raised as to the goals and objectives which the Board of Trustees of the college have set specifically, in the field of optometry, but generally in the field of health care. If the school or college of optometry is part of a university, an important question must be raised as to the nature of the university objectives in optometry, in particular, and in health care, in general. Is the school or college of optometry carrying out these objectives?

Support structure also means an awareness and responsiveness to community needs and to specific manpower categories. Particularly in schools of the health professions, like optometry, progressive educational thinking dictates that the professional school cannot exist in isolation. The extent to which, and the understanding with which, the institution serves the community is related to the question of its support structure.

Particularly, if the school is in a university, the question must be raised about its structural location within the educational system. Is it a department; is it a program: is it a school; is it a college; are the channels of communication to the leadership of the university clear and precise?

Certainly no question of support structure as a measure of quality of an educational program can be held without a discussion of the adequacy and stability of financial support. These are all budgetary considerations. The stability factor rests within the ability of the institution to maintain a level of financial support consistent with its goals and objectives in achieving the level of excellence that it sets for itself. The issue of adequacy to meet the educational goals and objectives is obvious.

Particularly in the schools of the health professions there historically has existed rather severe differentials between certain administrative activities as compared to undergraduate campuses. These relate to appointments, terms, salaries, time factors, commitments, etc. They all affect the nature of the support structure for an institution in optometry.

Finally, the issue and concept of long-range and short-range planning as an ongoing function of the institution constitutes another support structure. The absence of planning is a serious hazard and should be considered a serious lack of institutional support demeaning the very nature of the quality of the institution.

G. *Peer Judgment.* The opinion of what constitutes

quality by a peer can relate to three areas. The first is the opinion expressed by the leadership of other institutions in optometry. The second is a judgment rendered by the accreditation council—in this instance, the Council on Optometric Education of the American Optometric Association. The third area of peer opinion of quality concerns the acknowledgment and judgment by health agencies and health institutions with which the school or college of optometry may be involved. It can be suggested that research endeavors of an institution should be judged by others who are research scientists and this would be true. Clearly, any unit of a school or college of optometry, such as a program track in public health, might be judged by public health educators in other schools and colleges of optometry or by public health educators from among the schools and colleges of public health. However, any analysis of quality which does not take into account these three factors relating to peer opinion of quality would be an incomplete analysis.

H. *Public Opinion.* Another assessment of the quality of the institution relates to the opinion held by the many publics with which it is related. These publics may be the community served by the clinic of the school or college of optometry. It may be the health agencies with which it is associated. It may be the press which comes to recognize the institution by virtue of its research, teaching and clinical endeavors. Not infrequently public opinion relates to the recognition of government through the process of the awarding of grants and contracts for various projects and programs. Public opinion of the quality of an institution invariably relates, as indicated above, to the meeting of community needs in terms of manpower production, research endeavors, and clinical community service. Finally, there is a more elusive public opinion of quality held by "the man in the street."

> **"The pace of change is accelerating rapidly in America's medical schools. There is a great ferment within the institutions. Innovations are being increased and responsibilities broadened. The medical schools are responding to the challenges of society's rising expectations for better health. They are demonstrating a remarkable ability to expand their programs and to undertake John Gardner's concept of self-renewal to better serve both the national and local communities.**
>
> **Some of the impetus for change comes from outside the institutions, particularly from the federal government. Because of their central role in the education and training of health professionals, in biomedical research, and in the delivery of health care, medical schools are coming under increasing public scrutiny. They are being held accountable for the nation's investment in them."**[9]

The assessment of the quality of an institution is related to many of these factors discussed above and perhaps a host of others that are important, if not critical, but to which thus far this paper has only alluded. Each of these deserve separate discussions as does the issue of leadership mentioned in the opening paragraphs of this paper. Other issues which can be discussed are the extent and quality of faculty-student interactions, what constitutes a "good" teacher, the nature of the level of class and seminar discussions, how good students are "motivated" students, the measurement of the extent of education imparted as an output of the school or college of optometry, the transactional process, and the extent to which students, faculty, administration and staff express "satisfaction" with their participation in the educational community of the school or college of optometry.

> **"The essence of accountability is being held responsible for fulfilling commitments—for articulating your intentions and assuring that they have been accomplished. The implication is that commitments are, in fact, made; that they are clearly understood by all involved; that data can be, and are, gathered as evidence of efforts being made which can be regarded as contributing to or detracting from the desired outcomes; and that there is responsiveness, in terms of altered behavior, to whatever findings are generated. Would anyone who wants to be regarded as professional in the work he does actually dispute the desirability of such a set of conditions. I think not, but, is it feasible?"**[10]

This author has made an extensive search of the optometric literature. There have not been papers of great significance about the standards which produce quality optometric education. As a matter of fact, little institutional and educational research have been done in the educational process in the schools and colleges of optometry. This is a new field to "conquer."

Finally, the achievement of quality in optometric education must be a total, all consuming, ever present, constant commitment to reach for that quality. It must not falter; it must be supported and must pervade every aspect of the school or college of optometry. ●

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University School or Free Standing: The Dilemma of Optometric Education

By Lester E. Janoff

In an article addressed to the optometric community I assume the readers familiarity with the people and events responsible for the creation of optometric science. The trials and tribulations faced by this young profession in almost one hundred years of existence as a full time occupation[1] are also presumed unnecessary to recount. Therefore, in addressing myself to a question that is currently on the minds of many optometric educators, I present a list of pros and cons of university affiliation contributed by Dr. Henry Hofstetter.[2]

PRO

1. University degrees carry greater prestige for the graduate.
2. University schools provide better research facilities.
3. Optometry students can take advantage of existing courses within the university.
4. Universities attract teachers of higher caliber.
5. University affiliation is a form of recognition of the profession.
6. University schools have more financial stability.
7. Tuition is lower for the student in the university school.

CON

1. Free standing schools can respond to the needs of the profession more quickly and directly.
2. Free standing schools are not in jeopardy as a result of medical pressure on the school administration to alter the optometry program.
3. Free standing schools can teach not only what they please, but can hire whomever they please.
4. Free standing schools do not have to compete with other university departments for funds.
5. Free standing schools do not have to deal with administrations that have no appreciation of the profession's needs nor the nature of the curriculum.

Having listed the theoretical points at issue, let us see what occurs in the real world. It is true that the university degree carries more prestige, but only within the academic community and profession. It has no influence upon the general public whom the optometrist serves. Of much greater value is the Doctorate in Optometry which, until recently, was not available to the university school graduate. University schools do provide better research facilities and research work. However, this gap is narrowing as independent schools are getting more and more government grants to build just such facilities. Secondly research, although important, is not the primary function of an optometry curriculum. Consequently, schools that are more practitioner oriented afford the diversity in optometric education that is so desirable.[3]

Undoubtedly, the university has a large number of courses available that the optometry student might find useful, but here again, we cannot ignore the power of official medicine within the university system. Certain courses might be denied optometry students because of medical opposition or given to optometry students, but in an adulterated fashion. An example of this occurs in some university schools where certain courses are taught under an inappropriate heading so that it does not offend medicine (pharmacology as an example, might be listed as physiological optics 508).

The caliber of teachers in optometry varies little between schools. The free standing school invariably has a large percentage of faculty members who are university school graduates. Inbreeding is becoming a thing of the past. The O.D. with a Ph.D. is still considered the most desirable teacher-researcher for all but clinical teaching. Nevertheless, the basic science faculty is predominantly non-optometric, with graduate degrees in their area of concentration. The O.D./Ph.D. exists in enough abundance to satisfy the needs of current day optometry schools. Graduate programs continue to produce them in numbers enough to replace those who retire and die, with a number left over. These academics usually distribute themselves well on a voluntary basis among the schools doing research and teaching. Few go into private practice.

A potential problem is that there may be an insufficient number of qualified faculty to staff any **new** optometry schools that are created, unless graduate programs are expanded or time requirements reduced. Also, many talented optometrists have been lured into medical schools by higher salaries and more desirable working conditions. However, this does not forebode ill unless official opthalmological attitudes toward optometry change drastically.[4]

The fact that the university school brings a form of recognition by the academic community is indeed an advantage of the university school and one with which the free standing school cannot contend. It may affect public attitudes about the profession and thus must be considered a highly desirable asset. With regard to academic optometrists, it is a strong factor, for in the psychology of professionals peer recognition is much more important than client recognition.

When one considers the virtues of independent schools, one finds that all the points stated earlier are true and that they constitute the great strength of free standing schools. The Boards of Trustees of these schools consist predominantly of optometrists, mostly successful practitioners who are also alumni of the college. If optometrists decided brain surgery were within their province, the college could institute Brain Surgery 101 as a course for the following semester. The leading brain surgeon in the world could be hired to teach the course, and in the event he was not available, someone capable of discoursing on the subject could always be found. The course and instructor may lack the proper credentials, but theoretically there is no impediment to initiating such a course.

Hiring whomever one pleases as practiced by the independent school applies mainly to the hiring of physicians to teach medical subjects. The independent school faculty member, unless he has university affiliation, is under much less pressure from academic medicine for his work in aiding and abetting optometrists. In the 1950's, medicine went so far as to state that it was considered unethical conduct for a physician to teach in a col-

lege of optometry. Although the resolution is no longer officially on the books there are those whose memory serves them well.

It is true that independent schools do not have to compete with other departments for funds, but they now have to compete with other professional schools in their (DHEW) region. The federal government, having decentralized the funding of health profession schools, has now put them into the position of vying for funds among a larger group of applicants. Whereas there are only twelve optometry colleges in the United States, there now may be as many as fifty health professional schools in a region. The financial concerns of the independent school are by far the most critical factor in their continued existence.

Some general comments about the two types of schools shall show that differences, although they exist, are small and becoming even smaller. Tuition for the student is lower in the state university school, but only for in-state students. Since these schools are state supported, they must care for the states' optometric manpower needs first. Due to the loss or reduction of federal funds and regionalization of funding, the independent schools are becoming more state-like in character. Class size, generally larger in the independent school, is now being reduced as a result of dwindling financial support. Since most schools operate at a deficit per student, increasing the class size merely increases the deficit. The university school can turn to the university for support. The free standing school is now able to turn to the region, but suppose the region is innundated with schools in financial difficulty?

It is apparent that some optimum class size will soon be reached by most optometry schools. The student to faculty ratio varies somewhat, probably because of the larger class size in the independent school. In addition, university policies on such matters are firmer and rarely are the limits exceeded. The mean ratios are:[5]

Independent schools:
9.1 students/FTE Faculty
State University:
7.7 students/FTE Faculty

The caliber of students is equal in the two schools, the mean GPA being:[6]

Independent schools 2.9
State University 3.1

A lingering problem on the university campus is lack of cooperation between optometry and ophthalmology. Yet, the presence of a medical school and teaching hospital on the same campus as an optometry school could be a great asset to both. Optometrists would get more experience with pathology while physicians would learn more about visual function. Oftentimes great medical and optometric institutions lie side by side and almost completely fail to positively interact. The one school conspicuous by the fine level of cooperation achieved with medicine is the optometry school at the University of Alabama. This is a health center and optometrists work in close cooperation with all health professionals. The independent schools have solved the problem by either creating their own clinics devoted to ocular pathology, or by arranging placement programs for their students with medical institutions in the area. In Philadelphia, the Pennsylvania College of Optometry has the distinction of being part of an experimental health group consisting of schools of Osteopathy, Podiatry, Pharmacy, Nursing, and Optometry which could develop into a new educational device (i.e. consortium of independent health professional schools forming a health university or teaching center). This type of educational institution has only recently been proposed as a model for the future.[7]

"As the optometrist gives up his optician's work to devote more time to analyzing vision, his educational program will change."

A final word on the schools with regard to construction. Almost all the independent schools have built magnificant new structures in the last ten years, while very few state university schools have updated their facilities. This was accomplished through federal funding and fortunately, has helped to keep the independent schools strong.

Practitioner vs. Educator

Optometry is not immune from the battle betwen those who "do" and those who teach. The practitioner often sees the new optometrist as leaving the school unprepared for the realities of life. The student usually agrees and rebels against studies he perceives as irrelevant. On the other side sits the educator, planning curricula to meet what he believes are the needs of the future optometrist. He sees the optometrist of today as being obsolete in the future; the instruments and skills of 1984 different than those of 1974. What the educator sees as important is not the technology of 1974, but the desire to learn, the ability to learn and the need to change and grow. These are the skills needed for the future.

In summary, the student and practitioner want vocational training, while the schools strive for education. Some intelligent mix must prevail. The hope for the future is the increased use of para-professionals, who will make the practitioner less hardware-dependent and will force him to perform more as an information analyst than as an information gatherer. The fault in the continuation of the conflict lies with the educators who have not clearly communicated their position to the profession at large. Practitioners can hardly be expected to discover the rationale of the schools. With the changing role of the optometrist even greater changes in the educational programs are in the offing. As the optometrist gives up his optician's work to devote more time to analyzing vision, his educational program will change. Hopefully, ophthalmology will follow by dropping from its curriculum that which is largely optometric. This will allow more time for pathology and surgery of the eye.

Other changes that seem to be occurring in optometry schools deal with the major emphasis of the institution. The strong Physiological Optics department typifies the large university schools. Here the optometrists' training is more akin to ex-

perimental psychology. Most of the older, former proprietary schools seem to put their strength into the biological sciences and follow more of a medical model. It is possible that this orientation derives from a closer association with physicians and from the freedom to teach these subjects which does not exist in many of the university schools. A third identifiable model, is one which leans heavily on Education and Clinical Psychology stressing functional vision and its relationship to human development. Although this is a newer and smaller trend, it is clearly definable. These three models are to be encouraged since they provide another element of diversity of the training of professional Optometrists.[8]

Medicine as a Guide To the Dilemma

I have searched the medical literature for some guidance as to the degree of satisfaction with university affiliation. Much of Medicine's march to the university was the direct result of the Flexner Report in 1910.[9] Abraham Flexner was not an unbiased observer of medical education.[10] He approached the task with an answer in mind. He wanted to mold medical education in the model of Johns Hopkins, which was based on the German tradition of laboratory science as the cornerstone of medicine. Not that this was a poor model at the time, but the result was that the profession panicked into rushing into the university and possibly losing useful forms of medical training in the flight.

Had independent schools and apprenticeships persisted, we might not now be faced with the almost ridiculous prospect of thirteen years of post-secondary education before a specializing physician with subspecialty can get into practice. We might not now be faced with an abundance of highly trained specialty physicians and a crying need for plain old family practitioners. We might have discovered a middle-level practitioner who could deliver primary care. Funding medical education might have been done another way than through research grants; behavioral science might not have been resisted by the medical curriculum; and health care delivery might occupy more time in school than biochemistry.

Lester E. Janoff, O.D., M.S.Ed. is Coordinator of Curriculum at Pennsylvania College of Optometry.

"Yet, the presence of a medical school and teaching hospital on the same campus as an optometry school could be a great asset to both."

Flexner anticipated changes in the curriculum, especially in social and preventive medicine.[11] These have met with resistance, for the hold of basic science is difficult to break. Medicine was indeed fortunate otherwise, for the university allowed it to go its own way. What started as a minor branch of the university has often become the controlling power, making it seem as though some of today's universities exist for their medical schools. This fact cannot be ignored by the smaller professions. Is it better to marry a university with weak departments or none at all? Although many medical schools have only a budgetary relationship with the university, their affiliation does involve the loss of some freedom. Having intimately reviewed several of the leading authors on medicine and the university, I feel the medical view is best summed up by Darley,[12] who feels that the university is basic to the developments that are needed in medicine and that the medical schools must cease their isolation from the rest of the university. In no instance does medicine regret its alignment with the university.

Conclusion

Before a statement of my conclusion, a few preliminary objectives must first be stated:

1. Optometry must make a clear cut definition of its role in society.
2. Using this role as the behavioral objective, the colleges of optometry should now design curricula.
3. We must then examine the university structure and see how this will assist us in our goal. Is the simple Flexnerian model what we are after? Can we ignore health care delivery and set science in the Optometry school apart from science in the rest of the University? Optometry is a part of science and as such belongs in the university. This was stated recently by a special commission formed at the University of California at Berkeley to investigate whether optometry was rightfully a university discipline.[13]

After considerable investigation one must conclude that although independent schools have a number of advantages, new schools of optometry will have to be university affiliated. The start up and maintenance of an independent school is almost a fiscal impossibility. A recent constructed cost study of optometric education[14] put the annual cost per student at an excess of $15,000. This could hardly be done privately when tuition is under $3,000. and federal capitation is less than $1,000. per student. Optometry schools that are free standing receive almost no direct state aid, and alumni contributions cannot be counted on for significant support. Nor should they be. The new optometry schools should affiliate with health science centers. The Alabama model seems ideal. A number of new, strong, university schools of optometry should be created. What must remain are the present independent schools. These should be kept large, strong, and influential.

This is the "edge" optometry must hold in the event of conflicts with medicine within the university. When optometry is accepted by official medicine and cooperation and good fellowship reign, then can the independent schools begin to pass from sight. First, they might give up their training of the generalist in optometry and serve through their well developed clinical facilities as centers for continuing education and specialty training. Eventually this function would cease and they could integrate their vision service into a comprehensive health organization such as an H.M.O. or its equivalent. Like dutiful old soldiers, the independent schools will just fade away. The contribution of these free standing colleges of optometry will be nonetheless indelibly engraved in the history of the profession. ●

References for this article are on page 34.

Don't muddy up the googol.*

*Googol: The largest number of things that has a name. Webster defines as the number one followed by a hundred zeroes.

There are googols of little creatures squiggling and burrowing, flitting and squishing under the mud, through the swamps and over the sandy marshes. Sea squirts, copepods, lugworm larvae and the babies of little fish. Each with a kind of a brain, each with the breath of life. But their life is ebbing. And as they start to go—you do, too.

You are standing on the threshold of time in as sacred a place as any in the world. It's where the life of the water and the life of the land converge in biological blur. These are the wetlands—the swamps and the mudflats that sometimes smell like rotten eggs. These are the marshes, clogged with weeds, swarming with bugs, teeming with beautiful life. This is where the moon moves the water in shallow ebbs and floods; where the sun pierces down to the ooze and the nutrients flow in a strange and marvelous way. Nowhere else except here in these sopping grounds is there so much life in so much concentration. But the life is dwindling. And as these lands start to go—you do, too.

These squishy, mushy lands are where most of our fish are born, the fish that feed the fish that feed the fish that fill the sea. These narrow strips of estuarine land are where the birds come to rest and nest and feed; and they are tied inexorably to the life support for the raccoons and the bears and the deer a hundred miles away. And to you.

In California, most of the wetlands are already gone. In Florida, they're going fast. Once there were 127 million acres of interior and coastal wetlands. Now forty per cent are gone, the precious specks of life in these treasured lands exchanged for yacht clubs and marinas and industrial growth. As we dredge the bays and fill the marshes and cover the mud with asphalt; as we spray our poisons and scatter our waste and spew oil upon the waters—we destroy forever the great forces of life that began millennia ago.

But now we have gone too far. Because this planet belongs not only to us but to them as well. To the umpteen zillion other things that fly in the sky and roam on the land and swim in the sea and burrow beneath our feet.

Now, especially now, if we will only stop to think—perhaps we will think to stop.

Sierra Club

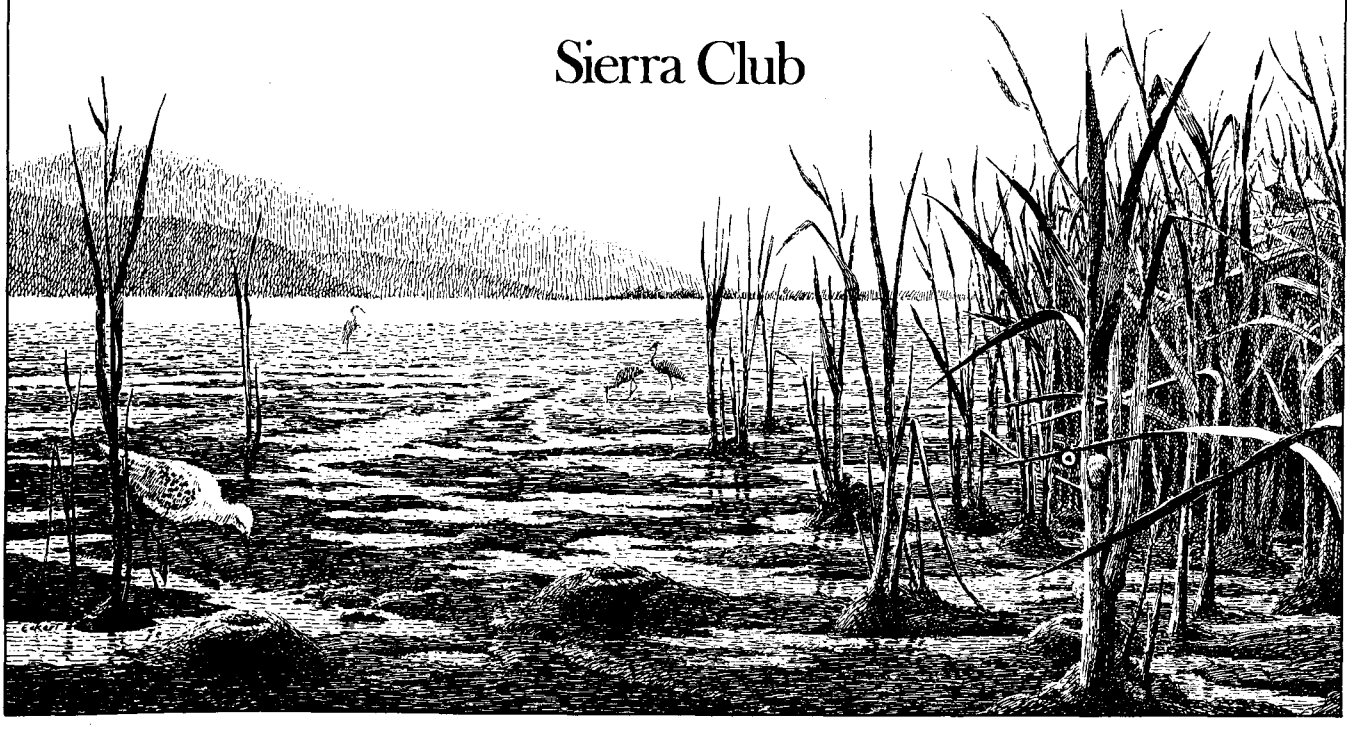

EXHIBIT B

Continued from page 11

BEHAVIOR	SUSPECT ABILITIES
18. Short attention span	18. Too many to list
19. Daydreaming	19. Too many to list
20. Tilts head to one side	20. Directionality; Vertical Phoria
21. Rubs eyes frequently	21. Refractive Error; Accommodative Flexibility; Binocular Integration; allergy; mild infection
22. Rests head on his arm when writing	22. Binocular Integration; Posture; Laterality; Directionality; Midline problem
23. Improper or awkward posture while reading or writing	23. Binocular Integration; Posture; Laterality; Directionality; Motor overflow
24. Confusion of similar words	24. Form Perception
25. Poor eye-hand coordination	25. Eye-Hand Coordination; Gross Motor Performance
26. Unusual awkwardness	26. Gross Motor Performance
27. Thrusting head forward or backward while looking at distant objects	27. Refractive Error
28. One eye turns in or out at anytime	28. Strabismus
29. Excessive tearing of the eyes	29. Refractive Error; Accommodative Flexibility; allergy; mild infection
30. Frequent styes	30. Refractive Error; allergy; mild infection
31. Reddened eyes or lids	31. Refractive Error; allergy; mild infection
32. Headaches in forehead or temple	32. Refractive Error; Visual Abilities
33. Repeatedly omits "small" words	33. Speed and Span of Recognition; Visual Memory
34. Writes up or downhill on paper	34. Directionality; Laterality; Eye-Hand Coordination
35. Complains of seeing double	35. Strabismus; Accommodative Flexibility; Convergence Sufficiency; Divergence Sufficiency
36. Misaligns both horizontal and vertical series of numbers	36. Eye-Hand Coordination; Directionality; Laterality; vertical imbalance
37. Repeatedly confuses right-left	37. Integration; Directionality; Spatial Organization
38. Mistakes words with same or similar beginnings	38. Form Perception; Speed and Span of Recognition; Figure-Ground
39. Fails to recognize same word in next sentence	39. Form Perception; Figure-Ground
40. Fails to recognize same word in different book	40. Form Perception; Figure-Ground
41. Confuses likenesses and minor differences	41. Figure-Ground; Speed and Span of Recognition; Form Perception
42. Makes errors in copying from reference book to notebook	42. Eye-Hand Coordination; Visual Memory; Accommodative Flexibility
43. Difficulty copying from the chalkboard	43. Eye-Hand Coordination; Visual Memory; Accommodative Flexibility; Refractive Error
44. Slowness in all schoolwork	44. Visual-Motor, all; Visual Abilities, all; etc.
45. Slowness in copying from chalkboard	45. Eye-Hand Coordination; Visual Memory; Accommodative Flexibility; Refractive Error
46. Large pupils in normal light	46. Medications
47. Excessive squinting from bright light	47. Photophobia, Medication, Refractive Error
48. Difficulty following verbal instruction	48. Auditory-Motor
49. Writes crookedly and/or poorly spaced	49. Eye-Hand Coordination; Directionality; Spatial Organization; Spatial Relations

Continued from page 33

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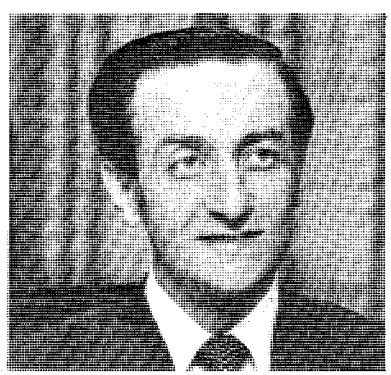

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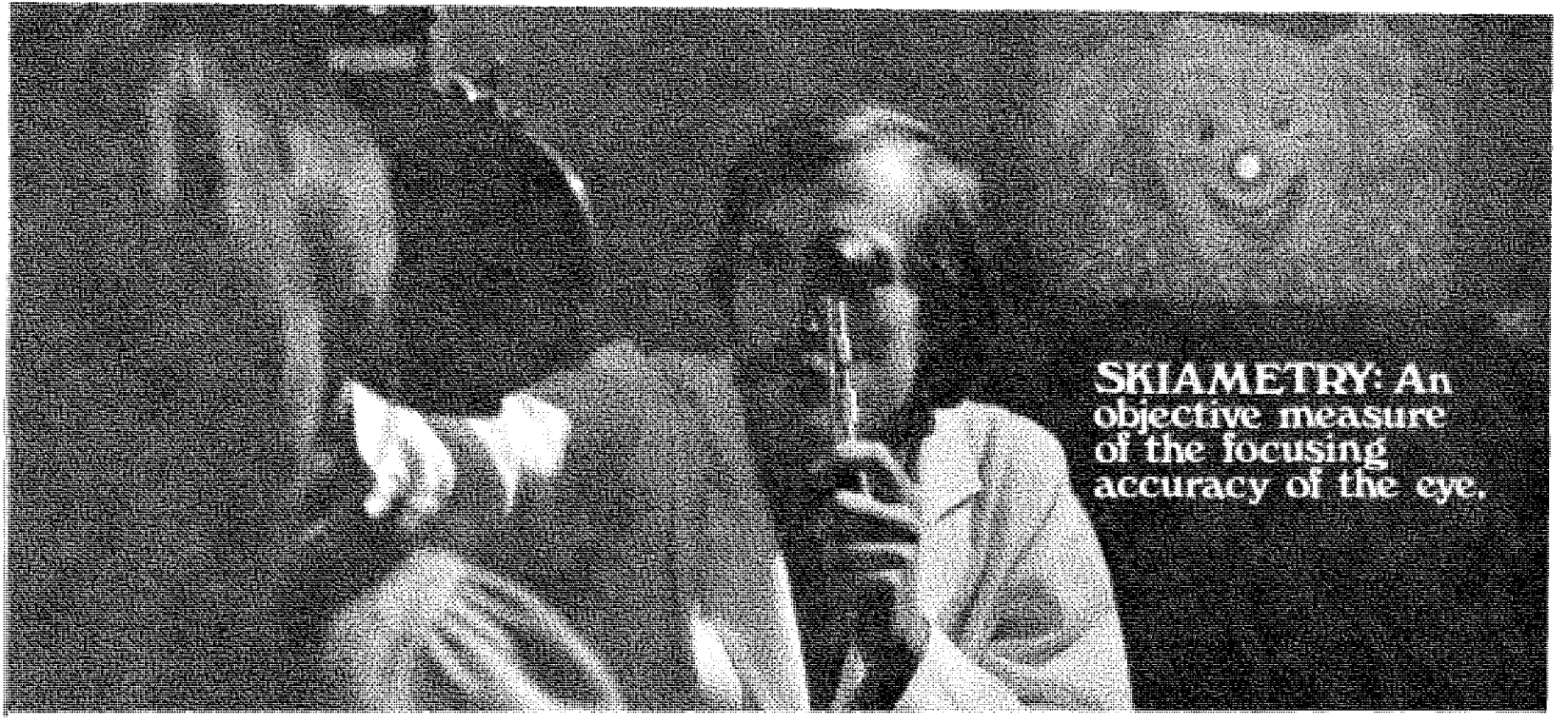

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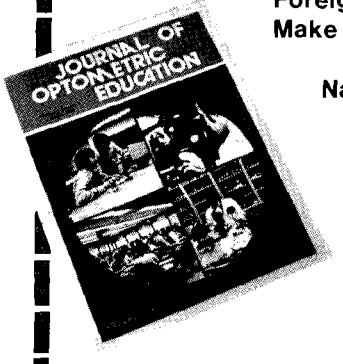

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