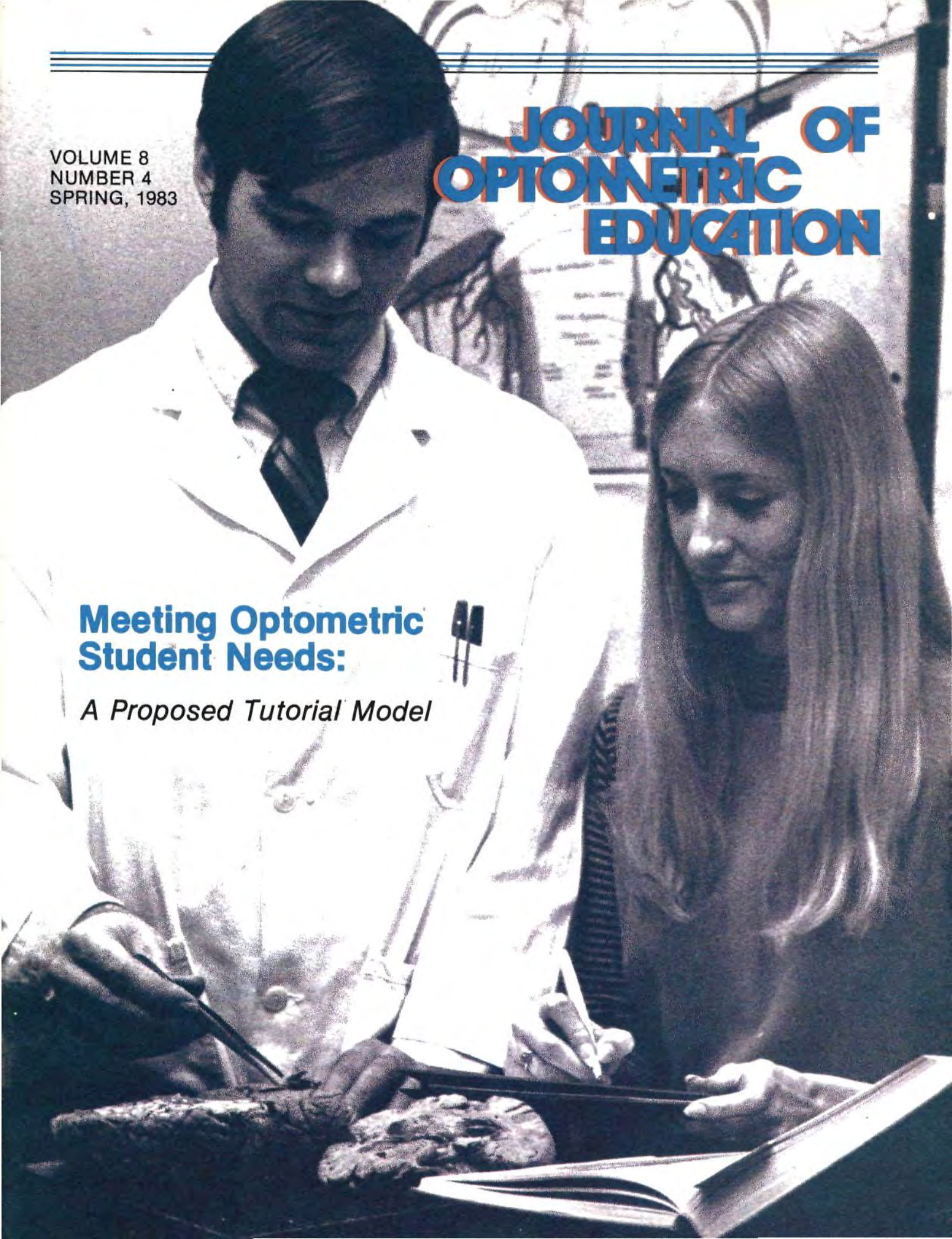


VOLUME 8
NUMBER 4
SPRING, 1983

JOURNAL OF OPTOMETRIC EDUCATION

Meeting Optometric Student Needs:

A Proposed Tutorial Model



ASSOCIATION of SCHOOLS and COLLEGES of OPTOMETRY

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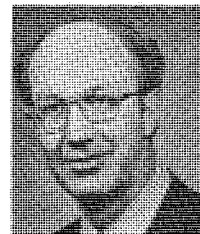
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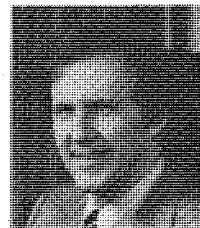
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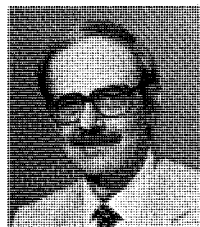
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The **JOURNAL OF OPTOMETRIC EDUCATION** is published by the Association of Schools and Colleges of Optometry (ASCO). **Managing Editor:** Harriet E. Long. **Art Director:** Dan Hildt. Graphics in General. Business and editorial offices are located at 600 Maryland Ave., S.W., Suite 410, Washington, D.C. 20024. **Subscriptions:** JOE is published quarterly and distributed at no charge to dues-paying members of ASCO. Individual subscriptions are available at \$10.00 per year, \$15.00 per year to foreign subscribers. Postage paid for a non-profit, tax-exempt organization at Washington, D.C. Copyright©1983 by The Association of Schools and Colleges of Optometry. Advertising rates are available upon request.

"The Role and Responsibility of a Trustee"

Some twenty-five years ago I was the youngest member of the board of directors of the YMCA in Evanston, Illinois. This YMCA had a large physical plant whose maintenance was deferred necessarily during the period of World War II. As a result of this deferment the board yearly set aside financial surplus in a reserve fund for later use. However, increased costs after the war caused a depletion of the reserves more rapidly than had been anticipated. The finance committee called this fact to the attention of the board, and the director recommended a public fund raising campaign.

Observing the determined reluctance of some board members to assume what I considered to be our collective obligation, I spoke my thoughts without adequate reflection and with no anticipation of the consequences. I stated, "As board members we are legally and morally responsible for the maintenance, support, and operation of the institution. If in our judgment there is need for additional financing, we have an obligation to assume the leadership in obtaining such funds in the most appropriate and constructive manner."

Following this unrehearsed remark there was silence, broken in time by one of the senior members who had been regular in his attendance at the monthly meetings. Looking directly at me he commented, "I did not accept appointment to this board to participate in any fund raising efforts."

At the next meeting of the board the other members and I learned that my spontaneous but sincere remarks had produced, not what I had hoped—a stimulus for the board to seek the necessary additional funds—but instead, the resignations of several of the longtime board members, including the one who had responded to my comment at the previous meeting. Their departure emphasized more directly, than any statement that I did or could make, the true responsibilities of the members of a board of trustees.

Ever since that experience I have considered that all members of a board of trustees must recognize that they collectively have assumed the legal and moral obligations for the maintenance, support, and operations of the institution on whose board they have accepted appointment. The charter or legal document that authorizes the existence of the institution identifies the existence of the board, and the bylaws prescribe the manner in which it will perform. But for an independent institution, such as a university or college, to be operated effectively in our society each member of its board must appreciate that he or she has assumed a position of responsibility and trust.

The trust will be interpreted differently by each of the many publics that the institution serves. In the case of an educational institution the students will tend to assume that it has been created only for their benefit. Faculties have a habit of believing that an educational institution is operated best if they are free to make major policy decisions. Alumni,

whose financial support is assiduously sought, are affronted if they are allowed to assume that their opinions are being disregarded; and when the institution is a professional school recognition must be given to the fact that the alumni are convinced that its main purpose is to support the interests of the profession. Members of the administration, and especially presidents who have a tendency to speak and think of the college in terms of "my institution," must balance all these and other forces; but they too have their special interests which must be counterbalanced properly so that the institution will fulfill its primary goal of meeting the overriding and all important public interest. It is this responsibility that the members of a board of trustees must fulfill in their position of power and ultimate control.

There are several ways by which educational institutions may be controlled. In many countries, and not limited to those with authoritarian forms of civil government, the ultimate control resides in a ministry of education through which curricular, financial, and personnel decisions are made. At the other extreme are educational institutions in which faculties, subject to various qualifications, constitute their own governing boards.

For years in this country there have been academic proponents for this form of educational control; that is, faculty control. Fortunately, proposals for this type of educational governance have been disregarded in the United States and we have continued to pursue the practice, initiated three hundred years ago with the founding of Harvard College, of placing control in the hands of a board of trustees. This practice was directly formed by Scottish traditions influenced in turn by a Calvinistic inheritance emanating from Geneva, Switzerland.

As our educational institutions have grown increasingly important to the welfare of society the significance of boards of trustees has expanded, although this fact generally has not been appreciated or recognized sufficiently. Education must be developed and considered with the welfare of the public as the primary goal. A board of trustees *constituted appropriately and functioning effectively* can provide the best assurance that the public interest continually will be that goal.

These comments are intended in no way to denigrate the importance of the faculty, contributions from students, support by alumni, interest on the part of the professions, or the need of a dynamic and stable administration. All of these elements are needed to support a well functioning educational institution. However, their interests and contributions should be balanced and weighed by a board of trustees whose members must collectively be capable of exerting both initiative and impartial judgment.

These comments also prompt a number of questions, questions that from time to time a board of trustees might

well ask itself. The following list of issues, presented under three topical headings, may serve as a point of reference for further discussion.

Responsibilities of Boards of Trustees

Election to a board of trustees may be interpreted as an honor bestowed on an individual but such an election should not be made as an honor. Rather attention should be given to the ability of the individual to participate in collective responsibility for the institution through engaging in the following functions:

1. Fulfilling the obligations specified in the charter or other similar legal document.
2. Evolving, reviewing, and revising the functions of the institution consistent with the purposes stated in the charter.
3. Planning for consistent and constructive development of the institution.
4. Selecting the chief administrative officer, approving appointments of other administrative officers and faculty members, and holding them responsible respectively to administer and pursue policies adopted by the board.
5. *Holding and supervising all financial assets, which include the budgets, fund raising, capital development and investment.*
6. Encouraging members of the faculty and administration and providing protection for them within the context of academic freedom as they pursue the social commitments of the institution.
7. Acting within the law as the body of final responsibility for the institution in matters of concern brought to its attention.
8. Other.

Organization of Boards of Trustees

No two boards of trustees should be organized necessarily in exactly the same manner. Each should be organized adequately in such a way as to fulfill the social purpose of the institution and to give recognition to the proper interests of the various elements that comprise an educational institution. In all cases the factors of organization include the following issues:

1. By whom are the board members selected?
2. What should be the size of the board?
3. For what length of term should members serve?
4. What limitations should be placed on an individual's length of service?
5. What formal relationships should exist between the board and (a) administration, (b) alumni, (c) faculty, (d) professions, (e) students, (f) others?
6. How frequently should board meetings be held?
7. To what extent should reliance be placed on use of executive and other committees?
8. Other.

Issues Confronting Independent Professional Colleges

For the past half century the trend has favored the affiliation of professional colleges within universities and more recently within academic health centers. Only a small

proportion of health professional colleges are now so related. The trustees of these institutions have special issues to face, not the least of which relate to the changing patterns in the delivery of health care. More specifically with relation to the Pennsylvania College of Optometry such issues as the following need to be considered and eventually resolved:

1. What relationship will opticianry, optometry, ophthalmology and their various assistants and technicians have to each other in provision of eye care to the public in the future?
2. What education should be encouraged and provided for the preparation of future optometrists?
3. What type of clinical training will best prepare optometrists for their future responsibilities in the delivery of health care?
4. How can an independent professional college most appropriately be financed?
5. What is the best path for an independent professional college to follow in relationships to federal and state governments?
6. What relationships should be developed and maintained with other educational institutions and health service agencies?
7. What policies should be developed and pursued as faculties and students increasingly insist upon collective bargaining?
8. What relationships should be expected with the profession of optometry, during a time when the place and authority of the professions in society are changing?
9. Other.

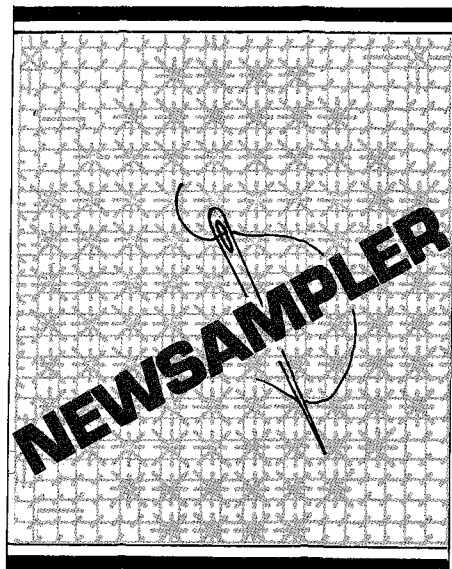
Selection of Members of Boards of Trustees

A fourth heading of issues for consideration might be the selection of members of boards of trustees.

Social conditions have changed from the time when it was thought that to serve as a trustee a man, only sometimes a woman, should be able either to give money, to raise money, to possess special needed expertise, or to be a diligent worker. Now additional factors are of importance. These include sex, age, race and religion, educational background, professional or vocational activities, social interests, and geographical location. More recently increased attention has been given to direct faculty, as well as student participation in board responsibilities.

Regardless of whom the board members may be, the greatest contributions are made by those who are assiduous in recognizing and fulfilling their trustee obligations, are available as needed, are discerning in recognizing the issues to be resolved, and have constructive ideas as to the best means of resolving such issues. □

*William K. Selden
Princeton, New Jersey
Member, Council on
Optometric Education*



SUNY Program Assists Elderly

An unusual community outreach program to assist visually-impaired and blind senior citizens began in April through the sponsorship of the State University of New York's (SUNY) College of Optometry and the University Optometric Center in Manhattan.

Five senior citizen centers under East Harlem's Boriken Health Center's aegis and one center in Lenox Hill were selected for the extensive free vision screening and education program, offering on-site examinations by the college's professional health care staff and fourth-year student interns.

The vision screening team worked with the support staffs from two senior citizen centers and other social service representatives to address the social, economic and health care needs of the elderly who were tested. The screening was administered for four days with the goal of testing 500-600 people at each site. The elderly were advised about existing health care services such as the University Optometric Center, the largest outpatient clinic of its kind in the country, as well as other social service agencies in the metropolitan area.

SCCO Students Present Research Papers

The Southern California College of Optometry (SCCO) held its Fourth Annual Student Research Symposium, Monday, February 28 at the University Center, California State University, Fullerton.

Twenty-seven papers were submitted by fourth-year students for review by faculty, of which 10 were selected for presentation at the symposium.

Monetary awards were given for the

top three papers presented. First place honor of \$500 was awarded to Christopher P. Likens and Robert R. Mauger for their paper entitled, "The Effects of Accommodation and Repeated Appplanation Tonometry on Intraocular Pressure."

Second place winners, receiving \$300, were Elizabeth A. Christensen and Darlyne Hayashi Fujimoto for their presentation, "An Investigation in the Use of Video Cassette Techniques for the Enhancement of Oculomotor Skills."

"Fresnel Prisms: Their Effects on Visual Acuity and Contrast Sensitivity" won third place, \$200, for Bruce J. Lucas and Takao Naito.

Eye Institute Receives Grant

The Eye Institute of the Pennsylvania College of Optometry (PCO) recently received \$4,100 from UCO Optics, Inc., makers of Aquaflex hydrophilic contact lens. The award represents The Eye Institute's third year of participation in the Aquaflex Institutional Funding Grant Program. The funds will support the college's clinical education program.

SCCO Receives Endowment Gift

The Southern California College of Optometry (SCCO) has received a gift of over half a million dollars in what is believed to be the largest single bequest ever made by an alumnus to a college of optometry.

The \$500,000+ endowment is a gift of the late Herbert McCracken Dixon, O.D., a 1923 graduate of SCCO. Dr. Dixon died in July of 1981 at the age of 89.

SCCO President Richard L. Hop-

ping, O.D., indicated that a permanent endowment fund will be created by the Dixon gift with the entire income providing scholarship support.

Bleything Appointed to National Health Advisory Council

Willard B. Bleything, O.D., dean of the College of Optometry at Pacific University, Forest Grove, Oregon, has accepted an invitation to serve on the National Advisory Council on Health Professions Education of the Health Resources and Services Administration, Department of Health and Human Services (HHS). His term begins immediately and runs through Jan. 31, 1987.

The Council advises the Secretary of HHS on policy matters in the administration of health professions programs. It also may make recommendations on contract and grant applications to enable the health professions education institutions to meet the nation's health manpower requirements.

The 20-member Council includes at least four representatives of schools of veterinary medicine, optometry, pharmacy, podiatry, and public health. Other new members appointed to the Council were: Dr. James E. Bates, president of the Pennsylvania College of Podiatric Medicine, Philadelphia; Dr. Gary L. Filerman, president of the Association of University Programs in Health Administration, Washington, D.C.; and Dr. Caesar Gonzmart, Jr., associate coordinator for administration of the Medical University of South Carolina, Charleston.

Bleything currently is president of the Association of Schools and Colleges of Optometry (ASCO).



SCCO Student Symposium winners (l-r): second-place winners Elizabeth A. Christensen, faculty advisor John R. Griffin, O.D., M.S.Ed., and Darlyne Hayashi Fujimoto; faculty advisor Morris Applebaum, O.D. and first-place winners Robert Mauger and Christopher P. Likens; third-place team faculty advisor Michael W. Rouse, O.D. and students Bruce J. Lucas and Takao Naito.

UAB Honors Art Show Winners

Winners of an art contest and exhibit, entitled "Two Dimensional Optical Illusions," were honored at a reception following award presentations in the University of Alabama in Birmingham School of Optometry clinic. The unique art show opened with a reception for the 33 Alabama artists who submitted works in the competition sponsored by the UAB School of Optometry and the Auxiliary to the Alabama Optometric Association.

Dr. Irvin M. Borish, an artist in his own right, was judge for the show. Dr. Borish is professor of optometry at Indiana University School of Optometry and benedict professor of optometry at the University of Houston College of Optometry.

Winning artists were: Helen A. Keller, current president of the Birmingham Art Association and assistant treasurer of the Alabama Watercolor Society, and a recent graduate of the UAB Art Department; John A. Gerlach, a freelance artist and a senior in the UAB Art Department program; and Mildred Cohn, an Alabama artist and potter.

ICO Begins Renovation Plan

The Illinois College of Optometry (ICO) has begun a master plan to revitalize its academic, clinical service and research programs and to fulfill its physical needs into the twenty-first century.

The construction/renovation project is the second in the history of ICO. The plan "manifests the commitment of the Board of Trustees in response to the challenges and opportunities confronting the profession," said Boyd B. Banwell, O.D., ICO president. "We expect class size to stabilize around 140 and we want to build the finest facility to accommodate our student body. Future students must be prepared for different and more sophisticated types of practice in total vision care."

Construction on a two-story, 50,000 square-foot addition began last August after ICO's board, administrators, faculty and students determined the college's needs in the future.

A complete upgrading of the entire library facility formed the core around which the building program was designed. The two-story library/study lounge, approximately 20,000 square feet, will double existing book stack space and, in the future, will house more than three times the number of volumes and journals.

A 15,000-square-foot lecture center, adjoining the library, features a movable



Dean Henry B. Peters (second from right), Dr. Irvin M. Borish (left), and Mrs. Felton (Jane) Perry (right), president of the Auxiliary to the Alabama Optometric Association, chatted with winners of the "Optical Illusions" art contest and exhibit held at the University of Alabama in Birmingham School of Optometry: Helen A. Keller (second from left), Mildred Cohn (third from left), and John A. Gerlach (third from right).

panel system which divides a 600-seat auditorium into four smaller lecture rooms each accommodating 150 people.

Gerald Ford to Highlight Banwell Inaugural

The Honorable Gerald R. Ford, former President of the United States, will be the featured speaker at the installation ceremony of Boyd B. Banwell, O.D., D.O.S., as the third president of the Illinois College of Optometry (ICO) May 14-15, 1983. The inaugural ceremony will be held at Rockefeller Chapel on the University of Chicago campus at 2 p.m., Sunday, May 15, 1983.

A specially-planned, two-day program of activities for optometric and non-optometric educators, leaders of the profession, ICO alumni, faculty and

students will commemorate the event at the college and Chicago's Ritz-Carlton Hotel.

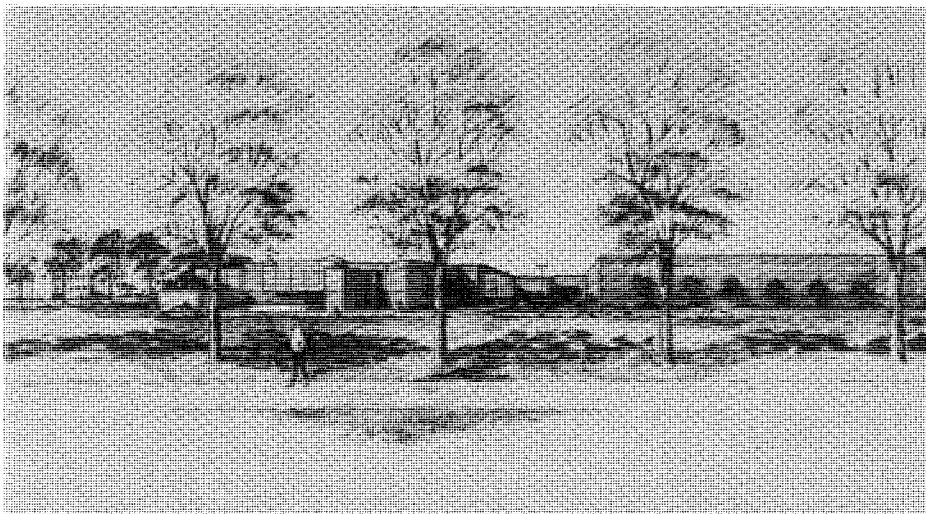
Henry Peters, O.D., dean of the School of Optometry at the University of Alabama in Birmingham, will keynote the first ICO educational symposium to be held Saturday, May 14, at the Ritz. Dr. Peters will address optometric educators and state optometric asso-



ICO President
Boyd B. Banwell, O.D.

ciation presidents; participants will then break into focus groups to discuss critical issues facing the profession.

(continued on page 29)



A 30-foot square glass pyramid rising 35 feet above the first level of the new library/lecture center addition to the Illinois College of Optometry (left) spreads uniform, natural light throughout the area. A radial stairway sits underneath the skylight joining the two levels.



Meeting Optometric Student Needs: A Proposed Tutorial Model

David A. Heath, B.A.
Catherine Hines, O.D.
Hyman R. Kamens, O.D.

Introduction

The decline in the number of students applying for admission to optometry schools, as well as the other health professions, in the past several years has been a major concern for those interested in maintaining the quality of professional education.^{1,2,3} The decrease in the number of applications is probably due to a combination of factors, including the general decline in the number of college bound students in the population and the rising cost of an optometric education. A simultaneous increase in the number of admissions to optometry school has occurred over the past decade as a result of the establishment of new colleges of optometry and the expansion of existing facilities.³ This increase in the number of admissions, coupled with a diminished applicant pool, has altered the characteristics of the optometric student population. This does not necessarily imply a significant change in overall ability of the applicants. It does seem to be true, however, that those applicants who previously experienced difficulty gaining admission are now doing so with greater ease.

This seems to be borne out by the statistical picture. The number of applications to optometry schools rose from three thousand in 1970 to over nine thousand in 1975.³ This represents a threefold increase in applications while positions available increased by merely twenty-four percent. 1975 represents the peak of competition for seats in schools of optometry. Since that time, while attendance has stabilized, the number of applications has dropped to approximately six thousand in 1980. Looking at the academic profile of entering classes, the G.P.A., as reported by the Association of Schools and Colleges of Optometry,⁴ was at its height in 1979 with a mean of 3.31. Over the past two years there has been a steady decline with the most recent figures (for the class entering in 1981) presenting with a mean G.P.A. of 3.19. It should be noted that with the entering

class of 1981 the number of students with four years of college or more decreased by 6.2%. Thus, the search for candidates of appropriate aptitudinal levels may be forcing a change in some objective criteria.

The above figures, coupled with the general decline of the American educational system, which frequently has been accosted by the media in recent years, raises serious questions as to the preparedness of college students and graduates for a professional education. First-year students of optometry are required to internalize massive amounts of information and demonstrate the ability to assimilate systems of thought. These demands necessitate efficient and effective study habits. For many the development of new study habits becomes necessary if they are to master the optometric curriculum.

It would seem that as a result of recent trends in the optometric student body, there has been an increased need among first-year optometry students for assistance in both subject clarification and in attaining more efficient study habits. In an attempt to meet these demands a paradigm for tutorial services has been developed at the New England College of Optometry over the past couple of years and is offered here as a model.

History

Prior to the 1980-1981 academic year, an optional individualized tutorial arrangement was used at the New England College of Optometry. Tutorial services were offered at the college's expense to those students who were in academic difficulty, having failed a midterm or a course. The dean of student affairs would assign the student in academic trouble a tutor, drawn from the student population, for one-to-one remedial work.

This program seemed sufficient until the 1980-1981 academic year when a surge in the demand for tutorial assistance was experienced. Part of this surge may be explained by the fact that the Student Affairs Committee made tutoring mandatory rather than optional in some instances. Over the course of that year, the authors provided a total of approximately four hundred hours of individual tutoring to first-year students. It became obvious that this system of individualized tutoring was inadequate and uneconomic.

The authors felt that by restructuring the tutorial program to include group

review sessions in certain subject areas a number of these inadequacies could be eliminated. A major problem with the then current system was that students were being referred for tutoring late in the term, only after they were in serious academic trouble. The students then were required to review the course material presented earlier in the term while attempting to keep pace with the information being presented later in the term. This was an extremely difficult task for students whose inability to budget their studying time and inefficient study skills had led them into academic trouble to start with. The authors believed that if weekly review sessions were available throughout the course of the term, these students would have the opportunity to receive additional help prior to falling into academic difficulty. In other words, revising the tutorial program in such a manner would provide preventive rather than ameliorative academic assistance.

Another problem with the individualized tutoring system was the lack of time and cost efficiency. This became more apparent as the demand for tutoring increased. As the tutors were frequently reviewing identical material to different individuals, they began to consolidate students into small groups for review sessions. This allowed the tutors to provide assistance to a greater number of students and allow more time for those students who were in dire need of additional individual attention. The economic benefits to this arrangement are obvious: it is more cost effective to pay for a few hours of group tutoring than to pay for many hours of individual tutoring.

The students' responses to the group review sessions were generally favorable. Group reviews made the students aware that they were not alone in their need for assistance; this also tended to diminish their fear of being stigmatized because they were being tutored. The group reviews also began to attract students who were not in academic trouble (in fact many of these students were doing remarkably well in school), but used these sessions as a means of reinforcing the material and regulating their studies. This further reduced the stigma attached to receiving tutorial assistance.

Phase I

In light of these observations, a formal proposal calling for a restructuring of the school's tutorial program was submitted to the dean of students in March,

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Catherine Hines, O.D., is a primary care resident at the Pennsylvania College of Optometry, Philadelphia.

Hyman R. Kamens, O.D., is professor of optometry and dean of student affairs at the New England College of Optometry.

1981. This proposal, encompassing the use of both group and individual tutoring, was accepted and funds were appropriated.

The courses slated for formal group review sessions under the proposal were geometric and visual optics, ocular anatomy and neuroanatomy. The courses were selected for several reasons. These subject areas, all of which are inherently difficult, comprise a significant part of the foundation of optometric education; subsequent courses require a strong background in these areas. These courses were also the source of many of the problems experienced by first-year students in the previous year. Many of the students who had trouble in one of these areas also had difficulty with the other areas. The authors believed this to be due to the fact that these courses require

tutors were provided with copies of faculty lecture notes and course materials in order to synchronize the presentation of material. The faculty also maintained open communication regarding students they felt required additional help, keeping in mind professional ethics of confidentiality. This cooperation was crucial to the success of the program as it insured that students would receive help early in the term.

At this time, the Student Affairs Committee also became more aggressive in the early detection and resolution of academic problems. The committee required tutoring following poor performance on midterm examinations or earlier in the term if there was a reason for concern. If a student was not attending the sessions and performed poorly on an examination, the student's attend-

The four courses identified previously were by no means the only ones in which students experienced problems, but they were by far the most frequent. Over the course of the year students required help in eight other courses. In instances where more than one student requested aid, informal group sessions were organized. If only one student required help in a given subject area, individual tutoring was provided.

Subjective feedback obtained from students, faculty and the administration has been positive. Perhaps the most reliable indication of success was the reaction of the students. The program was presented to the first-year class at the beginning of the year as an integral part of the academic curriculum. With the program presented in this fashion, most students did not hesitate to request tutoring when they felt the need and the majority did so prior to falling into academic trouble. Judging by these responses, much of the emotional stress of seeking aid seems to have been alleviated. Unfortunately an objective method for the quantitative analysis of the tutorial program was not instituted during Phase I. However, with the evolution of the program into its second year, a system of record keeping has been implemented which will allow for a thorough correlational analysis in the future.

Phase II

The success of this year's tutorial program has led to a proposed expansion of the service for the upcoming academic year. This expansion is due to the large number of students taking advantage of the program necessitating an increased number of tutors to meet the demand. It has been proposed that the program be expanded from two to four tutors, each of whom would be responsible for group and individual tutoring in their area of expertise. These four positions would be divided as follows:

1. Group Reviews:

- a. Geometric and Visual Optics
- b. Ophthalmic Optics

Individual tutoring associated with the above.

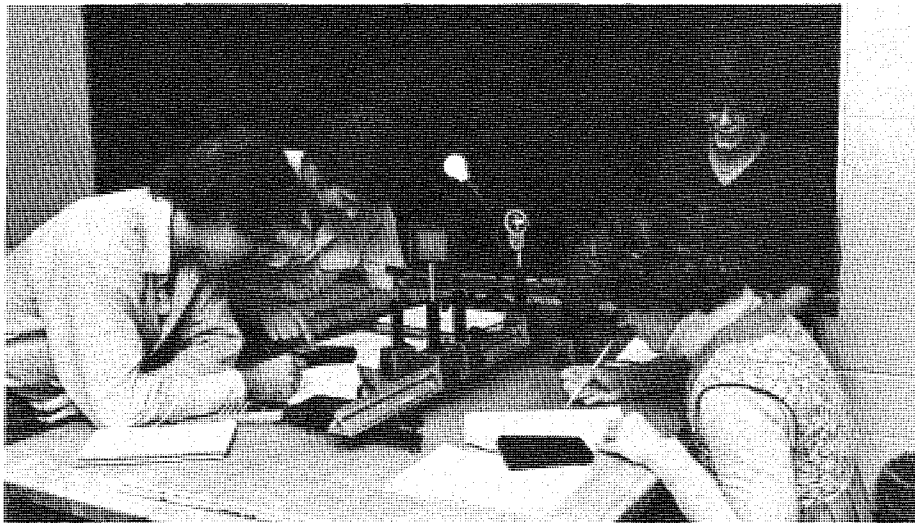
2. Group Reviews:

- a. Anatomy
- b. Neuroanatomy

Individual tutoring associated with the above.

3. Group Reviews:

- a. Physical Optics



similar skills, such as the ability to conceptualize three dimensionality and an understanding of spatial relationships. These types of mental activities are objectively measured in the quantitative analysis section of the OCAT. Correlational studies of the first and second-year students, at the New England College of Optometry, have indicated that this section score is the best objective predictor of failure in the areas of optics, ocular anatomy and neuroanatomy. Of the students who received a grade of D or F in optics courses, eighty-two percent had an OCAT QA score of fifty or less. Sixty-two percent of those first-year students who received a low grade in their first quarter of optics also received a D or F in neuroanatomy.

The first-year faculty members provided full cooperation in the coordination of the weekly review sessions. The

ance became mandatory as required by the Student Affairs Committee. If the student was attending the reviews and failed, individual tutoring was provided. Students' requests for individual assistance in these areas were always honored on the condition that the student attend the weekly review sessions on a regular basis.

The number of students attending the group reviews ranged from approximately six to twenty-five (class size of ninety-two). The actual number attending each session varied depending upon the proximity of exams and the difficulty of material being covered that week. As expected, the quality of the students attending varied considerably, ranging from the students in academic difficulty to students in good academic standing who merely wished to reinforce the faculty lectures.

Individual tutoring associated with the above and other areas as needed.

4. Individual tutoring in diverse areas as needed. This position supplies those areas not covered by weekly reviews.

This arrangement is of course designed to meet the curricular needs of the New England College of Optometry. Changes would have to be made according to the curricular demands at other institutions.

Other proposed revisions in the program include the addition of an educational counselor and a stronger delineation of the responsibilities of those involved. The proposed arrangement is illustrated in Figure 1. Under the arrangement, the dean of students is responsible for the coordination of the tutorial service and the facilitation of information flow. An educational counselor would be available to help students analyze and enhance their study habits, as well as handle the emotional issues faced by many students with academic difficulties. The Student Affairs Committee, which exercises the ultimate decision as to a student's academic status, would receive input from the dean of student affairs, the educational counselor and, if possible, from the tutors prior to deciding upon a course of action for a particular student.

Selection of Personnel

The success of a program such as this depends to a large extent on a careful selection of the tutors. The students selected for tutoring responsibilities should be prepared to deal with both the academic and emotional demands of the position. Due to the range of subject areas requiring tutorial assistance, the tutors, while having a singular area of expertise, should be flexible in their knowledge and able to cross-reference course material.

It should be realized that tutoring is not simply a matter of conveying information. Emotional issues often prevail when dealing with the student in academic trouble. In this realm, the tutor often acts as a communication link between the student and the administration, or simply as a source of support and sympathy.

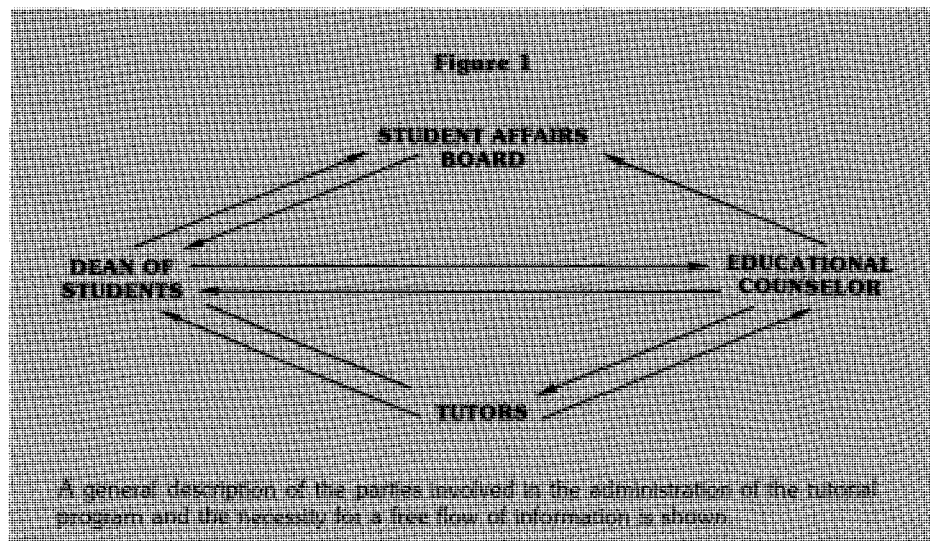
The position of tutor has inherent advantages and disadvantages. The position provides valuable teaching experience for students interested in pursuing a career in academe and previous learning is greatly reinforced as extensive review of the course material is neces-

sary for effective tutoring. A tutoring position also provides the student with a source of financial support.

A disadvantage to the position is the poor timing with which the demand for tutoring arises. The greatest demand occurs just prior to midterms and final exams and may therefore be disruptive to the tutor's own studies. The intense demands placed upon the tutor has on occasion elicited speculation as to the wisdom of using students as tutors. The most frequently expressed alternative is to have faculty members responsible for tutoring their own courses. In many instances, however, a student's difficulty with course material arises from the style in which the information is presented. It is extremely advantageous for the student to have the same material conveyed in a different manner, from another perspective. Another student

to the tutorial service on the part of the students has been enthusiastic and it is evident that a void has been filled.

In the filling of this void a word should be directed to program cost. At present, the tuition at the New England College of Optometry is nine thousand dollars. The total cost for the delivery of the program, as described in Phase II, is less than one-half the cost of one student's tuition. As we have several students who attribute their continued study of optometry to aid provided by the service, the authors feel the service is more than worth its cost. It also should be noted that the tutorial program has served to strengthen the information base of students who, while not in trouble, have chosen to participate in the review sessions. This only can have a positive impact on their future roles as professionals. □



who recently has been exposed to the material may be able to provide new insights and devote more time to the problem than the faculty member.

In order to insure quality tutoring and a cohesive program, it is desirable to reimburse the tutor well in order to maintain his/her services. This encourages the tutor to maintain involvement in the service for more than one year creating a continuity of personnel which is extremely valuable to those requiring help.

Conclusions

With the implementation of the tutoring program, the authors feel as though a large need or demand has been met. Whether the demand has evolved only recently cannot be determined, nor is it important. In either case, the response

Acknowledgements

The authors would like to express their thanks to Dr. Roger Wilson and the Student Affairs Committee for their encouragement.

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A Programmed Course in Geometric Optics

H. Matthews, O.D., Ph.D.

John Jones, Ph.D.

Two years ago this journal contained a stimulating, instructive article describing a programmed course for teaching the optics of the eye.¹ The course was organized on the basis of the Michael's Group Remediation System. The main components of this system are:

1. The course material is divided into a sequence of units. For each unit students are provided with written resource material which replaces the traditional lecture presentation.

2. There are two kinds of class sessions:

a. Quiz sessions in which students take written tests.

b. Discussion sessions, to which students bring problems they have encountered in the written material.

3. The sequence of classes is:

a. Students receive written resource material, which they study.

b. Discussion session, based on the written material, and particularly any problems students have encountered.

c. Quiz.

d. Remedial discussion session for students who have not reached a specified mastery of the material. (Students who have reached the

specified mastery go on to study the next unit.)

e. A second quiz for those who "failed" the first time, after which they too go on to the next unit.

There appears to be a number of advantages associated with this scheme. When the course intends teaching a standardized body of information, programmed tutoring seems a more rational approach than traditional lecturing. The quizzes expose the type and amount of difficulty students are experiencing, and these can be addressed before the next unit of work is presented. The written materials clearly define the curriculum boundaries for the students, and course grades can be arranged to correlate closely with the amount of material a student learns. Developing such a course seems well worth the effort involved, and encouraged by this consideration, a ten-week course in geometric optics was prepared according to the Michael's System. The twelve students taking the course were in the first-year optometry class at the University of Auckland.

The Course Structure

The Michael's System requires that written material be issued each week. This material provides instruction, sets the goals for each week's work, and "programs" the course mechanically and psychologically.

An excellent textbook is available for a course in geometric optics, and this

was used as the basis of the course material.² (The acceptance of Fincham and Freeman's *Optics* is evidenced by the appearance of the ninth edition in 1980.) The first ten chapters were used as the material for the ten-week course on geometric optics. Each weekly unit of written material consisted of a chapter from the textbook together with a study guide relating to that chapter. The study guide suggested which sections of the chapter should be given the most emphasis, specified exercises to be attempted, contained "motivational" material, and commented upon certain sections. An example of a weekly study guide is shown in the Appendix.

The class met for one hour, four times each week, beginning with a Monday tutoring session devoted to answering students' questions, discussing assigned exercises and examining the detail of important topics. On Tuesday all students took a quiz, which was graded for the students to pick up on Wednesday. An optional tutoring session was held on Thursday, aimed mainly at students who had not demonstrated mastery of the unit material on the Tuesday quiz and were therefore invited to take a remedial quiz on Friday.

Attendance at both the discussion and remedial sessions was high, and students occasionally attended the optional session even though they had passed the initial Tuesday quiz. (On one occasion a student even took the second quiz although he had demonstrated

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his competence on the first.) By the end of the third week the students had revealed their individual aptitudes for the subject matter and could be divided into two approximately equal groups: those who usually passed the first quiz and those who mostly did not. With one exception, this division remained constant throughout the course.

Most of the students taking the course were in their second year at the university level; but several had more experience of higher education and one student already had completed a bachelor's degree in zoology. There was further variation in students' entry qualifications and their previous exposure to optics. Students' mathematics preparation was varied also, and in some cases minimal: no student previously had taken calculus. All the students had some previous acquaintance with optics, during a general physics course if nowhere else. However, it was several years since some students had taken the subject, while others had taken it in the previous year.

The program coped well with the diversity in students' backgrounds; indeed, this is one of its main strengths, in comparison with the uniformity of the procedures associated with the usual lecture format. Students knew quite precisely what they were required to accomplish, and the quizzes provided feedback as to whether or not they had achieved these goals. The optional tutoring session (following the first quiz) turned out to be a very efficient and effective remedial session. Students knew precisely the topics they needed help to master and the instructor knew, with a similar precision, the topics which needed to be reviewed and perhaps presented differently.

The weekly quizzes were graded according to the scheme suggested by Christensen and McKittrick.¹ A student can earn a total of 10 points for each

unit by receiving 80% or more on the first quiz or earning 50% on the first quiz and 80% on the second. Otherwise, a student earns less than 10 points on that unit. Consequently, a maximum score of 100 points can be earned for the 10 units. These constitute 50% of the final course grade, which is obtained by weighted average with laboratory assignment scores 25%, and a final exam score also 25%.

By the end of the units the average score was 94.7 points; three students had earned 100 points. This geometric optics course is one-half of a two-term course in optics. Assessment of laboratory work and a final exam will be obtained at the end of the second term.

The overall reaction to the course was quite favorable. Students found the course structure highly motivating and responded very positively to a question which asked them to rate the structure in terms of its efficiency for learning the material. The key question asked was, "Given the subject matter, how do you feel about this course as a way of presenting it?" All of the students rated it as "excellent" or "good." At the session during which they completed the evaluation forms, students also participated in a structured group discussion based on Northedge's pyramid system.³ This procedure operates as follows:

A. Students complete the forms individually.

B. They swap forms with a neighbor and, in pairs, discuss points of similarity and difference for a few minutes.

C. The pairs then coalesce to form two groups who take about fifteen minutes to identify the main strengths and weaknesses of the course.

The conclusions of the two groups were used to generate a plenary discussion. The main strengths cited by the groups during this discussion were:

1. The system takes the pressure off final exams at the end of the course;

students know that by working diligently they can put themselves in a position where they are guaranteed a passing grade. The "lottery" aspect of a final exam disappears.

2. The system makes students work harder, but they feel they are learning a great deal more as a result. The regular tests are a powerful motivator.

3. Students do not waste a lot of time making copious notes during lectures.

4. The system guarantees that the weak points of students' understanding are exposed—and that remediation is available.

5. The system is orderly, and helps students organize their total workload.

The principal (and the only real) demerit the students saw was the short amount of time between the Monday tutorial and the Tuesday quiz: it did not allow them enough time to clear up their individual difficulties.

The student evaluation should be seen in the context of two important factors. First, all their other courses are traditional lecture courses, which predominate at their university; and secondly, these students have an unusual—even an unreasonable—workload of 32 class contact hours. In spite of the unfamiliarity and the out-of-class study load it imposed, they responded favorably.

At the end of the course students were asked about the course structure they would prefer for a course in physical optics they were to receive. They opted unanimously for a similar structure. □

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2. Fincham WHA, Freeman MH. *Optics*, ed 9. London, Butterworth, 1980.
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Appendix

Weekly Study Guide—Example

Unit 7

GOAL and PRIORITIES

Fincham & Freeman, Chapter 9, Lens Systems and Thick Lenses—Elementary.

Emphasize: Sections 9.1, 9.2, 9.3, 9.4, 9.5, 9.6

Study: Section 9.7

Exercises:

Easier: Chapter 9—2,6,9,12,13,16,20,24,35,35,36

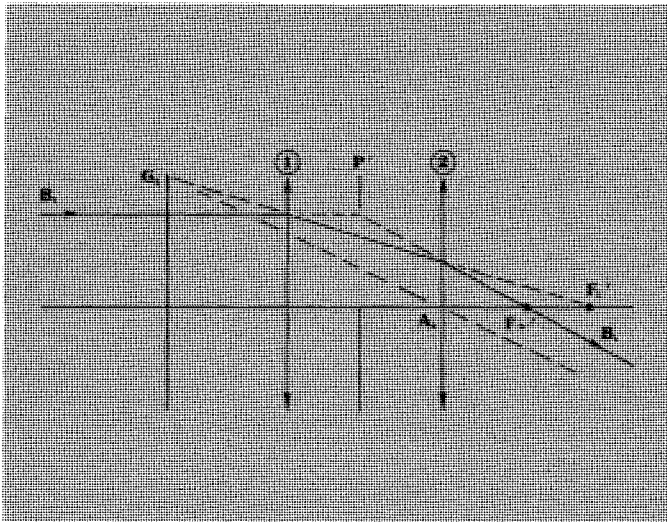
Harder: Chapter 9—28,30,38,39,43,35

Why: Ophthalmic spectacles and contact lenses are thick lenses as used. The eye is a lens system. The eye together with a spectacle lens or a contact lens forms another lens system. You will not use all you learn here daily in your

optometric work, but you need to understand the material in this unit to study physiological optics, and to understand some of the more technical articles in the optometric literature.

Section 9.2

There is only one equivalent thin lens, but its location for light incident on the system is not the same as its location for light emerging from the system. A simple construction finds it. Refer to Figure 9.1.



Direction of the ray after refraction by lens 2 is found by applying rule (e) in Sec. 6.15 on page 98. To wit, all rays proceeding from a point in the first focal plane of a lens are parallel after refraction. Thus:

- (1) After refraction by lens 1, the ray B_1 appears to come from a point G_2 on the 1st focal plane of lens 2.
- (2) There is a ray from G_2 that passes through A_2 . Because A_2 is not deviated therefore its direction after refraction is known.
- (3) Ray B_1 is parallel to it after refraction by lens 2.
- (4) The intersection of ray B_1 with the optic axis locates the 2nd focal point of the system.
- (5) The location of the equivalent lens for emergent light is found at the intersection of incident B_1 and emergent B_1 .

A similar construction finds the focal point and equivalent lens position for incident light.

Refer to the paragraph on nodal points mid page 140. The first sentence would be better if written . . . "Two further points on the axis can be found for any system. These points are the 'nodal points.' An incident ray directed toward the first, leaves the system as though from the second and with its direction unchanged."

Section 9.3

Note also that the ray QN incident on the first nodal point emerges as though from the second and without deviation. The nodal points are coincident with the principal points when the system is surrounded by the same media, air for instance, and the media between the lenses is uniform.

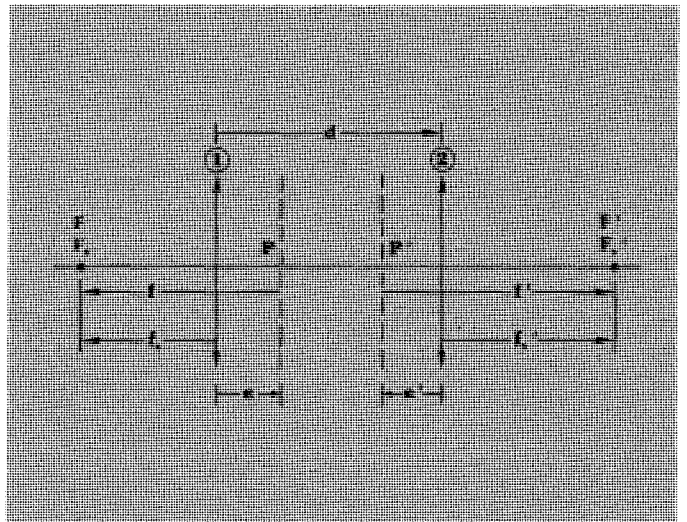
Spectacle lenses are specified by back vertex power, i.e. R + 2.00 sph means the lens for the right eye is spherical with a back vertex power of + 2.00 D.

Refer to the first paragraph beneath Figure 9.4. To get the

first statement of the derivation for equivalent power, notice that f_1' is the distance A_1F_1' , i.e. the 2nd focal length of the first lens. From similar triangles $A_2D_1 = 1$. Rearrange, and then remember $F_1 = -n_1/f_1 = -1/f_1$ to get $A_2D_2 = 1 - dF_1$.

Careful study of Figure 9.5 will help learn the names of the players on the two teams. Thus the first lens is at A_1 ; the first principal plane is at P, distance e from A_1 ; the first focal plane is at F, distance f from P.

Two Thin Lenses in Air—Summary



Power of equivalent lens	$F = F_1 + F_2 - dF_1F_2$
Position of incident light	$e = dF_2 / F$
Position for emergent light	$e' = dF_1 / F$
Back vertex power	$F_v' = F / 1 - dF_1$
Front vertex power	$F_v = F / 1 - dF_2$

Section 9.5

This section is important for optometrists because as used ophthalmic lenses and contact lenses are thick lenses when the back vertex power is ± 4.00 D or more. For instance consider a spectacle lens with $F_1 = +10.00$ D, $F_2 = -6.00$ D, $d = 2$ mm.

Considered a thin lens $F_v' = F = +4.00$ D. But considered a thick lens, $F_v' = +4.13$ D.

Be sure to notice that the formulas for two thin lenses in air and for a thick lens in air are the same if you use the reduced distance d/n .

Section 9.6

The important statements in the last three paragraphs show the value of the equivalent lens concept.

For two thin lenses in air or for thick lenses in air the principal points and nodal points coincide. They do not coincide when the two thin lenses or the thick lens separate different media; for example, the eye.

Section 9.7

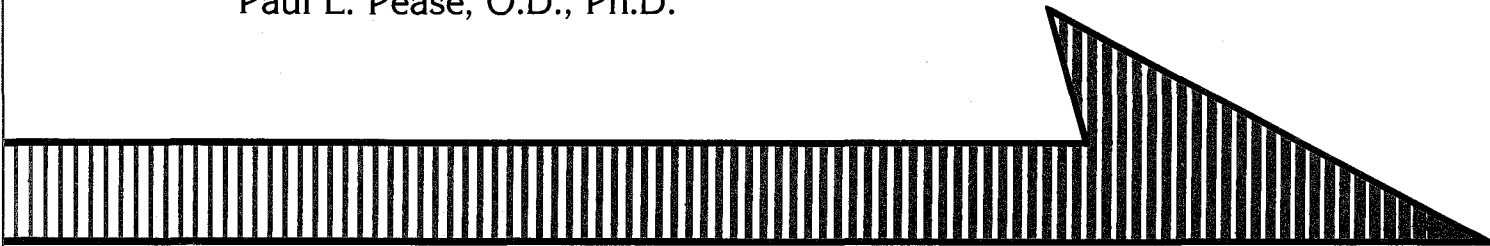
I enjoyed reading this section; perhaps you will too.



The Accelerated O.D. Program:

The Two-Year Program After Ten Years

Paul L. Pease, O.D., Ph.D.



Background

In the summer of 1972, the New England College of Optometry instituted a new curriculum,* the Two-Year Program, which provides accelerated optometric education leading to the O.D. degree for qualified candidates with a Ph.D. degree in the sciences. The initial impetus for the program derived from the abundance of highly qualified applicants to the four-year program and the then apparent shortage of optometric educators and researchers. At the same time, an experimental three-year program for those matriculants holding an M.S. degree was initiated. There were only two entering classes to the three-year program when it became apparent that the number of matriculants in this program was too large to make small, accelerated classes feasible. The two-year program has, however, continued without interruption since 1972. This report is a summary of the first ten years of the program: classes entering in the period from 1972 to 1981.

The program is administered by a program director and an Admissions Committee which has had a variable sized membership (three to six faculty members). Each class has entered in either June or early July and continues for eight consecutive quarters compared to the total of twelve quar-

*Drs. William R. Baldwin and John H. Carter were responsible for the initial planning and Dr. Norman E. Wallis served as the program's first director. The program is now directed by Dr. Depew Chauncey.

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ters of enrollment for the four-year program. The two-year program is supported internally from college resources and tuition income. Funding for support of the program from external sources has not been obtained successfully.

Admissions

General admission data for the ten classes is summarized in Table 1. The admissions data for the first five years of the program are incomplete; however, for the last five years an average of 162 inquiries and requests for applications were received. During the same period, there were averages of 24 completed applications and 13 students accepted into the program. The admissions data are quite variable, perhaps reflecting to some extent the level and quality of recruiting and advertising that the two-year program has received.

The Optometry College Admission Test (OCAT) is required of all applicants. The successful applicants typically have performed well in the section of the OCAT exam that either is in, or closest to, the applicant's field of specialty. On the other hand, it is not uncommon for the applicants to achieve rather low scores on the OCAT exam in the areas that are more or less remote from the area in which they hold a Ph.D. A statistical analysis of OCAT performance and progress through the program has not been attempted both because of the small number of students and because grades, other than pass/fail, have not always been assigned. In addition to the OCAT, the only other formal requirement for admission is that the applicant must hold an earned doctorate or equivalent in one of the biological, behavioral or physical sciences. No prerequisite

TABLE 1
Data Concerning Applicants for the First Ten Classes in the Program

	Classes (Year Enrolled)									
	1 (1972)	2 (1973)	3 (1974)	4 (1975)	5 (1976)	6 (1977)	7 (1978)	8 (1979)	9 (1980)	10 (1981)
Number of:										
Inquiries	—*	—	—	—	—	113	322	159	130	85
Completed applications	—	—	—	—	27	24	27	36	21	13
Students accepted	—	—	—	—	14	10	11	20	15	8
Students enrolled	11	12	5	9	11	8	7	9	10	3

*Insufficient data available.

courses are required, though, on occasion, remedial study is recommended for those lacking background course work in certain basic sciences.

In reviewing the credentials of applicants, the admissions committee examines the level of academic and professional achievement and motivation for an optometric career. In addition to an interview, all applicants are required to have at least two confidential reports submitted. Those completing these reports are apprised of the nature of the academic demands of the program and the fact that experience has shown that the program can be very stress-

ful intellectually, emotionally and financially. The stresses are relatively greater for those entering the two-year program than those entering the four-year program because of a number of contributing factors including the personal adjustment to the career change, a change in the standard of living, typically a greater responsibility to family life, and the impact of returning to student status. Those entering the two-year program, especially those with backgrounds in the physical sciences, are typically perplexed with the rote aspects of the curriculum, and the memorization of a large amount of material in a relatively short period of

TABLE 2
Data Concerning Students Enrolled in the Ten Classes

	Classes (Year Enrolled)										Totals
	1 (1972)	2 (1973)	3 (1974)	4 (1975)	5 (1976)	6 (1977)	7 (1978)	8 (1979)	9 (1980)	10 (1981)	
Number of Students											
Enrolled (Women)*	11(0)	12(0)	5(1)	9(1)	11(1)	8(1)	7(1)	9(0)	10(1)	3(0)	85(6)
Foreign Nationals Enrolled	4	4	0	1	1	1	0	2	3	1	17
Withdrawn	0	1	0	1	0	0	0	0	1	—	3
Dismissed	0	0	0	1**	1	1	0	1	1	—	5
Graduated	11	11	5	7	10	7	7	8	8	NA	74
Delayed Graduation	0	0	0	1	2	1	0	0	0	NA	4
Age of Students											Mean
Average	34	34	39	39	39	38	37	35	35	40	37
Range	29-40	28-40	32-52	33-52	27-54	29-48	31-45	28-46	27-46	30-50	27-54
Number of Years Elapsed Between Award of Ph.D. and Matriculation											Mean
Mean	4.1	3.0	9.4	9.1	6.8	7.2	6.6	4.4	6.3	7	6.4
Range	0-8	0-5	5-21	4-18	1-16	0-13	2-10	0-13	0-14	3-12	0-21

*Entry in parentheses indicates the number of women that comprise the total of each class.

**Readmitted to class entering 1976.

time. This is not unexpected of an individual who most often has dealt with abstractions and has a concern for understanding underlying principles rather than what, at first, appears to be a long list of unrelated facts. The first few weeks of the program represent a period of significant adaptation for the student in the two-year program.

Students

Data concerning the students enrolled in each of the first ten classes are summarized in Table 2. In this period a total of 85 students have enrolled in the program which, to date, has graduated 74 (69 men and 5 women). Eight have left the program (5 were dismissed and 3 withdrew) for an attrition rate of 9.4%. Nine are currently enrolled: 3 in their second year and 6 (not identified in the table) in their first year. The average age of the students at the time of matriculation was 37 years with a range of 27-54.

The number of years elapsed between earning the Ph.D. and matriculation averaged 6.4 years (range: 0-21 years) with the greatest number of matriculants (33) entering between 3 and 5 years after earning their Ph.D. The original fields of specialty for those enrolled is shown in Table 3. It can be seen that the largest group (22/85) are physicists though the majority of students come from the biologic sciences. Table 4 shows the immediate previous occupation of the students. About 38% (32/85) were faculty members, 24% (20/85) entered immediately after completing their graduate studies.

TABLE 3
Original Field of Students

Field	Number
Physics	22
Psychology	15
Biochemistry	12
Biology	12
Chemistry	6
Biomedical Science (Biophysics, Nutrition, Immunology)	6
Engineering	4
Physiology (Zoology)	4
Anatomy	2
Anthropology	1
Dentistry	1
Total	85

Curriculum

The requirements of the program are completed within twenty-four months which involves eight consecutive quarters of attendance. Presently there are two extended vacation periods, each for two weeks, occurring in July and December. In the first few years of the program, the schedule and the curriculum for the two-year program generally was separate from the regular four-year program. In the early years much more reliance was placed

TABLE 4
Previous Occupation of Students

Activity	Number
Teaching	32
Non-university Research	20
Post-doctoral Research	13
Graduate Student	9
Administration	5
Self-employed	2
Other	2
Total	85

upon students achieving curricular goals through independent study and assigned seminars. This pattern is now very different: the schedule for both the two-year and four-year programs are in phase with each other and nearly 40% of the classes in the two-year curriculum are taken jointly with those enrolled in the four-year program. An outline of the curricular content indicating the overlap with the four-year curriculum is presented in Table 5. The content of the curriculum is essentially the same as that in the four-year program, though certain courses proceed at a more rapid pace. The increase in pace is accomplished by truncating the laboratory sessions that appear in the four-year sequence and by placing a greater reliance on independent acquisition of knowledge and use of library resources. It is presumed that students in the two-year program already will have gained some of the general didactic goals of the four-year curriculum as a result either of their graduate study or professional activity. In fact, some of the students qualify for course exemptions.

Students in the two-year program spend the same number of clock hours in clinical rotations as do the students in the four-year program. The two-year students enter the clinic at the beginning of their second quarter which, after only one quarter of instruction, provides very little time for the students to assimilate the meaning of the various testing procedures they have learned. Thus, they proceed by rote which is particularly bothersome to those having scientific training and experience. While the students are understandably annoyed during their first rotation, it is nonetheless of value for the students to have the opportunity to work with patients and to develop their abilities and confidence with regard to interpersonal communication. Gradually, through their first year, they gain a fuller understanding of the meaning and value of the procedures they have been using and by the end of the first five quarters have spent as much time in the clinic as the student completing the third year in the four-year sequence. While the clinical clock hours are comparable in the two programs, the two-year students lack the obvious benefits of spreading their clinical experience over time which, to some extent, compromises the quality of their clinical experience. There is also precious little time to remediate any identifiable weaknesses. During the last three quarters of

the curriculum, students in the program take identical courses and clinical rotations as those in their fourth year of the four-year program: two full quarters (fall and spring) of clinic rotation and one quarter (winter) of classroom instruction.

Graduates

There have been 74 graduates of the program (see Table 2): the 8 who graduated in 1982 are presently seek-

ing positions. Of the 66 graduates of the first eight classes, 37 (56%) are principally engaged in the practice of optometry, 20 (30%) have teaching/research positions, 1 is working in the ophthalmic industry, 1 has continued to study for another advanced degree, and 1 is chief of the Optometry Service for the Veterans Administration. The remaining 6 graduates either have returned to their original profession, are self-employed in a profession other than optometry, or are presently unaccounted for. Some of

TABLE 5
Curriculum Outline for the Academic Year 1980-81

FIRST YEAR CLASS

Course	Hours/Wk.
Summer Quarter	
Geometric Optics	4
Visual Perception & Psychophysics	4
Ocular Anatomy	5
Biochemistry & Molecular Biology	4
Optometry	6
Optometric Procedures Lab	6
Fall Quarter	
Visual Optics	3
Physical & Modern Optics ²	3
Ocular Myology ²	2
Systems Physiology	1½
Refractive & Accommodative Anomalies ²	3
Ocular Disease ³	3
Clinical Medicine for Optometrists ³	3
Intro. to Clinical Practice	8
Optometric Methods Lab	2
Winter Quarter	
Ophthalmic Optics	4
Visual Perception & Visual Stimuli	3
Neuroanatomy ¹	4
Pathophysiology ¹	3
Ocular Disease ³	3
Clinical Medicine for Optometrists ³	3
Intro. to Clinical Practice	8
Optometric Methods Lab	2
Spring Quarter	
Ocular Physiology	3
Microbiology, Immunology & Genetics ¹	3
Patient Interviewing & Counseling ²	1
Sensory & Motor Anomalies ²	3
Neurophysiology of Vision	3
Counseling Psychology	3
Anomalies of Binocular Vision ²	4
Basic Clinical Practice	12
Photographic Lab	2

SECOND YEAR CLASS

Course	Hours/Wk.
Summer Quarter	
Contact Lens Theory & Methods	6
Pharmacology	5
Development of Visual Perception	2
Rehabilitative Optometry	2
Applied Ocular Pharmacology	1½
Pediatric Optometry	3
Visual Space Perception	4
Developmental & Abnormal Psychology	3
Advanced Clinical Practice	10
Fall Quarter	
Contact Lens Clinical Practice	8
Clinical Rotation*	32
Pediatric Clinical Practice	
Rehabilitative Clinical Practice	
Interdisciplinary Clinical Practice	
Pediatric/Rehabilitative Clinical Practice	
Winter Quarter**	
Ocular Health Assessment/Emergencies	3
Visuo-Neural Dysfunction	2
Selected Readings in Optometry	2
Current Developments in Optometry	2
Health Care Quality Assurance	2
Practice Management	4
Health Education & Counseling	3
Geriatrics	1
Spring Quarter	
Contact Lens Clinical Practice	8
Clinical Rotation*	32

NOTE: Superscripts (1-4) indicate classes that two-year students take jointly with students in the four-year program and correspond to each of the four years.

*Students select one of the listed clinical rotations. The same options are available during the clinical rotation in the spring quarter.

**All classes during the winter quarter are taken with the fourth-year students.

those in private practice have had, or still have, a part-time teaching position at a school or college of optometry. Eighteen of the 20 who hold full-time teaching/research positions are affiliated at twelve different schools or colleges of optometry (eight U.S. and four foreign); 1 of these graduates is the dean of the School of Optometry, University of Benin, Benin City, Nigeria. The remaining 2 who hold teaching/research positions have appointments within departments (Ophthalmology and Pediatric Neurology) at Harvard Medical School.

Discussion

One of the principal goals of the two-year program was to provide a vehicle for redirecting the careers of qualified scientists into teaching and/or research within the optometric profession. In this regard, the program most certainly has been successful with 30% of the graduates of the first eight classes now holding full-time positions in teaching/research and even a slightly higher percentage (approximately 33%) when one considers in addition those now employed as part-time faculty. There are, of course, additional benefits: the program offers an opportunity for qualified individuals to obtain optometric training in a relatively short period of time and hence provides an attractive option for those wishing to leave a career in the sciences; the program also serves to infuse the profession with individuals having advanced qualifications and experience in diverse fields.

The two-year program at the New England College of Optometry is unique to optometric education and at its inception was only one year behind a similarly designed two-year program at the University of Miami School of Medicine.^{1,2} There are apparently no other formally established programs within the health professions for Ph.D.'s to obtain their credentials at an accelerated pace though the University of Pennsylvania Dental School did have an experimental two-year program that entered one class of Ph.D.'s in 1973.

In the early seventies, when these programs began, there was a large number of applicants to the schools and colleges of medicine and optometry. The large applicant pools were attributed, in part, to a national trend of students turning away from the sciences toward careers in the health professions. It is quite likely that the success of the accelerated programs in attracting qualified applicants occurred for the same reason. The situation is now quite different: careers in the health professions and in teaching/research have become less attractive. As a result, there has been increasing concern^{3,4,5} in the medical profession about potential shortages of appropriately trained physician/scientists. Optometry is similarly concerned about future needs and, at a national level* has begun to address

*The Board of Directors of the Association of Schools and Colleges of Optometry (ASCO) has established as one of its goals: "To identify and develop personnel and training programs for faculty and administrators in optometric education." (*J Optom Educ* Summer 1981; 7(1):26). The Research Study and Planning Committee of the American Academy of Optometry "is now assessing the extent to which current research meets the future needs of the profession of optometry." (*President's Newsletter, Am Acad Optom*, September 30, 1980.)

the issue. Whatever the outcome, the two-year program undoubtedly will be affected as it has played a significant role in meeting the academic needs of the profession.

While the two-year program has enjoyed a certain degree of success, there have been a number of factors, largely economic, affecting the program. In the early years of the program the financial burden on the students was lessened with in-house stipends that were provided for service. Some of these stipends were given to individuals who met some of the teaching needs at the college in both classroom and laboratory instruction and consequently benefited both the individual and the college. The present schedule of classes places a much greater burden on the students' time, and there is much less flexibility in scheduling than there was during the initial years. Stipends are still provided, but they now represent a much smaller percentage of the total financial burden that the students encounter. These financial pressures are unfortunately unavoidable because of the present inflation rate and the rising costs of education which have had a particularly large impact on the small independent college. In addition, the New England College of Optometry currently lacks any federally funded programs which in the past provided a significant part of the annual budget. Consequently, the College is now much more dependent upon tuition income than in the past.

The two-year program is now well established, and it is hoped that plans for improving the quality of the program will be effected. Efforts are underway to enhance the ability of the College to attract highly qualified applicants. For the class that entered in 1982, there was an increase by a factor of over three in the number of inquiries though only five more completed applications were received compared to the previous year. One can anticipate that there always will be a supply of Ph.D.'s desiring a career change and the opportunity to enter the profession of optometry. Because of their previous training in the sciences, graduates of the two-year program have the opportunity for unique and significant contributions. □

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Residencies at The Eye Institute of the Pennsylvania College of Optometry

Arthur H. Alexander, O.D.
Joann Klopfer, O.D.

A new breed of optometric education programs has evolved within the past decade. These advance study optometric residency programs focus on clinical training in the areas of low vision rehabilitation, pediatric optometry, visual training, behavioral vision, primary care optometry and hospital based optometry to a wide range of Veterans Administration (VA) or educational institutional settings.^{1,2,3} In general, the programs reflect a desire of recent professional school graduates to participate in a "form of professional education beyond the undergraduate level, offering special opportunities for advanced clinical experience and training."³

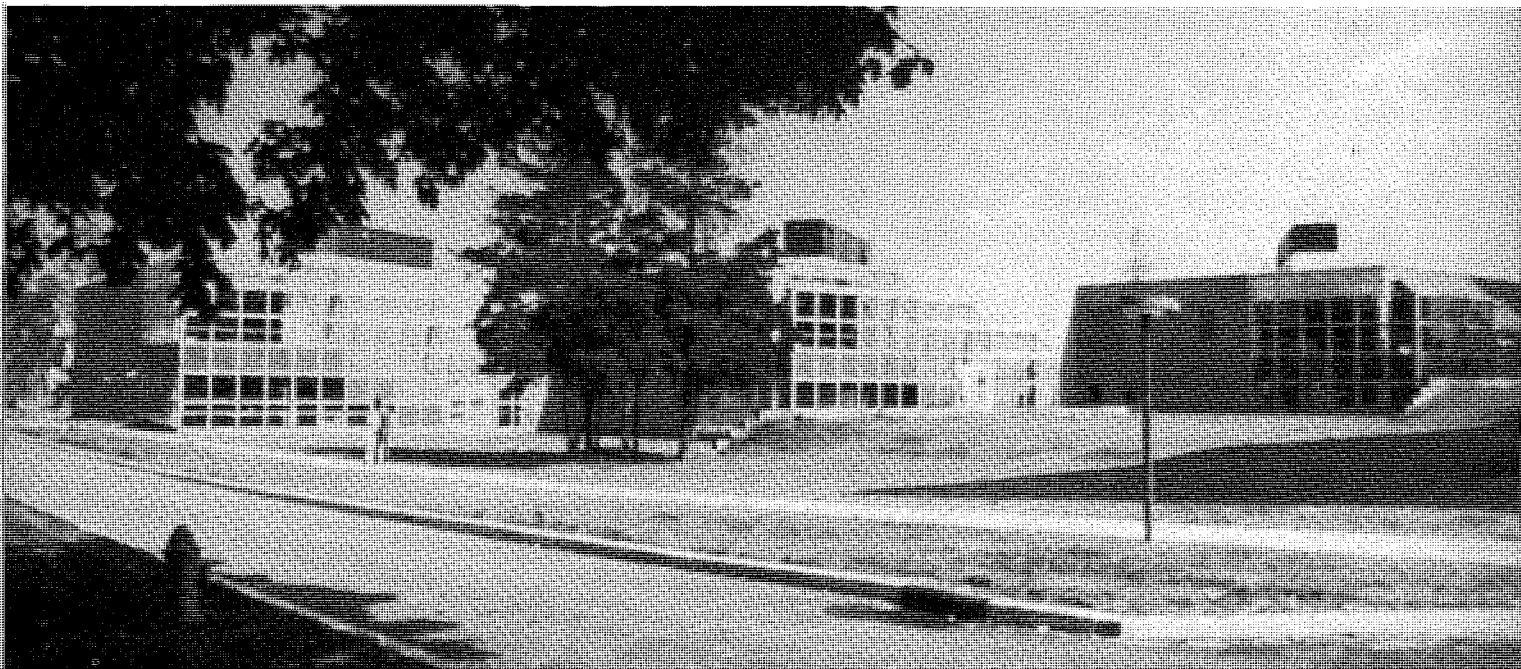
Because of a rapid increase in the scope of optometry, colleges of optometry have been seeking and utilizing external resources to expand their training programs.^{5,6,7} This has taken place for undergraduate and particularly postgraduate training programs.¹ Many of the institutions with which colleges of optometry have set up programs are medically dominated, such as VA medical centers, military health facilities and

public health hospitals. In addition, because of the limited scope of optometry practiced in some of these institutions, it is often necessary to establish additional rotations for residents and students outside the facility to which they are assigned to round out the programs.

This has resulted in excellent training programs. However, they are dependent on special agreements, interprofessional politics and government policies

for their existence. It would be a mistake for optometric educational institutions to become too dependent on external resources for postgraduate training since special agreements, politics, and government policy can change.

The Eye Institute of the Pennsylvania College of Optometry (PCO) has established several residency programs which produce clinicians of equal caliber to those found in medically dominated in-



The Eye Institute of the Pennsylvania College of Optometry.

stitutions. Our experience with the rapid growth of the low vision, pediatric and primary care residency programs at The Eye Institute indicates positive trends for optometric education and the development of excellent clinicians for the future.

Description of Facilities

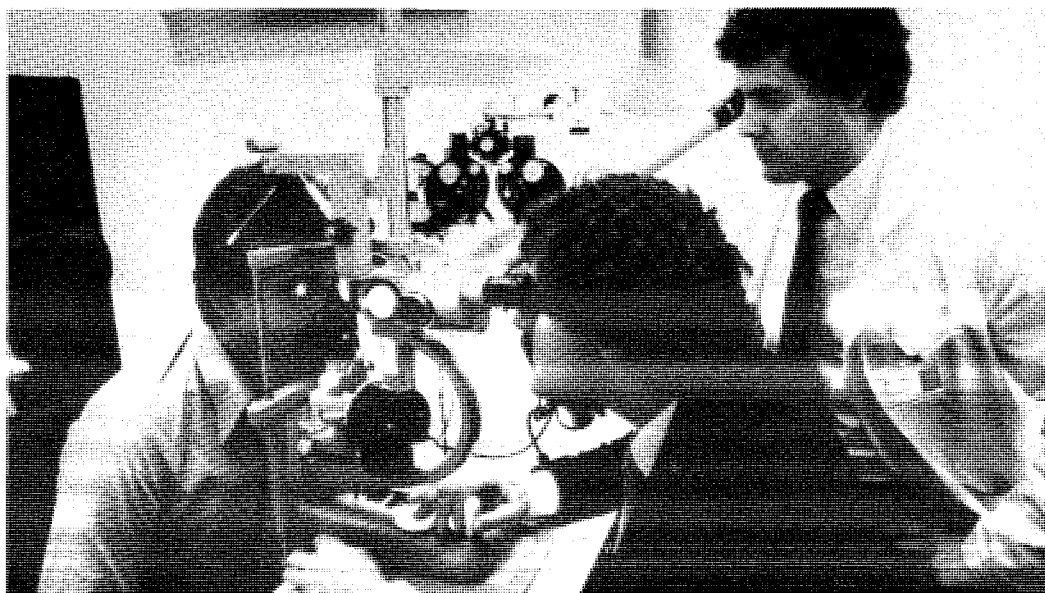
The Eye Institute is a full service eye care facility providing primary, secondary and some tertiary care. There are forty-four doctors on the staff including consultants in general ophthalmology, retinal and corneal disease, neuro-eye, family medicine, audiology, immunology, and special education. There are approximately fifty to sixty thousand patient visits per year of which about half are initial visits. The majority of patients are from low socioeconomic backgrounds, and there is a good mix of ages. A review of records shows that about four of every ten patients have some kind of ocular disease or disease related problem.

History

Residencies began at The Pennsylvania College of Optometry in 1974 when a pediatric residency was instituted under the direction of Dr. Jack Richmond. No expansion of residency programs at PCO occurred until 1977 at which time primary care residencies were begun with anticipation of moving into The Eye Institute in January of 1978. The first vision rehabilitation residency began in 1979 under the direction of Dr. Randy Jose. A well-defined administrative structure (Table 1) and curriculum (Tables 2 and 3) were established by mid 1980 and accreditation was granted by the Council on Optometric Education of the American Optometric Association in November of 1981.

Curriculum

The goal of the residencies at The Eye Institute is to develop primary care eye practitioners capable of diagnosis and management of a multitude of patient problems while emphasizing chil-



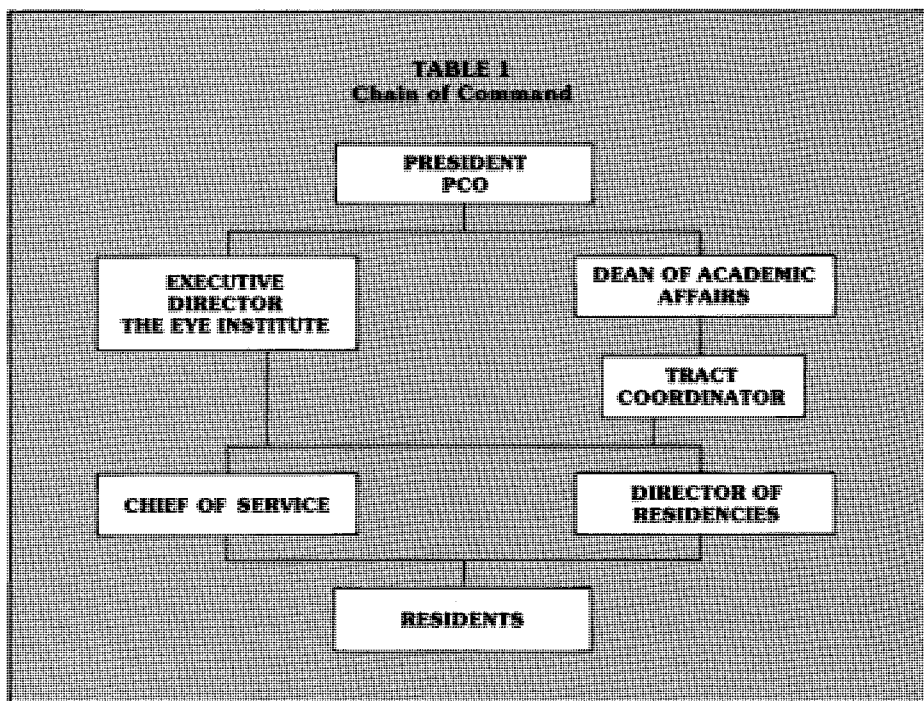
Dr. Bruce Munchick, senior resident, demonstrates anterior segment disease to a student.

dren's eye care in the pediatric residency, eye care for the partially sighted in the vision rehabilitation residency, and diagnosis and management of ocular disease in the primary care residency. Residents at The Eye Institute are students, providers of patient care, and preceptors.

The curriculum is broken down into two parts: clinical and didactic. The clinical program is represented in Table 2 and ranges from forty-four hours per week for pediatric or vision rehabilitation residents to forty-eight hours per week for primary care residents. There are required rotations for all residents through the ophthalmology, retinal and neuro-eye services. Optional rotations

consist of electrodiagnosis, corneal and external disease, family medicine, audiology and immunology. Primary care residents may choose to do an optional rotation through pediatrics or vision rehabilitation, and there are several optional external medical facilities through which the residents may rotate. Because of the high prevalence of eye disease in patients at The Eye Institute, it is necessary to have a twenty-four-hour on call service which is staffed by the residents. Each resident will be on twenty-four-hour call approximately eight weeks out of the fifty-four-week program.

The didactic curriculum (Table 2) consists of twenty-four hours of retina



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seminars, twelve hours of seminars on emergency eye care, six hours of seminars on research, six neuro-eye seminars, and a twenty-four-hour workshop on teaching skills. In addition, the residents must attend grand rounds and hold seminars with third and fourth-year optometry students each week. Before receiving their certificates, residents must have presented at least four case presentations at grand rounds and complete a written clinical paper of publishable quality.

Patient Experience

From previous resident logs, it has been established that the residents in primary care will have approximately 3,000 patient experiences (Table 4). Of these, 1,050 will be preceptor experiences, 750 will be services provided directly by the residents, and 1,200 will be shared experiences with specialists. Vision rehabilitation and pediatric resi-

dents will have approximately 1,000 patient experiences, 400 of which are preceptor experiences, 200 are direct patient experiences and 400 are shared experiences.

A large portion of the resident's time, twenty-four hours a week, is devoted to preceptorships. There are several advantages to the resident's devoting this portion of time to being a preceptor:

1. It increases the number of patient experiences.
2. Teaching interactions encourage residents to formalize and rationalize their thinking.
3. It gives the residents more opportunity to improve specific skills.

Educational Strengths

The experience that residents of The Eye Institute of Pennsylvania College of Optometry receive compares very favorably with that of other optometric

as well as medical institutions. Residents practice in an interdisciplinary environment in which there are excellent in-house as well as external referral sources. Because of the diverse population, it is possible to practice a full scope of optometry. In addition, the large clinical faculty provides a resource of experience on which residents may draw. Perhaps the biggest strength of the residency is that it provides an opportunity for a newly graduated optometrist to achieve a large number of patient experiences in a learning environment run by an *optometric* institution.

Advantages of Residencies to the Parent Institution

There are many advantages to optometric institutions in implementing residency programs. For example, since the residents bring in patient revenues they essentially pay for themselves, and therefore, provide an inexpensive, quality preceptor for students. In addition, residents make it possible to provide services that otherwise would be too expensive to provide (i.e., after-hour emergency services). The institution also gets the distinction of providing advanced clinical training which enhances its reputation as well as helps in student recruitment. Finally, it offers an opportunity to the institution to incorporate graduates from other institutions into its own programs providing a diversity of ideas.

Summary

Perhaps the most unique aspect of The Eye Institute residencies is the ability to train clinicians of the same caliber as those trained in a medically domi-



Resident Bruce Munchick answers questions about the peripheral fundus.

TABLE 2
Clinical Curriculum

	Primary Care	Pediatrics	Vision Rehabilitation
Preceptorship	24 hours/wk.	24 hours/wk.	24 hours/wk.
Direct Care	8 hours/wk.	4 hours/wk.	4 hours/wk.
Ophthalmology Rounds	4 hours/wk.	4 hours/wk.	4 hours/wk.
Retina Rounds	4 hours/wk.	4 hours/wk.	4 hours/wk.
Neuro-Eye Rounds	4 hours/wk.	—	—
Optional Rotations	4 hours/wk.	4 hours/wk.	4 hours/wk.
Primary Care	—	4 hours/wk.	4 hours/wk.
Fluorescein Service	as needed	as needed	as needed
Emergency Service	as needed	as needed	as needed
	48 hours/wk.	44 hours/wk.	44 hours/wk.

TABLE 3
Didactic Curriculum

	Primary Care	Pediatrics	Vision Rehabilitation
Seminars and Grand Rounds	4 hours/wk.	4 hours/wk.	4 hours/wk.
Emergency Care Seminar	12 hours/yr.	12 hours/yr.	12 hours/yr.
Retina Seminars	24 hours/yr.	24 hours/yr.	24 hours/yr.
Research Seminars	6 hours/yr.	6 hours/yr.	6 hours/yr.
Teaching Seminars	24 hours/yr.	24 hours/yr.	24 hours/yr.
Neuro-Eye Seminars	4 hours/yr.	4 hours/yr.	4 hours/yr.

nated institution, but within an optometric institution. Thus, the programs are relatively unaffected by the whims of interprofessional politics or government policies.

Some colleges already have initiated in-house residencies. Hopefully, other optometric institutions will establish similar programs. To do so, they must have an innovative flexible administration, an extremely competent clinical staff, a diverse patient population, and a willingness to provide *all* aspects of eye care.

Colleges of optometry have become dependent on external facilities to establish advanced clinical training. The Eye Institute provides a good example of how to establish an in-house advanced clinical training program of equal quality to those that have been established in facilities external to optometric institutions. □

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TABLE 4
Estimated Patient Experiences

	% of Total Patients Seen	Number of Patients
Primary Care		
Preceptor visits	35%	1,050
Independent visits	25%	750
Shared visits	50%	1,200
Vision Rehabilitation		
Preceptor visits	40%	400
Independent visits	20%	200
Shared experiences	40%	400
Pediatrics		
Preceptor	40%	400
Independent visits	20%	200
Shared experiences	40%	400



Resident Elaine Diamond makes comments on a video tape of a student exam.

The Visiting Scholars Program at the School of Optometry, University of Alabama in Birmingham

David R. Whitehart, Ph.D.

A current tradition in many academic and research institutions is the practice of inviting outside scientists to share their accomplishments with colleagues and their students. This is a means for investigators to keep abreast of work within their own specialty and in related fields. It is also an excellent opportunity for students to be exposed to ongoing research projects outside of their own institution. The invited scholar, himself, views the event as an occasion to gain feedback on his work and on either untried ideas or work in progress.

When the School of Optometry at the University of Alabama in Birmingham was established in 1969, its fledgling Department of Physiological Optics was without such a tradition. At that time its mission was oriented toward teaching and establishing new laboratories for vision research. Still, occasional seminars were held by a scientist who happened to be visiting or by a prospective faculty member. This situation remained in a relative content state for a few years. The development of the Physiological Optics Department, however, led to a need for a program which would include the presentation of research accomplishments by investigators outside of the department.

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In 1975, the department initiated a graduate program leading to the M.S. and Ph.D. degrees. By this time, several investigators had established productive research laboratories funded by the National Institutes of Health. In 1978, three new faculty members were added to the department and rapidly established their own research projects. In this same year a seminar series was begun. Each month from September through June a vision scientist was invited to present his work. Speakers were initially scheduled on a first-come, first-serve basis at the invitation of individual faculty members in the department. An effort was made to invite well-known vision scientists within the continental United States. Some of the earliest guest speakers included: Dr. James McKanna of Vanderbilt University who spoke on the development of myopia, Dr. Paul O'Brien of the National Eye Institute who reported on the control of photoreceptor shedding processes, and Dr. Ray Guillery of the University of Chicago who described the laminar organization of the lateral geniculate nucleus.

Because the Department of Physiological Optics is multidisciplinary (comprising anatomy, biochemistry, optometry, physics, physiology and psychophysics), it soon was realized that something more than only the research aspect of the seminars was needed. Subsequently, guest speakers were invited to stay for two days and give two

seminars: the first being an introduction to their field and the second dealing with the particular research of each guest speaker. This turned out to be much more satisfactory to the faculty and students. The program grew and it continued to be involved in the growth of the department itself.

In 1979 the department was awarded a large Core Center Grant from the National Eye Institute. This grant was used to establish a Vision Science Research Center within the school. The research center was subsequently able to attract other vision scientists within the university to participate in its overall efforts with the seminar program acting as a medium for the exchange of ideas. In the course of events one researcher, who actually had been an earlier guest speaker, joined the faculty of the university and became a member of the vision science research center. Time and experience with the program led to other developments. In 1980 the seminar series became known as "The Visiting Scholars Program." In addition to presenting seminars, the opportunity was afforded for all speakers to visit with each of the faculty members privately to discuss each other's work in greater detail. Graduate students were scheduled for a group conference with each guest in the absence of faculty members in order to explore the investigator's prowess on their own. This was an occasion for students to discuss scientific methods in a relaxed manner.

The program has had its growing pains. The original conference room became inadequate to hold all of the attendees and required a recent move to larger quarters. There are now more faculty members in the vision science research center than can be accommodated for inviting visiting scholars on a one-to-one basis in one year's time. The members of the department and the research center periodically have met to discuss this problem. One resolution was to agree on a list of scholars who would speak at the center over a period of one year (reached by common consensus). Another experimental solution has been to allow each member to invite a scholar of his or her choice on a per-turn basis. Still another solution, yet to

be tried, is to identify research areas of interest and make invitations on that basis. In spite of these problems, the program has flowed smoothly and has been helpful to both faculty and students.

Such a program is not inexpensive and does require that someone monitor its fiscal track record. It was found that the program could be held within bounds by boarding visiting scholars in faculty members' homes, alternating scholars who are close by with those who are far away, and holding receptions for scholars, when possible, at faculty members' homes.

The faculty members are very enthusiastic about the program and this, the

author believes, is the secret of its success. The interest comes not only from being able to learn about new research activities in a formal setting, but also by being able to talk informally about the fine details involved in the daily work of research; i.e., how some things work and others do not. It accomplishes for the students the removal of some of the seemingly mystical qualities of scientific research and places those qualities on the level of human possibility. The program has been a source for the generation of new collaboration among investigators. It has helped some students become established in new positions. It has, for all, removed any sense of isolation from the remainder of the vision science community. □

Participants in the UAB Visiting Scholars Program

SCHOLAR	AFFILIATION	SCIENTIFIC FIELD
1978		
Dr. Lawrence H. Pinto	Purdue University	Photoreceptor adaptation
Dr. James A. McKanna	Vanderbilt University	Manifestation of myopia
Dr. Paul J. O'Brien	National Eye Institute	Photoreceptor shedding
Dr. R.W. Guillery	University of Chicago	Anatomy of the lateral geniculate nucleus
1979		
Dr. Ralph Nelson	National Eye Institute	Retinal neural circuitry
Dr. Anita Hendrickson	University of Washington	Amblyopia reversal
Dr. Alvin Siger	Univ. of Calif., Los Angeles	Excitable membranes
Dr. Helmut V.B. Hirsch	State Univ. of New York (Albany)	Developing visual system
Dr. Michael V. Riley	Oakland University	Biochemistry of the cornea
Dr. Michael Friedlander	University of Virginia	Physiology of the lateral geniculate nucleus
Dr. Joseph C. Besharse	Emory University	Photoreceptor outer segment assembly
Dr. Mark A. Berkley	Florida State University	Behavioral tests of amblyopia
Dr. Shambu D. Varma	University of Maryland (Baltimore)	Diabetic cataracts
Dr. Robert E. Marc	University of Texas	Neurotransmitters in the retina
Dr. J. Warren Blaker	Optical Service Consultant	Gradient index modeling of vision
Dr. Ann Graybiel	Massachusetts Institute of Technology	Extrageniculate visual system
Dr. Henry F. Edelhauser	Medical College of Wisconsin	Effects of drugs on the cornea
1980		
Dr. Stephen B. Edwards	University of Virginia	Organization of the superior colliculus
Dr. Eileen Masterson	National Eye Institute	Phagocytosis of retinal rod outer segments
Dr. Ivan Bodis-Wollner	Mt. Sinai School of Medicine	Spatial contrast sensitivity
Dr. Peter Kador	National Eye Institute	Congenital cataract animal models
Dr. Vivien A. Casagrande	Vanderbilt University	Binocular interaction in visual development
Dr. James M. Sprague	University of Pennsylvania	Cortical involvement in visual discrimination

Participants in the UAB Visiting Scholars Program

SCHOLAR	AFFILIATION	SCIENTIFIC FIELD
1980		
Dr. David Hensen	University of Wales (Cardiff, Wales)	New visual field equipment
Dr. Gerald Chader	National Eye Institute	Cyclic nucleotides in the eye
Dr. John Dowling	Harvard University	Dopamine in the retina
Dr. Steven M. Podos	Mt. Sinai School of Medicine	Glaucoma
Dr. John DeVelis	Merrimack College	Optical coherence
1981		
Dr. David Bridges	Baylor College of Medicine	Vitamin A in vision
Dr. Stephen Easter	University of Michigan	The fish visual system
Dr. Davida Teller	University of Washington	Color vision development
Dr. Peter Hartline	Eye Research Institute of the Retina Foundation (Boston)	Integration of the optic tectum
Dr. Peter Spear	University of Wisconsin	Plasticity of the cat's visual pathways
Dr. Nicholas Brecha	State Univ. of New York (Stony Brook)	Neuropeptides in the retina
Dr. V.H. Perry	University of Oxford (Oxford, England)	Transient neo-natal visual connections
Dr. Fara Farmarzpour	Polaroid Corporation	Radio- and photometric measurements
Dr. John L. Semlow	Rutgers University	Control of the oculomotor near response
Dr. Ronald Jenkins	University of Alabama in Birmingham	Induced buphthalmia in fowls
1982		
Dr. Jennifer Lund	University of Pittsburgh	Structural mosaics in visual cortex
Dr. Raymond Lund	University of Pittsburgh	Development of visual connections
Dr. Stephen Klyce	Louisiana State University	Corneal hydration dynamics
Dr. Charles Gilbert	Harvard Medical School	Anatomy and function of the visual cortex
Dr. Donald Muccio	University of Alabama in Birmingham	Nuclear magnetic resonance of rhodopsin and bacterio-rhodopsin
Dr. Jean Bullier	Laboratory of Experimental Neuropsychology (Bron, France)	Properties of S cells in cat striate cortex
Dr. Mark Dubin	University of Colorado, Boulder	Abnormal development of kitten retino-geniculate connectivity
Dr. Ronald Harwerth	University of Houston	Psychophysics and amblyopia in monkeys
Dr. Francisco de Monasterio	National Eye Institute	Blue sensitive cones in the monkey retina
Dr. Stephen Highstein	Albert Einstein College of Medicine	Studies of the vestibulo-ocular reflex
Dr. Dennis Pillion	University of Alabama in Birmingham	Metabolism of retinal vascular basement membrane
Dr. Elias Meezan	University of Alabama in Birmingham	Insulin effects on isolated retinal microvessels
1983		
Dr. Arthur Koblasz	Georgia Institute of Technology	White noise analysis of the electro- retinalgram
Dr. Anthony Movshon	New York University	Analysis of visual motion
Dr. Theodore Williams	Florida State University	Theories of retinal light damage
Dr. Martin Banks	University of Texas at Austin	Pattern vision in human infants
Dr. Ronald Walkenbach	Eye Research Foundation of Missouri	Cyclic nucleotide physiology and pharmacology in the cornea



RESOURCE REVIEWS

COA Practice Reference Manual developed by the California Optometric Association. Kendall/Hunt Publishing Company, Dubuque, Iowa, 1982, 440 pp., illus., three-ring bound, \$85.00.

The *COA Practice Reference Manual* is a useful volume for the optometric student, educator, and practitioner interested in better practice management. Initial sections delve into a lot of detail about selecting a practice site, opening an office and developing a patient base. Subsequent sections cover routine office management, billing, personnel, insurance, and patient handling.

Typically, office practice manuals such as this are filled with rather time-labile information concerning billing procedures to specific programs and the like. This is not the case with this volume by the COA. Although California programs are addressed, very limited space is devoted to the specifics of any given state or program. Rather the committee authoring this manual has taken great pains to keep it focused upon office practice issues per se and the alternate approaches to managing them regardless of location or time.

Written in outline format the *COA Practice Reference Manual* is succinct and thorough. Topics can be easily referred to by using the well-organized table of contents and index. The *COA Manual* can serve as a valuable reference and can be gradually adapted by the practitioner into an office manual by rewriting various sections to meet the specific needs of his/her practice.

The Science of Photo Medicine edited by James. D. Regan and John A. Parrish. Plenum Pub., New York, 1982, 658 pp., illus., hard-bound, \$75.00.

One area of science which has been growing steadily, but almost imperceptibly, in importance to optometry is that of photo medicine. The influence of ultraviolet, visible and infrared radiant energy classically has been the domain of dermatologists and biophysicists. Several recently published texts have changed this by redirecting our interest toward new research about ocular damage by light. The result has been a significant impact in ophthalmic tint prescribing strategies for the practitioner.

The Science of Photo Medicine supports the ocular application of this research area by providing the environmental optometry instructor with a comprehensive source of the basics in this knowledge area. Covered are the basics of light damage mechanisms in human tissue, general cutaneous effects, photosensitization, photoprotection, and phototherapy.

There is no doubt that the eye practitioner of the next decade will be much more concerned about radiant ocular effects and their prevention. This text will support the environmental educator well in imparting the basis for practice in that area.

Primary Care Optometry: A Clinical Manual by Theodore P. Grosvenor, O.D., Ph.D. Professional Press, Chicago, 1982, 516 pp., illus., hard-bound, \$84.00.

This text represents a thorough and appropriately organized treatise on the basic concepts underlying optometric diagnosis and treatment of refractive disorders. The step-by-step presentation of the components of the refractive ocular examination in understandable terms makes this book a useful primer for the beginning student of refraction. A major strength of this volume is that the author does a good job of bringing together many pertinent fine points to be considered by the examiner when conducting a test clinically. All too often this cohesiveness of detail has in the past been left to the personal discovery of the new practitioner or student.

Concerning the issue of "primary care," however, this text would be better called a "Textbook in Refraction." Primary care optometry implies involvement in a wide variety of disease, binocular and rehabilitative techniques, treatments, and management issues which hardly are touched upon in this work and were admitted by the author to be "beyond the scope of this text."

Taken in the proper perspective, this text fills a need in optometric education for the teacher of clinical methods and early clinical experience. It falls far short of what the title implies.

Ocular Anatomy Embryology and Teratology edited by Frederick A. Jacobiec, M.D., with 38 contributors. Harper & Row, Philadelphia, 1982, 1,122 pp., illus., hard-bound, \$125.00.

There are 33 chapters in this large text which covers the eye on a tissue-by-tissue basis. Among the many authors selected by Dr. Jacobiec are anatomists, pathologists and clinicians so that basic anatomical descriptions of tissues and structures are combined with discussions of their prenatal development and clinical correlates of health and disease. *Ocular Anatomy Embryology and Teratology* is replete with light and electron micrographs, diagrams and illustrations aimed at giving the reader a better understanding of the eye and its origins.

Because of its extensiveness and thoroughness *Ocular Anatomy Embryology and Teratology* represents a valuable resource to the optometric educator. The correlative approach taken by its authors causes it to extend beyond the scope of more classical standards in ocular anatomy. The introduction of health and disease concepts even allows this volume to, at times, bridge the gap between basic science and clinical science. Clinicians will find this book a valuable reference.

The potential buyer of this text should realize that it basically represents a hard-cover extract of the embryology section from Dr. Thomas Duane's recently published looseleaf project entitled *Biomedical Foundations of Ophthalmology*. Owners of this larger series text may want to evaluate their need for this extracted version before purchasing.

The Federal Health Budget

In early February, President Reagan presented his proposals for the FY 1984 federal budget that begins October 1, 1983. Aside from a few initiatives which restructure disbursement of student aid, establish educational savings accounts for parents, and provide support for science and math education, the President's requests for education, health and other programs affecting colleges and universities strongly resemble his previous two budgets.

Health Professions Assistance

A proposed \$1.6 billion overall reduction in discretionary spending in the Department of Health and Human Services (HHS) would affect several important programs. A reduction of \$56 million in health professions education assistance is proposed, representing a cut of 32.5 percent. The main rationale for this reduction is that previous government support has helped produce an adequate number of health professionals. Moreover, budget amounts for health professions assistance do not reflect goals of HHS previously established relating to primary care practitioners, underserved areas, minority recruitment, nurse distribution, gerontological training, and disease prevention and health promotion.

The following are funding proposals in the area of health professions assistance put forth by President Reagan:

- Primary Care grants—\$43 million for 1984, a reduction of \$11 million.
- Financial distress grants—\$6 million for 1984, a reduction of \$2 million.
- Nurse training—\$13 million, a reduction of \$34 million.
- Aid to disadvantaged students—\$18 million, an increase of \$1 million.
- Student loans—no funding.
- Aid to public health schools and students—\$5 million, a reduction of \$4 million.
- Special health initiatives—\$1 million, a reduction of \$5 million.

Even though no new funds were

asked for student loans, budget documents said that \$62 million would be available for student loans from existing revolving funds at health professions and nursing schools.

The National Health Service Corps (NHSC) would receive the same funding as 1983 (\$96 million); however, no new scholarships would be awarded.

Student Aid

The total for student aid, not including guaranteed student loan costs would remain the same at about \$3.6 billion in Reagan's budget proposal. Three programs would receive no new funding: Supplemental Educational Opportunity Grants (currently \$335 million); State Student Incentive Grants (currently \$60 million); and National Direct Student Loans (currently \$179 million).

The College Work Study program would be increased by nearly 60 percent to \$850 million to provide student work opportunities under a new self-help proposal introduced by President Reagan.

Guaranteed Student Loans would be reduced to \$2.047 billion, a reduction of about \$9 million from present funding. Legislative changes were also proposed for the GSL to (1) require a financial-needs test from student applicants to determine the amount of aid, and (2) double the loan origination fee from the present 5 percent to 10 percent.

National Institutes of Health

The budget for the National Institutes of Health (NIH) would increase by \$73 million in 1984 to \$4.1 billion. Of that amount, \$143.3 million would go to the National Eye Institute.

House Plan

The House of Representatives approved a budget resolution for fiscal 1984 in late March that rejected the budget priorities proposed by President Reagan. The resolution reduces spending for the Defense Department wanted by President Reagan and restores

money cut from education and other social programs over the last two years. The resolution boosts student aid by \$650 million over the present amount proposed which would permit increases in the size and number of awards and preserve programs which the President had proposed to eliminate.

The House funding amount also would permit the Guaranteed Student Loan program to continue with no legislative changes as proposed by the Administration.

The Senate Budget Committee is still drafting its version of the budget resolution. A leaner spending plan is expected and the two measures will have to be reconciled by a joint conference committee.

ASCO Involvement

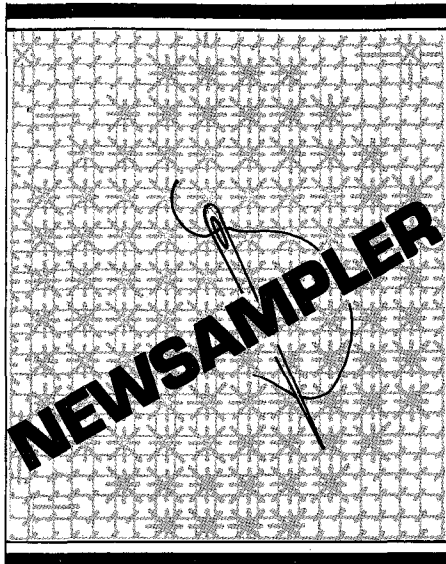
ASCO, through its membership in the Coalition for Health Funding (CHF) and the Federation of Associations for Schools of the Health Professions (FASHP), has worked to influence changes in the President's budget proposals in both the House and the Senate.

Of particular interest to schools of optometry are the following recommendations related to health professions education:

- An increase of \$5 million in health professions student loans to provide capitalization of this program at newer schools which do not yet have revolving funds.

- An increase of \$6 million for special health professions initiatives to provide for funding of curriculum reviews, faculty development and other programs of special concern.

The budget process includes both House and Senate Committee action, consideration by the two bodies and ultimately consideration of the differences in a Joint Committee of Conference of both the House and Senate before a "clean" bill is presented for final action and sent to the President. While difficult to predict, it is unlikely that the final budget figures will be known until the new fiscal year begins October 1, 1983.



(continued from page 7)

Cochran Designated SCO President-Elect

William Edgar Cochran, O.D., of Kosciusko, Mississippi, will assume the position of president-elect of Southern College of Optometry (SCO), July 1, 1983.

Dr. Cochran will become president of the college when Spurgeon B. Eure, O.D., current president, retires June 30, 1984. Dr. Eure has been president since 1965.

A graduate of SCO, Dr. Cochran was a member of the Gold Key Honor Society and was president of the student body association. Named to Who's Who in American Colleges and Universities, he also received the Outstanding Senior award in 1968.

Dr. Cochran has been in private practice in Kosciusko since 1970. He has served on the board and as president of the Mississippi Optometric Association. He also has been active on the Southern Council of Optometrists and the American Optometric Association in economic and legislative affairs.

His business background includes membership on the board of directors of the First M and F Corporation, an advisory board to the Merchants and Farmers Bank in Kosciusko. Dr. Cochran also has presented Leadership Development and Association Management Training Programs in Mississippi and Kentucky.

New NBEO Method Being Tested by SUNY/PCO

A new and innovative testing methodology initiated by Dr. Leonard Gross of the National Board of Examiners in Optometry is currently being

designed in a collaborative effort with seven faculty members from the State University of New York's (SUNY) College of Optometry and the Pennsylvania College of Optometry.

Drs. Leonard Werner, Irwin Suchoff, Rochelle Mozlin and Leonard Press from the SUNY campus and Drs. Felix Barker, Jeff Nyman and Linda Casser from Pennsylvania are developing a new portion of the National Board Examinations which will test fourth-year optometric students' diagnostic and patient care abilities. The new Patient Management Problems Examination will simulate actual clinical, problem-solving situations in a unique, two-dimensional format in which the candidate must respond with correct reasons to a consistent set of options. As students select a response, they must justify their answer. Each major area of optometric patient care has a set of options in the new model.

Dr. Gross and representatives from both professional colleges have been holding work sessions this winter to develop and refine the series of prototypes which the National Board can use for further research, development and educational purposes.

The Patient Management Problems section is expected to be included in the National Board Exams as early as 1985.

Peters Receives First Carpenter Distinguished Service Award

Dr. Henry B. Peters, dean of the School of Optometry at the University of Alabama in Birmingham, received the first Thomas P. Carpenter Distinguished Service Award from the National Health Council at its Annual



Dr. Morton D. Miller (left), president of the National Health Council, presents the first Thomas P. Carpenter Award for Distinguished Service to Dr. Henry B. Peters, dean of the School of Optometry at the University of Alabama in Birmingham. Congratulating Dr. Peters is Mrs. Thomas P. Carpenter (right).

Membership Meeting March 30, 1983, in New York City.

Conferring the award, Morton D. Miller, Council president, cited Dr. Peters' 14 years of extraordinary service to the Council—as president, vice president, board member, and chairman or member of various committees, which included: Executive, Membership, Admissions, Nominating, Program Development, Professional Associations, Annual National Health Forum, Health Manpower, and Community Health Promotion Forums.

The prestigious Thomas P. Carpenter Distinguished Service Award was established by the Council's Board of Directors in 1983 to celebrate outstanding service to the National Health Council and its member organizations. The award honors Thomas P. Carpenter, a leader in the nation's fight against alcoholism through his distinguished service as a board member and president of the National Council on Alcoholism. For 17 years, Mr. Carpenter also served as a respected member of the Board of Directors and chairman of various committees of the National Health Council.

INTERNATIONAL

AESCO Holds 4th General Assembly

The 4th General Assembly of the European Association of Schools and Colleges of Optometry (AESCO) was held on November 12, 1982 in Rome. Representatives from fifteen schools participated. The European Society of Optometry, which was holding its 16th Congress at the time, provided simultaneous translation into five languages.

AESCO secretary G.N. Roosen reported that the development of the association during 1981-82 had been modest: only two new schools had applied for membership, and very few members had been in contact with the executive committee.

Roosen further stated that he had come into contact during the year with the Institut d'Education—Commission des Communautés Europeennes—whose role is to develop "a uniform teaching program" between the European schools. The organization has offered financial support to AESCO to support travel and accommodation expenses for educators who attend workshops to carry out a common teaching program in ophthalmic optics and optometry.

Roosen further reported that AESCO had been accepted by the International

NEWSAMPLER

(continued from page 29)

Optometric and Optical League (IOOL) as an associate member at the IOOL General Delegate Meeting in Boston in June, 1982.

In discussing the standardization of a teaching program, the AESCO Assembly decided that a report of any meetings held by individual countries concerning the problem of standardization should be sent to the AESCO secretary for distribution to all other members. Only after this could inter-European workshops be organized.

The Assembly also admitted the Institut de Visiologie de France as a new member and the Department of Optometry at the University of Durban (South Africa) as an associate member. An application for membership from the Escuela de Optica y Acustica Audiometrica de Santiago (Spain) was refused, since it was felt that its program, training level, and length of studies were incompatible with the statutes of AESCO.

Keeping Up with People...

Dr. Kenneth J. Ciuffreda of Woodbridge, N.J., associate professor of vision sciences at the State University of New York's College of Optometry, co-edited a recently published major reference book, *Vergence Eye Movements: Basic and Clinical Aspects* (Butterworths, Woburn, MA).

Twenty-five nationally recognized authors under the editorship of Dr. Ciuffreda and **Dr. Clifton M. Schor** of the University of California, Berkeley, School of Optometry, combined to produce the specialized, multidisciplinary volume. The 21 chapters cover the major areas of binocular vision, with emphasis on clinical application.

Fifteen students from the State University of New York's College of Optometry have been selected for membership in Beta Sigma Kappa, the international optometric honorary fraternity. The new members are: **Janet Schmukler** of Staten Island, N.Y.; **Marci Golomb** of Rego Park, N.Y.; **Deborah Popplewell**, **Sandi Prusock**, **Mary Rita Sheehy** and **Paul Feiglis** of New York City, N.Y.; **Laurel Feltham** of Dix Hills, N.Y.; **Victor Delicce** of Seaford, N.Y.; **Mark Woodward** of West Hurley, N.Y.; **Steven Schiff**, Port Jeffer-

son, N.Y.; **Kenneth Stack**, Little Falls, N.Y.; **Richard Madonna**, New Paltz, N.Y. and **Teresa Halliwell** of Garden City, N.Y.

Dr. Harold A. Solan, of Teaneck, N.J., associate clinical professor of optometry and director of the Learning Disabilities Unit at the State University of New York's College of Optometry, recently edited a major text which explores the evaluation and treatment approaches of learning disabled children. *The Treatment and Management of Children with Learning Disabilities* includes chapters authored by well-known specialists in education, neurology, psychiatry, optometry and speech-language pathology. The book is published by Charles C. Thomas, Publisher, Springfield, Ill.

The 84th Annual Congress of the California Optometric Association (COA) was dedicated to **James R. Gregg, O.D.**, in appreciation for his 16 years of distinguished service as COA Congress chairman and for over 40 years of dedication and commitment to optometry. Dr. Gregg, grants admin-



James R. Gregg, O.D. (center), accepts COA Congress Dedication plaque from immediate past COA President L. Edward Elliott. Mrs. Bernice Gregg looks on.

istrator for the Southern California College of Optometry (SCCO) in Fullerton, was honored at COA ceremonies in San Jose, Calif., on February 18.

Illinois College of Optometry (ICO), Chicago, hosted a luncheon for alumni and students during the North Central Optometric States Conference in Minneapolis in January. Fourth-year student **Jacque Young**, of Glenwood, Ia., thanked alumni and optical companies for their assistance to students at the conference and cited the need for increased placement aid to students. ICO President **Boyd B. Banwell, O.D.**, reviewed changes at the college, citing increased placement aid from the college administration. **John Fitz-**

patrick, O.D., a 1971 graduate of ICO and North Central Optometric States Conference president-elect, promised formal placement presentations at next year's North Central conference.

ICO faculty members **Janice Jurkus, O.D., M.B.A.**, and **James O. La Motte, O.D., Ph.D.**, have received research grants for investigations into a contact lens fitting technique and a treatment for "dry eye."

Cibe-Geigy Optical Company awarded a \$600 cash grant in addition to lens materials to Dr. Jurkus, chairman of ICO's Division of Optometric Sciences, for her research, "Contrast sensitivity study during adaptation in monovision patients."

Dr. La Motte, interim chairman of the Division of Basic Sciences, received \$700 from the American Optometric Foundation for his study, "The Efficacy of Cellulose Ophthalmic Inserts."

Dr. Peter Weinrib, a 1962 graduate of ICO, joined the college's clinic staff full time in the fall of 1982.

Dr. Terry L. Hickey of the Department of Physiological Optics at the University of Alabama in Birmingham School of Optometry, has been promoted to the rank of professor in the Department of Physiological Optics. He also holds the rank of associate professor of psychology in the School of Social and Behavioral Sciences. Dr. Hickey is director of the School of Optometry's Vision Science Research Center which is supported by a 1.2 million dollar award from the National Eye Institute, National Institutes of Health.

Dr. Hickey has achieved international scientific recognition for his research in mammalian visual system development, including work on the development of the human visual system.



Dr. Terry L. Hickey

The 1983 Annual Meeting of Beta Sigma Kappa, the international optometric honor fraternity, will be dedicated to **Alfred A. Rosenbloom, Jr., O.D., M.A.**, immediate past president of the Illinois College of Optometry. Dr. Rosenbloom will be honored at a breakfast meeting to be held at the Sheraton Washington Hotel in Washington, D.C., on Wednesday, June 29, at 7:30 a.m.

ANNOUNCEMENTS

ASCO ANNUAL MEETING

**June 24-26, 1983
Washington, D.C.**

The Association of Schools and Colleges of Optometry (ASCO) will hold its Annual Meeting June 24-26, 1983, at the Sheraton Washington Hotel in Washington, D.C., just prior to the opening of the 1983 AOA Congress.

The ASCO Executive Committee will meet Friday, June 24, from 2-5 p.m.; and the Annual Meeting will be held Saturday, June 25, from 8:30 a.m. to 5 p.m., and Sunday, June 26, from 8:30 a.m. to 5 p.m. All membership categories in ASCO, as well as individuals and representatives from other organizations are cordially invited to attend.

A special educational Symposium/Luncheon will be held on Saturday, June 25, at 12:00 noon, entitled "Residency Programs in the Health Professions: Their Structure and Role in Specialty Credentialing." Symposium participants will discuss extensively the admissions process, program design, and program structure and outcomes of residency training. The role of residency programs in specialty credentialing, including steps to specialty certification, residency completion as a requirement for specialty certification, and other alternatives for eligibility of specialty certification also will be examined.

A reception for members, guests and other participants will follow the Saturday meeting in the ASCO suite of the Sheraton Washington Hotel from 6-7 p.m.

A minimal registration fee will be charged to cover costs of the Symposium/Luncheon and meeting refreshments. For further information contact ASCO Executive Director Lee W. Smith, 600 Maryland Ave., S.W., Suite 410, Washington, D.C. 20024, telephone (202) 484-9406.

U.S. NAVY Opportunities for Employment

The U.S. Navy is seeking recent graduates from schools and colleges of optometry for induction this summer as optometry officers in the Navy's Medical Service Corps.

Selected candidates may expect to enter with the rank of Lieutenant (O-3) and will incur a three (3) years' service obligation. Entering monthly salary for a Navy optometrist (O-3) is *approximately*: basic pay (taxable) \$1450, quarters allowance (tax free) \$330, subsistence allowance (tax free) \$98, and special pay (taxable) \$100.

In addition to the above pay rates, the Navy offers a variable housing allowance, medical, dental and retirement benefits and 30 days paid annual leave, all of which contribute to total regular military compensation package of over \$27,000 per year.

Detailed information is available at your local Navy recruiting office or by contacting Captain Robert M. Poquis MSC, USN, Eye Clinic, Naval Hospital, Bethesda, Maryland 20814, telephone (202) 295-0668.

British College of Ophthalmic Opticians International Congress 1984:

"FRONTIERS OF OPTOMETRY"

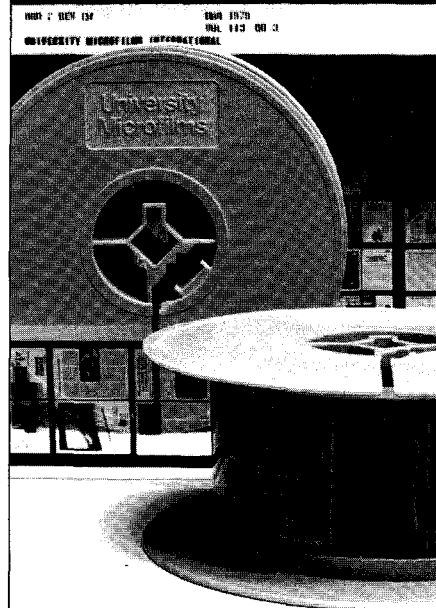
The British College of Ophthalmic Opticians (Optometrists) will hold its International Congress on April 12, 13 and 14, 1984, in London in conjunction with the 1984 General Delegates Meeting of the International Optometric and Optical League (IOOL).

The Congress will comprise two and a half days of lectures by recognized experts in all fields of ophthalmic optics, symposia and discussions. It will be supported by a full social program including a Grand Banquet, and a separate program for partners not participating in the Congress itself.

The theme of the Congress, "Frontiers of Optometry," will examine in depth how the profession will progress scientifically and technologically, and will deal also with the development of optometry elsewhere in the world.

The College will invite advance registrations beginning in April, 1983, at a reduced fee. For more information, contact Thomas H. Collingridge, General Secretary, The British College of Ophthalmic Opticians, 10 Knaresborough Place, London SW5 0TG, England, telephone: 01-373 7765.

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