HEALTH CARE
IN THE
UNITED STATES
AND CANADA

Fall 1990
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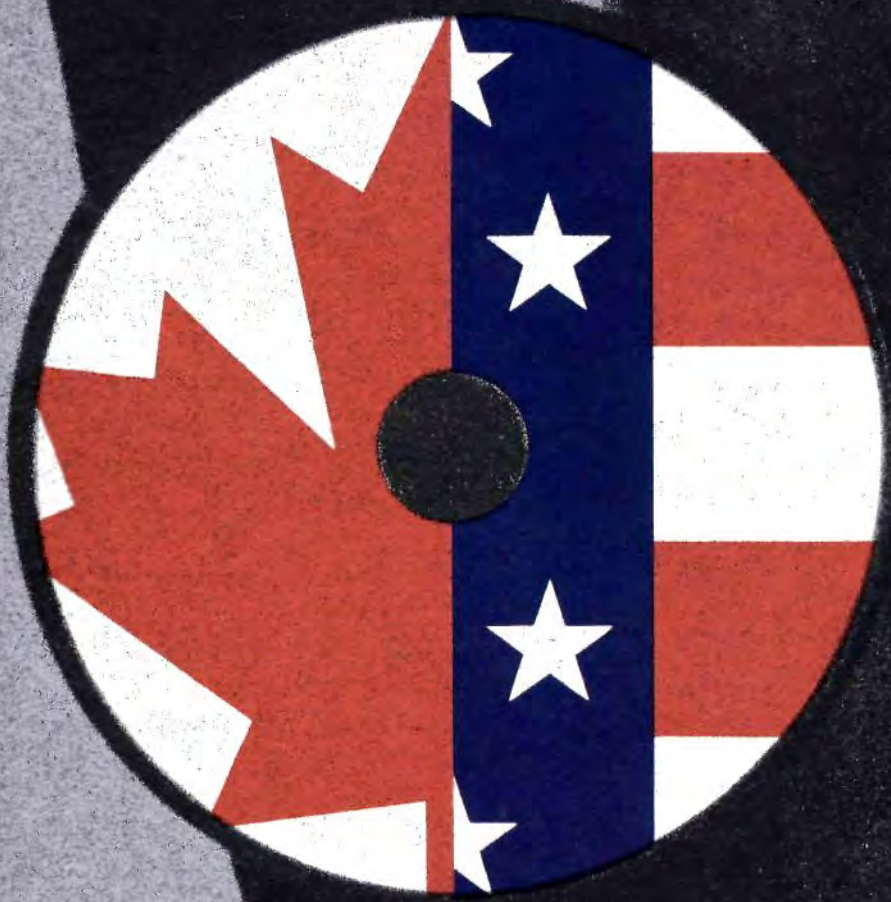
JOURNAL OF OPTOMETRIC EDUCATION



Also in this issue: ASCO's Annual Report
Optometric Education in Saudi Arabia

Association of Schools and Colleges of Optometry

The Association of Schools and Colleges of Optometry (ASCO) represents the professional programs of optometric education in the United States, Canada and a number of foreign countries. ASCO is a non-profit, tax-exempt professional educational association with national headquarters in Rockville, MD.

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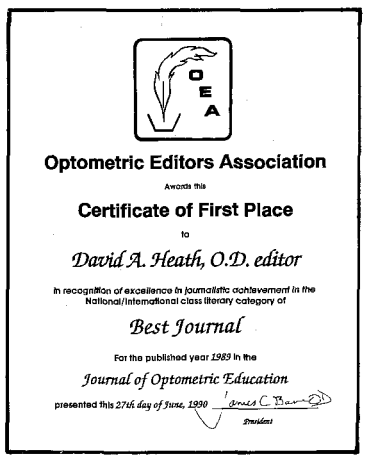

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A Perspective on the International Optometry Scene

Each time I visit overseas I am reminded of the variations on the theme, *optometry*, both in the way it is practiced, and in its educational base. As in a symphony, there is a recurring theme, the prescribing of lenses for refractive and other visual anomalies — no matter what the national setting.

In a parallel sense, the common curriculum element is the study of optics. Optics is basic even among those who are self-trained. Variations begin at this point, however, and there are many.

It has been helpful to me to mentally place the variation typical of a certain program in one of three broad categories. The first category has the look and feel of a craft. Primary emphasis is placed upon the fabrication of a pair of spectacles with various extensions from this orientation. These individuals are trained first as craftsmen, then are taught various examination techniques to facilitate the prescribing of the optical appliance they "craft." It is not unusual for their scope of practice to be limited to refractive care and to restricted age groups. Typically, they receive their schooling in a vocational/technical institution, and in many countries are licensed under the handicraft acts. They often are expert in all types of optical instruments such as microscopes and binoculars. The curriculum is heavily laden with optics and opticianry. It may have some introductory courses in ocular physiology and physiological optics, but the behavioral sciences are usually lacking.

The second category places optometry alongside various allied health occupations. These are technician level health care personnel who work under the direct supervision of physicians—usually ophthalmic surgeons. Schooling is usually hospital based and brief, not unlike other medical helpers. It is common for these individuals to examine patients for the purpose of prescribing lenses. They also do orthoptic work and other ophthalmic nurse duties.

The third category identifies optometry as an independent health care profession. Scope of practice includes refractive care, vision therapy and orthoptics and the assessment of ocular health. Schooling is typically university based and equal to other independent health care providers such as medicine, dentistry and veterinary medicine. A strong presence of the physical, biological and behavioral sciences pervades the optometry curriculum.

Although this schema is simplistic, it is helpful in gaining a global appreciation for the extreme variations of an *optometrist* around the world today. Similar variations occur with degrees. It is the custom in the United States to recognize two types of degree tracks, academic and professional. The typical academic track would progress from the B.A./B.S. to the M.A./M.S. to the Ph.D. In the traditional sense, the master's and doctorate degrees require the demonstration of skills in research. Professional degrees also are awarded at the bachelor's, master's and doctorate level. These degrees commonly require the completion of certain course work for entry; however they do not necessarily require the award of an academic degree along the way. The United States may be the only nation which has developed its degree tracks along these lines. The M.D., D.D.S., D.V.M., O.D. — called first professional degrees in the U.S. — are not commonly found in other parts of the world. The doctor of optometry degree is used in the United States, Canada and The Philippines — nowhere else. Of course, it is well to keep in mind that the doctor of medicine degree is not in common use in many countries as well.

The very structure of professional education in the United States seems unique. There are those who would argue that it is the best. This view is not necessarily shared by educators in other countries, in particular with respect to optometry. Other countries do not require the pre-med/pre-opt step. Individuals who test into the university system do so at the end of 12 to 13 years of general schooling. They then enter a professional school curriculum. Securing the degree may take anywhere from four to six years of professional study, depending upon the particular discipline.

The educational process in the United States also places far more emphasis upon a final clinical training step. Graduates of optometry schools in the United States usually have seen a high volume of patients involving a broad range of ocular conditions and, in many cases, within a broad range of patient care delivery systems.

Clearly, change is noted in the United States regarding the educational base of today's graduate. I project that we will see change in other parts of the world as well; however, there will continue to be many variations on the theme, *optometry*. A university based program has emerged in Malaysia, and new ones are projected in Poland and in Spain. The Hong Kong program recently received approval to confer degrees. A new four-year United States styled program graduates its first class in Italy this November and a new program in Saudi Arabia is described in this issue of the Journal. These are important milestones on the international scene.

Are these new programs four years in length and preceded by three to four years of undergraduate study? No. But we only need to look back one generation to see when the programs in the United States looked like the international programs of today. International programs are entitled to our understanding as they mature and reach their full development.

Willard B. Bleything, O.D., M.S.
Dean and Professor of Optometry
Pacific University

Dr. Bleything chairs ASCO's Committee on the Consortium Model for Non-U.S. Optometric Programs and is ASCO's designated representative to the International Optometric and Optical League. He also chairs the education committee of the International Federation of Asian and Pacific Optometric Associations and sits on its board.

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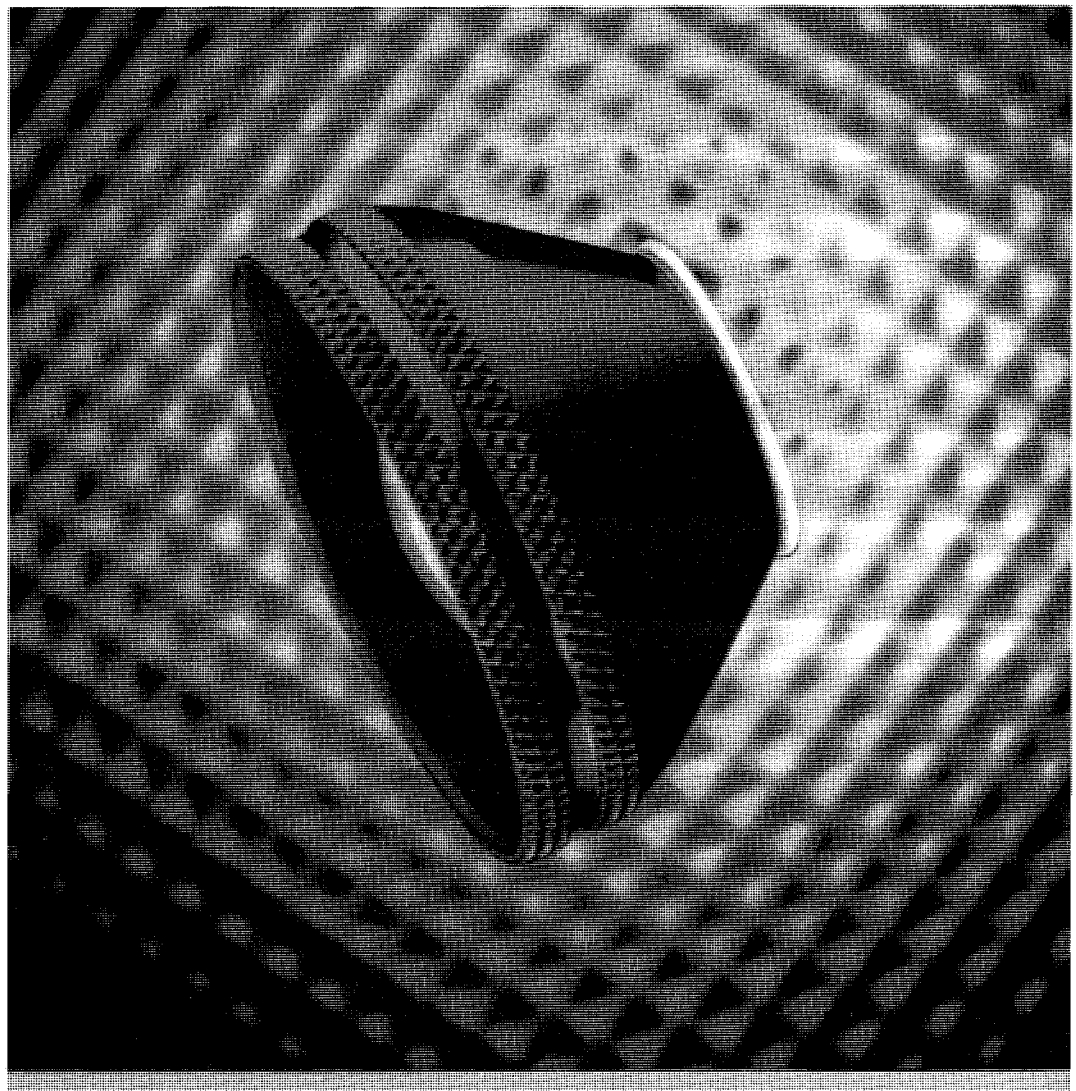

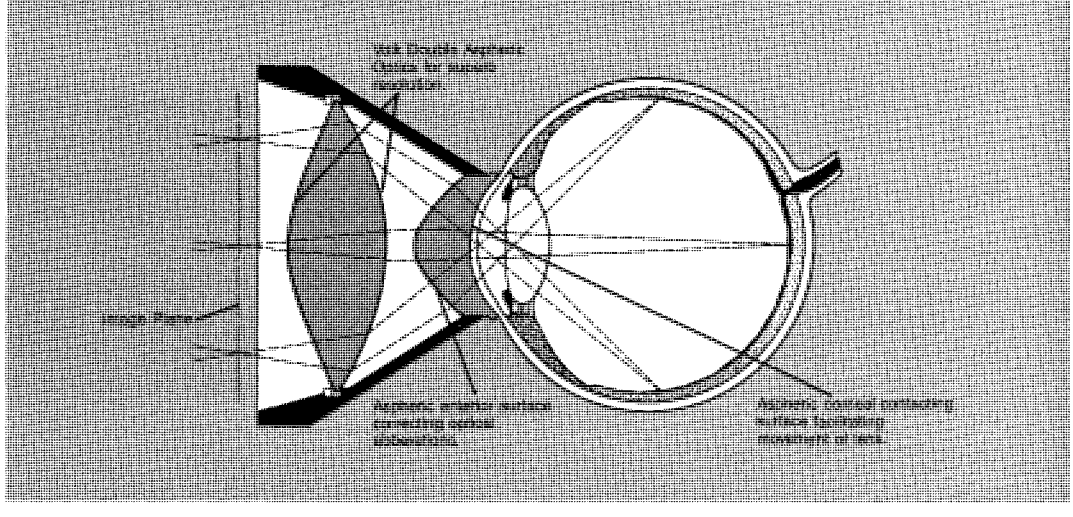

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SUSTAINING MEMBER NEWS

MediVision Optometric Residency Program

Eight doctors have successfully completed the 1989-1990 MediVision Residency in Ocular Disease. The 13 month program, which stresses the diagnosis and management of ocular disease in an ophthalmic comanagement setting, is being offered at several MediVision eye practices around the country. The doctors and their respective MediVision center locations are: Phillip Stephens, OD and Frank Winski, OD (Atlanta); Andrew Walkowiak, OD (Baltimore); Charlotte Barnette, OD (Denver); Embry Kendrick, OD (Memphis); Ofelia Sanchez, OD (Miami); Brian Nelson, OD (New Orleans); and Lisa Brill, OD (Phoenix). The following doctors have been selected for the 1990-1991 residency program: Christine Berry, OD (Miami); David Fisher, Jr., OD (New Orleans); Hale Kell, OD (Denver); Creighton Simmons, OD (Memphis; and Martin Lee Tomko, OD (Baltimore). MediVision, a subsidiary of Medical Care International, the nation's largest owner and operator of ambulatory surgery centers, provides secondary and tertiary eye care services through a national network of eye care centers and eye surgery centers.

MediVision Optometric Scholarships

MediVision Optometric Scholarships were recently awarded by two optometric institutions to students selected by their respective faculties for excellence in their academic and clinical studies. Hans Kell of the Southern California College of Optometry was presented the $1,000 scholarship award by SCCO President Richard L. Hopping, OD at the College's annual honors banquet in May. Nancy McNamara of the Ferris State College of Optometry received her scholarship award from Assistant Dean Thomas R. Colladay, Ph.D. at the College's annual awards banquet, also in May. One of the scholarships is available at each of the country's schools and colleges of optometry, and is awarded annually, based on recommendations of the institution's clinical faculty, to the student who has demonstrated superior academic and clinical skills, and who has completed or is scheduled to complete an internship at a MediVision Center. Dr. Kell interned at Omni Eye Services in Denver, CO, and Dr. McNamara will be interning at Omni Eye Services in Chattanooga, TN. MediVision, a subsidiary of Medical Care International, the nation's largest owner and operator of ambulatory surgery centers, provides secondary and tertiary eye care services through a national network of eye care centers and eye surgery centers.

CIBA Vision Corporation Introduces Focus™ Programmed Replacement Lenses

CIBA Vision Corporation this summer introduced Focus™ (vifilcon A) Programmed Replacement Lenses—the first soft contact lenses exclusively for programmed replacement.

"We are taking a bold step by introducing a soft contact lens specifically targeted to the growing programmed replacement market," said Terry Walts, senior vice president of sales and marketing at CIBA Vision Corporation.

Programmed replacement lenses satisfy the needs of eye care practitioners and lens wearers who want a practical alternative to conventional soft contact lenses and disposable soft contact lenses. With a new product solely dedicated to this concept, CIBA Vision is helping the practitioner and the patient benefit from this growing market segment.

"Some patient management systems are confusing for eye care practitioners and patients," said Doug Weberling, an optometrist in private practice in Bristol, Virginia. "Prescribing and administering a lens developed and packaged solely for programmed replacement eliminates the confusion found in the currently available programs."

Focus™ soft contact lenses are designed to be worn on a daily or flexible wear basis, with lens care. CIBA Vision recommends monthly replacement schedules, depending on patient needs.

The lenses are made ot 55% water vifilcon A, which permits good oxygen permeability. Initially, Focus lenses will be available with a light blue visibility tint, for user convenience, and in a wide range of parameters, to fit a variety of patients.

Focus programmed replacement lenses, soon available as an entire family, will include toric lenses for astigmatism and tints for cosmetic enhancement.

Focus lenses come in convenient, easy-to-store four-packs. Each lens is individually packaged in a tamper-resistant, easy-to-open foil pouch.

"With the introduction of Focus™ lenses, CIBA Vision Corporation has filled the need of a growing market segment, programmed lens replacement, with a family of high-quality soft contact lenses," Walts concluded.

Varilux Names Colucci to New Sales Position

Robert M. Colucci, national sales manager for Varilux Corporation for the past year, has been appointed to the new position of executive director of sales.

Remaining in charge of the field sales force, Colucci now has additional corporate responsibilities of sales administration, sales training and communications.

"Varilux has restructured the sales organization to accommodate recent growth in sales overall and particularly in Varilux Infinity lens products, which now account for a significant portion of all sales," Colucci said. The national force of sales consultants has been expanded by 25%, prompting the creation of a new sales district, and regional boundaries that have been realigned. These changes are especially significant in order to strengthen service to the presbyopic markets.

"The effect is to improve hands-on service to eye care practitioners and our labs," Colucci said. "This allows us to have closer contact with our accounts; the people using Varilux products will be able to see their reps more often."

Aquaflex Excellence Award Winners Named

Wesley-Jessen's first "Aquaflex Excellence Award" was presented to Linda Hsieh, O.D., and Li Wang, O.D., both of whom graduated from Southern California College of Optometry in May.

Gary Bekritsky, O.D., head of W-J's Department of Clinical Research, presented the award at the 8th Annual Educational Symposium of the Contact Lens Section of the American Optometric Association.

Bausch & Lomb Reiterates Policy on Sale of Contact Lenses

Bausch & Lomb has restated its long-standing policy of distributing its contact lenses solely through licensed eye care professionals, including optometrists, ophthalmologists and opticians, where permitted by law.

In a letter to Contact Lens Section officials, Bausch & Lomb Contact Lens Division President Harold O. Johnson said it has always been the company's policy to sell contact lenses only to licensed eye care professionals, or authorized distributors.

"It continues to be our intent that lenses be dispensed to consumers only through an eye care professional," Johnson said. "We feel strongly that this is in the best interest of both the consumers and the eye care practitioners we serve. Contact Lenses are medical devices which must be prescribed and fit with care, and which require routine medical followup if they are to be worn successfully."

Johnson said the company is opposed to the sale of contact lenses through drug stores or other similar outlets which do not have a licensed practitioner on the premises.

"We absolutely oppose dispensing contact lenses through these outlets; we do not sell to them, and our distributors are prohibited from selling to them," he said.

Bausch & Lomb manufactures the world's most extensive line of soft contact lenses, including the SeeQuence disposable lens, a wide variety of standard single vision lenses, and specialty toric, bifocal and aphakic lenses.

Pennsylvania College of Optometry Awards Sheldon Wechsler, O.D., Neill Memorial Medal

The relative ease with which today's patients are successfully fit with contact lenses is the result of centuries of advancements, Sheldon Wechsler, O.D., vice president of professional affairs for Vistakon, Inc., a Johnson & Johnson company, said recently.

Delivering the Ninth Annual Dr. John C. Neill Memorial Lecture before an alumni group at the Pennsylvania College of Optometry, Dr. Wechsler, whose company manufacturers the ACUVUE® Disposable Contact Lens, traced the historic connection between the knowledge derived from both research and technical development. He noted especially the research during the past 40 years which led to modern contact lens patient care.

Following his talk, entitled "Contact Lenses: From da Vinci to Disposables," Dr. Wechsler was presented with the Neill Memorial Medal, named for the optometrist who pioneered the development of the micro contact lens. Dr. Neill (1902-1978) was a member of the college faculty.

"Although very early concepts of contact lenses were put forth centuries ago by da Vinci," he said, "and knowledge has continued to develop over the years, the major breakthroughs in contact lens development have only recently begun to occur."

Dr. Wechsler noted the invention of the all-plastic corneal lens by Tuohy, and Wichterie's hydrogel polymer soft lens, as two examples of significant developments that eventually led to Vistakon's 1987 introduction of the first disposable contact lens in this country.

Although Wichterie originally conceived of his lens as a potentially disposable product, it was not until 1984 in Denmark, he noted, that advances leading to lower costs and improved repeatability resulted in the marketing of a single use lens.

As good as this lens was for its time, however, it required the resources and expertise of Johnson & Johnson to improve the lenses (after acquiring the basic technology) to meet the requirements of the U.S. market.

The result was the ACUVUE® (etafilcon A) Disposable Contact Lens, the first disposable contact lens. Available in multi-packs containing six disposable lenses, ACUVUE is currently the number one prescribed soft contact lens for all new soft lens patients, and is prescribed in both extended wear disposable, and daily wear, two-week replacement regimens.

The newly-minted O.D.'s reported the results of their winning research at the symposium. They collaborated on "A Comparative Study of the Incidence of Bacterial Contamination of Contact Lens Case Caps Versus Contact Lens Case Wells."

A total of 53 patients were included in their study, 39 of which used peroxide, 14 of which used a non-peroxide disinfecting system.

The researchers found 15% of caps contaminated and 19% of wells contaminated in both disinfection systems. No statistical difference in contamination rates between peroxide and non-peroxide systems was reported.

"W-J was exceptionally pleased at the quality and quantity of research papers submitted for the award," said Dr. Bekritsky, who headed a distinguished panel of practitioners and optometric educators who served as judges. "We accomplished our goal to further exceptional research on contact lens and cornea related issues," he added.

The winning co-authors received a $3,000 award for their research. W-J also hosted their trip to the AOA educational symposium.

Sola Optical Releases New Lens Selection Guide

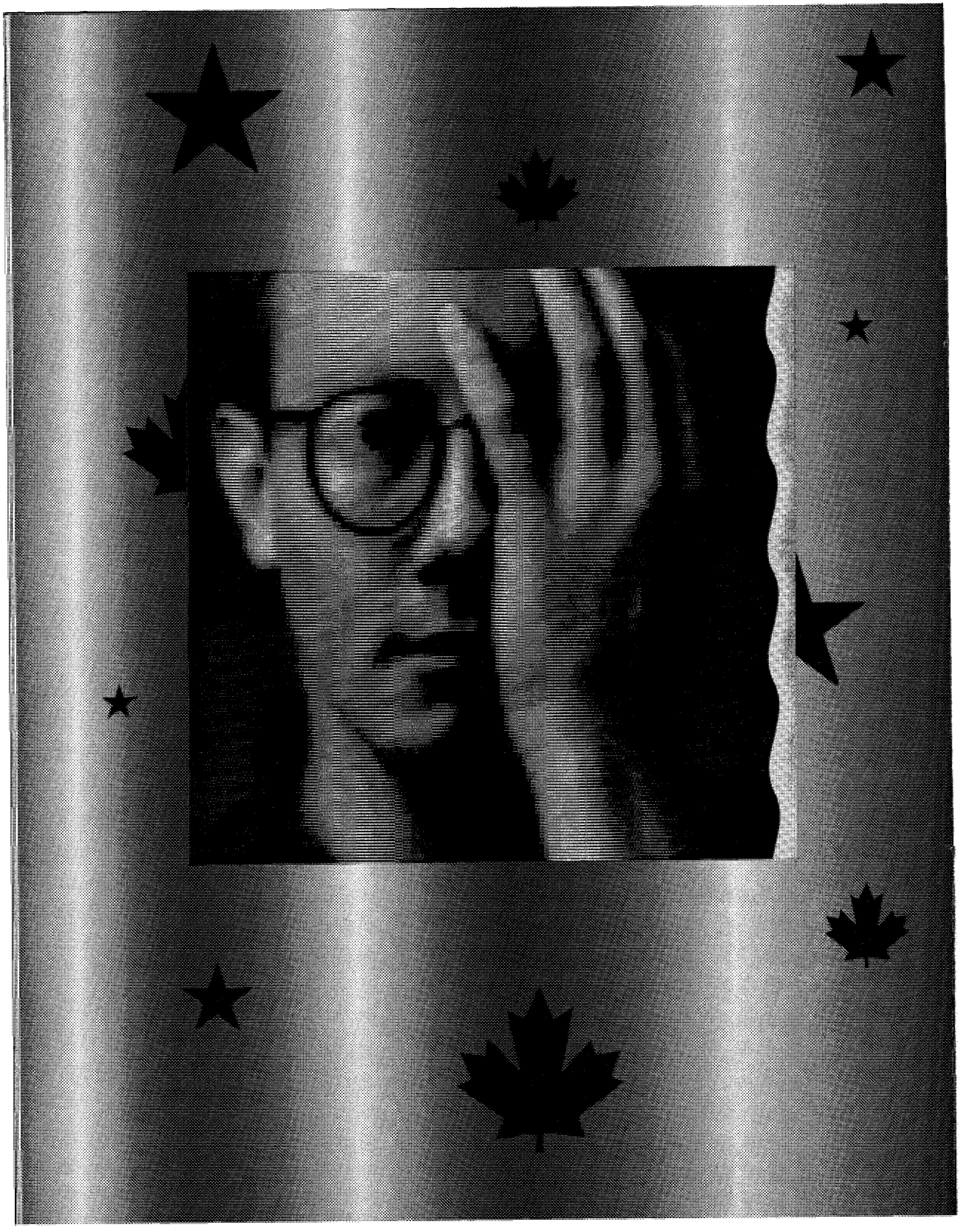
Sola Optical has released a new Lens Selection Guide for dispensers to use with their presbyopic patients. The purpose is to educate presbyopes about their four major lens options and show them "what the world looks like" through each of these lenses.

The card demonstrates the differences between a progressive, SmartSeg, bifocal and trifocal using identical, side-by-side photographs. Each photograph depicts what the patient will see through the distance, intermediate and near portions of the lens.

"Aging baby boomers represent a rapidly growing market for progressives and SmartSeg, the new standard in flat-tops," says Valerie Manso, director of lens consultants. "By illustrating the benefits of these lenses, the Lens Selection Guide will be valuable in capturing this enormous market."

The Lens Selection Guide was printed on a 2-sided card using high quality, 4-color photography. The dimensions are 7" x 10", small enough to fit in a dispensing drawer or on a dispensing table.

The new Lens Selection Guide is available at no charge through Sola Customer Service. To order a copy, call (800) 358-8258, press 8.



Some Comparisons Between Health Care in The United States and Canada

William M. Lyle, O.D., Ph.D.
Barbara E. Robinson, O.D., M.P.H.

Introduction

America's health care economy has been called "a paradox of excess and deprivation."[1] The Health Care Financing Administration (HCFA) has projected that in the United States health care spending, according to present trends, will reach 15 percent of the gross national product (GNP) by the year 2000.[2] It is estimated that 35 to 37 million Americans have no medical care insurance, public or private.[1,3] Some have suggested that a solution to these problems might lie in adopting a universal health insurance system.

Colleagues in the United States often ask about Canada's health plan. Their concerns seem to stem from a general fear of what some call socialized health care. They enquire about such matters as:

- lack of incentive to do good work; equal pay to the best and the worst doctor; lack of freedom of choice; becoming a salaried practitioner. (None of these problems have materialized.)
- increased taxes, government control.
- imposition of quality control; peer assessment of quality of services, need to justify fees.

Canada has had a universal health insurance system in place since 1968. Before implementing this system Canada's health care spending as a percentage of national income was similar to and at times slightly higher than that of the United States (6% of GNP in Canada compared to 5.5% of GNP in the United States in 1961).[4] Before 1960 the costs of health care in Canada were met by a mixture of personal, fee-for-service, private sector insurance plans and limited government support. The Canadian approach to the development of a universal health insurance system has been to provide, step by step, major segments of publicly-financed personal health care to the whole population. The programs are designed to ensure that all residents of Canada have access to prepaid health and hospital care when needed. The completion of universal public coverage in 1971 has had a stabilizing effect on Canada's health care expenditures. Currently Canada's total health care expenditures are 8.6% of the GNP and the United States spends about 11.5%. (Table 1.)

In the United States there is concern that the present health care system is too expensive while in Canada some have accused the government of paying too little. What effect has approximately twenty years of universal health insurance had on Canada's health care sys-

TABLE 1
Health care costs as a proportion of GNP[1,4-10]

	U.S.A.	Canada	U.K.	Japan
1970	7.6%	7.2%		
1971	7.8%	7.4%		
1980	9.5%	7.4%	5.8%	6.4%
1981	9.2%	7.7%		
1982	10.2%	8.6%		6.7%
1983	10.5%	8.6%	6.2%	
1984	10.7%	8.4%		
1985	10.7%	8.6%		
1986	11.1%	8.5%	6.2%	6.7%
1987	11.0%	8.6%		
1991*	11.5%			
1995*	12.2%			

*Estimated

Dr. Lyle teaches courses in genetics, pharmacology, and general pathology at the University of Waterloo School of Optometry. Dr. Lyle also is editor of Optometry and Vision Science, the official publication of the American Academy of Optometry.

Dr. Robinson teaches courses in epidemiology at the University of Waterloo School of Optometry.

This paper is based on a talk presented at the 19th Congress of the American Optometric Student Association, Toronto, Ontario, Canada, January 1989.

tem? A comparison of health care in the United States and Canada might offer some insights into the advantages and disadvantages of each system.

Before comparing health care in the two countries we looked at problems common to both countries in the provision of health care.

Problems in Providing Health Care

Financial

Between 1960 and 1984 annual health care costs have increased almost 100 percent in the United States and about 50 percent in Canada. Relman refers to the present era of cost containment as the revolt of the payers.[7,11] Provincial governments allocate about 30 percent of their total revenue for health care. (Table 2). In Canada, health professionals estimate the fees they believe to be appropriate for their work, then negotiate with the provincial government for the actual fee they will receive. Generally, physicians in Canada have obtained over 75 percent of the fee they requested. The actual subdivision of the money to the various subspecialties of medicine is decided upon by the physicians themselves.[6] Physicians' incomes are generally larger than those of dentists, lawyers, accountants, engineers, architects[6] and optometrists. In Ontario a physician's income is about 5 times the average wage of an industrial worker; in the United States a physician's income is about 5.5 times the average wage of an industrial worker.[6] Physicians' income is increasing at the rate of 8.8 percent a year in Canada and 15 percent a year in the United States; i.e., about twice the rate of inflation.[12] Approximately half the increased income of Canadian physicians is obtained by seeing more patients each working day or by more creative billing.[16] (Presumably creative billing means arranging the bill to include costs of the more expensive services.)

A working man in Ontario pays about $820 a year for comprehensive health insurance for himself and his wife; the insurance covers doctors, hospital, prescribed drugs, etc.[6] No premiums are required in some provinces (e.g. Manitoba, New Brunswick, Saskatchewan, British Columbia), as all costs are paid through taxes. No premiums are paid in any province by those who have reached 65 years of age or by those without income, e.g., children, students, unemployed, and those unable to work.

Cost of administering health care programs is 2.5 percent of total health spending in Canada and about 8.5 percent in the United States.[6,16] (Table 3).

TABLE 2(a)
Average annual payment from Ontario Health Insurance Plan to full time practitioners

	Physician	Optometrist
1986-1987	$170,509	$75,000
1987-1988	$197,000	$75,700*
1988-1989	$238,000*	

*Estimated

If the patient requires new spectacles, contact lenses or orthoptics the patient also pays a treatment fee to the optometrist (as well as paying the laboratory bill for materials) since treatment services and ophthalmic appliances are not covered by the Plan.

The 1987-1988 Annual Report of the Ontario Ministry of Health (page 19) shows the following claims paid:

TABLE 2(b)

	Claims paid to practitioners	Percent of total
Physicians	$3,355,870,827	92.5
Optometrists	62,828,804	1.7

If the resource-based relative value scale of payments to ophthalmologists is adopted, ophthalmologists in the United States will receive a reduction of 23 to 40% in their income.[12,13] The average ophthalmologist makes more money from office based services than from surgery.[13] For ophthalmologists in the United States the average major surgical case load is less than 100 each per year.[14] In Australia and in the United States ophthalmologists perform about 40% of the refractions. In the United States surgeons receive from six to seven times more money than primary care physicians.[15]

TABLE 3
Distribution of certain health care costs as a proportion of GNP.[7] (1985)

Percentage of GNP spent on	U.S.A.	Canada
Insurance, overhead costs, costs of prepayment and administration	0.59%	0.11%
Payments to hospitals	4.18%	3.48%
Payments to physicians	2.07%	1.35%

TABLE 4
Numbers of physicians and optometrists (approx.)[6,21-24]

	U.S.A. 1985		Canada 1985	
Number of active civilian physicians		500,000		51,996*
Population ratio	208 / 100,000	= 1 / 481	204 / 100,000	= 1 / 491
Medical school enrollment		66,600		7,350
Number of medical schools		127		16
Percentage of female students**		33%		43%
Number of new MD graduates each year		16,650		1,835
Number of active optometrists		25,000		2,386
Population ratio	10.6 / 100,000	= 1 / 9434	9.4 / 100,000	= 1 / 10,688
Optometry school enrollment		4,500		400
Number of optometry schools		17		2
Percentage of female students		30%		50%
Number of new ODs each year (plus a few foreign schools)		1,100		100

*Includes residents and interns.
**A female physician provides about 70% of the total person-years of service that a male physician provides.[6]

Ratio optometrists/ophthalmologist. (All values approximate.) U.S.A. 2/1, Canada 3/1, U.K. 10/1 and Australia 2.3/1. The American Bureau of Health Manpower recommends 5/1 for 1990.[14]

TABLE 5
Suggested ideal ratios of practitioners[21,23,24]

	U.S.A. (1985)	Canada (1985)
Population	240,856,000	25,625,200
If ideal ratio is 1/500 physcians	need 481,700 have 493,700 surplus 12,000 = 2.5%	need 51,000 have 51,996 surplus 996 = 1.9%
If ideal ratio is 1/40,000 opthalmologists (Some advise 1/54,000)	need 60,200 have 66,200 surplus 6,000 = 10%	need 650 have 900 surplus 250 = 38%
If ideal ratio is 1/10,000 optometrists	need 24,085 have 25,000 surplus 915 = 3.8%	need 2560 have 2386 deficiency 174 = 6.8%

All governments are striving to put a limit on health care costs.[10] These efforts are made more difficult by the rapid increase in the number of health care practitioners, the aging of the population, the development of new expensive technology and higher expectations of the public. Managed health care has become necessary everywhere. Rationing of health care will become an ethical issue.[9,10,17] Potentially an insurance company or other third-party payer will be able to influence the care that a patient will receive.

Aging of the population

Certain demographic changes are well-known. People are living longer, and the proportion of those 65 years of age or older is increasing rapidly in most countries.[18] By the year 2000 nearly 1/5 of the population will be over 65 years of age in the United States and Canada. Practitioners feel that care of the elderly is less satisfying. The elderly require more physician time, hospital beds, drugs, nursing homes, glasses, hearing aids and low vision aids. More health care workers are needed to care for the elderly.[9] All these factors are driving up health costs.[10]

Excess numbers of practitioners

In both the United States and Canada there are too many physicians.[6,7,9] The era of medical school expansion began in the late 1940s. An excess of physicians has been shown to result in excess surgery, e.g., tonsillectomy, breast removal, cataract surgery,[14,19] hysterectomy, cesarean sections[20] and coronary by-pass operations. There is no evidence that a physician/patient ratio greater than 1/600 improves health care. Physicians increase their volume of services when payment rates are cut thus preventing price controls from limiting the overall costs of physicians' services.[12] The increasing number of physicians (and their increased personal income) drives up total health costs.[16] Equating the level of health with the availability of physicians and hospitals is inadequate.[21] Medical schools, dental schools, and residency positions are now being cut back.[17] (Tables 4,5) Even

TABLE 6
Trends in Infant Mortality Rates (per 1000 live births)[3,12]

Country	Year												
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987[*]
United States	16.1			13.8	13.1	12.6	11.9	11.5	10.9	10.6	10.5	10.4	
United Kingdom (England & Wales)	15.7	14.3	13.8	13.2	12.8	12.0	11.1	10.6	10.1	9.5	9.4		
Canada	14.3	13.5	12.4	12.0	10.9	10.4	9.6	9.1	8.5		8.0	7.9	
Japan	10.0	9.3	8.9	8.4	7.9	7.5	7.1	6.6	6.2	6.0	5.5		5.2

Additional sources:
1986 Demographic Yearbook, Thirty-eighth issue, United Nations, New York, 1988.
1985 Demographic Yearbook, Thirty-seventh issue, United Nations, New York, 1987.
1984 Demographic Yearbook, Thirty-sixth issue, United Nations, New York, 1986.
1983 Demographic Yearbook, Thirty-fifth issue, United Nations, New York, 1985.
1980 Demographic Yearbook, Thirty-second issue, United Nations, New York, 1982.

TABLE 7
Neonatal mortality rate (deaths under 28 days of age per 1,000 live births)[*]

	U.S.A.	Canada
1971	15.1	12.4
1981	8.5	6.4
1982		5.9
1983		5.6
1984		
1985		5.2
1986		5.1

though enrollment is now declining it is estimated that by the year 1990 there will be 70,000 physicians in excess of the need in the U.S.A. and by the year 2000 the excess will be 145,000.[13] This includes a surplus of 4,700 ophthalmologists. A similar excess exists in some parts of Canada. More and more physicians in the United States are on salary, especially the younger ones (40 to 60 percent).[13]

The ideal case load for an optometrist is probably 2400 patients a year or not many more than ten a day, with allowance for holidays and attending continuing education courses. Comparable daily patient loads for physicians vary widely depending on specialty, but many book patients for a 15-minute office call. Ophthalmologists estimate that they can see about 5000 patients a year or more than 20 a day.

Influence of for-profit organizations

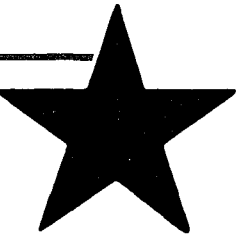
Ten to fifteen years ago, for-profit companies began to expand in the health field.[18,25] They hoped to achieve economies of scale, more efficient management, better control of planning, closer control of nurses and support staff and thus to make a profit. The government in the United States encouraged the for-profit companies because they hoped:

- to shift the cost burden off the government.[6]
- to reduce the pressure for a national health plan.[18]
- to take advantage of the excess of physicians and thus squeeze down costs in a market-driven economy.[3,6,7,17,18]
- to pressure physicians to leave metropolitan areas and practice in smaller communities.[6,22]

For-profit projects experienced the following problems.[25]

- businessmen lacked the skills to run a hospital. They hired excess administrative staff.
- they were unable to attract the best practitioners.
- their walk-in clinics antagonized the local practitioners. (Cost to a patient who visits a typical walk-in clinic averages $65.00 for about 15 min of a physician's time.)
- they tried selling health insurance but were not successful at it.
- some set up Health Maintenance Organizations (HMO's) or Preferred Provider Organizations (PPO's) but this proved to be complicated.
- the profit goes to the shareholder not to the practitioner.
- physicians working in for-profit centers complained that if the center worked on a per capita basis[26] or on a fee-for-service basis,[27] pressure was put on the physician to maximize income for the company. Clinical decisions tended to be altered by financial considerations.[8] Professional ethics are modified by commercial exigencies. Decisions about health care are influenced by the profit motive.

The results indicate that market forces do not work well in health care.[16] Entrepreneurship creates a two-tiered health care system,[18,28] a bottom-line attitude to health care.[27] Market forces do not lead to an efficient or fair outcome.[1] As Flexner said in 1910, "Medicine, curative and preventive, has



indeed no analogy with business . . . the medical profession is supported for a benign, not a selfish, for a protective, not an exploiting, purpose."[29] For-profit companies have, however, been successful owners and managers of chronic care facilities such as nursing homes.

Presence of underserviced groups

In all countries there are underserviced groups,[28] e.g., elderly, mentally defective, hearing-impaired, drug-dependent, physically handicapped, poor,[30] chronically ill, some ethnic groups, some who live in rural areas, people in prisons, retarded children, the unemployed, and patients with AIDS.[10] There are problems of accessibility for patients and availability of practitioners at the place and time when they are needed. Practitioners (especially physicians) prefer to remain in large cities.

Costs of new technology

The explosion of new technology, the need for complex and expensive devices and facilities, and the constant need to update and replace equipment and modernize hospitals[6] tend to increase costs.[25] Patients are becoming more sophisticated and expect a higher standard of care. However, health care needs more emphasis on humanity and less on high technology.

Cost of malpractice insurance

The high cost of malpractice insurance is considered to be a factor which forces doctors to practice defensively e.g., order extra tests which further increase costs.[18,31,32] There is an obvious need to limit malpractice awards, while providing a fair settlement to the victim. At the same time one might suggest an increase in the length of time that the guilty practitioner is suspended from practice by the professional licensing body. This is not entirely an example of double jeopardy as the cash payment is usually made by the practitioner's insurance company.

Inadequate inter-professional cooperation

There is a clear need for improved inter-professional cooperation.[28] There are no completely independent health professions.[33] Inter-professional jealousy, distrust, and financial competition still exist and are likely to increase as competition for the limited health dollar becomes more intense.[16] The resulting inefficiency in the system further increases costs.

Commercialization of the professions

Recent actions of governments in the United States, Canada, and the United Kingdom have had the effect of downgrading the professions and placing professionals in the category of "merchants." Note the encouragement of advertising by professionals. Presumably governments think that a a market-driven economy will help control costs of health care.[18] There is no evidence to support this concept but the risk of a decline in quality is high. The marketing of health care for profit erodes the status of the practitioner and increases the frequency of malpractice claims. Practitioners who advertise will be regarded simply as the seller of a product. Caveat emptor.

Insufficient or ineffective quality control

There is a need for quality control, and for effective ways to detect and deal with those who practice in a substandard way.[20] The era of accountability is here.[11] Professions have done a poor job of policing their own members. A few practitioners whose practice is oriented to making money or whose competence is marginal have been allowed to continue to exploit patients at the very time when they are vulnerable.[19]

Emphasis on cure instead of care

Too much emphasis has been placed on cure rather than on care. Education and grant support focus on cure. More and better chronic care facilities are needed. For-profit companies could play a role here.

Insufficient attention to prevention

Health planning and health education have traditionally placed too little emphasis on prevention.[9,34] In terms of cost and quality of life, prevention is better than detection or treatment. The major causes of death (heart disease, cancer, strokes, accidents, and diseases of the liver and lungs) all are largely determined by excess cholesterol, lack of exercise, smoking, carelessness, and alcohol abuse.[32] It is obvious that our "self-inflicted" wounds cause a significant portion of our illnesses. Up to now the major improvements in health have been due to improved sanitation, safe drinking water, limitation of family size, better nutrition and improvements in our environment.[21] Future improvements in health are likely to depend on similar life-style factors.[9,21] It is difficult to convince all those involved that patients have some responsibility for their own health care (life-style changes) and that health professionals must allocate more of their time and resources to preventing illness. The present attack on environmental pollution is a step in the right direction. Someone has suggested that we need a system like that which is said to have existed at one time in China. Under that system each person paid the doctor as long as the person remained well but payments to the doctor ceased when the person became ill.

Irrational ad hoc planning

Health services need rationalization, better allocation of resources to avoid duplicating expensive facilities, and more efficient administration.[9,13] Flexibility is necessary to deal with the inevitable changes which are occurring as a result of the factors described above.[16,27] The public must decide on the balance between accessibility, quality and costs of health care. Different groups rank these key factors in different orders of importance.

Health care problems identified in Canada

1. Practitioners want to charge more than the health plan permits but are not allowed to do so.[34] Practitioners in Ontario can charge only for the work they perform themselves and not for the work of technicians.[6]

2. Practitioners must periodically

negotiate overall fees with the provincial government.[6,34]

3. Strikes by physicians were unsuccessful and were recognized as self-serving. The problem was not professional autonomy as some physicians claimed, but more money as other physicians pointed out.[6] Physicians do worry about their autonomy and feel threatened by the need to restrict their fees and reduce their numbers.

4. When National Health Care was introduced, some physicians left Canada (less than 1 percent) but over 500 foreign physicians enter Canada each year and some Canadian physicians who did leave have since returned to Canada. The supply of physicians continues to increase in Canada at between 1.5 and 2 percent per year.[16] The rate of increase in the number of physicians in Ontario is nearly 5 times the rate of population increase. According to the Registered Nurses Association of Ontario, we would need 30 percent fewer physicians in Ontario if nurses were allowed to function as midwives and nurse practitioners. They already function in these roles in some outpost nursing stations in Canada's north.

5. Pressure is on practitioners to see more patients in order to increase their income.[9] Half of the current increase in physicians' income is the result of seeing more patients. (Physicians under this kind of pressure have little time or incentive to offer life-style counseling.)

6. When most costs are paid by a third party, the patient becomes less concerned about the costs of health care. It would be illuminating to the public to send each patient a year-end statement showing the total costs of that person's health care. Such a procedure might also influence practitioner billing practices.

7. There is a tendency to keep patients too long in acute care facilities because of insufficient chronic care facilities. Hospitals account for 40 percent of health care spending. A recent estimate by the Registered Nurses Association of Ontario indicates that 20% of the patients in acute care beds in Ontario hospitals could be cared for adequately and less expensively in chronic care or home care facilities if these were available. In Ontario in 1982, nursing home residents paid $15.68 a day and the government paid $42.35 a day for their care. Home care costs for a patient are estimated to be about half that of nursing home costs. In Ontario, Comprehensive Health Organizations are being set up. These are modeled on the HMO's in the United States and are expected to reduce hospital use by 10 percent. The number of "store-front" medical, dental and optometrical offices is increasing. Hospitals are closing some beds, and this makes it even more difficult for a physician to get a bed allotment.[16,31]

Many practitioners and some of the public in the United States prefer a "pluralistic" system.

8. Access to care is not as good as it might be in some remote areas (but air ambulance service is readily available and widely used).

9. Optometrists must be able to justify the standard of care provided and the fees charged. Adequate records must be kept. Optometrists' accountability is presently to their own self-governing body. If a member of the public has a complaint, the optometrist's records can be reviewed by a peer review committee and the member can be disciplined.

10. Optometrists are not usually integrated into hospitals and other health care facilities. This integration is less common in Canada than in the United States or in the United Kingdom.[33]

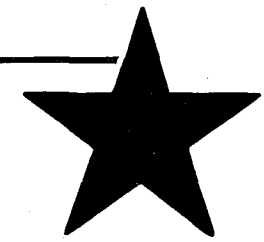
11. There is a need for more recognition of and adequate payment for diagnostic services by optometrists and less reliance on dispensing fees.[33] Ophthalmologists are paid an additional fee for each of certain procedures but an optometrist who performs the same procedure is not reimbursed. This peculiar anomaly seems to be a legacy from former times when only ophthalmologists were paid for eye examinations.

Health care problems identified in the United States

1. From 15 to 30 percent of the population has no (or inadequate) health insurance[1,3,7,16] and this number is increasing.[30] This pool of people provides a potential focus for disease, especially if prenatal care, immunization and nutrition are substandard. Deferring prenatal care and care for such conditions as hypertension and diabetes eventually result in greater costs.[1] This cost escalation overlooks the humanitarian factors of illness, disability, and a shortened life. County hospitals (for those who can not pay) are said to provide a lower quality of care—a two-tier system.[30] Low income persons receive substantially less care.[30] About 46 percent of low income citizens in the United States are covered by Medicaid.[30] The Medicare and Medicaid legislation were passed in 1966.[11] Medicare pays primarily for acute care. Medicare fees provide about 20 percent of the average physician's income.

Unfortunately Medicare and Medicaid exacerbated the inflation of health costs because to a certain extent they locked in the fee-for-service payment system.[1] Before becoming eligible for Medicaid coverage residents of a nursing home must exhaust their own funds;[35,36] there is a means test. The cost of long term care in the United States is paid as follows: 43% by Medicaid, 2% by Medicare, less than 2% by group and individual health insurance,[36] and the rest by government assistance.

2. A few practitioners appear to value freedom of choice more highly than equality of outcome.[23,37] In effect this means that the rich and the poor have an equal right to sleep under a bridge. Competitive health care markets have no interest in the poor and the uninsured.[7] Defenders of an entrepreneurial system point out that the Constitution



does not guarantee equal health care to all. In the United States, only prisoners and military personnel are legally entitled to health care at government expense.

3. The cost of malpractice insurance and the frequency of lawsuits are higher in the United States. Fear of malpractice suits forces doctors to order excessive laboratory and other tests. Providing sensitive, empathetic care is time-intensive and not easy to prove if a doctor is sued for malpractice, however it does decrease the likelihood of being sued.

4. The shift to a for-profit system allowed the quality of care for many to be eroded; costs did not decrease and problems of access and equity were aggravated.[6,7] The once popular shift to for-profit companies is now slowing down. The four big for-profit health companies are selling off some of their facilities.[25] Their bed occupancy rate is less than 60 percent.[12] (Bed occupancy rate in Ontario hospitals in 1985 was 87 percent.) About 700 hospitals will be closed in the United States within six years.[10] The traditional emphasis has been on acute care. As in Canada there is a great shortage of chronic care facilities. At least three-quarters of nursing homes are proprietary in the United States,[31] and in Ontario about 70 percent are proprietary, but in other parts of Canada most are government supported. Cost of one year's care in a nursing home is at least $25,000[35] and is roughly equal in the United States and Canada.

5. Potential for excess surgery and hospitalization. Frequency of surgery and hospital admissions are much lower in HMO facilities[12] (where doctors are on salary)—a fact which implies that surgery and hospital admissions are excessively high in fee-for-service type practices. Patients are enrolled as members in an HMO and pay a fixed annual fee. Hospital use by these patients is reduced by about 40 percent and health care costs are nearly 35 percent less. In a HMO the patient's choice of doctor is restricted.[37] Preferred provider organizations (PPOs) are now becoming popular in the United States.[10] The PPO retains the fee-for-service concept but fees are usually lower than customary charges and the patient's choice of providers is limited.[32] Prepaid group practices can reduce costs of health care by 10 to 40 percent.[1]

Advantages in Canada

Health care is universal, comprehensive and portable. One hundred percent of Canadian residents are entitled to the insured health services provided by the plan under specified terms and conditions. All provinces, except one, include optometrists' services in their plans.

This new Act stipulated that 100 percent of Canadians are entitled to insured health services.

Although the extent of coverage may vary slightly, this coverage provides a ready source of patients and income to the optometrists. The home province or territory pays, at host province rates, for services received out-of-province and out-of-country.

Advantages in the United States

Practitioners feel less constrained by government and by the prospect of peer review of the quality of their work and by the prospect of control of the fees charged. Many practitioners and some of the public in the United States prefer a "pluralistic" system. Some practitioners achieve a higher income.

For optometrists there are stimulating opportunities to gain experience for a year or two in VA hospitals or in military hospitals. Optometrists who have had this experience have exerted a profound change on optometry in the United States. Optometrists also serve in the Public Health Service and in the Civil Service.

Canada's National Health Plan

In 1968 Canada committed itself to implementation of the Medical Care Act of 1966 and to the provision of high quality care to no fewer than 95 percent of its almost 26 million citizens, rich or poor, sick or well, rural or urban.[4,21,39] The Federal Hospital Insurance Act was passed in 1957.[4] In 1984 the Canada Health Act replaced the Hospital Insurance and Diagnostic Services Act and the Medical Care Act. This new Act stipulated that 100 percent of Canadians are entitled to insured health services. Most Canadians believe that a society reveals its values by the human services it provides. Just as every child is entitled to an education, it is felt every person is entitled to the best available health care. Some organizations tend to fight against a public health care plan.[40] At different times and in different ways the Medical Associations,[6] the Insurance Industry and parts of the Pharmaceutical Industry have resisted development of a National Health Plan. In Canada the Canada Health Plan is tax funded, but some provinces charge premiums. In a typical Canadian hospital there is no way you can tell who is rich and who is poor.[6]

Canada's health status looks to be as good as that of United States.[3] Tables of morbidity, disability and mortality indicate much similarity. It has always been difficult to measure the quality of health care but some data tend to show that health care in Canada is of good quality. The rate of infant mortality and neonatal mortality (Tables 6,7) is lower in Canada than in the United States. Life expectancy at birth is slightly longer for females and males in Canada than in the United States.

Most Canadians are satisfied with health care services as currently provided; over 80 percent express satisfaction with the system.[3,21] The public in the United States and in the United Kingdom have expressed a relatively

low level of satisfaction with the provision of health care in their own countries.[6,41]

Conclusion

It is clear that the United States and Canada have chosen different ways to control the costs of health care. Now both systems must perform more selective allocation of resources and more rationing of care. Neither system solves all the problems. No country has achieved a system which relates management of health care to outcomes.[11] Neither Canada nor the United States has been able to reach the low infant mortality rates achieved by Japan or match their life expectancy at birth (75.2 years for males, 80.9 years for females).[42] Japan spends 6.7% of their GNP on health care. A high proportion of GNP spent on health care does not necessarily result in a healthier population. Factors such as lifestyle and occupational and environmental hazards have to be considered.

Most of the disadvantages in the Canadian health care system are from the viewpoint of the practitioner. Although there are more controls on the practitioner they also have the benefit of a guaranteed income. They may not be paid what they feel they are worth but they do get paid. The main flaw in this system is that with removal of all barriers to access there is no control on utilization of the system. This results in overusage of the system by consumers who view health care as "free" and by practitioners who increase their income by increasing their patient load.

Under the United States health care system the main disadvantages are for the consumer of health care while all the advantages are for the practitioner. Whether a universal health insurance system would work in the United States as well as it has in Canada is difficult to say. It is not possible to transplant one health care model to another country due to differences in traditions, experience and philosophy. It should be possible for each country to learn from others and to incorporate modified components of another health care system in order to benefit its citizens.

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Optometric Education in Saudi Arabia

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Abstract

This paper describes the first attempt at optometric education in the Middle East. King Saud University in Riyadh, Saudi Arabia, has undertaken this effort, offering a B.Sc. degree in optometry. The University's second class of optometrists is currently being trained within the College of Applied Medical Sciences to meet the Kingdom's need for vision care.

Key Words: optometric education, optometric curriculum, King Saud University, Saudi Arabia, Middle East

Introduction

The intent of this paper is to share with the optometric world the historical development and status of the Middle East's first program in optometry at King Saud University in Saudi Arabia. It is not difficult to imagine the need for optometric eye care in a country of roughly seven million people, with a harsh desert environment and very limited eye care. The boom in oil prices during the 1970s gave the Kingdom of Saudi Arabia the financial resources necessary to develop the country. An infrastructure, including roads, telecommunications, education, agriculture, and health care has been developed over the past two decades. During the 1940s there were two hospitals in the Kingdom—both in Jeddah and catering to Hajj pilgrims journeying to Mecca and Medina. By 1970 there were 74 hospitals with 9,039 beds, and in 1985 there were 177 hospitals with over 30,000 beds. Physicians have increased in number from 1,172 in 1970 to 14,335 in 1985.[1] Approximately ten Western-trained O.D.s are currently in Saudi Arabia. The vast majority of health care workers are expatriates of various nationalities.

The bulk of health development revolved around curative medical care. Fletcher proposed the need for optometric training in Saudi Arabia in 1982.[2] Tabbara and Ross-Degnan surveyed the eye health of the Saudi population in 1984, finding uncorrected refractive error essentially tied with nontrachomatous corneal scarring as the third leading cause of blindness, and a blindness rate of 2.6%, which is about 20 times that of the U.S.[3] Ophthalmological and optometric eye care are services greatly needed in Saudi Arabia.

TABLE 1
Departments and Programs within the College of Applied Medical Sciences.

Department of Biomedical Technology
- Biomedical Instrumentation
- Optometry

Department of Community Health Sciences
- Environmental Health
- Health Education
- Health Service Administration
- Medical Record Administration
- Nutrition

Department of Nursing

Department of Clinical Laboratory Sciences

Department of Dental Health
- Dental Hygiene
- Dental Technology

Department of Radiological Sciences

Department of Rehabilitative Sciences
- Physical Therapy
- Speech Pathology and Audiology

TABLE 2
Courses in the Unified Health Program at KSU.

Semester One	Semester Two
Introduction to Physics	General Physics
General Biology I	General Biology II
General Chemistry	Organic Chemistry
General Mathematics	

Dr. McQuaid graduated from the Southern California College of Optometry in 1984 and is currently practicing in Aurora, Colorado. He is a former assistant professor at King Saud University.

Dr. Kusztyk, a 1984 graduate of the Southern California College of Optometry, resides in Southern California where he practices in an HMO setting with FHP, Inc. He is a former assistant professor at King Saud University.

TABLE 3
First Semester Core Program Courses at CAMS.

First Semester
Pathophysiology
Principles of Biostatistics
Health Care Delivery System
Basic Emergency Care

TABLE 4
The Optometry Curriculum at CAMS.

COURSE	UNITS LECTURE	LAB	TOTAL
SECOND YEAR			
SECOND SEMESTER:			
Ocular Anatomy	2	1	3
Optics	2	1	3
Clinical Methods I	1	1	2
Visual Science I	1	1	2
Introduction to Optometry	1	-	1
University Requirements or Free Elective			6
TOTAL			**17**
THIRD YEAR			
FIRST SEMESTER:			
Ocular Neuroanatomy & Physiology I	2	-	2
Ophthalmic Instrumentation	1	1	2
Ophthalmic Optics I	1	1	2
Clinical Methods II	1	1	2
Visual Science II	1	1	2
Visual Optics	2	-	2
University Requirement or Free Elective			4
TOTAL			**16**
SECOND SEMESTER:			
Ocular Neuroanatomy & Physiology II	2	-	2
Ocular Drugs & Pharmacology	2	-	2
Ophthalmic Optics II	1	1	2
Contact Lenses I	1	1	2
Clinical Methods III	-	2	2
Binocular Vision	1	1	2
Professional Elective	2	-	2
University Requirement or Free Elective			3
TOTAL			**17**

Optometric Education at King Saud University

In the early 1980s, British and American consultants in allied health professions advised the Saudis on developing a school to train allied health personnel. King Saud University (KSU), in the capital city of Riyadh, incorporated optometric education in the planned curriculum of the College of Applied Medical Services (CAMS). Table 1 shows the seven departments and the various programs within the college. Although one of the U.S. optometry schools was contacted to assist in developing optometric education, no agreement was ever reached and KSU eventually began recruiting faculty in an ad hoc manner. The first students were accepted in the college in 1983, and CAMS moved to a new building in 1985.

Students wishing to pursue an education in health care are required, in their first year of study at KSU, to take the Unified Health Core. Table 2 lists these courses, which are prerequisite for acceptance by one of the health-related colleges. This one-year program is designed to provide a basic math and science education, and is taught largely in English. Upon completion of these two semesters, admission to the Colleges of Medicine, Dentistry, Pharmacy or Applied Medical Services is based on academic performance, with 75 out of 100 being the minimum acceptance overall grade. An English examination must be passed, but English proficiency varies widely among students.

The first semester in CAMS consists of a college core program designed to provide a common knowledge base to students in allied health sciences. Table 3 includes those courses required before a student is eligible for admission to a specific five semester program within CAMS. Completion of 128 units is required for graduation; 60 of those units are comprised of university requirements and free electives. Optometry degree candidates are required to complete 68 units. One unit of credit consists of one lecture hour or three laboratory hours. Table 4 outlines the optometry curriculum. It is similar to the program offered at the University of Benin[4] and to that proposed for the College of Optometry at Tel Aviv University.[5] Upon completion of this course work a student must then complete a one-year internship, gaining additional clinical experience before being allowed to practice.

Education of men and women through the undergraduate level is separate in accordance with societal and religious custom. The first optometry class of six men and eight women completed course work in January 1988. During the following year each student had a three-month rotation through four of fourteen hospital eye clinics in the Kingdom. Supervision was provided by optometrists at four of these sites, and ophthalmologists supervised the interns in the balance of the facilities. The second class of nine men and ten women began study in February 1988, and will finish their internships in

FOURTH YEAR			
FIRST SEMESTER:			
Ocular Disease I	2	-	2
Contact Lenses II	1	1	2
Clinical Methods IV	-	2	2
Advanced Techniques	1	1	2
Anomalies of Binocular Vision	1	1	2
Professional Elective	-	-	6
University Elective	-	-	2
TOTAL			18
SECOND SEMESTER:			
Ocular Disease II	3	-	3
Optometry Clinic	-	3	3
Case Analysis	2	-	2
Low Vision	2	1	3
Professional Electives	-	-	4
University Requirements	-	-	2
TOTAL			17
ELECTIVE OPTOMETRY COURSES			
Developmental Vision	2	-	2
Geriatric Optometry	2	-	2
Contact Lenses III	1	1	2
Visual Science Project	-	4	4
Optometric Practice	2	-	2
Orthoptics I	1	1	2
Orthoptics II	1	1	2
Occupational Vision	2	-	2
Pediatric Optometry	2	-	2

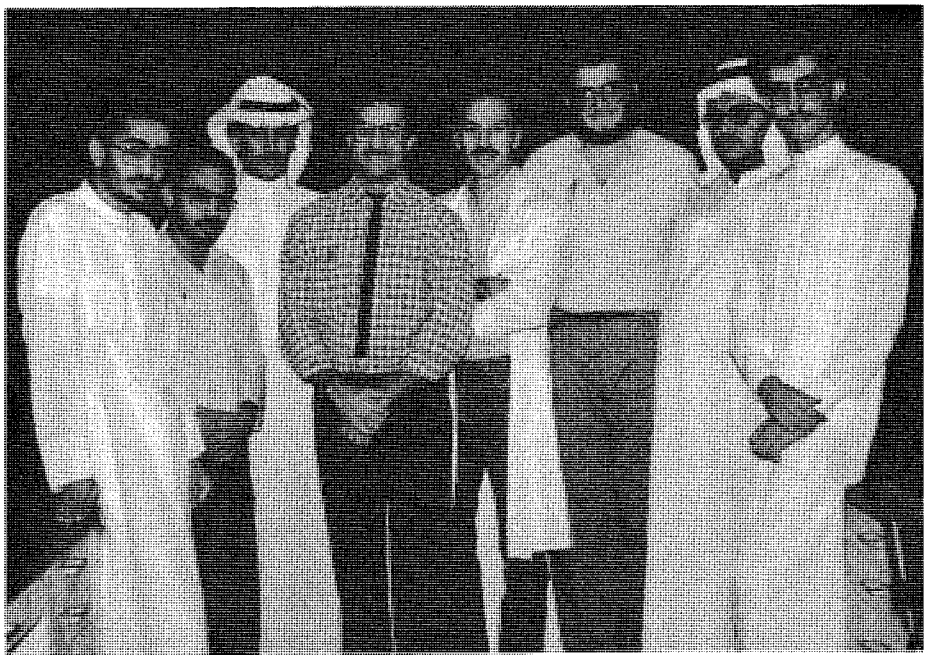

FIGURE 1. George Kusztyk, O.D., right, and Robert McQuaid, O.D. with the second class to participate in the first optometry program in the Middle East.

spring 1991. (See Figure 1). The students are from Saudi Arabia and neighboring Middle Eastern countries.

Professional Status

In the United States, optometric education leads to a professional degree. The award of the doctor of optometry degree (O.D.) allows an individual to apply for licensure throughout the states. This is similar to the educational and licensing process for other health practitioners who have earned the terminal degree within their professions, as compared to the terminal academic degree, a doctor of philosophy (Ph.D.). In many foreign countries, including Saudi Arabia, a system of medical education based more on the British model has evolved. Physicians, dentists and optometrists can earn a B.Sc. degree in their chosen specialty and then be eligible for licensure (in Saudi Arabia there is no qualifying licensure) and professional practice. If interested in further training and specialization, they may earn an M.Sc. or Ph.D. In Saudi Arabia, the Ministry of Health and King Saud University consider a board-certified specialty in the U.S. equivalent to this graduate training. Consequently they extrapolate that the O.D. degree is equivalent to their entry level baccalaureate.

Optometry has only recently been introduced to Saudi Arabia, and the O.D. degree has not been universally accepted as a terminal, professional degree and incorporated into the existing scheme. Confusion still exists between the American and British models of medical education and practitioner qualification, particularly when extended beyond the realm of medicine. The greatest problems still lie in educating other health professionals as well as university administrators on the education, training, and qualifications of U.S.-trained optometrists. These problems are not unlike those described by Levinson[5] of varied practitioner training and qualification in Israel, and by Kragha[6] and Babalola[7] who discuss the establishment and practice of optometry in Nigeria, where both B.Sc. and O.D. degrees are recognized.

1984: An Auspicious Beginning

As the first faculty member of the optometry program in 1984, we were beleaguered by a professional identity crisis. Optometry had been placed as a program within the Department of

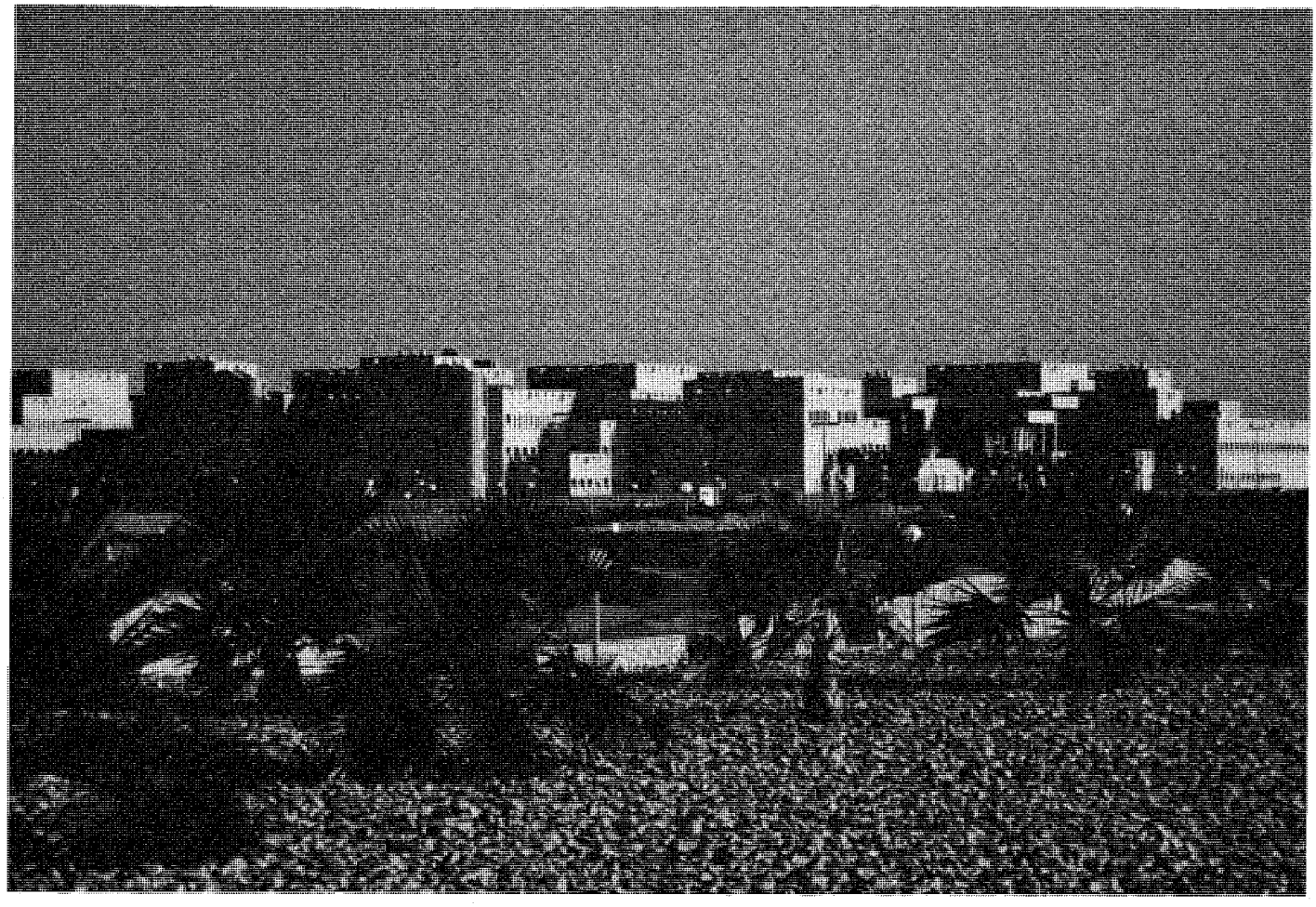

FIGURE 2. The King Saud University campus completed in 1984 just north of the capital of Riyadh was designed for 20,000 students. Plans are being drawn for addition of the CAMS facility and optometric clinic adjoining King Khalid University Hospital.

Biomedical Technology, a department that trains students in the repair and maintenance of biomedical instruments. Despite departmental approval and support by the dean of CAMS, we were not able to establish an optometry department at KSU during our five-year tenure. Attaining department status would help provide the recognition and political clout necessary to move the optometric profession forward.

Equipment was ordered from various American and European suppliers. The nucleus of our optometric library—texts and journals—were also ordered. After studying the brief optometry curriculum offered in the College Bulletin, we rewrote the entire program producing a more detailed and continuous flow of topics. Efforts to recruit additional faculty were initiated. The first optometry students were enrolled in February 1985.

Faculty

The number of optometric faculty members at KSU is still very limited. This has prohibited the annual enrollment of an optometry class and hindered program development. Our goal was to graduate ten male and ten female optometrists annually. To establish an annual class enrollment, we project a need for fifteen full-time-equivalent faculty members to teach the male and female classes at all three levels, as well as to develop curriculum, to supervise interns, and to attend to administrative duties.

Confusion still exists between the American and British models of medical education and practitioner qualification, particularly when extended beyond the realm of medicine.

Educational Resources

Development of the college's optometric library has been slow. Faculty and students have access to the College of Medicine library, as well as limited access to the library at King Khalid Eye Specialist Hospital. Both of these are located across the city from CAMS. While reference texts are available, journal subscriptions are skewed in favor of medical care, with few optometric titles. Students can order texts through private book retailers, which is a slow process requiring six months or more of lead time.

Cooperation with existing government eye care facilities is tenuous and needs to be expanded and solidified to enhance the education and training process for clinically oriented courses and the internship.

Physical Facilities

CAMS is housed in a beautiful new building, one which it outgrew after one year of occupancy due to student demand for the health professions and course duplication for males and females. Optometry currently has three laboratory rooms which are utilized for lectures and laboratory practicals. Presently, two complete preclinic examination lanes and the equipment for a third lane are available. There are plans to construct a new facility for men, including an optometric clinic, on the main KSU campus in Diriyah within a few years. (See Figure 2.) The present facility will then be used solely by women.

Summary

A clear and pressing need exists for optometric education in Saudi Arabia. Very few eye care practitioners are available to treat a huge patient backlog which will continue to grow as the Kingdom's population increases. To meet the Kingdom's needs, the number of graduates must increase significantly by expanding the current program, or by establishing additional training programs in the Kingdom. The optometry program at King Saud University is playing a leading role in the development of the optometric profession in Saudi Arabia. It represents the vanguard of optometric education within the Middle East and deserves the recognition and support of the international optometric community.

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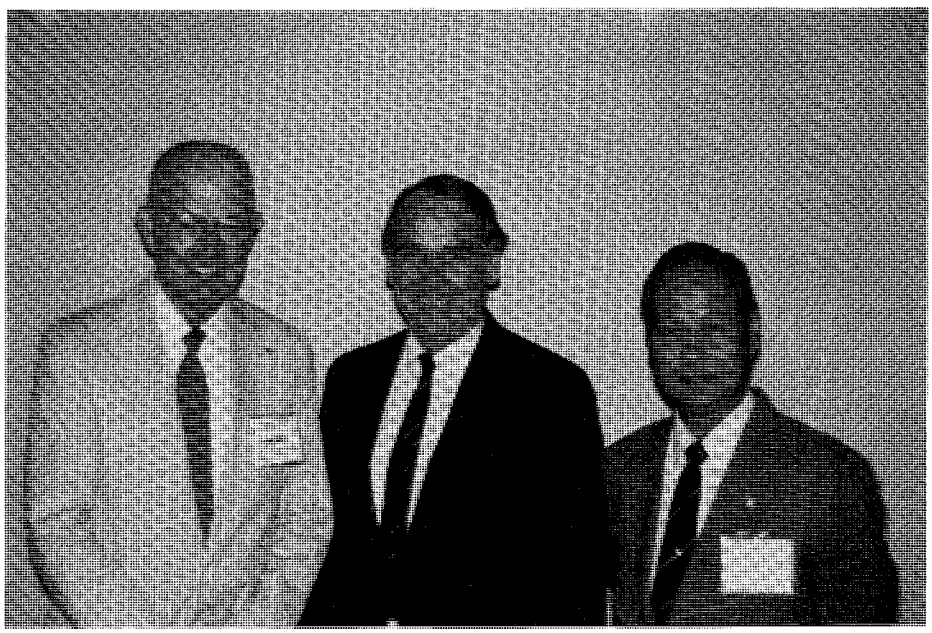
International Optometric and Optical League Meets in Washington, D.C.

Optometrists from 24 countries attended the recent Annual Meeting of the International Optometric and Optical League held for the first time in the capitol of the United States.

A highlight of the Meeting was a special briefing at the White House by major government figures involved in education and health care. The delegates were briefed on education programs in the United States and the use of highly educated professionals to assist in teaching.

During the meeting, Dr. Henry Hofstetter, Indiana University School of Optometry, was named International Optometrist of the Year. Dr. George Woo, Waterloo School of Optometry, delivered the Herbert L. Moss Memorial lecture. His topic was Implications of New Technology to the Profession of Optometry. This year's meeting also saw the induction of two new associate members of the League. The Jamaica Optometric Association became the 51st country member and the National Board of Examiners in Optometry became the 62nd organizational member.

Of major importance were the discussions about the First World Conference on Optometric Education which will be coordinated by the League, December 4-5, 1990, at the University of Houston, School of Optometry. Schools and colleges of optometry around the world are expected to participate. "The fact that this conference is going to be held illustrates just how far optometry around the world has progressed in the past ten years. It represents an opportunity for all optometrists to focus on the value of education in the advancement of their profession," said R. G. Burtt Holmes, president of the IOOL. The conference is being made possible by a major grant from Bausch & Lomb.



Pictured left to right are: Dr. Henry W. Hofstetter, 1990 International Optometrist of the Year; Dr. G. Burtt Holmes, president of the International Optometric and Optical League; and Dr. Claro Cinco, 1989 International Optometrist of the Year.

ASCO's 1989-90 Annual Report

Report of the President

Annual Meeting
June 23-25, 1990
Honolulu, Hawaii

Appointments

Two committees have been appointed. The first is the Resolutions Committee comprised of Dr. Norman Haffner, chairman, Dr. Willard Bleything, and Dr. Thomas Lewis. The second is the Committee to Develop a Consortium Model for Non-U.S. Programs comprised of Dr. Willard Bleything, chairman, Dr. Arthur Afanador, Dr. Darrell Carter, Dr. William Baldwin, and Dr. Larry Clausen.

I have asked Dr. Morris Berman to serve as the chairman of the Standing Committee on Academic Affairs. The composition of this committee is crucial to its effective functioning. The other members of the Committee are Dr. David Heath, Dr. Pierrette Dayhaw-Barker, Dr. Jim Sheedy, and Dr. Mike Keating. The Committee had its first meeting in February and made a number of recommendations that are discussed later in the Annual Report.

National Summit on Optometric Education

I have asked Drs. Norman Haffner, Richard Hopping and Brad Wild to serve as a planning committee for a proposed National Summit on Optometric Education. The American Optometric Association is interested in sponsoring such a conference but wants additional information.

Letter to the President of the American Optometric Association

I sent a letter to the president of the AOA that addressed the following issues: the Education Summit, ASCO Practice Information Service and AOA's Residency Conference. Representatives of the AOA will meet with the ASCO Board at its meeting in Hawaii to discuss these and other items.

ASCO's Strategic Plan Progress

During the year, the Ophthalmic Optics Workshop was held, planning for a meeting of the clinic directors and a meeting on graduate education in optometry proceeded. Progress is being made on the biomedical sciences curricular element both by the task force and by the Standing Committee on Academic Affairs. The revised annual survey has been collected and appropriate changes will be made before it is sent to all institutions this fall. There is work to be done relative to the National Commission to Study Optometry, and the organization of the National Summit on Optometric Education.

Respectfully submitted,
Jerry Christensen, O.D., Ph.D.
June 1, 1990

National Activities

Optometric Education Task Force

ASCO and the American Optometric Association have joined together to form the Task Force on Optometric Education to create a new initiative to obtain federal funding for optometry schools. The task force asked Dr. Melvin D. Wolfberg, former president of the Pennsylvania College of Optometry, and Dr. Irvin M. Borish to prepare a paper stating the case for increased federal support for the schools and colleges. A draft of the paper was presented to the ASCO Board at its annual meeting in June and the first version will be ready by fall 1990 when the renewal of Health Manpower legislation will be considered by the Congress.

Migrant Worker Program

The Association's efforts to improve optometric vision care for migrant farm workers entered a new phase this year. After five years of optometric vision demonstration projects and a summary report of that activity, ASCO moved this year into a program to develop self-sustaining programs of vision care at the migrant health centers. Workshops were held in Texas, West Virginia and Puerto Rico. Two videos are nearing completion — one to teach health professionals at migrant health centers to do vision screenings and one to heighten awareness of the need for vision care.

Student Endowment Fund

The ASCO student endowment fund provided approximately $10,000 to the 17 U.S. optometry schools for financial aid for students. Most of these funds were used for individual scholarships or emergency loans.

Sustaining Member Section

The current number of sustaining members is 27. New members since January 1 are the Sunsoft Corporation and Ross Laboratories.

Board Meetings

In addition to the Annual Meeting in Honolulu, Hawaii, Board of Directors meetings were held this year at The New England College of Optometry in October 1989 and at Pacific University in March 1990. ASCO is grateful to Drs. Clausen and Bleything for the excellent hospitality and arrangements for the board meetings and entertainment at New England and Pacific respectively.

Pennsylvania Higher Education Assistance Agency

ASCO's Board is pursuing access of federal loan programs through PHEAA. A meeting to draw up a preliminary agreement is planned. It is hoped to have the new program in place for the fall 1990.

Annual Survey

A new format for the Annual Survey of Optometric Education has been developed. A pilot survey was conducted in 1990 and the final version of the survey will be circulated on August 1, 1990, for the 1989-90 academic year. The return date for the revised survey will be October 15, 1990, with the data compiled by early January 1991.

Applicant Status Report

A new applicant status report format was generated this year. The preliminary count of applicants is 1,820 compared to a final count of 1,881 last year. This represents a decline of 3.2 percent which is not good, but not as bad as expected. The number of applications decreased from 4,191 to 3,798, a decline of 9.4 percent. The new report format also will provide additional basic data on the applicant pool: sex, age and ethnic status. This additional data is an improvement, but falls far short of the applicant pool information available in the other major health professions: allopathic medicine, osteopathic medicine, dentistry, podiatry, pharmacy and veterinary medicine.

Optometry Recruitment Video

The fourteen-minute recruitment video titled "Is Your Future in Sight?" was developed by ASCO to respond to the decline in the number of applicants to the schools and colleges of optometry. Over 2000 of these videos have been distributed to health professions advisors, college career counselors, high school guidance counselors and optometrists. Additional videos are available at a cost of $15.

Ophthalmic Optics Conference

Approximately 40 faculty members participated in the April 20- 22, conference convened by ASCO and sponsored by Varilux with support from AIT, Logo Paris and Silor. Representatives of the ophthalmic industry and optometry faculty made presentations relevant to optics and dispensing. Reports on model curricula in dispensing and optics are currently in process.

Biomedical Sciences Curricular Workshop

The Biomedical Sciences Curricular Workshop, sponsored by ASCO with assistance from the NBEO, was held in Washington, D.C. on March 15-17. Faculty and experts in the six areas of anatomy, physiology, biochemistry, microbiology, general pathology, and general pharmacology worked to develop a course outline and to specify hours needed. (Reports of the discussion groups will be reviewed by an ASCO task force in October 1990.)

National Conference on Graduate Optometric Education

Planning is proceeding for a fall, 1990, meeting on graduate education in optometry. Directors of graduate programs have been contacted and solicited for ideas.

ASCO Fiftieth Anniversary

Next year will mark ASCO's fiftieth year. Appropriate activities are being planned for the annual meeting and for the Journal of Optometric Education.

Interprofessional Activities

NAAHP Meetings

ASCO was well represented at the June, 1990, National Association of Advisors for the Health Professions meeting in San Diego. ASCO's Council on Student Affairs met in San Diego immediately before the NAAHP meeting and the council members stayed on to attend the advisors' meeting and to participate in the "Meet the Deans" program. In addition, Dr. William Cochran, president of Southern College of Optometry, Dr. Gene Kramer of the Optometry Admission Testing Program, Dr. David Corliss of the University of Alabama at Birmingham (UAB) School of Optometry, and Mr. Joe Fleming, a student at UAB School of Optometry, represented optometry in four separate multi-disciplinary panel discussions.

Council Activities

Council on Student Affairs

Dr. David Corliss, assistant dean for student affairs at the University of Alabama at Birmingham (UAB) School of Optometry, ended his term as chairperson of ASCO's Council on Student Affairs (CSA) in June of this year. He remains a member of the Council. The Council's new chairperson is Dr. Lorraine Voorhees, dean of student affairs at the Southern California College of Optometry.

The CSA distributed over 2200 copies of the ASCO videotape package "Is Your Future in Sight?" to high school and college career counselors and to prehealth advisors. The videotape package was developed by the CSA's Student Recruitment Task Force, which is chaired by Ms. Eydie Jones of UAB. Among other projects this past year, the Task Force held a recruitment workshop at the January CSA meeting and a marketing workshop at the June CSA meeting.

ASCO's Practice Information Program continued into its second year of operation. This service was administered by Sharon Davis of the University of Missouri-St. Louis School of Optometry. Although funding ended on June 30, 1990, ASCO is negotiating with the American Optometric Association to take over the service.

Discussion is underway with Betz publishing company to produce a preoptometry planning guide and an optometry admission book. These volumes could be published as early as June 1991.

The Applicant Status Report administered by the CSA was revised this past year. More data is now collected than ever before about optometry school applicants. The Council hopes to expand its single year-end report to several reports issued throughout the year.

Standing Committee on Academic Affairs

The Standing Committee on Academic Affairs held its first meeting in St. Louis on February 24-26, 1990. Dr. Morris Berman of SCCO described the committee's basic goal of advancing the Strategic Plan. The committee stressed the importance of faculty development focusing on a faculty placement service, educator workshops, sabbatical opportunities and visiting scholar programs. The committee advocated curriculum development activities emphasizing the biomedical sciences and manpower. The committee also advocated communication via an ASCO newsletter.

Other Committees

The Geriatric Curriculum Committee met in Atlanta on April 21 and 22 to develop an application for a new grant from the Administration on Aging. That application was filed and notification is expected in the fall of 1990.

1990 Annual Meeting

The ASCO annual meeting was held June 23-25, 1990, at the Hilton Hawaii Village Hotel, Honolulu, Hawaii. There were 31 representatives of the 17 United States schools in attendance as well as an associate member from the College of Optometry in Verona, Italy.

Representatives of the American Optometric Student Association, the National Board of Examiners in Optometry, the Council on Optometric Education, the American Optometric Association and the College of Optometrists in Vision Development presented reports to ASCO's Board.

Resolutions passed by the Board included a tribute to AOA President David Sullins upon his promotion to the rank of Rear Admiral and for his staunch support of optometric education; appreciation to Allergan Inc. for its support of practice development and administration through the Pathways program; and thanks to Dr. David Corliss for his insightful leadership and fine accomplishments during his years as chairman of the ASCO Council on Student Affairs

ASCO sustaining members met with member school deans, presidents and faculty at both an evening reception and a luncheon. Three sustaining members — Dr. William Boyts of Allergan, Dr. Rod Tahran of Varilux and Dr. William Wallace of MediVision spoke with the Board on matters of mutual concern in the profession. Other sustaining members will appear before the Board at meetings throughout the year.

Luncheon

A highlight of ASCO's meeting was the annual luncheon program. The luncheon speaker was Dr. Satoru Izutsu, associate dean at the University of Hawaii Medical School. Dr. Izutsu spoke about his school's experience with a problem based curriculum and the challenges it presents to the faculty and administration. Dr. Izutsu also described a number of clinical opportunities available to the students. Those who were at the luncheon will long remember the warmth and passion Dr.

Izutsu exuded as he shared his extensive knowledge about education, medicine and life in Hawaii.

Journal of Optometric Education Report

The *Journal of Optometric Education* continues under the leadership of editor David A Heath, O.D., associate professor of optometry and director of general vision services at the New England College of Optometry, and managing editor Patricia Coe O'Rourke, M.A.

Editorial

Four issues were produced during 1989-1990 (Volume 15) containing a total of seventeen articles.

The summer 1990 issue included papers on teaching clinical reasoning; these papers were based on presentations delivered at the meeting of the Education Section of the American Academy of Optometry in December 1989. In addition, papers dealing with a variety of other topics were published: a study of problem based learning as a potential teaching approach, a look at the effects of changing student characteristics on attrition at the New England College of Optometry, a description of a patient assessment diagram as a teaching model, a consideration of a strabismus diagnosis laboratory for the evaluation of concomitancy, a discussion of the value of high test reliability, and a study of the Kolb Learning Styles Inventory. Additional papers published in Volume 15 were: a description of a clinical curriculum model for training fourth-year optometry students at NEWENCO, a study of the attitudes of optometry students toward the disabled and visually impaired, a neural sciences computer- assisted learning package and a description of the programmed lecture for improving large audience teaching.

An interview with ASCO president Jerry Christensen, O.D., Ph.D., was prepared by ASCO managing editor Patricia O'Rourke and a tribute to ASCO executive director emeritus Lee W. Smith, M.P.H. was written by Richard L. Hopping, O.D., D.O.S.

Editorials published this year were: "The Curriculum Crunch," "Professionalism and the Life-Long Learner," and "Teaching Clinical Reasoning" by JOE editor David A. Heath, O.D.; and "Educational Research in Optometric Education" by Larry R. Clausen, O.D., M.P.H.

JOE Review Board

An historic first was achieved when JOE's editorial review board met in December 1989 during the annual meeting of the American Academy of Optometry. Approximately half of the board was able to attend. In discussing the mission of the Journal, the board stressed the importance of appealing to educators beyond optometry; the Journal should publish articles that address issues of common concern to all professional educators. While the quality of the articles now being published has improved, further development is necessary.

The board expressed its concern that JOE's inability to become included in *Index Medicus* limits the desire of potential authors to publish in JOE. (The Journal now is included in the following indexes: Ocular Resources Review, and the Current Index to Journals in Education/ERIC.) The board recommended that JOE publish more invited articles from professions educators outside optometry. (This was begun with the publication of "The Case for a National Center for Health Professions Education Research," reprinted from *Academic Medicine*.

Revised publication guidelines, to be published in the fall 1990 issue, will include a new classification for articles received: article, invited article, literature review, communication, letter to the editor, and editorial. The board hopes that these changes will allow for a rigorous review of original articles and research, while allowing for a more informal exchange of ideas through the communications section.

Distribution and Subscriptions

The total distribution of each issue is about 2800 copies with all senior optometry students receiving JOE directly in their mailboxes as a result of the support of ASCO's sustaining members.

Production and Advertising

Advertisers this year were Varilux Corporation, Ciba Vision Care, and Volk Optical/Tech Optics. Special thanks to these sustaining members for their support.

Computerization

In an effort to contain costs and shorten production time, the Journal is moving toward computer-based typesetting. Authors are being encouraged to send their manuscripts on discs. By June 1991 it is hoped that the entire Journal will be telecommunicated to the typesetter.

OEA Awards

The Journal again has been honored with several awards in the Optometric Editors Association's annual journalism awards contest for the published year 1989. The Journal again won the first place award for "Best Journal-National." The Journal also was awarded first place in the "Best Non-Technical Article" category for the article "Problem Based Learning as a Potential Teaching Approach: A Literature Review, by Mitchell Scheiman, O.D., Steve Whittaker, Ph.D., and William Dell, O.D., M.P.H. Second place awards were received in the "Best Editorial" category for the editorial "The Curriculum Crunch," by David A. Heath, O.D. and in the "Best Guest Editorial" category for the editorial "Student Remediation," by Morris Applebaum, O.D.

Publication Guidelines for the Journal of Optometric Education

I. Introduction

The *Journal of Optometric Education* invites educators, administrators, students, practitioners and others with an interest in optometric education to submit manuscripts for publication consideration.

The *Journal of Optometric Education* is the national quarterly publication of the Association of Schools and Colleges of Optometry. Its circulation includes all of the accredited optometric educational institutions in the United States, as well as students, practitioners, government leaders, and others in the health sciences and education. Established in 1975, the *Journal of Optometric Education* is the forum for communication and exchange of information pertinent to optometric education. It is the only publication devoted entirely to optometric education.

The *Journal of Optometric Education* publishes scholarly papers of archival quality, descriptive and timely reports, information and observations in the field of health sciences education, as well as current news from the member institutions of the Association of Schools and Colleges of Optometry. Manuscripts submitted for consideration for publication are evaluated by any or all of the following: 1) journal editor, 2) members of a peer review board, and 3) two or more independent referees who are specially selected as nationally recognized experts in the subject area of the manuscript. Manuscripts are considered for publication with the understanding that they are to be published exclusively in the *Journal of Optometric Education,* unless prior arrangements have been made.

International Style Guide for Uniform Submissions

In May 1987, a number of optometric editors and writers met in St. Louis, Missouri, to develop a standard set of publication guidelines for optometric journals. The *Journal of Optometric Education* subscribes to these guidelines. The following instructions to authors reflect those guidelines (first published in 1989 by the *Journal of the American Optometric Association and the American Journal of Optometry and Physiological Optics*), but have been modified slightly to reflect the educational orientation of the *Journal of Optometric Education.*

The *Journal of Optometric Education* generally publishes four basic types of manuscripts:

1. Articles
2. Literature reviews
3. Communications
4. Editorials

II. The educational research article

A. Title

The title should be concise, meaningful and clear. It generally should not be in the form of a complete sentence. Subtitles may be used whenever needed for specific purposes relating to the title or text. Titles should indicate the content of the manuscript, serve as a guide to reference librarians, and facilitate communication.

B. Author

The name of the author, or names of the authors, should be typewritten and centered, one double space below the title. Proper names should be in capital and lower case letters, and the appropriate academic degree(s) should be indicated. In a multi-authored manuscript, the person should be listed first who has made the most significant intellectual contribution to the work regardless of academic rank or professional status. This list should include only those who have made a substantial contribution to the design and execution of the work and the writing of the manuscript. Authors should identify the name and address of the author to whom correspondence should be sent.

C. Abstract

Authors are required to submit abstracts with their papers. The abstract should be typed on a separate sheet of paper in one paragraph, and it should not exceed 100 words. Abstracts should be as informative as possible and should contain statements regarding the nature of the problem studied, methods, results, and conclusions.

D. Key Words

Authors should select key words (about 5) that reflect the primary subject matter of the paper. The purpose of key words is to assist reference librarians and others in retrieval and cross-indexing. The *Journal of Optometric Education* is listed in the computer databases Ocular Resources Review and Educational Resources Information Center (ERIC).

E. Text

The goal of scientific writing is effective communication. More specifically, its goal is to communicate abstract propositions, logical arguments, empirical observations, and experimental results, including their interrelationships and interactions.

Authors should use the active voice ("this study shows" rather than "it is shown by this study") and the first person ("I did" rather than "the author did"). The past tense is appropriate for describing what was done in an experiment; the present tense is suitable for

referring to data in tables and figures.

Lens formulas and associated acuities should be expressed as in the following example: OD:+2.25 - 1.00 × 95, 20/20 (6/6).

Generic drug names should be used, followed by the proprietary name in parentheses at the first mention. Acronyms and abbreviations should always be spelled out at first mention.

Symbols and diacritical marks, when used, must be clearly drawn and identified in pencil in the margin, for example, "prism diopter sign."

Manuscripts should be organized within the framework of a formal outline. The standard outline for reporting of studies, experiments, or other research projects is as follows:

1. Introduction
   The introduction has several functions. It acquaints the reader with other relevant work performed in the subject area. Only contributions that bear on the interpretation of the results should be referenced. The introduction also presents the general nature of the problem to be addressed, the specific aspect of the problem that was studied, and the hypothesis and the manner in which it was tested.

2. Methods
   The methods should be described in enough detail so that others could replicate them. However, if portions of the methods have been described elsewhere, a summary with appropriate citations is sufficient. It is essential to describe how case and control subjects were selected for study. It is important to describe any commercially available apparatus used in the study by identifying the manufacturer's name and address. Brief descriptions of methods that have been published but may not be universally understood should be presented. In addition, limitations of the methods employed should be presented, and new or modified methods should be described in detail. It is important to identify precisely all contact lenses, chemicals, drugs, or ophthalmic lenses, including generic names, dosages, and administration where appropriate. It is inappropriate to publish names of subjects or patients, their initials or other personal identification. Also, it is inappropriate to use ethnic terms when they serve only to perpetuate unnecessary, unscientific or derogatory connotations.

3. Results
   The results should be presented in a logical order, emphasizing only the important findings of the study without elaboration. Limitations of the results and any implications should be stated. The statistical analysis, if any, should be clear and relevant.

4. Discussion
   The discussion should elaborate on the data, noting the interrelationships among the results and relating them to the original question asked in the study. Acceptance or rejection of the hypothesis should be stated. In addition, the discussion should emphasize any unique or new aspects of the study, and discuss the relevancy of the results.

   It is important to draw those conclusions that can be supported by the results. Implications for basic and applied issues should be stated wherever possible.

F. Acknowledgements

Only those who have made a substantial contribution to the study should be acknowledged. Authors are responsible for obtaining written permission from those acknowledged by name, because readers may infer that acknowledged persons have endorsed the methods and conclusions of the manuscript. Many contributions justify acknowledgement, but not authorship. Such contributions might include acknowledgement of technical help, financial support, sources of materials, and persons who have contributed intellectually to the development of the manuscript. Also, any financial relationship that may be interpreted as a conflict of interest must be acknowledged.

G. References

A list of references is placed at the end of a manuscript following the corresponding author's address. References should be listed in sequential order as they are cited in the text by superscript numbers. Accuracy of citations is of major importance because it makes each specific reference retrievable by the reader. Authors should make every attempt to cite references that are relevant, original and current, and only references actually consulted. Manuscripts that have been accepted for publication but not yet printed, should be cited in the footnote section. Manuscripts that have been submitted for consideration for publication, but have not been accepted, should not be referenced. The list of references should be checked for accuracy against the original publications.

Most optometric journals have adopted the style of references used by the U.S. National Library of Medicine in the *Index Medicus*. The titles of publications should be abbreviated according to the style used in *Index Medicus*. A list of abbreviated names of frequently cited publications is printed annually in the January issue of *Index Medicus* as the "List of the Journals Indexed."

Examples of the correct form of referencing are listed below:

Journal articles

1. Standard journal article
   (List all authors when six or less; when seven or more, list only the first three and add *et al.*)
   Alpar AJ. Botulinum toxin and its uses in the treatment of ocular disorders. Am J Optom Physiol Opt 1987 Feb;64(2):79-82.
2. No author given
   Anonymous. The OD-MD conflict: economic welfare. Optom Manag 1982 Jul;18(7);23-7.
3. Journal paginated by issue
   Kloos S. How do TPAs impact practice? Optom Manag 1987 Apr; 23(4): 14-21.

Books and other monographs

4. Personal author(s)
   Taylor S, Austen DP. Law and management in optometric practice. London: Butterworths, 1986.
5. Editor(s), Compiler(s), Chairman(en) as Author(s)
   Bartlett JD, Jaanus SD, eds. Clinical ocular pharmacology. Boston: Butterworth, 1984.
6. Chapter in book
   Mondino BJ. Bullous diseases of the skin and mucous membranes. In: Duane T, ed. Clinical ophthalmology, vol. 4. Hagerstown, MD: Harper & Row, 1980:1-16.
7. Published proceedings paper
   Norden CN, Leach NA. Calibration of the ERG stimulus. In: Lawville T, ed. Proceedings of the XIV annual symposium of the International Society for Clinical Electroretinography. Doc Ophthalmol Proc, series 12, XIV ISERG Symposium, May 10-14, 1977. Louisville: XIV Annual Symposium of the International Society for Clinical Electroretinography, (ISERG), 1977:393-403.
8. Monograph in a series
   Wurster U, Hoffman I. Influence of age and species on retinal lactate de-

hydrogenase isoenzymes. In: Hockwin O, ed. Gerontological aspects of eye research. New York: S Karger, 1978:26-39. (von Hahn HP, ed. interdisciplinary topics in gerontology; vol 13).

9. Agency Publication
United States Department of Health and Human Services. Fifth report to the President and Congress on the status of health personnel in the United States: Optometry, March 1986. Springfield, Va: United States Department of Commerce. National Technical Information Service, 1986; DHHS publication no. HRS-P-OD-86-1.

Footnotes

Optometric journals discourage excessive or improper use of footnotes, but realize that on specific occasions the footnote may be acceptable. Footnotes can be used to designate a nonretrievable citation, a personal communication, or institutional affiliation of the author. A footnote can also be used to identify sources of equipment or instruments. Footnotes should be identified with small superscript lower case letters in alphabetical order in the text, and referred to at the end of the text of the manuscript under a listing "Footnotes."

III. Literature Review

The purpose of the review is to analyze, consolidate and synthesize the literature on a subject of interest. Topics should be relevant to the journal's readership. A review can make an important contribution to the literature by arriving at a supportable conclusion. Headings for the literature review do not usually follow the standard format (research manuscripts), but the author should use headings and subheadings that promote understanding of the topic.

IV. Communications

This type of manuscript generally describes a program, teaching method or technique useful to the health professions educator. Manuscripts submitted in this category frequently discuss programs or methods, which might otherwise be a research article but for which an assessment of effectiveness has not been done. Communications can also review a body of literature on a specific subject for the purpose of providing the practitioner with guidelines or recommendations regarding the subject matter. Headings for a communications paper do not usually follow the standard format for a research paper, but the author should use headings and subheadings that promote understanding of the topic.

V. Editorials

An editorial is generally a concise article consisting of a critical argument, a personal opinion, or emphasizing an important issue. An editorial does not necessarily depend upon literature support. Letters to the editor, as an editorial submission, are encouraged by the *Journal of Optometric Education.*

VI. Tables, figures and appendices

A. Tables

Each table should be typed double-spaced on a separate page. Tables are usually not submitted as photographs. Tables should appear in consecutive order in the text designated by Arabic numerals (example: Table 1). Location of tables within the body of the text should be specified in the manuscript. An appropriate table title should be on the same page as the table to which it applies.

B. Figures

All figures, whether line drawings, black-and-white photographs, color photographs or 35 mm slides, should add to the presentation of a manuscript.

All figures should be of professional quality, whether they are drawings or photographs. Most computer-generated "drawings" are unacceptable. Figures should be submitted as 5x7 inch (13x18cm) black-and-white or color, glossy prints.

All figures, whether line drawings, black-and-white photographs or color photographs, should be designated as "Figures" (eg., Figure 3). They should be numbered consecutively in Arabic numerals throughout the text of the manuscript. Locations of figures within the body of the text should be specified in the manuscript.

1. Legends
The numbers and captions should be typewritten, double-spaced, in paragraph form, and on a separate sheet of paper. Legends for several figures should be typed on a single sheet of paper. Legends should be kept as short as possible, and should not contain explanatory notes that duplicate the explanations in the text. All internal labels in the figure should be identified in the figure legend.

2. Labels
Authors should label figures adequately. On the back of each print, the author should place a label that indicates the name of the author, the title of the article, the figure number, and the direction of the top of the figure. When labeling slides, clearly label with author's name, figure number and a red mark to indicate the upper right hand corner for viewing the slide, not projecting of the slide. To facilitate the review process, the authors should submit an original and three copies of each line drawing, photograph or slide.

C. Appendices

Occasionally it is necessary for the author to supply subordinate information that is relevant to the study but that might distract the reader because of excessive detail; eg., computer programs, mathematical formulas, address lists, surveys or other data that might be cumbersome to present in the text. Appendices should be labeled Appendix A, Appendix B, Appendix C, etc. Each should have a short, descriptive title.

VII. Submitting the manuscript

A. General guidelines

The manuscript should be typed double-spaced on a heavy grade of white bond 8½x11 inch with margins of at least 1 inch. Print quality should be highly legible. For reviewing purposes, the original plus three photocopies of the manuscript should be submitted along with the original plus three high quality duplicates of each figure and table. All pages should be numbered consecutively, beginning with the title page, and the author's (authors') name(s) should appear only on the title page.

A cover letter should accompany all manuscripts and the letter should identify the corresponding author. The cover letter should also contain a statement that the manuscript has been approved by all of the authors of a multi-authored paper. In addition, the letter should indicate the type of article and whether or not the work has been submitted to other publications. Copies of letters of permission and other pertinent information should be included.

Authors should arrange manuscript pages as follows:

1. First page: Title, name of author(s), degrees and the institutional affiliation, if any

2. Second page: Abstract and key words
3. Text (start on a new page)
4. Acknowledgements (start on a new page)
5. Footnotes (start on a new page)
6. References (start on a new page)
7. Appendices (start on a new page)
8. Tables (each on its own page)
9. Figure legends (all on one page, if possible)
10. Figures (each separately)

B. Mailing instructions

Protection of manuscripts from rough handling while in transit is necessary. The mailing envelopes should be strong and provided with stiff cardboard or corrugated fillers slightly smaller than the envelope. Fillers are essential if drawings or photographs are to be enclosed. Authors should always retain copies of their manuscript as a precaution against the potential loss of originals.

C. Accepted manuscripts

If a manuscript is accepted for publication, the author will be asked to make or respond to any changes recommended by the reviewers and to resubmit the revised paper within a specified time period. Authors are asked to submit revised papers on computer discs as well as in printed form. Information on which software can be converted for computerized typesetting may be obtained in advance from the managing editor. Otherwise that information will be included when manuscripts are returned to the author for revisions.

References

1. The International Style Guide Committee for Uniform Submissions to Optometric Journals. Uniform requirements for manuscripts submitted to optometric journals. J Am Optom Assoc 1989 Jan;60:1.
2. The International Style Guide Committee for Uniform Submissions to Optometric Journals. Uniform requirements for manuscripts submitted to optometric journals. Optom Vis Sci 1990 Jun;66:1.
3. Potter JW, O'Rourke PC, Carlson PT. Publication guidelines for the Journal of Optometric Education. J Optom Ed 1986;12:1.

AFVA Awards Annual Grants

Rusty Williamson (right), vice president, presented the American Foundation for Vision Awareness's annual grants at an Awards Breakfast during the organization's annual meeting in Honolulu, June 24.

Thomas L. Lewis, O.D., Ph.D., president, Pennsylvania College of Optometry (left), accepted a $6,000 visual dysfunction/illiteracy research grant on behalf of Mitchell Scheiman, O.D. and Penni Blaskey, Ph.D. for their project, "A Study of the Efficacy of Irlen Filters for Improving Reading Performance."

Ralph P. Garzia, O.D., associate professor of Optometry and director of the Pediatric/Binocular Vision Clinic at the University of Missouri/St. Louis School of Optometry, accepted a $6,000 research grant for the project, "An Electrophysiological and Visual Acuity Investigation of a Transient Pathway Deficit in Children with Specific Reading Disability," to be conducted with co-investigators Stephen W. Lehmkuhle, Ph.D. and Steven B. Nicholson, O.D.

Darrell Carter, O.D., Ph.D., assistant dean, University of California, Berkeley, School of Optometry, accepted a $6,000 fellowship on behalf of Susan T. Lin, O.D., who is studying for her Masters of Science Degree in Physiological Optics at the University of California/Berkeley School of Optometry.

RESOURCE REVIEWS

Felix M. Barker, II, O.D., M.S.

Primary Care of the Posterior Segment, Larry J. Alexander, Appleton and Lange, E. Norwalk, CT, 1989, 311 pp., illus., 84 color plates, hardbound, $85.00.

Primary Care of the Posterior Segment is a textbook written for the serious student of the eye in retinal disease. It is subdivided into five major sections concerned with: optic nerve disorders, retinal vascular disorders, macular diseases, peripheral retina and hereditary retinal and choroidal diseases. Each major section is opened with a page-by-page content listing for easy reference. Sections are organized by presenting the relevant anatomical, diagnostic and theoretical considerations which are followed by discussions of the specific diseases and their managements throughout the majority of the section. The content is well written and amply supported by both photographic and diagrammatic illustration. The schematic diagrams are well matched to their photographic counterparts and are particularly helpful to the student trying to understand the underlying etiology of the disorder in question. Topic-related "clinical pearls" are set aside in small boxes on pages throughout the text. These are very helpful summary devices that will aid both the new student learning the material for the first time and the experienced practitioner looking for quick reference. As a further aid for rapid reference, the opening pages of the text display a listing of the "clinical pearls" and the "summary tables," both of which are quite helpful.

The knowledge base presented in this book is broad and quite appropriate for the primary care eye specialist. It is beautifully written and illustrated and is, therefore, a pleasure to read. I think *Primary Care of the Posterior Segment* is a must have item for any student or practitioner in our field.

Ocular Syndromes and Systemic Diseases, F.Hampton Roy, WB Saunders, Philadelphia, 1989, 528 pp., no illus., hard-bound, $60.00.

Ocular Syndromes and Systemic Diseases is a reference manual containing descriptions of 1250 eye-related hereditary or congenital disorders. The text is comprised simply of sequentially numbered, short entries describing various syndromes and their manifestations. Specifically, each entry has a name in bold capitals followed in parentheses with synonyms by which the condition is also known. Following this are three short statements entitled: "General, Ocular and Clinical" providing descriptive material. Finally, each entry is concluded with several key or recent references to the literature. The syndrome entries are printed in the text alphabetically according to their bold face names and are also listed in an alphabetical content section at the beginning of the book by all bold face names and synonyms used.

This reference provides the ophthalmic community with an excellent update in the area of syndromes; the classic text by Geeraets* is now over ten years old and contains only 435 syndromes. Nevertheless, the descriptions provided by Roy are a bit skimpy and do not delve into etiology and detailed clinical findings to the extent that Geeraets did in his book. Also, to find a syndrome in Roy's book, the clinician must already know one of the names of a syndrome or be prepared to thumb through the pages. In the older book by Geeraets, cross reference index guides of clinical findings such as cataracts were provided to aid the clinician in finding the potential syndrome.

With these factors in mind, however, *Ocular Syndromes and Systemic Diseases* is still a good buy as a handy clinical reference and as a key to literature sources.

*Geeraets WJ. *Ocular Syndromes*, 3rd ed., Lea & Febiger, Philadelphia, 1976.

Ophthalmic Lasers, Francis A. L'Esperance, Jr., Mosby, St. Louis, 3rd edition, two volumes, 1989, 1,046 pages, 1,401 illustrations, $165.00.

The development and application of lasers for the treatment of eye diseases is expanding rapidly. Within the past twenty years lasers have been used clinically with six different laser-ocular tissue interactions: photocoagulation, photodynamic therapy, photovaporization, photodisruption, photoablative decomposition and phototherapy. This two-volume book provides a clearly written presentation of ophthalmic lasers, their basic principles, and their clinical application and use.

The author¢s purposes were 1) ". . . to make ophthalmic lasers and their ocular tissue interactions as simple to understand and employable as possible . . ." and 2) to ". . . serve as a comprehensive guide for the laser surgical specialist for the proper and conservative therapy of many ophthalmic diseases." I believe these two volumes have achieved these purposes reasonably well. These volumes should be useful to residents, educators, and practitioners interested in ophthalmic lasers. The extensive use of diagrams, illustration and photographs is quite helpful.

The two volumes are organized into five parts: 1) laser technology and clinical applications, 2) photocoagulation lasers (argon, krypton, dye), 3) photocoagulation of ocular disease: application and technique (peripheral retinal, diabetic retinopathy, macular and anterior segment disease-including glaucoma), 4) photovaporization, disruption and ablative decomposition lasers and 5) complications and future applications. The book is indexed well (16 single spaced pages with double columns) which makes it easy to use. For example, diabetic retinopathy is indexed by classification, grading systems, proliferative and nonproliferative, and photocoagulation therapy: consent form, contraindications, fluorescein angiographic evaluation, indications, panretinal technique, rationale and therapeutic technique.

Although relatively short (31 pages) the chapter on the excimer laser presented current information, including 10 human eyes followed 3 1/2 days to 8 months. The laser developed by Taunton Technologies was featured and well described. Histopathologic and clinical results were also included.

This two-volume set should be useful to optometrists interested in ophthalmic lasers. It provides an understandable description of laser principles and emphasizes clinical applications and appropriate disease treatment.

Guest Reviewer:
Robert N. Kleinstein, O.D., Ph.D.
The University of Alabama
at Birmingham

Pediatric Optometry, Jerome Rosner & Joy Rosner, Butterworth Publishers, 80 Montvale Avenue, Stoneham, MA 02180, hardbound, 538 pp., $60.

Pediatric Optometry is an updated version of the successful 1982 first edition. There are few significant changes in the book's format, which is separated into two main sections: Examination and Diagnosis, and the Postexamination Process. The Examination and Diagnosis chapters are organized around a series of diagnostic questions which mimics a familiar examination sequence of case history, visual acuity, ocular health, refractive status, binocularity, accommodative-vergence ability and perceptual development. A problem-oriented approach is emphasized with the assistance of flow charts that serve as helpful visual summaries of the diagnostic process. The Postexamination chapters are concerned with management (both compensatory and remedial) of ametropia, constant strabismus, amblyopia, nystagmus, substandard vergence and/or accommodation facility and delayed development. The management discussion concentrates on general principles and often only offers superficial information and direction. The reader will feel the need to consult additional sources for the "how to" information.

The major additions to this edition are the inclusion of practical suggestions (clinical insights) at the end of each chapter, over 200 more references to updated information and 14 clinical case reports that illustrate the diagnostic and management principles presented.

Although some clinicians may argue with the authors' management style and depth of presentation, Drs. Rosner and Rosner continue to provide the most comprehensive clinical guide to pediatric optometry for the optometry student and family practice optometrist.

Guest Reviewer:
Michael W. Rouse, O.D., M.S.Ed.
Southern California College of Optometry

Current Ocular Therapy 3, Frederick T. Fraunfelder and F. Hampton Roy, WB Saunders Co., Philadelphia, 1990, 3rd edition, 845 pp., $80.

In their preface, the editors state that *Current Ocular Therapy* "is intended for the busy practitioner who needs a concise outline of therapy for a particular condition." In this endeavor, they have succeeded. They have done so without stripping the users of the text of their professional judgment, as many "cook book" texts are wont to do.

Current Ocular Therapy 3, as the name implies, is the third edition of a reference text which covers just about every ocular anomaly that is likely to come into the optometrist¢s office. In comparison with *Current Ocular Therapy 2*, published in 1985, there are some subtle updates in drugs of choice, and the authors that I compared directly from one edition to another showed that they had consulted new information and references in completing their sections. The result is similar to what readers would achieve if they had done their own literature search and reviewed the current information on each of these topics.

Current Ocular Therapy 3 is a collection of recommended therapies gathered from hundreds of noted clinicians from around the world. Each contributor, noted for the topic on which they were writing, briefly discusses the entity and the appropriate treatment options. The contributors have made suggestions (and backed up those suggestions with references), but still call upon the user/practitioner's professional judgment. Thus, *Current Ocular Therapy 3* can be the quick reference tool it was meant to be, while not replacing professional judgment.

Current Ocular Therapy 3 is a collection of recommended therapies (there are no illustrations); the assumption is that the diagnosis is already established. Some of the contributors will digress with a brief differential diagnostic review, but therapeutic approaches take the spotlight here. An excellent adjunct to this text would be F. Hampton Roy's *Ocular Differential Diagnosis* (fourth edition, Philadelphia, Lea and Febiger, 1989). These texts would be at home next to the *Physician's Desk Reference*, within quick reach of the practitioner. This text is not meant to be a comprehensive discourse on individual subjects; that is best left to other texts. It is meant to be a quick, accurate, up-to-date check on a particular therapy decision. In that attempt, it is very successful.

Guest Reviewer:
Dennis W. Siemsen, O.D.
Illinois College of Optometry

Synopsis of Ophthalmology, Jack J. Kanski, Wright, London, 1990, 6th edition, 237 pages, $24.95.

Dr. Kanski, a British ophthalmologist, describes the aim of the *Synopsis* in the preface to this sixth edition, "to provide a quick reference to the main aspects of ophthalmology in an orderly and easily reproducible manner." It is intended as a source "...to those preparing for postgraduate examinations in the specialty."

This text is written in brief outline form. It consists of 15 chapters covering major ophthalmic diseases and disorders, organized primarily along anatomic lines. Chapters on "The Glaucomas," "Strabismus," and "Neuro-ophthalmology" are also included. Each chapter contains between 2-12 clinical disease entities organized in a variable outline form, but generally including "Definition," "Cause," "Clinical features," and "Treatment" entries. Other components that may be present include "Inheritance," "Pre-dispositions," "Differential diagnosis," and "Systemic features." The *Synopsis* is well indexed but includes no figures, photographs or reference listings. Although I am not familiar with previous editions of this text, Dr. Kanski indicates that this edition represents a complete revision to keep pace with recent developments in ophthalmology.

I found that this text fulfilled its stated purpose well as a concise listing of common ophthalmic diseases and disorders. I was concerned at times, however, that it may be too simplistic and tends to give only the author's personal perspective on treatment and management issues. I found the 2 pages "Contact Lenses" to be so cursory as to be potentially misleading. For example, Dr. Kanski indicates that soft lenses have a "high incidence of serious complications." The section on "Anti-Glaucoma Drugs" understandably includes medications that are not available in the United States, although indications as to drug availability are not given.

I would be concerned that this text could be inappropriately concise for the student who is not yet well versed in the many facets of ocular disease diagnosis, treatment and management. For the knowledgeable student, resident, educator or practitioner, however, this text does have its place. It may be of value for the optometric student preparing for board examinations pertaining to ocular disease. I am not certain, however, that it should preclude more expansive references that are already available.

Guest Reviewer:
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