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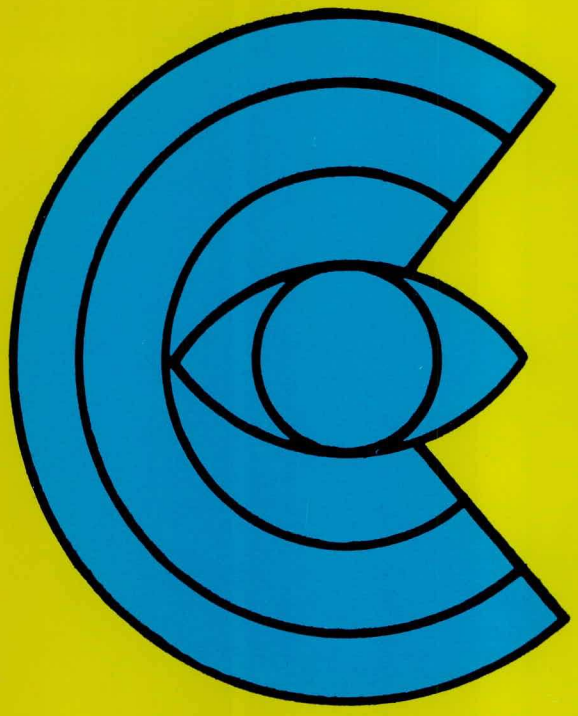
THE CANADIAN JOURNAL OF Optometry

Target $3,000,000



Canadian Optometric Education Trust Fund

Campaign '81

Trust Fund Chairman's Appeal & Campaign Update

Also: Vision Examinations of Mentally Handicapped
Prismatic Effects in Bicentric Grinding
Direct Ophthalmoscopy Toward the Retinal Periphery
. . . and more.

LA REVUE CANADIENNE d'OPTOMÉTRIE

SEPT/1981 VOL. 43 No. 2 & 3

CLEAN·O·GEL

A new enzyme approach to cleaning soft contact lenses.

New Approach
The new Clean-O-Gel enzyme granules solve the problem of lens deposits.

Effectiveness
Clean-O-Gel removes organic deposits which accumulate on soft lenses.

Rapid Action
Clean-O-Gel removes organic deposits after six (6) hours of soaking activity. (Soaking for more than six hours will not harm the lens.)

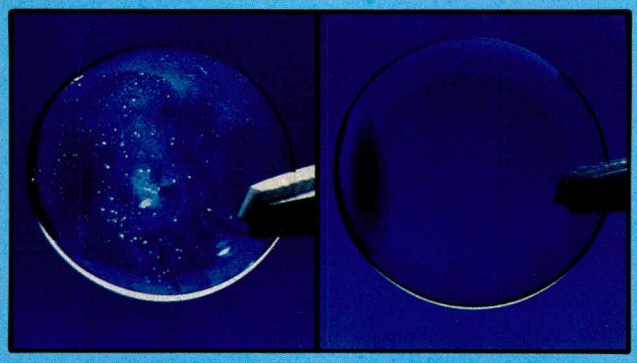
Widely Useful
Clean-O-Gel can be used with all soft contact lenses.

Safety
Clean-O-Gel will not harm lens surfaces or your patient's eyes should the lens be inserted by mistake immediately after soaking.

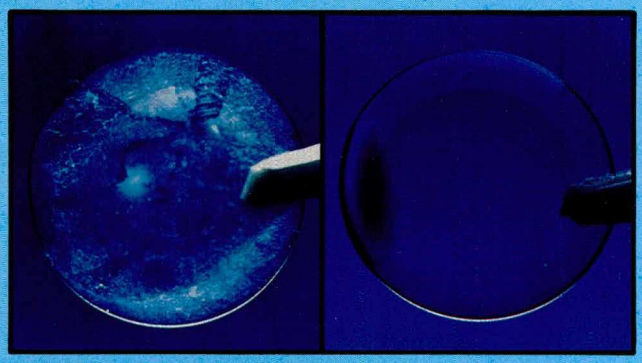
A Simple Cleaning Schedule
Clean-O-Gel should be used weekly or, periodically, as directed.

Clean-O-Gel works.

LIPO-DEPOSITS
Before & after cleaning with Clean-O-Gel.



MUCO-DEPOSITS
Before & after cleaning with Clean-O-Gel.



One of the few disadvantages of soft contact lenses is that they collect deposits over time.

These deposits are caused by several agents including cosmetics, ocular medications and other products the lens wearer may use, lipids, lipo-proteins, muco-proteins, and other tear film components which are adsorbed or absorbed into the lens. Once the deposits occur, removal is difficult.

Clean-O-Gel removes these problem causing substances, including deposits resulting from tear components, which cannot be removed through the use of a daily surfactant type cleaner. Clean-O-Gel relies on enzyme action to break up and remove these substances. In addition to being effective, Clean-O-Gel is safe for soft lens material as well as delicate ocular tissue.

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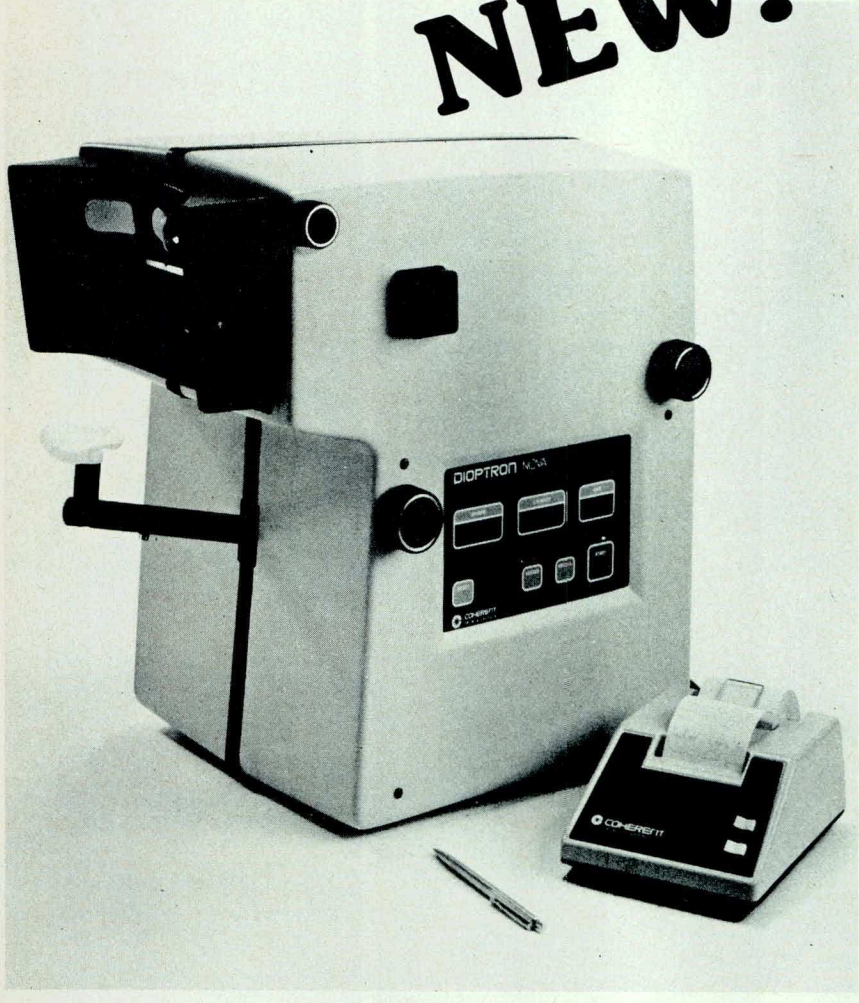

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Nova's simple operation allows your technician to take fast, reliable patient readings with clinically proven accuracy.

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  - Solubilizes lipids, and lipid-containing mucin
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  Outperforms leading single function soaking and wetting solutions.
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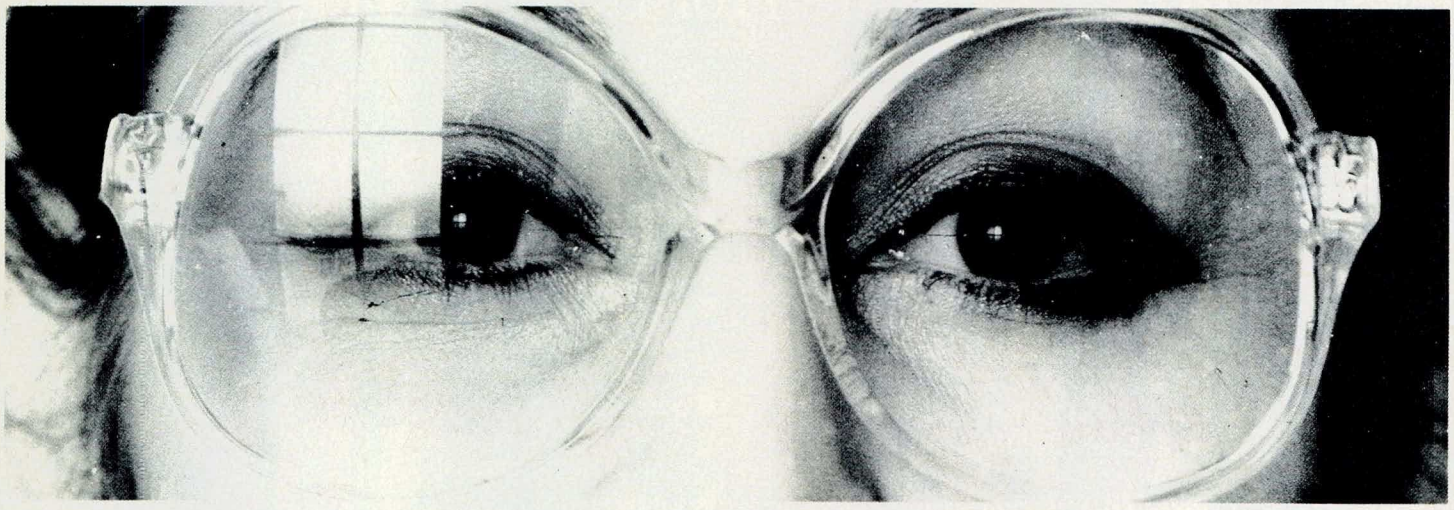

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To see better and to be better seen

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THE CANADIAN JOURNAL OF OPTOMETRY

LA REVUE CANADIENNE D'OPTOMETRIE

Vol. 43 OTTAWA, ONTARIO, SEPTEMBER 1981 No. 2 & 3

Contents

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LETTERS

Ed. Note – The following letter was received in response to the CSO Editorial Vol 43 No. 1

Dear Editor:

I would like to respond to your recent editorial (Canadian Journal of Optometry, March 1981) since it takes both soft contact lens practitioners and manufacturers to task in some cases rightfully so, and in other cases not. Having seen the field from both practitioner and manufacturer sides, I feel especially qualified to comment.

First let me address the major issue that the editorial fails to recognize. There is no creditable technology to measure wet lenses when immersed in saline. There are some capabilities in the hands of manufacturers and hardly any methods available to practitioners. Therefore, assessing the optical performance of a soft contact lens is not yet possible with the sophistication used in spectacles or even hard contacts. Oh yes, it can be done with a dry soft lens, but that is not the final product. It would cost manufacturers millions to develop these specialized systems, and some of the larger companies are doing just that. However, it takes time.

Second and just as important, is that the clinician has no valid way of easily measuring visual performance with a soft lens on the eye. The Snellen chart is very limited as a predictor of visual performance and we could spend pages on this subject alone. However, American Optical has developed a simple test of contrast sensitivity which we hope to market soon. We expect that it will prove valuable in assessing visual performance with soft lenses on in a much more meaningful way than standard Snellen acuity.

Thirdly, there is extensive price competition among soft lens manufacturers, but this competition has been fueled by practitioners striving to get the lowest possible selling price. Support the chief price cutter and who will be left to do this wonderful and needed research? In our capitalistic system, research does not get funded when a company is unprofitable. Practitioners must keep that in mind when purchasing products purely on a price basis.

Finally, clinical research on soft lenses concerning the significance of manufacturing tolerances, design parameters, flexing characteristics, etc. is useless until we develop greatly improved in-vitro and in-vivo evaluation techniques. We are today obsessed with physiology because it is the most predictable and consistent measure that a clinician can use with any confidence. We are also enamored with central K readings because they provide nice neat numbers. Unfortunately the numbers are frequently useless since we are fitting the peripheral cornea and sclera rather than the central cornea. Clinicians have lensometers, but hardly ever measure lens power. Why? They have no confidence in blotting a lens dry and then looking at mires that are poorer than any rigid lens they have ever viewed. They cannot measure lens base curve with confidence. They cannot modify a soft lens to their own design, and even if they could, they would have no way of determining what they have produced.

The point is, soft lenses are not made to fit individual eyes. Rather, eyes are selected to fit available soft lenses. This is different than any other modality and constitutes the real distinction between soft and hard lenses. It is a point I wish practitioners understood better. If you advocate a multitude of parameters, you advocate higher costs, longer waiting time for delivery, and the same old uncertainty because neither of us are sure you are getting *exactly* what you ordered.

Let me finish by quickly addressing a few of the other issues you raise. We have done a good deal of research on lens flexure, effects on polymers by temperature, humidity, etc.; and the literature is extensive on these subjects. There are clinical studies constantly being published, all demonstrating superb Snellen acuity (in spite of patients complaining about vision with soft lenses). Base curves do not seem to be as critical in thin lenses and lens design (which *is* rather sophisticated) is related to the material and its physical properties. But, we are in the stone age of soft contact lenses and will never progress beyond Cro-Magnon unless consumers (optometrists and other fitters) support the companies who conduct meaningful and comprehensive R & D programs rather than the price cutter who is able to offer the lowest price by *not* spending money to improve his product or develop new ones.

Sincerely,

Lester E. Janoff, O.D.
Director of Professional Services
American Optical Corporation

Dear Editor

I would like to thank all those who sent letters to the government of Israel in response to their proposed optometry act. This act would have severely limited the practice of optometry in Israel. I recently recieved a letter from the Israel Optometric Association saying, that thanks to our efforts, the government will be changing the act to provide optometrists with full professional status. There will be a period of time allotted to allow those persons who do not meet the set educational standards to upgrade themselves. Failing this they will become opticians. The IOA is hoping to next establish a school at one of the universities in Israel.

Many thanks for your efforts.

Best Regards

M. Larry Sheldon, O.D.

THE END of dry eyes IS HERE.

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EDITORIAL

ELECTRONICS — PASSWORD TO THE 80'S?

One would need to be very stubborn and uninformed not to recognize that automated and electronic equipment will have a major impact on the eye and vision care field in the 80's. It will not be a fly by night impact; its use and sophistication will increase over the decade to the point that it will affect all aspects of optometric practice, diagnostic and therapeutic services not to mention in-office management and administration of the small or large office.

Not all such instruments will find their way into all optometric offices. Some in their present size, form and purpose not to mention prohibitive cost may never be found outside of clinics or teaching or research institutions. Others because of their function, small size and relatively modest cost will become as common as the phoroptor and the lensometer.

Due to the emphasis on some more recent innovations such as electronic refractors, practitioners are apt to forget the invasion of electronic devices began many years ago with the introduction of the Bausch and Lomb ophthalmetron, the field analyzers and the McKay Marg tonometer. Even these have become obsolete or are giving way to newer and more sophisticated designs. Even the air puff tonometer threatens the existence of the electronic applanation tonometer.

Remote controlled projectors will likely become more common and new designs likely will eventually permit rotating astigmatic "T" charts.

Photokeratoscopes although primarily optical in concept rely on computers to rapidly determine contact lens designs. Even these are threatened with the arrival of thinner and more flexible contact lens series of restricted base curve choices. Similarly all automated refractors from the prototype ophthalmetron to the most recent models rely on mini-computers to analyze optical data upon which all are based.

Programmed mini or micro-computers are to be seen in many offices for recording and statistical classification of patient files, types of exams, pathology cases, age groups, types of lenses prescribed, stock control, recall programmes, billing and all other aspects of in-office administration. This is the area in which office efficiency can be most affected in a beneficial manner.

From a strictly clinical aspect computers can be programmed to design eikonic lenses, to compute resultant powers and axis location when over refracting contact lens and aphakic patients. In this same vein, curvature thicknesses and prism powers fall prey to the speed and accuracy of these phenomenal micro computers and calculators.

Lens analysers, providing printouts may eventually replace the lensometer if costs can be brought within reasonable limits. They are readily available at this time but at about five times the cost of the lensometer.

The objectives sought by the practitioner will guide his choice of both hardware and software. Some practitioners may qualify themselves to set their own programmes but the need for professional guidance in determining and tailoring programmes to individual needs and desires will be required by most practitioners. Continuing education courses in computer knowledge and theory, as well as practical applications for optometric practice will be in great demand. We cannot overlook the need to incorporate this into undergraduate training if it has not already been done.

Mathematics and optics, the basis of optometric education from the beginning will take on added importance as optometrists become more and more expert in the design and control of the prescriptions they write for their patients.

Perhaps the areas of practice being given the greatest emphasis are those areas and phases subject to delegation to para-optometric personnel, namely, refractors, tonometers and field analysers.

Informing the public in general and one's patients in particular may be enhanced by the use of closed circuit TV to demonstrate fundus or other pathological conditions not to omit its use to help in the cosmetic choice of frames. It is all well to recognize the high technological progress involved in the design and manufacture of such equipment but the profession should not let itself be overwhelmed and dictated to by the instruments themselves or their manufacturers.

We question some advertisements which claim automated refractors are responsible for practice growth amounting to 71% over a few weeks. Such refractors are in essence "sophisticated and costly" retinosocopes. Except in special cases of decreased transparency of the media or mentally retarded patients or people unable to communicate due to illness, particularly brain damage, they cannot be said to be time savers or any more accurate than a skilled retinoscopist or an astute and experienced practitioner able to guide and control a patient during a subjective test. Electrophysiological equipment such as the V.E.R. and the ultrasonograph al-

though offering advantages beyond the capability of present office equipment must await the design of more compact and less costly models before they come into more widespread use.

The purchase of these instruments should be based on an understanding of their uses and limitations and their possible clinical advantages but never on the basis that they will "automatically" bring about a formidable increase in one's patient load. The amount of time saved with each patient would need to be significant in order to realize a significant increase in one's ability to see more patients. But one should not forget that one can handle more patients only if the patients present themselves at the office. Such refractors are not necessarily "instant practice builders". They do indicate that the practitioner is keeping abreast of progress and such knowledge by the public can do no harm but one should not expect overnight doubling of one's practice as promoted by these advertisements.

Practitioners must not forget that optometry is a "personal profession" dealing with individuals. Computers tend to "depersonalize patient contact." Patients are not automobiles or refrigerators to be mass produced by mechanical or electronic devices in a health care practitioner's office.

One must not confuse automated objective refractometers with the Humphrey Vision Analyzer and the AOSR II, both of which are subjective testing instruments. Results depend on the patient's ability to discriminate targets presented to them in a controlled manner. The major component in the H.V.A. is the lens system where movements are regulated by a motor under the control of a computer and the practitioner or the patient controls the computer. The SR II is a much less sophisticated optical system with adjustments programmed by a computer under the control of patient and practitioner.

Although the many advantages of electronic devices are recognized, there is a very real danger that health care, because of too great a reliance on these devices, could become more impersonal and more costly. Ultimately one could foresee a definite reduction in the need for "health care practitioners". Health care could become a mathematical formula requiring no more intelligence or human reasoning than that required to push a button on a simple calculator. Why would there be any need to train health care people? Why would there be any need to continue to pay high fees for such impersonal and shortened services? As health care practitioners, we must ask what level of health care will result from all this gadgetry?

What motivation will exist to drive the health care practitioner to improve skills' levels?

And now we could perhaps give some thought to the economics of "computerized health care" and ask ourselves: "Is this what we really desire as responsible health care practitioners?" Fee for service based on time, knowledge and seriousness of the procedure has always been a fundamental criteria for the establishment of payment.

Will third parties, who pay the bills continue to pay the pratitioners the same fees for such impersonal and short services?

G.M.B.

*Guyton, D.I., M.D. Instruction course 74, 1980 Meeting — American Academy of Ophthalmology.

CAO Congratulates the University of Waterloo's School of Optometry 1981 Graduates

J. Tim Allen O.D.
James Bender O.D.
Diane Chong Bras O.D.
Philip Brooks O.D.
A. Susan Buxton O.D.
David Carr O.D.
Kwong Chow O.D.
Paul Clark O.D.
Michael Dennis O.D.
Bill Derus O.D.
Albert Devries O.D.
Sam D'Ortenzio O.D.
Lily Dubé O.D.
Gene Edworthy O.D.
Edmund Eng O.D.
Stanley Eng O.D.
Lise Pringle Fraser O.D.
Paul Gagnon O.D.
Ron Gaucher O.D.
Paul Geneau O.D.
Gavis Gies O.D.
Donna McMullan Goemans O.D.
Brian Hadden O.D.
Darryl Hansen O.D.
Morris Hazan O.D.
Shelly Hook O.D.
Janet Hruska O.D.
Carolyn Jarrett O.D.
Jacquie John O.D.
Janet Leduc O.D.
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Scott McKnight O.D.
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Dale Mulhall O.D.
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Patrick Murphy O.D.
Jane Kraemer Newman O.D.
Dean Nisbett O.D.
H. Gary Parsons O.D.
Cindy Pope O.D.
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Jim Tripp O.D.
G. Bernie Uhlmann O.D.
Donald Vinge O.D.
Jon Walcott O.D.

Canadian Optometric Education Trust Fund Awards $23,000 for Approved Research and Studies

"A mature profession performs its own research . . . a health profession seeks answers to the questions which are relevant to the problems presented by its patients."

These well-aimed remarks were delivered by the 1980 National Fundraising Chairman, Dr. W. Lyle in his address to the CAO General Business Meeting in St. John's this summer.

"For too long," Dr. Lyle emphasized, "Optometry has relied upon primary information developed by other disciplines . . . we must have adequate, sound, scientific programs on a continuing basis."

Now, as a result of the action of the concerned optometrists across the country who have contributed to the future of Optometry through the Trust Fund, we stand ready to take the first major steps in support of the expansion of these vital research and development programs.

The COETF Trustees are pleased to announce awards totalling $23,000 for projects promoting research and manpower development for the benefit of the profession and the public at large.

Canadian Games '81

For the promotion of eye health care and the provision of vision care services to the athletes participating in the Canada Games '81, Dr. A. Devon and Dr. M. Long of northern Ontario will receive funding of **$2,500** for a screening project to be supervised through the School of Optometry and under the direction of Dr. E. Woodruff.

Contact Lens Solution Study

An award of **$1,500** was authorized through Dr. W. Lyle for the partial support of a pharmacy graduate currently enrolled at the School of Optometry who is collecting data on contact lense solutions over the summer at the School. The results of this data search will be eventually distributed to all practitioners and to the public at large.

Traffic Signals Study

For the undertaking of a research project entitled "Efficacy of Direction — Indicating Traffic Signals" by the Roads and Transportation Association of Canada an award of **$532** has been made to Manitoba Optometrist Dr. Steven Mintz who will be the chief researcher.

Clinical Equipment

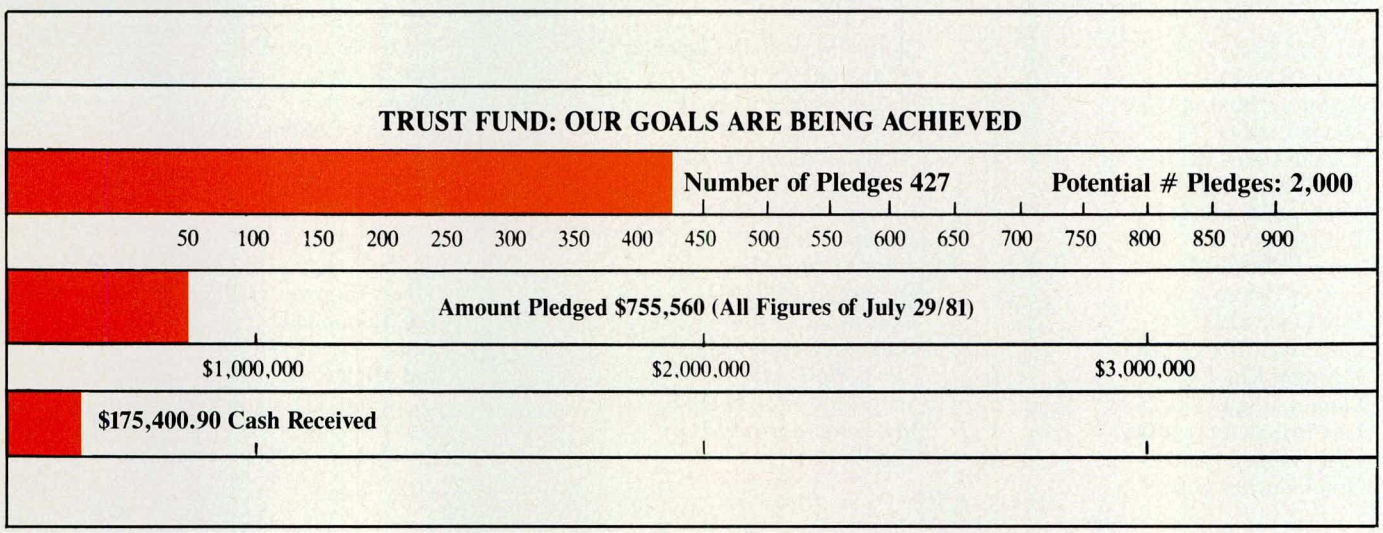
To assist in the funding of a new Contrast Sensitivity Unit needed at the University of Waterloo Low Vision Clinic for the research work of Dr. George Woo, **$3,500** has been made available through the COETF.

Doctoral Studies

In recognizing the value and need for a successful graduate program both for the profession and the School of Optometry, two doctoral students will each receive $7,500 per year for a maximum of three years, total **$45,000**, to pursue their studies at the University of Waterloo.

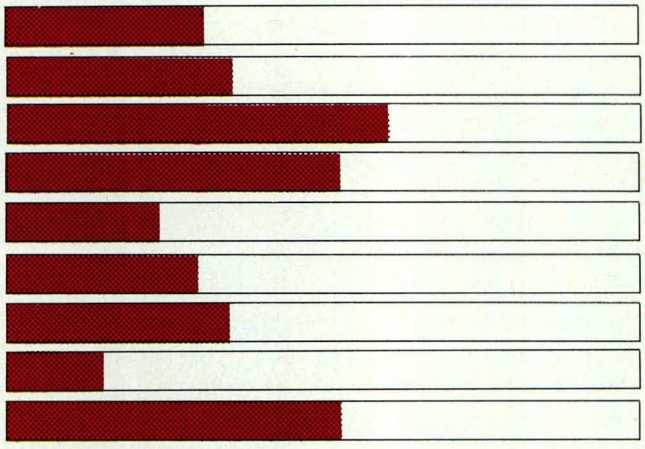
One thing is now certain, the Trust Fund is working. With your continued support and the recruitment of new COETF contributors these first steps of the Awards Program will become great leaps forward for the profession of Optometry. Remember, September is Trust Fund Month!

Prepared by Alex Saunders
CAO Public Information Coordinator



COETF TARGET — $3,000,000
BASED ON AVERAGE $2,215 pledge per member

Target Percentage Achieved July 29/81



B.C.	31.5%	$409,896.
Alta.	34%	409,896.
Sask.	59%	197,192.
Man.	53%	161,742.
Ont.	22%	1,522,151.
N.B.	29%	126,292.
N.S.	37%	99,704.
P.E.I.	16%	13,293.
Nfld.	53%	59,822.
		$3,000,000

Provincial Performance

	No. of Pledges	Amount Pledged	Amount Received	Per Member Average Pledge
B.C.	61	129,800.00	59,750.00	2127.00
Alta.	48	139,950.00	49,950.00	2915.00
Sask.	47	116,380.00	50,980.00	2476.00
Man.	40	85,780.00	41,495.00	2144.00
Ont.	160	180,680.00	66,065.00	1129.00
N.B.	27	33,125.00	15,025.00	1226.00
N.S.	25	36,095.00	13,345.00	1443.00
P.E.I.	1	2,100.00	2,100.00	2100.00
Nfld.	18	31,650.00	8,350.00	1758.00
	427	**$755,560.00**	**$307,060.00**	

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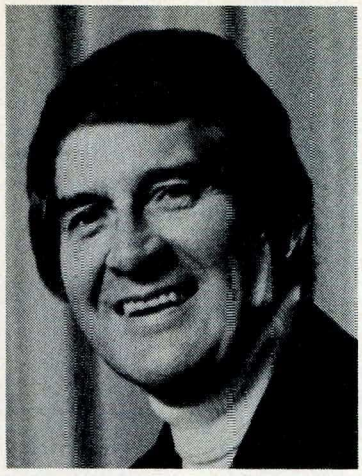
COETF
Philanthropy or just "paying our dues"?

by Ron Macpherson O.D.
National Fund-raising Chairman — 1981 Campaign



So much has been written about the Canadian Optometric Education Trust Fund since it's inception in 1976 that a summary of it's purpose and goals is, I believe, in order.

The TRUST FUND was created simply to preserve and strengthen Canadian Optometry. The word "preserve" suggests that the survival of optometry is endangered and indeed it is. Let the statistics speak for themselves. In the last twenty years the number of Canadian optometrists has increased by 33%. But ophthamologists have increased 133%! in the same period. In the next fifteen years 40% of our present practitioners will retire. Population increase and attrition rates indicate that the western provinces alone will require thirty new optometrists each year. And we are still not filling the "unmet needs" so eloquently described in the now historic 1974 paper, "The Role of the Optometrist in Health Care Delivery."

It would not be melodramatic to say that there are, at present, real threats to the scope of Optometric Health Care; political threats, medical threats and manpower shortage threats. The governments in Canada, following those in the U.S., clearly intend to reduce the influence of all professional groups that function as a service delivery monopoly. The advertising of fees, portability of prescription, the ophthalmic industry's promotion of materials as cosmetic or beauty aids, rather than health prostheses, the relinquishing of dispensing by 25% of optometrists in some provinces are grave problems that the Trust Fund intends to deal with.

Those of you in practise ten years ago will recall the glow of professional pride that pervaded the profession on achieving primary care status with legislation to allow use of diagnostic drugs. Our colleagues in opthalmology developed at that time, a two-fold action policy to achieve their goals, one of which was to be associated with primary vision care and the other, to promote access of the public to their offices (unlike other specialists who require referral). A similar successful attainment of objectives awaits Optometry on the day when we can announce the satisfactory achievement of our public service goals through the Trust Fund program. That "glow of professional pride" will be guaranteed constant rekindling inspite of the continued economically motivated opposition from medicine.

Finally there is the issue of a new School of Optometry. Because of the herculean effort of the early committee, I share the opinion that there will soon be a new school in western Canada. Support for it is growing daily, despite the remaining political hurdles.

The Trust Fund's goal is to raise $3,000,000, the interest from which will be used to encourage better educational personnel and facilities, including libraries, for both the present school and the new school, when it is built.

It will use it's funds for practitioner research in those fields pioneered by Optometry, i.e., contact lens therapy, occupational vision, low vision and pediatrics.

By increasing optometric manpower the COETF will also help us to stop the present trespassing by unlicensed personnel who are now performing treatment and diagnostic services for patients by the unlawful use of refractors, ophthalmometers and biomicroscopes.

As this year's National Chairman I am absolutely convinced that a well financed programme such as the Trust Fund, raised within the profession and administered by OUR profession is the ONLY effective method of combating the threats to our scope and mode of vision care practice.

The Trust Fund plans to use interest funds to provide a "Chair in Continuing Education." Who among us would not agree that, through continued education, we will strengthen our local reputation, so that more and more Canadians will seek, not just eye services, but Optometrical vision care services.

Canadian Optometrists earn adequate incomes equal to engineers, accountants, dentists and physicians. Pledging to the Trust Fund over several years makes the accumulated donation painless. One percent of a year's average earnings, ($500) is really not that much of a sacrifice. The $2000–3000 pledge you give will still be working for the profession a hundred years from now, since the Trust Fund intends to make it's grants and expenditures from interest, not capital.

I deem it a privilege to serve along with your Provincial Chairmen as part of an all volunteer program that is cost efficient and soundly administered. I consider my own initial $2000 pledge as a way of "paying my dues", as well as "looking after my own".

Optometry is providing me with a rich, full, prestigious and rewarding position in my community as indeed it must be providing the same for you in yours. I just can't think of a better way of showing my appreciation than by supporting my provincial chairman of the Trust Fund. I ask every one of my colleagues in Canada to do the same.

CANADIAN OPTOMETRIC EDUCATION TRUST FUND
Contribututors — of July 1, 1981

BRITISH COLUMBIA

Argatoff, M.
Armstrong, W.N.
Beauchamp, E.L.
Beckner, J.E.
Blay, P.
Bosdet, J.D.
Bowman, I.L.
Burgoyne, D.
Chatten, R.E.
Chow, J.K.
Clarke, R.H.
Daniels, R.P.
Danielson, G.L.
Denman, R.J.
Demmery, P.A.
Dodd, H.L.
Downing, A.G.
Dumka, E.W.
Dunkin, G.E.
Ebata, E.A.
Evans, G.E.
Fraser, F.W.
Frewin, D.
Gansner, J.W.
Graham, G.R.
Grundison, R.J.
Hailstone, J.S.
Hantelman, N.
(Normag. Mgmt.)
Hunter, D.E.
Irwin, D.E.
Jackson, W.E.
Jervis, D.
Jervis, H.W.
Kemp, J.L.
Kendrick, J.E.
Knowlton, W.E.
Lillos, N.M.
Linzey, W.E.B.
Lynn, G.W.
MacAulay, L.A.
McLay, J.M.
McLeod, C.M.
McLeod, S.F.
McRoberts J.B.
Melville, G.G.
Menkes, E.T.
Moore, B.M.
Murphy, H.F.
Myrfield, D.J.
Olson, S.O.
Russell, J.W.
Stewart, J.C.
Stickle, R.A.
Thomas, J.R.
Thompson, J.C.
Timmins, J.G.
Tucker, K.
(Emerson Optical)
Ujimoto, G.A.
White, E.L.
Williams, J.L.D.
Wright, G.R.

ALBERTA

Akitt, D.J.
Armstrong, K.G.
Banister, R.D.
Batting, W.R.
Bistritz, L.R.
Boyle, N.S.
Byggdin, M.D.
Campbell, G.E.
Cloake, G.
Cloarec, J.
Curtis, J.
Dumka, J.
Edworthy, G.H.
Fabbi, R.S.
Faryna, L.H.
French, C.R.
Gellatly, K.W.
Gies, L.
Grigg, R.D.
Hegland, D.C.
Hensel, G.
Holyk, D.M.,
Howes, D.
James S.C. &
Findlay, G.W.
Johnson, M.F.
Knight, C.G.
Kot D.G. &
Gaudet, P.
Lampard,
J.A. & S.M.
Lindberg, R.
Lindsay, A.M.
Marsh, G.
Martin, D.
McNabb, I.J.
Mezei, G.R. &
Huszar R.A.
Mitson, W.L.
Moore, R.R.
Oler, R.F.
Pack, G.L.
Prior, E.G.
Ratledge, E.
Ross. P &
Wilson, P.G.
Schmidt, D. & B.
Snell, R.F.
Spunt, E.
Walker, L.A.
Walker, R.E.
Watts, R.A.

SASKATCHEWAN

Ames, D.
Archer, A.J.
Beaton, B.S.
Bistritz, R.
Breker, J.A.
Burnard, L.G.
Campbell, E.
Chaplin, J.
Cochran, J.H.
Degelman, R.
Forsyth, W.A.
Gnyp, L.W.
Gulka, R.S.
Hannah, G.A.
Hayes, G.W. & C.S.
Holmes, D.J.
Holmes, J.R.
Horeak, A.H.
Huber, J.F.
Kerr, D.J.
Kolbenson, L.B.
Koltun, L.J.
Krueger, J.A.
Kuntz, H.A.
Lacey, W.G.
Laycock, A.M.
Leydon, L.G.
MacDonald, T.R.
McAfee, D.V.
McKillop, D.A.
MacKenzie, H.D.
McCaw, C.H.
Menzies, L.
Monea, D.
Moser, R.H.
Potter, F.C.
Proctor, W.R.
Rogoza, R.
Sask. Opt. Foun.
Schebywolok, C.H.
Seale, J.A.
Selvig, L.V.
Sen, B.R.
Sheasby, G.A.
Stadnyk, M.F.
Thienes, B.L.
Turriff, R.

MANITOBA

Anonymous
Ashcroft, R.P.
Baloo, S.R.
Basman, H.
Bourassa, B.L.
Brown, R.
Charney, D.J.
Cram, W.D.
Eastwood, J.
Finkelman, E.M.
Friesen, J.A.
Garnett, W.B.
Hornbeck, H.L.
Jenkins, S.M.
Jiggins, R.E.
Koblin, E.
Lecker, R.J.
Letts, G.K.
Logan, R.W.
MacDonald, K.E.
McCaughey, N.R.
McQueen, J.D.
Moore, H..W
North, C.A.L.
Oakley, D.R.
Perkins, G.
Porter, D.
Rae, P.
Rosner, B.
Rosner, Bruce N.
Small, D.C.
Small, R.
Smiley, S.F.
Solomon, M.M.
Soloway, C.J.
Soloway, O.
Spearman, E.J.
Stanners, R.J.
West, B.P.
Williamson, D.J.

ONTARIO

Akande, I.A.
Albright, S.
Arseneault, S.A.
Astles J.C.
Attridge, E.F.
Attridge, J.G.
Barbour, J.E.
Beauchamp, K.A.
Beaulner, D.L.
Belanger, G.M.
Benoit, R.A.
Benson, G.T.
Beuglet, G.E.
Bock, R.R.
Bonney, T.J.
Booth, W.A.
Brisson, J.A.
Brokenshire, A.
Bruce, D.A.
Buchner, E.L.
Burton, G.R.
Carr, L.S.
Chantry, J.E.
Chen, R.
Chhatwal, K.S.
Chisholm, J.A. &
Chow, M.
Church, T.H.
Passmore, D.K.
Clancy, G.B.
Coates, P.H.
Cobean, E.J.
Conron, B.T.
Coughlan, P.J.
Coward, L.A.
desGroseilliers,
R. & M.
D'Hondt, R.
Dickie, W.I.
Dubuc, J.J.
Feeley, H.
Feldman, I.W.
Ferguson, R.A.
Fisher, E.J.
Folz, R.J.
Forristal, D.L.
Freeman, D.B.
Freeman, W.T.
Fretz, B.

Gaulin, J.B.
Girard, M.J.
Goodwin, G.L.
Grant, G.A.
Grubin, E.A.
Hamilton, P.D.
Hanniman, G.E.
Hansford, R.R.
Henderson, J.R.
Hrano, L.
Hoffman, F.A.
Hohner, J.E.
Homuth, C.E.
Homuth, H.V.
Hunter, J.C.
Ingle, H.G.
Ivan J.J.
Jaggard, F.C.
King, W.C.
Kniaziew, R.
Knight, M.I.
Kogon, D.I.
Korn, D.
Kovacs, S.
Kozior, J.P.
Kronick, S.J.
Lafrenière, J.A.L.
Lam, E.
LeVasseur, P.E.
Lapienis, R.
Leake, R.B.
Lidkea, R.E.
Locke, R.A.
Long, M.
Longstaff, J.E.
Lyle, W.M.
Lynch, F.E.
MacPherson, R.W.
Madill, L.D.
Marsden, B.R.
Martin, N.L.
Matthews, D.V.
McCann, J.J.
McCreery, P.A.
McCreery, S.A.
McDonald, G.W.B.
McLean, C.S.
Millar, G.F.
Miller, R.E.
Milne, D.L.
Mittelman, J.
Modesto, D.H.
Moles, J.
Morrison, L.E.
Morrow, D.R.
Mustaler, K.L.
Neff, D.
Newell, L.M.
Newhouse, R.J.
Nisker, H.N.
O'Grady, M.W.
Pace, R.J.
Parc, J.
Patterson, R.W.
Peloso, M.
Penwarden, G.D.
Peppler, C.E.
Peta, S.
Petrachenko, W.
Powers, G.A.
Price, D.R.
Pridham, W.H.
Pym, W.H.
Radford, D.H.
Rhynd, J.
Robertson, J.G.
Robinson, D.J.
Roche, W.M.
Rowe, J.M.
Rowe, W.M. Jr. & Sr.
Sassi, J.
Schaefer, D. & M.
Shanfield, H.
Scheid, R.J.
Smith, Baldock & Pickard
Salsberg, S.A.
Springer, G.
Stephenson, N.G.
Stevenson, J.M.
Tait, S.
Tenenbaum, N.
Thompson, H.C.
Thompson, R.
Thomson, R.
Ulrichsen, B.J.
Vachon, M.P.
Wasserman, H.
Waters, D.J.
Watson, R.B.
Weldon, M.G.
Whitfield, D.E.
Wigstoh, D.H.
Williams, G.A.
Wilcox, D.L.
Wilson, N.M.
Winter, B.
Wolf, M.
Woodruff, S.E.
Wooten, P.
Wonnacott, G.S.
Young, R.

NEW BRUNSWICK

Bell, R.B.H.
Bell, B.S.
Boudreau, L.J.
Brown, A.I.
Corbin R., Proulx A.
& Morin, J.L.
Caissie, G.E.
Cormier, J.
Daigle, J.
Des jardins, L.
Desjardins, J.G.
Duguay, R.
Fullarton, K.
Gagne, J.
Giasson, H.S.
Gionet, R.
Goldfeather, B.
Harding, J.R.
Hickey, T.F.
Landry, H.
Lenehan, T.W.
Marcantonio, P.
Ouellette, L.J.
Prince, W.M.
Ross, C.G.
Savaria, G.
Smith, C.M.

P.E.I.

Hunter, B.F.

NOVA SCOTIA

Buckley, W.G.
Campbell, P.D.
Comeau, R.
Comstock, P.
Comstock, F.L.
Dobbelsteyn, D.M.
Duffey, M.P.
Gray, P.J.
Grimms, S.E.
Haines, R.S.
Lawrence, T. &
Livingston, R.F.
Isabelle, G.
Lecker, G.
MacArthur, D.C.S.
MacLeod, J.G.
MacLeod, W.H.
Marney, C.E.
Martin, J.A.
Mendleson, I.A.
Ray, J.E.
Robichaud, B.
Rosere, R.A.
Wagg, R.P.
Wile, R.S.
Winslade, T.

NEWFOUNDLAND

Boulay, L.
Buchanan, R.
Christopher, E.J.
Coté, D.J.
Duncan, C.J.
Halleran, D.P.
Halleran, K.F.
MacDuff, R.
Nichols, J.
Patriquin, J.L.
Richardson, A.N.
Richardson, D.F.
Snow, J.A.
Richler, A.
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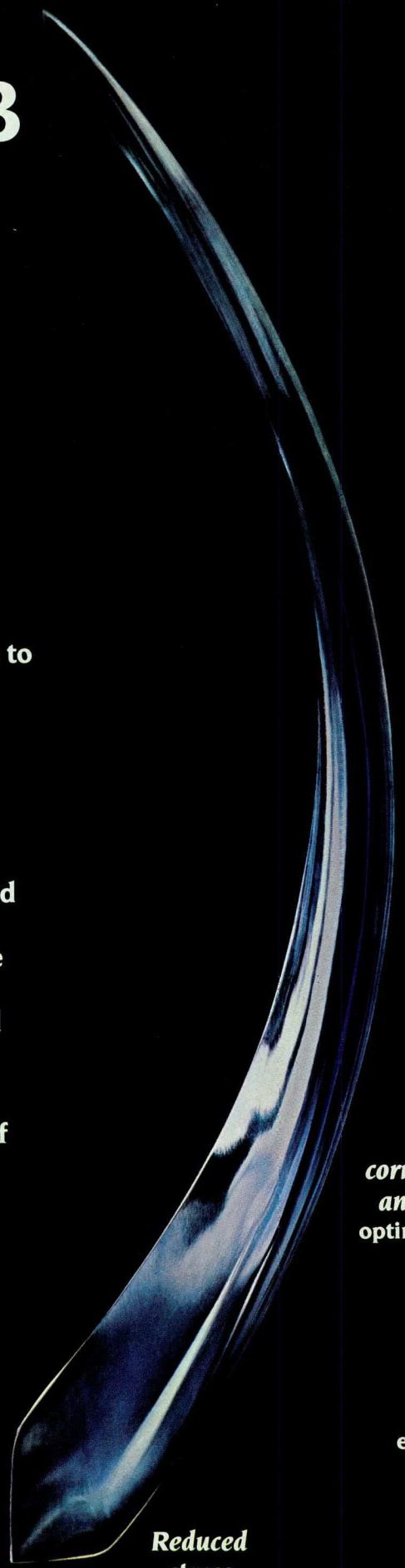

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correction of astigmatism

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polished base curve bevel

Improved stability
prism ballast geometry

BAUSCH & LOMB
SOFLENS DIVISION
Markham, Ontario, Canada

17th Biennial Congress Gleanings

G. Maurice Belanger

From Sea to Sea — now that Newfoundland has hosted the 17th Congress it can truly be claimed that C.A.O. has realized Canada's Coat of Arms motto "From Sea to Sea."

The 17th Congress offered a unique opportunity to combine business and pleasure. For most registrants it was a first visit to Newfoundland. Truly, to most visitors this was a newly found land for few of us could have imagined what this visit would offer. Post card pictures or even provincial publicity publications could not accurately foretell what most visitors would encounter, particularly the genial friendly open-hearted character of the Newfoundlanders themselves — no photograph or printed word can describe their character. It must be experienced on a person to person level. Let us hope that the expected boom of the 80's will not change that charm and openess.

Registrants really discovered Newfoundland either before or after the Congress as most first time visitors spent three to four days exploring the "Rock" from Port aux Basques to Cape Spear and from St. Anthony to Cape Race with all the picturesque and quaint villages and outports between. Yes, a Newfoundland of charming vistas, magnificent scenery, breathtaking views and last but not least, of charming hospitable folks.

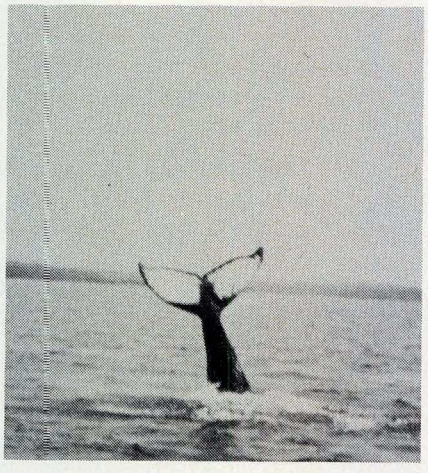
A few Congress delegates even managed a visit to St. Pierre and Miquelon, but these islands cannot be considered Newfoundland in attitude or character.

History dogs one's steps, particularly in the Avalon peninsula and Buenavista. However, all coastal areas of the North coast and northern peninsula offered local points of interest to the history buffs and nature lovers. And of course, the whole province is a sport fisherman's

St. John's area photos courtesy Dr. Kevin Halleran

paradise. It was not uncommon to see cars parked by the road near a bubbling creek or small river and observe people of all ages readying their fishing gear.

Those hearty ones who braved the wind and the fog on Tuesday evening were rewarded on their trip to Cape Spear — the most easterly point of North America — the old Mariners cry of "thar she blows" was repeated as a school of whales accommodated the mainland landlubbers by staying close to shore and blowing their spouts.



The charm of old St. John's however old and weatherworn in some spots contrasted spectacularly with some of the newer and more renovated sections of the city. With a population of 140,000, St. John's was astir with activity, especially the port area with its assortment of ocean-going vessels, from small fishing boats to oil drillers and cruise ships.

The beauty of wooden houses, plain or with ginger bread designs emanated a certain attractiveness, which brick homes almost certainly fail to render and which only those very old stone houses can come close to matching for a feeling of hominess and nostalgia.

Congress registrants were treated to a fine performance of "1881," in fact a premier performance, honoured by the presence of the Lieutenant-Governor of Newfoundland, the Hon. John Paddon. "1881" was a collection of amusing and somewhat satirical sketches depicting life in 1881 on the rock. These scenes included a courtroom re-enactment, a post office line-up, the ladies sewing circle and its undercurrent of gossip, a

temperance meeting, the turning of a spade of sod for the Great Newfoundland Railway, later to be known as the Bullet for its lack of speed while for years existing as the only transportation to be had except by boat around the coast.

The costumes were typical of the era and the cast's presentation was lively. They may not have exhibited the polish and finesse of a Stratford Festival but are these attributes really essential for one to enjoy an evening at the theatre? In this case, emphatically no! Many thanks to the organization committee for offering such an evening of wonderful relaxation.

St. John's performing arts facilities are excellent. The Arts and Culture Centre could shame many other larger cities. It is not a lavish building but is well designed for acoustic performance, the seating is comfortable and the stage fully visible from all seats in the house.

The weatherman was really good to all, offering almost a full week of beautiful sunshine right up to Saturday evening. The skies clouded over intermittantly on the Sunday and Monday and did interfere with the Junior programme and also with part of the spouses activities but alternative arrangements allowed the programs to continue without major interruption. While central Canada sweltered in 90°F heat, temperatures in St. John's remained on the cool side, even making outdoor swimming uncomfortable.

The lobster boil was a success despite the inclement weather — lobster, whether eaten indoors or outdoors is still an enjoyable delicacy.

* * * *

Registration was better than expected. A total of 328 including optometrists, their guests, spouses and children registered — the block of rooms at the Holiday Inn was filled and the overflow had to be accommodated at the nearby Battery Inn.

On a provincial breakdown of practitioners we counted:

From	B.C. 14	Que. 4
	Alta. 20	N.B. 15
	Sask. 10	N.S. 17
	Man. 12	P.E.I. 2
	Ont. 54	Nfld. 21

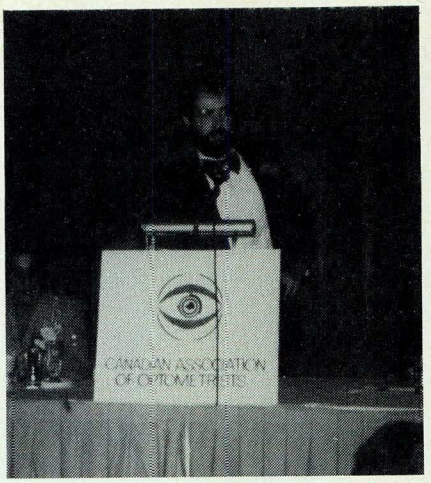
Spouses 104 Guests & Lecturers 10
Children 45 Exhibitors 75

No one class year appears to have had an overwhelming number in attendance. Even the big classes of 1949,50 51 failed to dominate the registration but all in all, though 198 optometrists does represent a very high percentage of our Canadian membership — proportionately we do better than medicine at their national congress.

Had our Quebec colleagues attended in proportionate numbers, overall attendance could have reached 20 per cent of our membership.

A sure sign that time marches inexorably onward — the old guard, including this writer, searched in vain among a sea of new faces and names for friends of many years standing. Identification tags were not needed not so many years ago but they are indeed essential today as the old give way to the new!

Another sure sign that things are changing. Dr. Reid MacDuff becomes the 24th C.A.O. President. Not only is he the first Newfoundlander to occupy this post, he is the first Waterloo Graduate to do so.



CAO President-Elect Dr. R. MacDuff addressing Banquet guests.

For those who may be confused by the unequal number of congresses and presidents one must recall that C.A.O. became a chartered group only in 1948 and it held its first Congress in Ottawa in May 1949. C.A.O. history goes back to 1924 when Herb McLung of Regina first proposed a national body. It took until 1942 to organize and until 1948 before obtaining a charter of incorporation. Prior to 1948 five people held the office of president(1).

Past Presidents in attendance included Jack Huber, Regina; Garson Lecker, Sydney; Roy Brown, Virden; Elwood Spearman, Killarney; William Lyle, Waterloo.

Junior delegates at the "Screech-In".

(1)Editorial — a Silver Jubilee — C.J.O. Dec. 1973

The number of young children attending the Congress seems to increase at each occasion, testimony to the interest of younger practitioners in their national association. This is an encouraging sign for the future — Leaders are not formed overnight, they develop over time with continued exposure to the business of the association.

Dr. Jack Huber's masterful presentation of the 1981 President's Award to recipient Dr. Elwood J. Spearman of Killarney Manitoba was a highlight experience. In responding, Woodie, in his usual humble manner denied any responsibility for his many accomplishments, reflecting instead that his good spouse Marion and his colleagues, particularly Roy Brown, should be cited rather than he.

Dr. J. Huber (left) presents 1981 Presidents Award to Dr. E.J. (Woodie) Spearman (right).

Previous award winners in attendance were William Lyle, Ted Fisher, Fred Attridge and Maurice Belanger. The award was first instituted in 1965 and presented to John J. Mulrooney of Halifax, C.A.O. President in 1952-53 and then C.A.O. treasurer for 9 years.

The prestigious award is given no more frequently than once every two years. Deserving practitioners can be proposed by any C.A.O. member. The award committee is composed of the three most recent C.A.O. past presidents.

The theme of the educational programme "Etiology of Refraciton" was excellent. Unfortunately three half days of lecturers are hardly enough to cover such a wide field, basic to the development of optometry as a distinct and autonomous health care discipline. Dr. Avrum Richler and Dr. Allan Richardson are to be congratulated for developing the theme.

Dr. Ernst Goldschmidt, a Danish Ophthalmologist and Director of Ophthalmology at the University Hospital of Odense was the featured speaker. It was evident from his enthusiasm and his delivery that he is very knowledgeable on this subject, a topic he admits receives far too little attention by all eye care professions. He stressed that we are still far away from a thorough understanding of refractive errors, their causes and evolution throughout human life. He encouraged his audience to engage in longitudinal studies of refraction although he admitted to the difficulty of maintaining an adequate sample of patients due to lack of interest, displacements and death. He suggested that buried in the files of every refractionist's office were records covering the life span of a number of patients. Data such as this collected from numerous offices would be of great clinicial significance in understanding refraction.

As a token of our appreciation he was presented with a copy of the illustrated book "Treasures of Canada" by Samuel and Stevens.

Dr. Indra Mohindra, from New England College of Optometry, described in detail an examination routine she recommends for use with children. This retinoscopy technique is simple and results are accurate. Her presentation was basically an illustrated lecture of each step in the routine which was next best to an actual demonstration in a clinical setting.

Dr. Ted Grosvenor is a recognized authority on contact lenses but proved his versatility as a teacher of clinical topics. His lecture was a slide presentation of 50 pathological fundi and externa. Each person in attendance was given a list of four conditions numbered for each slide. Each member in the audience was to indicate which condition of the four listed was the proper diagnosis. This self evaluation test required just about the full lecture period. In the final few minutes Dr. Grosvenor listed the diagnosis for each slide commenting on the decision when needed.

Dr. John Bear and Dr. Avrum Richler added to our knowledge of refractive errors by reporting on their studies of the refractive states of Newfoundland natives and Labrador Inuits. The lecture on the use of computers in optometric offices was a basic presentation with examples chosen to illustrate typical uses in the office.

(l) Newfoundland MLA for the Opposition, Mr. Steve Neary advises CAO Delegates on Lobbying Tactics, (r) President - Elect MacDuff

The lecture on clinical photography was more a report of historical aspects than a technical presentation on the use of photography as a clinical tool for recording normal or abnormal visual conditions. However entertaining the lecturer proved himself to be it was a disappointment from a clinical aspect.

Thanks is due to the many firms who accepted C.A.O invitations to participate in the Congress exhibit. The industry and the profession are mutually interdependent. Sympathetic cooperation by both parties is essential to meeting the needs of the Canadian public.

To optometrists who take pride in their prescribing skills it was gratifying to note a resurgent interest by some firms in offering a wide range of lense types including strip segment prism bifocals and bicentric grinding of plastic lenses (back surface only).

Also in evidence were the newer multi-coat anti-reflection coatings and RLX treatment and polycarbonate lenses for racquet sports.

The display of objective and subjective auto refractors leaves one perplexed as to their ultimate effect on the vision care professions. They can be so readily abused and their findings taken for the final say when such is not the case.

An initiative which needs to be repeated and emphasized is the photograph contest for practitioners. It must have been disappointing to have so few entries when so many optometrists are photography addicts. Less than 5 entries did not make for a large display. If the quantity was missing, quality was evident in all entries. Ralph Rosere of Dartmouth kindly provided an exhibit of his own work to inspire future contestants. In 1983 in Vancouver let's have quantity and quality!!

The Saturday evening reception really provided an opportunity to talk, renew acquaintances and get in the mood. Authentic Atlantic head gear in the form of the famous "Sou'Wester" hat was worn by everyone. Herve and Jackie Landry

CAO "Screechers" line-up for the traditional "Fish and Brewis" welcome to Newfoundland.

policed the door and nobody attended the "Screech In" without one (see pictures). A hearty musical lead from a genuine "Newfie Band" and a liberal hand on a keg of "Newfie Screech" supplied by the Government of Newfoundland helped fuel this favourite event.

On the more serious side, the General Business meetings were reasonably well attended. The various activities of C.A.O. were described and reported on and registrants were able to question committee chairmen to clarify any point they wished. It is unfortunate that these meetings are not attended by all registrants — the opportunity to hear about and question C.A.O. activities and policies comes only once every two years.

Fortunately the two days prior to the Congress is given over to the Provincial Presidents and Secretaries meetings and National Board meetings. These deal with the more routine administrative affairs and permits a wide ranging discussion of topics leading to concrete policies and action plans.

The President Elect of the American Optometric Association, Dr. Harold F. Demmer was in attendance as our guest and spoke briefly but emphatically to the assembly. He remarked how similar problems affecting the profession exist both in Canada and U.S.A. He also described in some detail the effects of consumerism, the Federal Trade Commission decision and the effect they will have on the practice of optometry. In particular he cited chain optical outlets, the return of uncontrolled advertising, price cutting, the emphasis on frames rather than service. This, he said, places a great responsibility on ethical and professional practitioners to take on junior associates so that the commercial chains do not attract the new graduates by their well equipped offices and high salaries.

He noted that consumers are ready to pay more for proper service but the patient must be educated as to the nature of the services rendered.

The decision of the Quebec Association to renew its membership in C.A.O. was enthusiastically applauded when President Landry made the announcement at the Sunday afternoon session of the business meeting. Although neither Jacques Vinson representing the Order of Optometrists and Jean Marie Rodrigue, President of the Quebec Association were present at the time of the announcement, their presence at the Congress augurs well for the future.

Professor Emerson Woodruff was recognized by the profession for his

unrivalled contributions to Canadian optometric education and was presented with a suitably inscribed copy of the text Treasures of Canada. In his reply Dr. Woodruff paid homage to Ted Fisher as his mentor for his dedication and example and to the faculty, people and staff for their constant support, help and counsel in his duties as Director of the school.

* * *

Dr. Roland des Groseilliers in his Trust Fund report made the important point that the Waterloo Development Fund and the Canadian Optometric Education Trust Fund should not be considered antagonistic. Both need the unfailing support of optometry. Those who do make contributions to the WAT fund can be assigned directly to the needs of the School of Optometry.

The success of any Congress is a measure of the efforts put forth by the various Congress committees from the general chairman down to the rank and file. Our heartfelt thanks to:
Dr. Avrum Richler, Dr. Allan Richardson, Dr. Luc Boulay, Dr. John Snow, Dr. Sandra Taylor and all the other Newfoundland members who helped. Particular thanks must go to Roslyn MacDuff who

Dr. Avrum Richler — Congress Arrangements Chairman at the helm!

ably ran the Congress Registration and Information desk.

To paraphrase one of our banking institutions, "when they succeed, the Congress succeeds."

O.D.'s must be an emotional group for it has occurred before and it happened again at the Congress. Eminent optometrists losing the power & speech as mist wells up in their eyes is not uncommon. Herve Landry whose vocal chords refused to vibrate as he attempted to thank his good spouse for her dedicated support and patience during his term of office was one. Yes, and even the phlegmatic Dr. Woodruff could not evade his emotions about Canada and Optometry. He too cut short his words of thanks as he responded to the presentation made to him.

Even Ray Corbin, our M.C. at the Banquet became confused in his routines of "Grace" and "Toasts," excusing himself by accusing optometrists preference of drinks over prayer.

The banquet is an occasion of joy and festivities and conversations between friends — during the meal we could do without music from the band — voices were hard enough to hear without the music. It could save a few dollars for the finances committee, but more importantly, attendees could hear themselves talk!! — not that the band was not good. On the contrary, those saxes really had it!!!

Fortunately for optometry, Don Larkworth ran the Ontario College more efficiently than he did the "49" class reunion. Imagine Table 5 in one corner of the hall and Table 6 in the other!

And so we will see you again at the Bayshore Inn in Vancouver, July 2-6, 1983. Au revoir till then.

G.M.B.

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Optometrists Are Not Communicators

Dr. Harry Basman*

Excerpts from Dr. Harry Basman's Address to CAO General Business Meeting — St. John's 1981

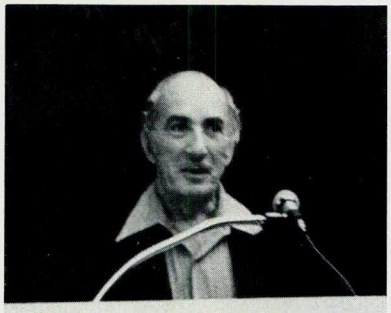
Verdict: *In the majority of cases — guilty as charged*
Prognosis: *If we don't get off our seats and start becoming communicators then we are going to wake up some day, in the not too distant future, and discover we are no longer a full service profession.*

In the past, the ground rules were very clearly defined. Optometry was a full service profession and not one optometrist questioned that or failed to provide a full service to the public. The ophthalmologist did his very own thing and felt it was extremely unethical to have any connection at all with opticiantry. Opticiantry accepted the fact that it knew its place and stayed strictly in the background.

To illustrate the importance of effective communication, there is the story told of ancient times in which a Christian is thrown into the arena with a lion. The Christian immediately kneeled down to pray and he noticed that the lion, too, was taking a reverential pose on its knees. "This is a miracle," he said. "I must be communicating with him." The lion looked up and said, "I don't know what you're doing, but I'm saying grace."

That is not the kind of communication we need. From the viewpoint of the practicing optometrist, there are two main parts to communications:

1. Communicating with patients.
2. Communicating with the community at large.



Our primary goal in conveying optometry's message should be four-pronged:

1. To educate — explaining what constitutes optometric care.
2. Establish the optometrist as the primary source of vision care.
3. Enhance the rapport between the patient and optometrist.
4. Demonstrate true professionalism by separating optometrists from the eyeglass merchandisers who some consumers mistakenly believe do what we do. In this respect we must inform consumers that our purpose and function are far beyond that of just "fitting glasses." Now let us deal with part one — communicating with patients. Remember, the patient in your chair is a human being — full of the usual fears and apprehensions common to most. Most of your patients are apprehensive about their vision, and worried because it isn't as good as it was or they wish it would be. Their biggest fear in most cases is that there is something drastically wrong and they may be in danger of going blind. This latter fear is especially true of the older patients. Take the time to treat that patient exactly the way you would like to be treated — that is the cardinal rule of communications — reassure them — take the time to explain what their visual problem is and show them how well it can be corrected — and above all — reassure them that their visual problem is *not* a rare occurrence, and that they are not going blind. Take the few minutes necessary to educate the patient and explain what constitutes optometric care. Enhance the raport between your patient and yourself. These steps in communications are simple basic decency, and also darn good business. Patients appreciate your explanations and assurances and become your best source of advertising. There is no better source of practice-building than a satisfied appreciative patient. I speak from over thirty years of experience and not from a theoretical viewpoint.

Remember, basic point two — people tend to hear only what they want to hear, and most never remember enough of your explanation to relate it properly to their friends and families. Do supplement your communication with the printed word. The best vehicles we now have in this department are:

a) The eye charts on which you can explain cataract, glaucoma, pathology, presbyopia, anatomy, etc.,
b) The Family Guide to Vision Care — this guide makes each patient an instant expert, and they can return home and show off their new knowledge to family and friends — communications in action.
c) Sam and Susan visit the optometrist — I am constantly amazed

Dr. Basman is Past-President of the Manitoba Optometric Society, and now serves as Executive Director of the Society. He is also Chairman of the Western Provinces Communications Program.

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Director of Vision Function Lab, Centre for Developmental and Learning Disorders, Associate Professor of Optometry, University of Alabama

The Team Approach to the Learning Disabled Child - The Optometric Approach

Dr. William Ludlam, O.D. MSc. Director of Learning Disability Diagnostic Clinic, Director of Strabismus Clinic, Professor of Optometry, Pacific University

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at the responses I get to my distribution of vast quantities of this coloring book. It finds its way into the school room and the teacher often uses it to explain vision to her class, and it finds its way to the parents who are corralled into examining the artistic coloring the child did in the book.

d) The CAO and AOA pamphlets on each and every imagineable topic — I'll discuss more about this shortly.

e) The wall plaques or table models of the schematic eye as well as various texts can also be utilized to educate the patient.

Communications with the community at large — get your head out of the sand and get out and communicate. Both the Western Communications Program and New Brunswick simultaneously got the idea that we ought to produce audio visual presentations. Steps are now being taken to assemble a large number of slides into presentations and scripts will be prepared so they can either be shown on the labelle cassette or the slides can be shown and the optometrist can give his own talk in conjunction with the slides. The initial presentations will likely be (A) "The Eye" — how it works: (B) Pediatric Optometry; and (C) The profession of optometry. It is to be hoped that given the material and/or complete presentations, we'll get larger and larger numbers of optometrists going out to speak to career days — PTA meetings — service clubs, schools, etc.

It must also be kept in mind that any and all public relations has to start and be nourished by the practising optometrist in his or her office and in the community at large. The public must be educated on the role of the optometrist - his education and expertise and the services he offers. Remember — if we don't blow our own horn, then nobody else ever will, for we know optometry best, and it is our mandate to pass that knowledge on.

There are three more forms of communications that should be touched on:

Institutional Advertising

No one individual has the means or the time or expertise, to launch a good program on his own, so it only makes common sense for various provinces to pool their money and talents to create a sustained effective institutional advertising program. This was the rationale for British Columbia, Alberta and Manitoba to launch the Western Communications Program. Our last couple of meetings have been attended by Saskatchewan and Ontario and we find that we do have many interests and desired programs in common.

The first issue was to establish that institutionalized advertising was simply the promotion of an image — the image of optometry. One of the basic purposes behind the consumer education program is promotion of professional optometry through the media to combat commercial influence. Promoting good vision care gives the patient something to consider other than the cheap eyeglasses he has been reading about in the newspaper and seeing on TV.

The Western Communications Program accepted the conclusions of the survey carried out by the American Optometric Association entitled — "A survey of United States Homemakers". This gave us our target — the homemaker — and research pointed to the use of the Reader's Digest as the publication best suited to our needs.

We decided on a budget of $100.00 per member plus $15.00 per member for travel as we decided we had to keep right on top of the program and have frequent meetings. We agreed to base our payments on a per capita basis. In 1980, we had 5 insertions in the Reader's Digest — pediatric. The first one stressed the need for early examinations and we ran this in three issues. The second insertion stressed the need for routine vision care for school-age children and was run for two insertions in the Reader's Digest. The third insertion has run in the May and June 1981 issue of the Reader's Digest.

Efficiency studies show we reaped our maximum benefits with the seven ads in the Digest, and we will be running a mini page ad on the second insertion in the September issue of Chatelaine Magazine.

Of course, the first question from critics and opponents of the institutional advertising program is: "Can you guarantee that this program will bring even one single new patient into my office?" The answer is definitely no. The purpose of the program is to promote the image of optometry and of the optometrist as the primary eye care practitioner and not to try to attract new patients. If we do our job properly, over a sustained period, then the acquiring of new optometric patients will be the crop. First, you have to prepare the ground and plant the seed, and the end result is the harvest. Those optometrists who want assurances of instant new patients are in the position of wanting to have the harvest before the seeding.

CAO Communications:

CAO has been aware for some time that it has failed miserably in its own communications with the grass roots portion of optometry — the practising optometrist. The Canadian Journal of Optometry is an excellent publication in its present form, but it was never really intended to be and certainly is not, a communications vehicle. CAO's excuse is that it cannot afford to launch a membership newsletter and my reply is that CAO canot afford to not launch a membership newsletter. The councillors, the presidents and the executive directors all know of the excellent work done by CAO, but the average member has to wait till the provincial annual meeting to get a quick summary of CAO endeavors and that just isn't good enough. Optometrists cannot be expected to stand behind and support policies and programs they hear about only briefly after their success or failure. I am pleased to note that an Interaction resolution on July 3, 1981, gave CAO the green light to launch such a newsletter.

cont'd. on pg. 102

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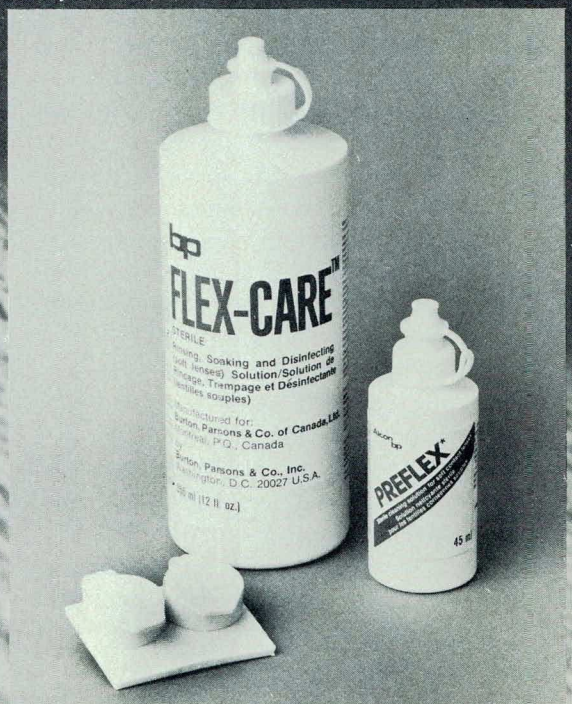

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Results of Vision Examinations of Mentally Handicapped Persons in Toronto

Dennis Bader* and
Harvey Mayers

Abstract

This paper presents the results of examinations of mentally handicapped persons in Toronto. Discussion is presented concerning the higher prevalence of vision problems in this population.

Abrégé

Ce travail présente les résultats de l'examen visuel d'un groupe de handicappés mentaux dans la ville de Toronto. La plus grand fréquence de problèmes visuelles dans cet échantillon est notée ainsi que le besoin de surveiller ces populations de plus près.

During a two year period, 249 mentally retarded persons underwent vision examinations by the authors at their respective residences, adult development programs (ADP) or employment training centres (ETC).

The primary goal of an ADP is to help severely retarded adults learn skills which will facilitate their personal growth and help them become involved in the community. Personal growth and development may include learning skills for daily living, better communication, recreation and physical fitness. Community involvement encompasses learning to use community resources such as public transportation, keeping informed through newspapers, radio and television and learning to relate to one's surroundings.

The goal of employment training is sucessful employment, appropriate to the individual.

Providing an industrial environment for vocational assessment, employment training at two locations in Toronto covers a range of vocational activities geared to developing marketable skills. Job training may last from two months to two years.

The purpose of these examinations was to satisfy an unmet need in vision care for this population. This has been documented by the Ontario Government and others, most notably in the Royal Commission of the Healing Arts Report (1970) which is the forerunner of the 1974 Health Disciplines Act, and in a government funded project published in 1977 by Drs. Woodruff and Schmidt of the University of Waterloo School of Optometry. This was a study of vision service delivery in Ontario with recommendations for meeting unmet needs for vision care and the rationalization of the delivery of vision care services. There is a need to determine and document the extent and types of vision problems existing in the mentally handicapped population in Toronto.

With the full co-operation of the Metropolitan Toronto Association for the Mentally Retarded (MTAMR) and staff, the authors were able to complete on-site vision exams, using portable equipment and special optometric techniques.

Table 1 presents the age range of the sample. 151 males and 98 females were examined. One hundred seventy four persons were seen at various employment training centres and 75 were seen at adult development programs.

Thirty-one (12%) persons exhibited strabismus (mostly esotropes). 41 (16.8%) persons exhibited ocular pathology, most of these being cataracts or lens opacities. Other conditions were nystagmus, keratoconus, blepharitis, conjunctivitis, keratitis, entropion, ectropion and pupil abnormalities.

Five persons were found to be functionally monocular and five persons were blind (they had been registered with the CNIB).

Referrals for further vision assessment for spectacle therapy were made in 92 (37%) cases. These referrals include a few ophthalmic appliance repairs. When pathology was found, referrals were made to general practitioners or opthalmologists.

Discussion:

It is known that vision defects influence neurological development and that neurological development, in turn, may influence intellectual development and motor achievement.[1] Recent experimental studies of the visual systems of several species, including man, have shown that sensory deprivation has striking consequences. [2,3] Defects of the ocular refractive system tend to deprive the individual of visual input and such deprivation may well inhibit further sensory, perceptual, and cognitive development. Hence, research on the practical implications of correcting sensory malfunction may lead to prevention of defects of sensory and motor development.

It is uncertain what amount of refractive error induces sensory deprivation and the extent to which deprivation depends on the degree of error. The vision care program for mentally handicapped in which we have been involved has already provided insight into the prevalence of vision anomalies among retarded populations.

Previous studies have been able to measure the extent of improvement in visual acuity and ocular muscle balance.[4] Changes in behaviour and

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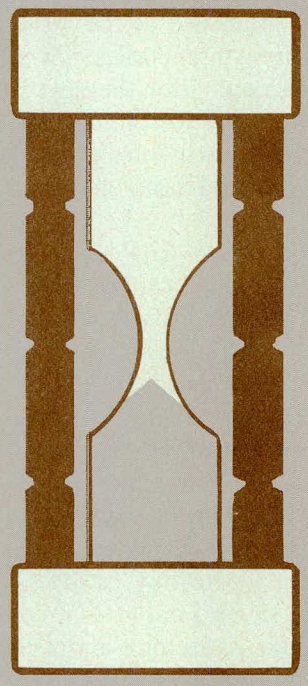

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social interaction have been observed among individuals who received care.[5]

It is evident that the high frequency of refractive errors and eye pathologies among this population places these persons "visually at risk"[6] and in need of optometric care. Even after spectacle therapy, the residual impairment of vision leaves retarded persons at a considerable disadvantage. Consequently, their vision care should include modifications in environment and visual tasks to help them make maximum use of the vision available through spectacles, low vision devices, and vision therapy.

This is essential for the development of individuals in job placement programs, general tasks and their day-to-day lives.

In this population 66.4% persons presented with significant refractive errors. We referred 37% for further evaluation and found that the remaining 29.4% had adequate spectacle corrections at that time.

In a population of normal persons in these age ranges, only approximately 25% would be expected to have significant refractive errors, 5% ocular pathology, and 5% strabismus. In our sample we found 16.8% ocular pathology and 12% strabismus, proving that populations of mentally handicapped persons have a much higher frequency of vision problems. (See Table 3).

TABLE 1
AGE RANGE OF SAMPLE

Age	Number	%
11-20	59	23.7
21-30	140	56.3
31.40	28	11.2
41-50	14	5.6
51-60	8	3.2
Total	**249**	**100.0**

Results: Table 2 presents the nature of the vision problems (Refractive errors)

TABLE 2
NATURE OF VISION PROBLEMS

Refractive Error	Number	%
Hyperopia	55	22.1
Myopia	40	16.1
Hyperopia with astigmatism	35	14.1
Myopia with astigmatism	35	14.1
Marginal refractive error or emmetropia	84	33.6
Totals	**249**	**100.0%**

TABLE 3
FREQUENCY OF VISION PROBLEMS IN SAMPLE

Significant	Normals	M-H
Refractive Errors	25%	66.4%
Ocular Pathology	5%	16.8%
Strabismus	5%	12.0%

Conclusion:

Since the incidence of vision problems is significantly greater in the mentally handicapped population, it appears that vision assessment and correction should be an integral component of their health care program. We stress that vision problems should be detected as early as possible for maximum benefit.

References

1. Freeman, R.D. and L.N. Thibos. Electrophysiological Evidence that Abnormal Early Vision Experience Can Modify the Human Brain. *Science*, 180:4088, 1973, 876-878.
2. Annis, R.C. and B. Frost. Human Visual Ecology and Orientation Anistropies in Acuity. *Science*, 182:4113, 1973, 729-731.
3. Blakemore, C. and G.F. Cooper. Development of the Brain Depends on the Visual Environment. *Nature*, 288, 1970, 477-478.
4. Woodruff, M.E., Cleary, T.E. and D. Bader. "The Prevalence of Refractive and Ocular Anomalies among 1242 Institutionalized Mentally Retarded Persons", *Amer. J. Optom. & Physio. Optics*. Vol. 57, No. 2, pp. 70-84, Feb. 1980.
5. Bader, D. The Effects of Corrective Lenses on Various Behaviours of Mentally Retarded Persons, M.Sc. thesis, University of Waterloo, 1977.
6. Woodruff, M.E. The Visually "at Risk" Child. *J.A.O.A.*, 44(2), 1973, 130-145.

Prismatic Effects in Bicentric Grinding

Arnulf Remole*

Abstract

Bicentric grinding is widely used to neutralize a vertical differential prismatic effect at the near visual point. However, the prismatic effects in other portions of the reading field differ from those at the near visual point. In this study, the variations in prismatic effect throughout the entire reading field are demonstrated. It is shown that a slab-off prism is most effective in spherical anisometropic prescriptions and when the differential prismatic effects are symmetrical about the horizontal meridian.

Abrégé

Le procédé de surfaçage bicentrique est communément employé afin de neutraliser un effet prismatique au point de lecture. Toutefois les effects prismatiques diffèrent à tout autre point du champ de lecture. Ce travail étudie ces variantes dans l'effect prismatique. Le procédé bicentrique est le plus efficace quand l'anisométropie est sphérique et les effets prismatiques sont symmétriques autour du méridien horizontal.

Bicentric grinding as a correction for differential prismatic effects in the vertical meridian at the near visual point has been used for a long time.[1] The fundamental principles of its application are well known. In bifocals, the biprism allows the patient to look through the segment without having to contend with an unduly large difference in vertical prismatic effects between the two lenses. The slab line is placed so that it coincides with the top edge of the segment, usually a straight-top type. The biprism can be incorporated also in single vision lenses, but since such prescriptions allow the patient to offset differential prismatic effects by means of head movements, it is less critical. It is therefore generally associated with bifocals or trifocals, where the patient has no choice but to look through the segment while reading.

The magnitude of the bicentric grinding can be from about 1.5^{Δ} to about 5^{Δ}, depending on the thickness of the lens blank. The slab-off is introduced on the lens with the highest minus or least plus, on the front surface, its base directed upwards. It is designed to neutralize the vertical differential prismatic effect generated by the distance portions of the lenses at or close to the near visual point (NVP), usually considered to lie about 10 mm below the major reference point (MRP) of the spectacle lenses. The slab-off prism will neutralize only the vertical component of the prismatic difference. A small horizontal prismatic effect will normally remain at the near visual point. Since the two eyes can cope relatively easily with horizontal prismatic differences if binocular vision is normal, this is not considered significant. Most often, the reading adds are similar in power and will therefore not generate a significant differential prismatic effect.

Having summarized what is generally known about bicentric grinding and its effects, we are now interested in determining how the differential prismatic effects change as the eyes look through lens regions other than the near visual point, as is bound to occur during reading. An answer to this question is of considerable practical and theoretical interest. In this article, we present relatively simple examples to derive some general answers to this question.

Change in vertical differential prism through the slab-off field

First, consider a pair of spectacle lenses that embody a spherical anisometropic correction of 3.00 D, the right eye having the higher minus or lesser plus power. For example, this amount of anisometropia would be produced by the prescription:

O.D. – 6.00 D
O.S. – 3.00 D

According to Prentice's rule, which states that the prismatic effect is equal to 1^{Δ} per D per cm from the optical center of a lens, we see that the prismatic difference between the two lenses increases by 3^{Δ} per cm. We emphasize that we are interested in prismatic differences rather than absolute prismatic effects, since it is the differences which give rise to problems. If a slab-off prism of 3^{DT} is incorporated in the right lens in the above correction, the prismatic difference will be neutralized 10 mm below the optical centre of the lenses. If the eyes converge, a slight horizontal base-in effect will be produced.

Before we consider the changes in prismatic effect as the eyes look right and left through the reading field, let us simplify our task by introducing the principle of iso-prism lines.[3,4,5] An iso-prism line is a line locus in the spectacle field along which the same prismatic effect is generated. Iso-prism lines can be applied to a single spectacle lens, or it can be applied to the differential prismatic effects between left and right lenses. In the latter case, the lines are often referred to an imaginary right eye lens embodying all the differential prismatic effects. It is in the latter context that we shall use the concept in this article. This method of mapping differential prismatic effects can be elaborated on further by applying it to vertical prismatic effects only. Such loci are called iso-V-prism lines[3]. These are the loci we are most interested in at the moment.

*B.F.A., O.D., M.S., Ph.D., F.A.A.O., Member of Faculty, School of Optometry, University of Waterloo.

Figure 1 shows iso-V-prism lines for the above prescription, the lines representing loci of prismatic differences transferred to an imaginary right eye lens. When the eyes look obliquely through points corresponding to A at a distance OA from the optical center, 0, an oblique prismatic difference is generated, as shown by the prism vector. By Prentice's rule, $\Delta = cF$, this vector is proportional to the distance OA. Because the right angle triangle formed by the vertical component and the oblique resultant is similar to triangle OAB, the vertical vector is also proportional to the distance AB. Therefore, points that produce the same vertical prismatic effect lie on a line through A parallel to the horizontal axis. For example, the vertical component at A' is identical to that at A, the oblique resultant and the horizontal component being, of course, larger. This demonstrates that the iso-V-prism lines in the above type of correction are oriented horizontally. Thus, the differential prismatic effect is neutralized 7 mm below the slab line throughout the entire near field, which allows the eyes to move unrestricted from side to side at this level.

If we are dealing with a combination of right and left lenses where cylindrical components produce a differential prismatic effect that is symmetrical about an oblique meridian, the case is more complicated. Fig. 2 shows such a situation, where the diagram again represents an imaginary right eye lens onto which all the differential prismatic effects have been transferred. Points A and A' are equidistant from the "axis" of the differential prism effects. At these points, equal prism differences will be generated. Therefore, the vertical prism components will also be identical. Thus, the iso-V-prism lines will run parallel to the "axis" of the differential prismatic effect. In a manner similar to that presented above for spherical anisometropia, it can be shown that this is the case also when the iso-prism lines, representing the total

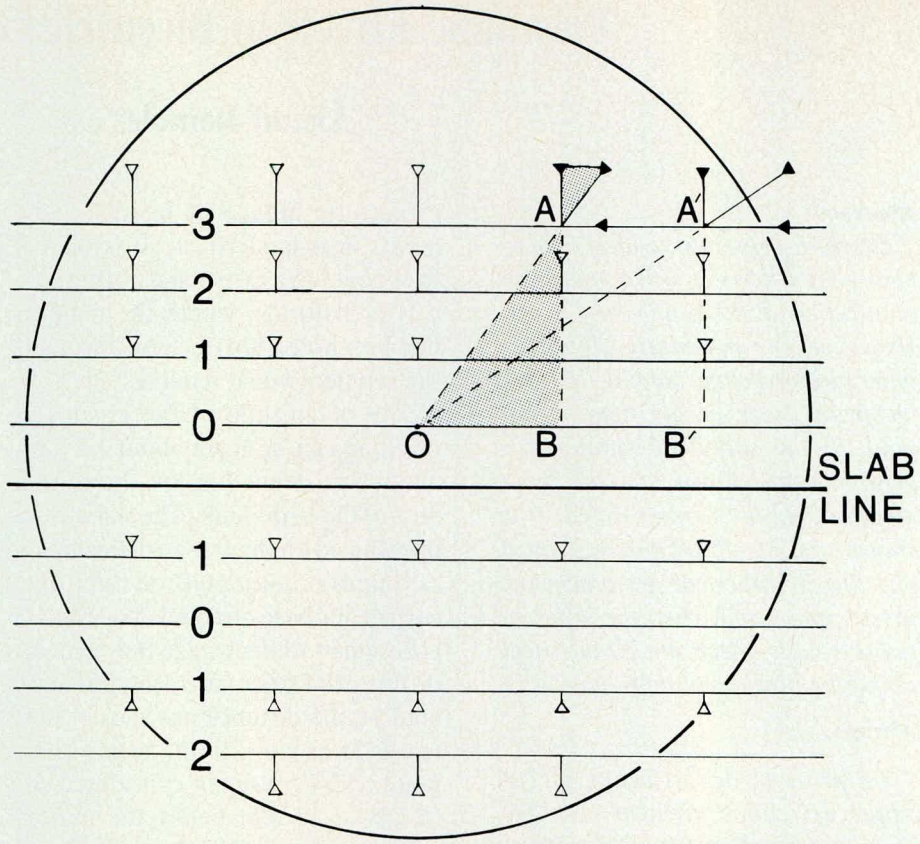
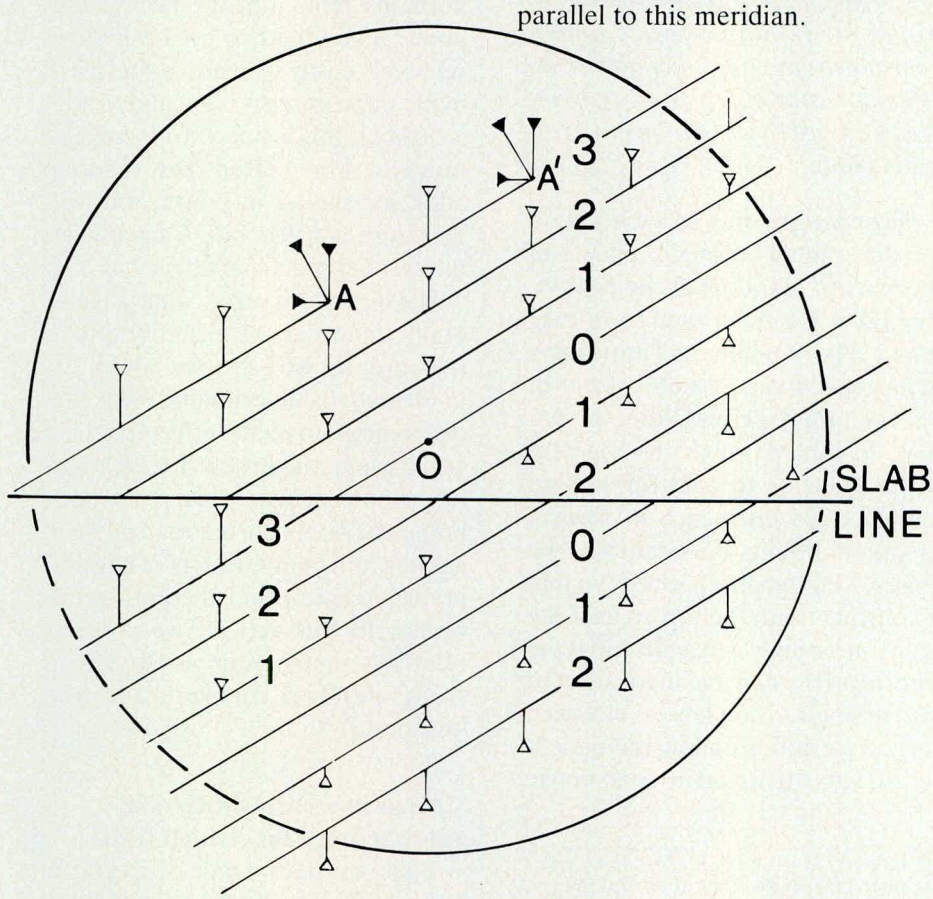


Fig. 1. Iso-V-prism lines generated in a correction of spherical anisometropia. The loci run parallel to the horizontal meridian.

Fig. 2. Iso-V-prism lines generated by a prescription for meridional anisometropia, where the differential prism is symmetrical to an oblique meridian. All the loci are parallel to this meridian.



prismatic differences, are elliptical. The corresponding iso-V-prism lines are then parallel to the axis of the ellipse that is closest to the horizontal meridian.

In this study, we are chiefly interested in the effect of the slab-off prism in the reading field. From Fig. 2, it will be seen that the vertical prismatic effect will change as the eyes sweep from side to side during reading. There is one point at which the prismatic effect is zero, but to one side of this point the effect becomes increasingly base-up, and to the other side, increasingly base down. The reading field is therefore restricted in the horizontal meridian by the vertical prismatic effect. The patient will have to rely more on head movements from side to side.

Figure 3 is a graphical representation of the changes in differential prismatic effect as the eyes rotate vertically behind a pair of spectacles provided with a slab-off correction. The differential prismatic effect is minimal at two points, the optical center of the major lens, and at 10 mm below the major reference point. The graph also illustrates the sudden change in prismatic effect at the slab line, the "jump" due to the slab-off portion. By interpolation from the graph, it can be seen that the prismatic effect is kept to a prismatic difference of 2^{Δ} or less through a vertical range of 22 mm. Without the slab-off, this range would have been only 14 mm. The dashed line shows the prismatic the prismatic difference that would have been generated had the slab-off not been present.

If the anisometropia is spherical or symmetrical about a horizontal axis, the graph describes the change in prismatic difference in the vertical meridian through the entire field of the prescription. However, if the prismatic difference is symmetrical about an oblique meridian, the graph is descriptive only of the vertical meridian through the optical center. In other vertical meridians, the positions of the points of zero prismatic effect would change, as discussed above.

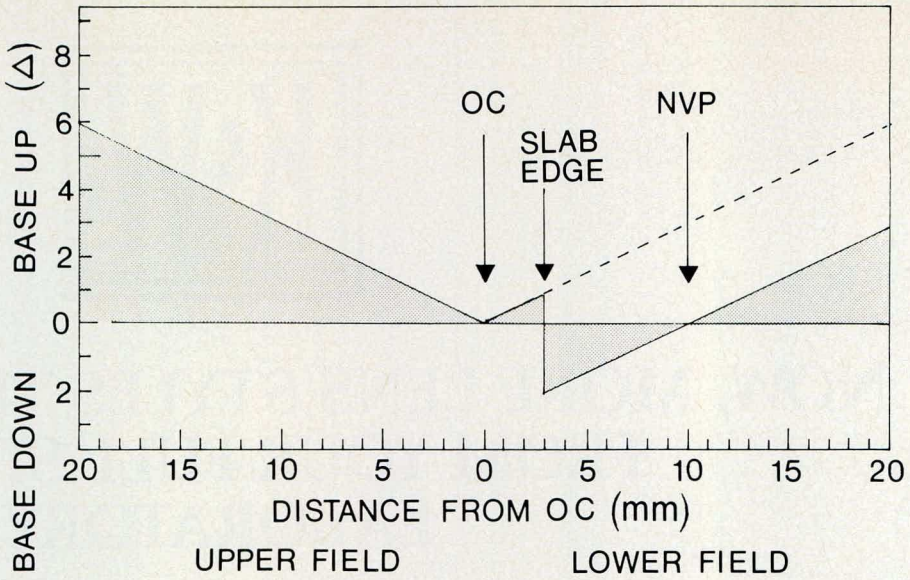
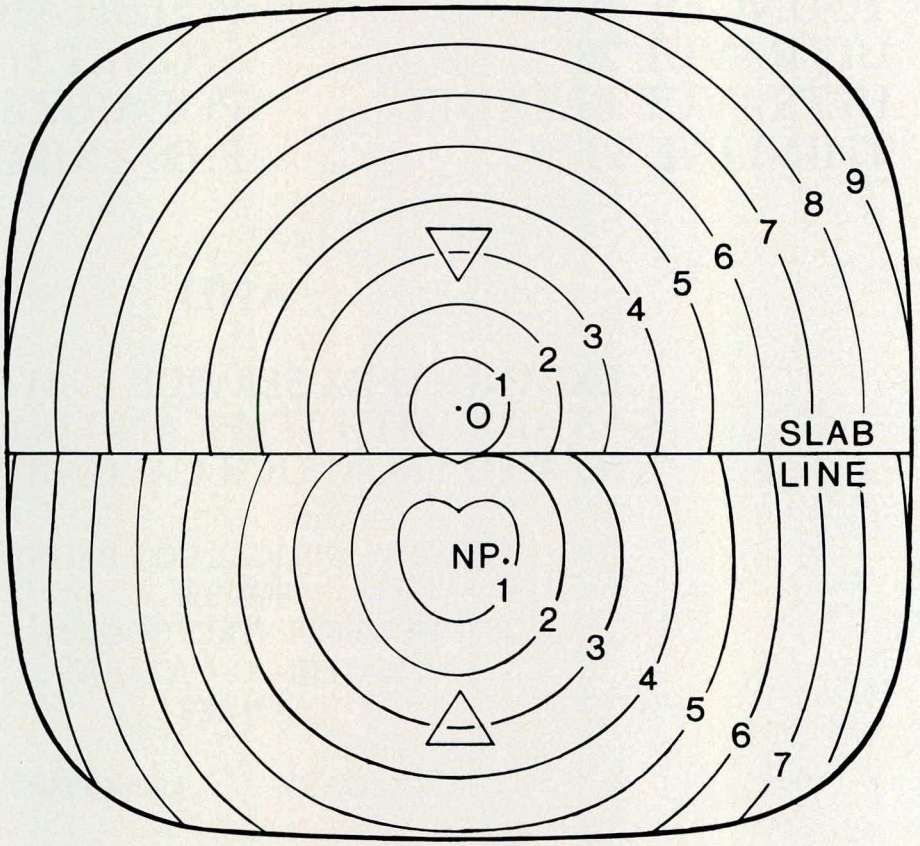


Fig. 3. Graphical illustrationof changes in differential prismatic effect in the vertical meridian as the eyes move vertically through the major portion of the lens and into the slab-off field.

Fig. 4. Iso-prism lines of a spherical anisometropic correction supplied with a biprism 3 mm below the optical centre. The loci show the changes in total differential prismatic effect as the eyes move behind the lenses, but not the changes in direction of the prism.



Total differential prismatic effect of a biprism

We have discussed the effect of the biprism on the vertical differential prismatic effect, using the principle of iso-V-prism lines. However, we must remember that the changes in vertical prism do not give the entire picture, since there is also a horizontal prism component present. When the lines of sight travel into the slab-off-prism field, there is a total change in differential prismatic effect both in direction and magnitude. Obviously, the vertical prismatic effect is the most important because of the relatively restricted fusional amplitudes in the vertical meridian, but it is nevertheless of some interest to formulate a more complete picture of the total changes in differential prism. For this purpose, we again present the relatively simple case used above, where 3.00 D of spherical anisometropia is incorporated in the prescription, the right lens being the higher in minus power. Again, a slab-off prism of 3^{Δ} has been placed on the right lens, 3 mm below the optical centre.

If the anisometropia is spherical or symmetrical about a horizontal axis, the graph describes the change in prismatic difference in the vertical meridian through the entire field of the prescription. However, if the prismatic difference is symmetrical about an oblique meridian, the graph is descriptive only of the vertical meridian, through the optical center. In other vertical meridians, the positions of the points of zero prismatic effect would change, as discussed above.

In Fig. 4, the iso-prism lines generated by such a prescription have been calculated. The lines are circular in the major field but deviate from a circle in the slab-off field. They define a region of relatively low prismatic effect surrounding the near visual point. Along the slab-line, the iso-prism loci change abruptly in location, the change being greatest towards the central portion of the lens.

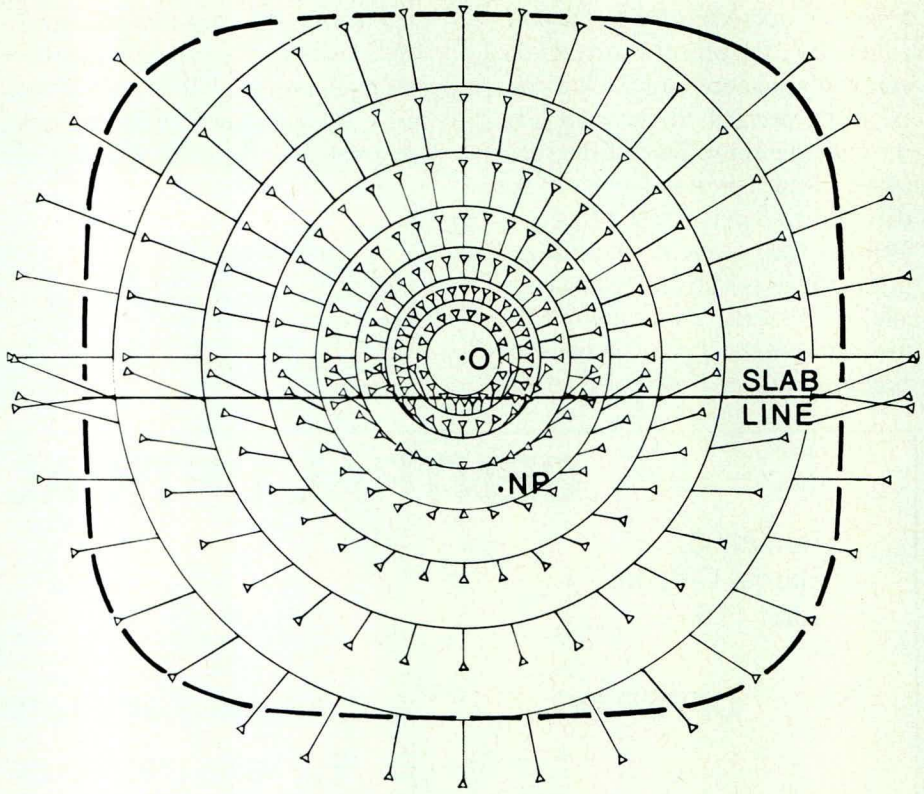


Fig. 5. Graphical illustration showing changes both in magnitude and direction of the differential prism as the eyes move behind the above prescription. The reference loci are concentric about the optical centre of the lenses.

Fig. 5 shows the directions as well as magnitudes of the prismatic effects generated by the above prescription. In this scheme, not previously presented in the literature, prism vectors are drawn from reference loci concentric about the optical centre of the major lens. Again, a region of relatively small differential prismatic effect surrounds the near visual point. The change in direction as well as magnitude of differential prismatic effect along the slab line is illustrated.

In both Figures, it can be assumed, for simplicity, that the lines of sight remain parallel as the eyes make conjunctive excursions behind the lenses. If the convergence for near is taken into account, a slight change in the horizontal component will be introduced. In this prescription, a combined convergence for the two eyes equal to 3 mm along the lens plane would result in an additional base-in prism of 0.9^{Δ} throughout the slab-off field. This adjustment can be made by a 3 mm lateral displacement of the near visual point in the imaginary right eye lens, as has been shown in the Figures. The exact differential prismatic effect at the reading level can then be interpolated with this position of the near visual point as reference. On the other hand, to adjust the entire prism field for this purpose would be awkward, for the eyes do not converge fully until the lines of sight have descended to the level of the near visual point.

Figs. 4 and 5 present a more complete picture of the differential prismatic effects generated as the eyes move behind a prescription incorporating a slab-off prism. More complicated prescriptions could be analyzed in the same manner, but since the vertical prismatic effect is the more important from a clinical point of view, the above illustrations will suffice. Their chief purpose is to add perspective to our knowledge of the vertical prismatic effects.

Conclusions

In a simple anisometripic correction, or in a correction where the

differential prism induced by the anisometropia is parallel to the horizontal axis, the biprism corrects the vertical imbalance along a horizontal locus parallel to the slab line, through the entire field of the spectacles. If the axis of symmetry of the differential prismatic effects is oblique, the locus of neutralized prism effects is also oblique and parallel to this axis. This will limit the usefulness of the biprism in the horizontal meridian. If we consider the total prismatic effects produced by the biprism, it is seen that the direction as well as the magnitude of the prism changes as the eyes move across the slab-line. These changes are greatest in the central field.

References

1. Ellerbrock, V. J., A clinical evaluation of compensation for vertical prismatic imbalances, Am. J. Optom. and Arch. Am. Acad. Optom., Vol. 25 No 7 Jul 1948 pp309-325.
2. Borish, I. M., Clinical Refraction, 3rd Ed., The Professional Press Inc. 1970, pp 263, 257, 1166.
3. Bennett, A. G., Ophthalmic Lenses, Vol I, The Hatton Press, London, 1968, pp 217-221.
4. Boeder, P., Analysis of Prismatic Effect in Bifocal Lenses, Southbridge, American Optical Co., 1939.
5. Stimson, R. L., Opthalmic Dispensing, St. Louis, C. V. Mosby Co. 1951, pp 116-119, 491-499.

Direct Ophthalmoscopy Toward The Retinal Periphery: A Quantitative Study

T. David Williams*
and
A. DiPasquale**

Abstract

Examination of the vortex vein region (some 3 mm posterior to the equator of the eye) requires from 3 to 5 D of extra plus power in the direct ophthalmoscope, relative to the power required to examine the optic nerve head. The method used to obtain the above estimate for a single subject is described in an earlier report by Williams and Bader[1]. The purpose of this report is to describe a larger, quantitative, study involving 13 subjects.

Abrégé

L'examen, avec ophtalmoscope direct, de la région veineuse, dite du tourbillon, (3 mm. postérieur de l'équateur du globe) exige une augmentation de trois à cinq dioptries de puissances convexe que l'examen de la papille de Mariotte. La technique utilisée pour établir cet estimé a été décrite précédemment. Le présent travail décrit une étude quantitative plus vaste utilisant 13 sujets.

Method

Ocular fundus photographs were taken along the four major divisions of the central retinal vessels up to the vortex veins in the right eye of thirteen healthy third year university students. For each subject, a composite of these photographs was prepared, and markers were placed at four readily identifiable points in each of the four quadrants, at intervals of approximately 15 degrees, starting at the disc. Fig. 1 shows a composite photograph for a single subject (subject 13). Direct ophthalmoscopy was performed on each subject, each of the selected landmarks was located, and the maximum amount of plus power permitting a clear view of the selected fundus detail was determined. Three readings were obtained for each landmark and averaged. Prior to ophthalmoscopy, two drops of 0.5% tropicamide were instilled in the examininer's and the subject's eye. Ophthalmoscopy was done with the instrument held as close as possible to the subject's and examiner's eye. Observations were made through the apical cap of the cornea.

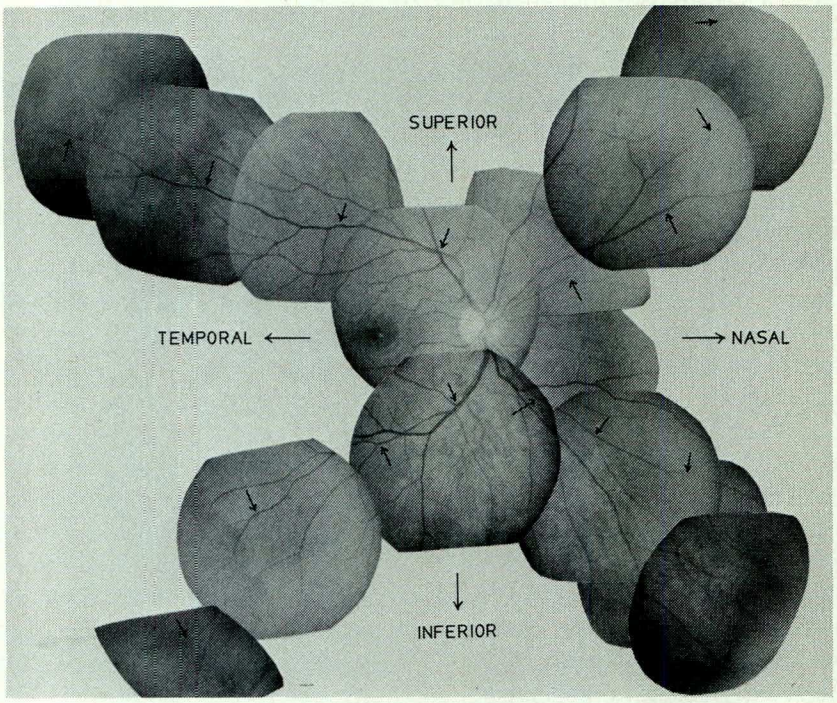


Fig. 1

Results

The results are shown in Figs. 2, 3, and 4. The data points give the average ophthalmoscope lens power (relative to that used to view the optic nerve head) required to view the landmarks in 13 subjects. For example, in Fig. 1, the average lens power used to view the disc was −4.6 D, while the average lens power used to view the remotest marker in the superior temporal quadrant was +2.6 D. Thus, the *change* in ophthalmoscope lens power required to view this point is +6 D, which happens to coincide with the average for all thirteen subjects, shown on the extreme left in Fig. 2.

Discussion

If we interpret the changes in ophthalmoscope lens power as being due to changes in retinal level, then Fig. 2 indicates that there is a slight but measurable lowering of the retinal level at 15 degrees from the nerve head in the inferior nasal and superior temporal quadrants. Such a lowering of retinal level occurs in the inferior temporal quadrant also, as shown in Fig. 3. The superior nasal quadrant, however, does not show such a retinal downslope, but rather

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its level rises steadily upward. From Fig. 2 it would appear that the center of symmetry of the retina is the nerve head; however, from Fig. 3, it would appear that the center of symmetry is shifted toward the fovea centralis. When the data of Figs. 2 and 3 are replotted in a single graph (Fig. 4), it appears that the slopes of the two temporal quadrants are similar. The two nasal quadrants are both more steeply sloped than the temporal quadrants, and resemble each other closely, except for the 15 degree point along the superior nasal quadrant.

Inspection of Fig. 4 leads to a tempting speculation. Nasal fundus ectasia[2,3] is a condition in which the nasal retina (particularly the inferior nasal retina) slopes downward in a dramatic fashion. It is associated with inferior conus, tilted nervehead, and inverse entrance of the central retinal vessels (situs inversus), and such patients frequently show a refractive scotoma in the temporal visual field. There is an associated pallor and poor choroidal circulation in the inferior nasal retina. In many cases, the division between normal and abnormal body structure is only quantitative and not qualitative. For example, many patients have one eye which is slightly smaller than the other: at what point would that eye be termed microphthalmic? It may similarly be true that nasal ectasia is simply a quantitative exaggeration of a tendency which is present in the 'normal' population. This appears to be the case for the inferior nasal quadrant plotted in Fig. 2.

Some comment should be made concerning individual differences. It appears that at least two types of slope may be seen when individual data are plotted in a fashion similar to Fig. 4. It appears that for some subjects (e.g. subjects 4, 7, and 13, shown in Figs. 5, 6, and 7 respectively), there is a steep slope to the retina in all quadrants, while for others (e.g. subjects 2, 3, and 10, shown in Figs. 8, 9, and 10 respectively), there is little change in retinal level until the more peripheral points are

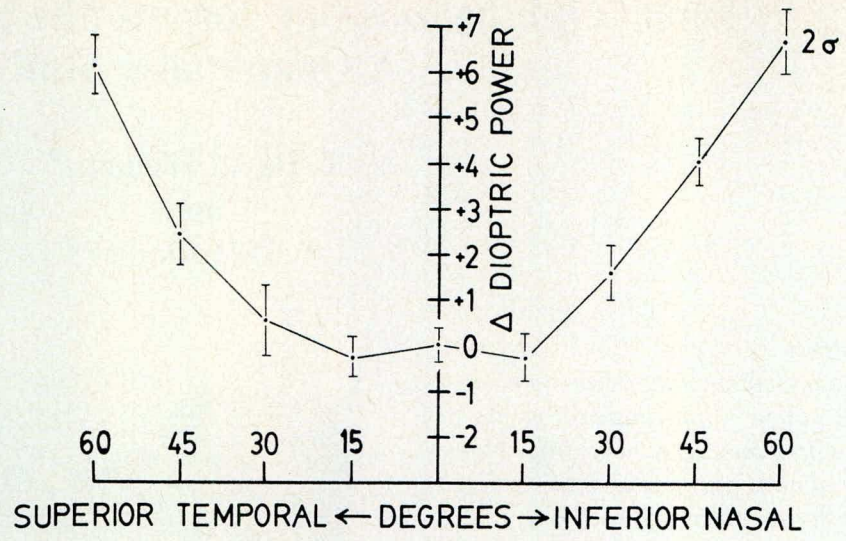

Fig. 2

reached. The slopes shown in Fig. 8 would appear to be intermediate between those of Figs. 9 and 10 and those shown in Figs. 5, 6, and 7.

There appears to be no correlation between the slopes shown in Figs. 5-10 and either the subjects' refractive errors or their corneal curvatures: for example, the subjects shown in Figs. 7 and 10 have nearly identical refractive errors and corneal curvatures. The subject in Fig. 7 is a 3 diopter myope with keratometer readings of 41.12 @ 180 and 42.00 @ 90, while the subject in Fig. 10 has a refractive error of −2.75 −2.00x23 with keratometer readings of 41.50 @ 12 and 43.00 @ 102. The subjects shown in Figs. 9, 10, and 8 have rather low corneal curvatures (40.75 @ 180 and 42.25 @ 90; 41.50 @ 12 and 43.00 @ 102; 37.87 @ 160 and 38.37 @ 70 respectively), but so does the subject shown in Fig. 7.

Elschnig disc type does not appear to play a role in these individual differences: subjects shown in Figs. 5, 7, 10 are type III; those in Figs. 6, 9, 11 are type IV; in Fig. 8, type II.

The subject shown in Fig. 6 presents some contradictions also. This peson has a refractive error of −7.75 D, and keratometer readings of 46.62 in both principal meridians. Judging from the keratometer readings, this appears to be a refractive ametropia. However, there is a very steep slope to the data shown in Fig. 6, suggesting that the shape of the posterior pole region (in terms of changes of dioptric power) is independent of the nature of ametropia (refractive or axial). The subject

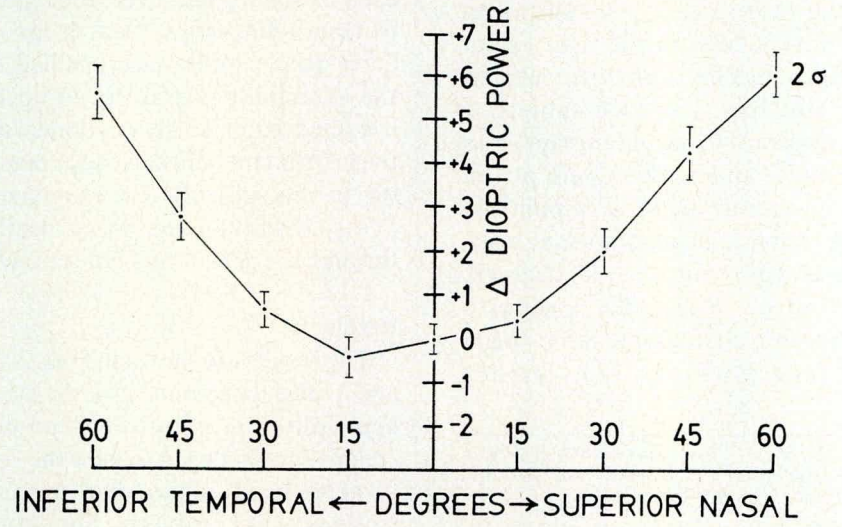

Fig. 3

shown in Fig. 11 has a refractive error of −10.00 −1.75 x 20 and keratometer readings of 42.25 @ 17 and 43.50 @ 107, yet the retinal levels appear to rise only very slowly until the 30 degree point is reached. This subject appears to be an axial myope, yet the slopes seen in Fig. 11 suggest a flatter posterior pole than that seen in Figs. 5, 6, and 7.

It appears that the ocular fundus, far from being a smooth curve of constant radius, is made up of many different curvatures, and possesses many little hills and valleys irregularly located over the surface of the retina.

Table I lists for each subject the number of quadrants in which the retinal level (as determined dioptrically) is lower at a point 15 degrees from the nerve head. The dots to the right of each subject number indicate which quadrant(s) are lower at this point. In eleven of thirteen eyes, there is retinal lowering in at least one quadrant; thus, it would appear that this retinal lowering is the rule rather than the exception. Of a possible 52 quadrants (13 x 4), the retinal level (at a position of 15 degrees from the disc) is lowered in 21 quadrants. it appears that the quadrant in which retinal lowering occurs most frequently is the superior temporal (8 out of 13 eyes), followed in order of decreasing frequency by the inferior nasal (6/13), inferior temporal (5/13), and superior nasal (2/13). The lowered retinal level temporal to the nerve head is to be expected, since the nerve head is medial to the posterior pole of the

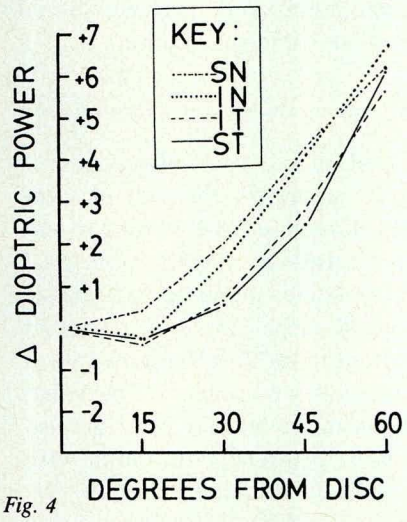

Fig. 4

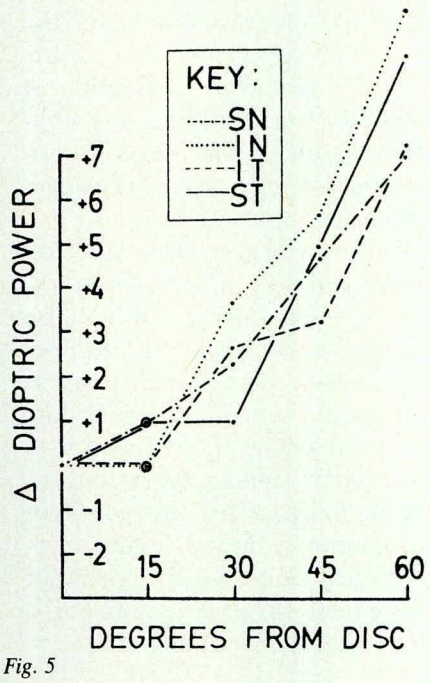

Fig. 5

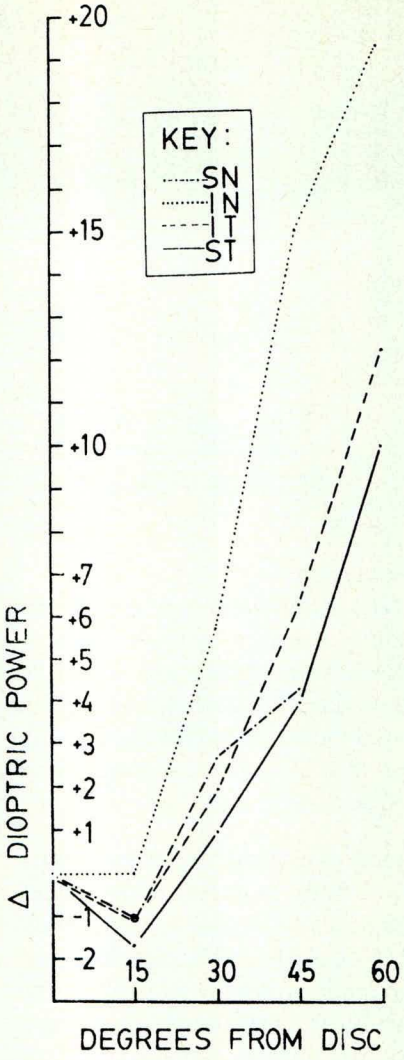

Fig. 6

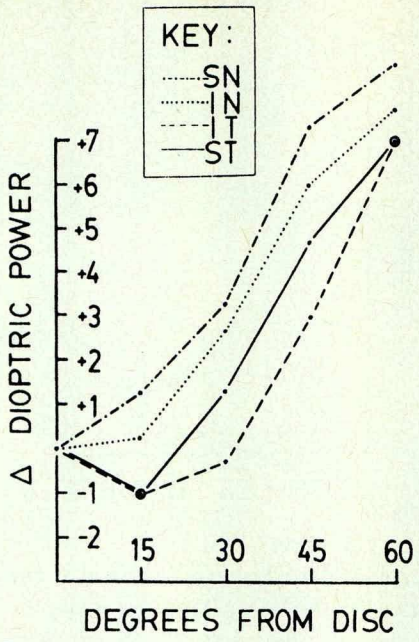

Fig. 7

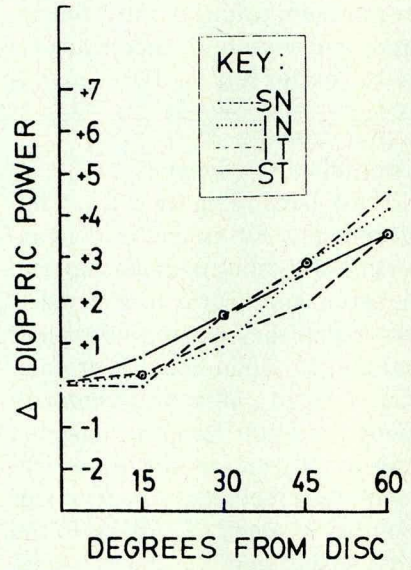

Fig. 8

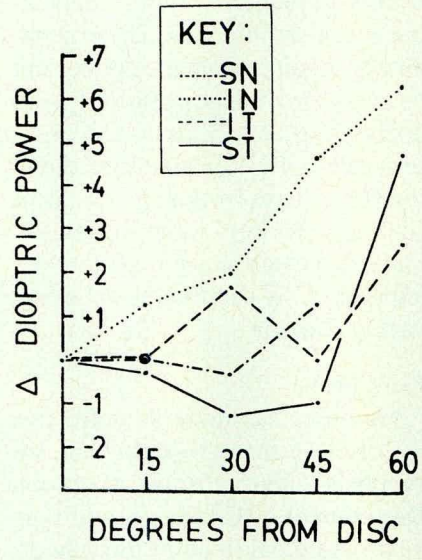

Fig. 9

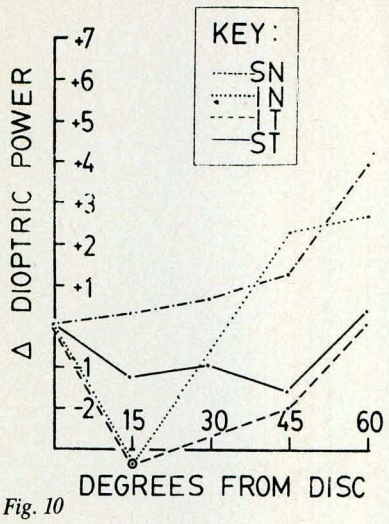

Fig. 10

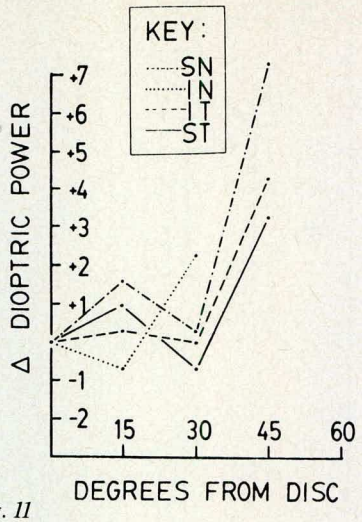

Fig. 11

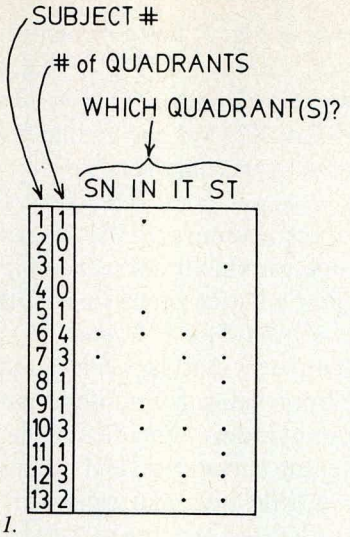

Table 1.

globe. The lowered retinal level nasal to the nerve head, on the other hand, is unexpected, and suggests (as mentioined above) that some degree of outpouching of the retina inferior and nasal to the nerve head is to be expected in the normal population.

The ophthalmoscope lens powers required for viewing the retina in the vortex vein region are similar to those reported earlier, although we found increases in plus on the order of 5 to 6 D were necessary, in contrast to the 4 to 5 D change reported earlier.

The embryonic and clinical implications of this study merit further investigation, and certainly should stimulate some speculation.

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Association Newsletters

These have room for a lot of improvement. An enlightened membership is a strong membership, and the problem with provincial newsletters is that they are too infrequent and don't contain enough information. I plead guilty on Manitoba's count for I still haven't found the time to get out newsletters as frequently as I feel they are warranted. There is so much to pass on to the membership and too much in one letter is as bad as too little. The answer is frequent newsletters, appearing at pre-set intervals. These newsletters should automatically be sent to every provinical president — to every CAO councillor and to every provincial office or executive director. If we are to work as a unit, all of us must be kept completely informed of every single thing that has happened to optometry in every part of Canada.

Eye Charts

Manitoba has made very effective use of these charts — each year, we supply 20,000 free to the Manitoba Department of Education and they distribute them to all of the schools in the province. This chart is used in schools of nursing, and in university lecture halls, as well as in the offices of our members, and in many medical offices. In 1980, the Western Communications Program made the decision to have the charts printed with their provincial names and use them in a manner similar to Manitoba. All used up their orders in a short time. At our last meeting, we decided to revise the chart, and at our next meeting we'll finalize our revisions and order a large amount of new charts.

Eye Plaques

British Columbia — as an outcome of the Reader's Digest messages, had an office plaque developed — stressing vision care of the young child. They had it produced by a workshop for the mentally handicapped and made it available to their membership and to the other provinces at cost. This is an excellent in-office public education item. If you are interested in having a great number of three year old patients, then get a plaque. Believe me — it works only too well.

The Family Guide to Vision Care

This, of course, was an American publication and we received permission to reprint it. We met in Winnipeg and revised the wording to suit our Canadian needs and had 375,000 copies made up at a cost of 5.7 cents each. This is an excellent hand-out item. The last item I want to mention is pamphlets. The Western communications program intends to produce pamphlets with distinctively Canadian content. We feel the need for this as most CAO pamphlets are close copies of the AOA pamphlets. Our first efforts will be directed at production of pamphlets on: sunglasses — children's vision — low vision — optometric treatment — the Canadian optometrist — contact lenses.

We are going to go ahead full blast on the audio-visual presentations. Contact lens fitting PR will be stressed as the optometrist and not the optician, must be recognized as the specialist in contact lens fitting. We are planning to go ahead with third party support advertising — placing full page ads in trade journals describing the availability of occupational vision care programs.

The fields to tackle are endless — all we need is money and time.

CASE REPORT

Successful Vision Training for An Esotrope

by Ronald Molzan*

History:

H. P., female, age 5, was first seen for a routine visual examination in May 1979. The chief complaint, as reported by the parents, was that the right eye wandered in occasionally. She had never been examined previously, and there was no family history of amblyopia or strabismus.

Clinical Findings:

The unaided acuities at this time were OD 6/9 OS 6/9 OU 6/6 (Allen slide). There was an intermittent comitant right esotropia of 6° at 6m and 10° at 40 cm. With the Worth dot, there was fusion at all distances in the lighted room, but in the dark, there was a diplopia response with occasional suppression of the right eye (fluctuation between 5 and 3 dots). The rest of the examination was unremarkable, and no treatment was instituted at this time.

At the six month checkup in October, the mother reported that the right eye was staying turned in more frequently. The clinical findings now revealed constant suppression of the right eye, light and dark, at all distances.

Disposition:

With the kind assistance of Dr. Dalziel, a combination spectacle therapy and visual training program was prepared. Before therapy could be instituted, the parents requested a second opinion from an ophthalmologist. Dr. Bernstein in Windsor concurred with my diagnosis and recommended a spectacle prescription to control the eye turn.

The initial spectacle prescription was

OD +1.00 2°OUT
22 + 1.50 add OU round top
OS +1.00 2°OUT

The prism was necessary to establish a minimal amount of fusion.

To supplement the spectacle therapy, the patient was given home training with the MSC kit to be done three times daily for ten minutes. The individual targets for tracing were used to eliminate the right eye suppression. All the other targets, which are the same for each eye, were used to build up the negative fusional reserves. The parents were shown how to use the MSC kit and were advised to vary the targets at each session with the training goals in mind.

The initial MSC fusional ranges, before training, with the glasses, were 50° convergence and 10° divergence. In January, after one month of training, the fusional range had improved to 15° divergence. The patient reported a fused response for the Worth dot at all distances in light and dark.

In March, after two more months of training, the fusional ranges were 50° convergence and 25° divergence. A new spectacle prescription was ordered as follows:

OD +1.00
+ 1.50 add OU
OS +1.00

The prism was removed to facilitate further expansion of the fusional ranges.

In June 1980, a full examination was carried out and the findings were as follows:

OD 6/6
acuity Snellen
OS 6/6

the ocular deviation was now a phoria of 4° at 6m and 10° at 40cm. There was no suppression, and the stereoacuity was 80″ of arc. The base in fusional reserves were X/8/2 6m
10/15/4 40cm

The patient was discharged with a maintenance home training program to further increase the fusional reserves.

Discussion:

Before taking on this case, my opinion of visual training was, "I'm busy enough. Who has time for it?" What began as a personal favour to the parents became a highly rewarding experience. Almost immediately after training began, the parents noticed a dramatic improvement in their daughter's colouring. She could stay inside the lines on the pictures. Soon afterward, her schoolwork improved from C's to straight A's. Her teacher was quite pleasantly surprised.

We have the training and ability, why not use it? The rewards are tremendous without a huge sacrifice of time.

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*O.D. – 75 Erie St., Leamington, Ont. N3H 3B2

The MSC kit was used both as a cheiroscope and as a divergence exerciser.

Footnote

* MSC stands for Mirror-Stereoscope-Cheiroscope. With its winged arms and double mirrors, it can be set up as a cheiroscope for anti-suppression training or as a fusion trainer to build up fusional reserves. It is available for $23.95 US from:
Bernell Corporation
422 E. Monroe St.
South Bend, Indiana
46601
Phone: 219-234-3200

CLASSIFIED

CASE REPORT

Diagnosis of a Choroidal Malignant Melanoma

Gordon Hensel*

Introduction

Only one province in Canada has the privilege of using diagnostic pharmaceuticals at the time of this writing. (New Brunswick.) Many provincial associations are attempting to pass legislation enabling optometrists the use of such pharmaceuticals but surprisingly, have met opposition from some of its own members. This case report should be read by anyone who exhibits a negative attitude towards the use of diagnostic pharmaceuticals. The author is presently working in association with an ophthalmologist and has the use of such pharmaceuticals under his auspices.

Case Report

A fifty-six year old, white male presented himself to our office complaining of decreased vision in his right eye over the past month. A complete medical exam one week prior to his visit to our office revealed the patient to be in excellent general health. The exam finding were as follows:

1. *binocularity:* normal ocular motility and orthophoric at all distances.
2. *manifest subjective* O.D. – –2.75/–0.50 155 20/25
   O.S. –2.75/–0.25 105 20/15
   (his corrected visual acuity O.D. was 20/15 for the last 9 years)
3. *slit lamp* – moderate corneal edema and conjunctival injection O.D.
   – O.S. normal
4. *goldmann tonometry*
   – O.D. 49 mmHg
   – O.S. 22 mmHg @10:00 a.m.

The patient was immediately given 1 Diamox sequel 500 mg orally and one drop Timoptic 0.5% O.D. to reduce the pressure in the right eye. The IOP was retested that same afternoon @ 2:30 and revealed:

O.D. 25 mmHg
O.S. 24 mmHg.

Funduscopic examination was negative at this point through undilated pupils. The patient was to continue using Timoptic 0.5% O.D. every 12 hours.

The patient returned two days later and revealed no change in his corrected visual acuity (O.D. 20/25; O.S. 20/15). The IOP measurements were O.D. 14 and O.S. 20 @ 2:30 p.m. The pupils were dilated with one drop each of Mydriacyl 1% and Mydfrin to facilitate ophthalmoscopy. To our surprise an elevated pigmented lesion in the far anterior lower retina was observed. Immediately a P_{32} uptake test was performed and it revealed a 3.3/1.0 right/left ratio. The eye was enucleated eight days later. The post-operative histopathology tissue report confirmed the diagnosis of choroidal malignant melanoma. Additional testing of blood, liver, spleen, heart and skeleton tissue revealed no spread of the cancer. Luckily the tumor had been caught in time.

Conclusion

The important point in this case report is not the diagnosis of the malignant melanoma itself but rather that the tumor could not be seen without the use of a dilating drug. If left undetected, the cancer might have spread throughout the whole body.

If you have not voted in favor of using diagnostic pharmaceuticals in your province; think again . . . . . you might save someone's life.

*O.D. - 4031 - 110 St., Edmonton, Alta. T6J 1E7.

CASE REPORT

Pupil-Sparing Third Nerve Palsy Due to Diabetes Mellitus:

Gordon E. Searles*

Abstract

The symptoms and diagnosis of diabetic oculomotor ophthalmoplegia are examined in a case study. The patient had a right ptosis with diplopia and paresis of all muscles subserved by the oculomotor nerve. Tests for diabetes were positive and patient was placed on therapy to control diabetes, with resolution of palsy three months after initiation of treatment.

Diabetic ophthalmoplegia is a form of ischemic neuropathy that could be elicited from metabolic or vasculor causes. Differential diagnosis is essential to rule out aneurysms and myasthenia gravis. The cardinal sign of diabetic palsy is the sparing of pupillary function. The case points out the importance of a careful case history to determine the cause of the condition.

Abrégé

Les symptômes et le diagnostic d'une paralysie du nerf oculomoteur causée par une diabète, sont misent de l'avant par l'entremise d'une histoire de cas. Le patient manifestait un ptose de l'ocil droit, une diplopie et une paralysie de tous les muscles par le nerf oculomoteur. Une diagnostique de diabète fût faite et le traitement préscrit — trois mois plus tard la paralysie avait disparu.

Ophthalmoplegia of the extraocular muscles can be caused by a variety of factors. Inflammatory disease, tumour, thrombosis, arteriovenous fistula, diabetes, and an aneurysm at the cavernous sinus can all elicit an ophthalmoplegia.[1] Of these, diabetes and aneurysm are the predominant causes of most ophthalmoplegias. Due to the great number of diabetics in the population, the eye care practitioner may observe a number of cases of diabetic ophthalmoplegia, and the recognition of the cardinal signs is necessary for performing a differential diagnosis.

* Optometry Student, Third Professional Year, School of Optometry, University of Waterloo, Waterloo, Ontario

Case History

An 85 year old North American Indian male was examined and indicated a right full ptosis. Upon raising the lid, a laterial squint was realized in the primary position (figure 1). The patient described a diplopia immediately preceding the onset of the ptosis. A test of ocular motility demonstrated an inability to adduct, elevate, depress, and a slight intorsion was observed when the patient looked to the inferior left (figure 2). It was apparent that the left lateral rectus and superior oblique muscles were relatively normal in function. Pupillary examination showed normal responses and he had a pupil-sparing third nerve palsy. Tests for diabetes were performed by an ophthalmologist, and the glucose tolerance test indicated 420 mg/100 ml. The normal limits for a patient of this age would be 160 mg/100 ml.[2] The patient was then put on a carefully regulated diet for the control of the blood glucose level. Immediate improvement of the ophthalmoplegia was observed within 48 hours after start of treatment in the hospital. After 3 months, the effects of the ophthalmoplegia were completely resolved.

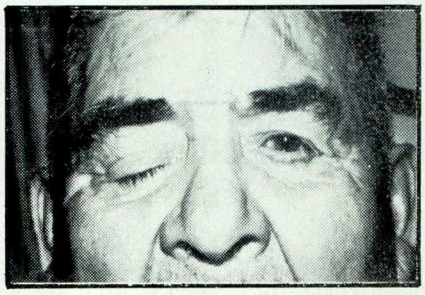

Figure 1: *85 year old male exhibiting a full ptosis of the right eyelid.*

Discussion

Diabetic ophthalmoplegia is a form of peripheral diabetic neuropathy of the extraocular muscles subserved by one of the cranial nerves. Specifically, the mechanism of diabetic neuropathy involves segmental injury to nerves, associated with focal demyelination of Schwann cell degeneration with minimal axonal degeneration. The types of neurons affected can be sensory, motor, or those of the autonomic nervous system. The most common ocular involvement includes the abducens nerve, with the oculomotor cranial nerve to a lesser extent. The specific symptoms are pain to the involved eye and area, sensory loss and motor weakness or loss of function of the motor and sympathetic innervation.[3]

The lesion is caused by the ischemia of the neurons when the intraneural arteries in the region of the intracavernous or subarachnoid segment are affected by the diabetic complications.[1] The effect may be metabolic, via the sorbitol pathway, or vascular.[4] In the case of diabetic ophthalmoplegia, the prognosis is usually good, with the resolution and normal function within 3 months, as the axonal regeneration occurs.[1] Damage to the neurons by metabolic changes usually has the better prognosis, since it is potentially reversible, whereas the effects of vascular change are not reversible. Also, the condition may be recurrent, affecting the same or other nerves.[1]

Figure 2: *(centre) Patient with lid retracted in the primary position. Surrounding views of eye positions while directed into the various positions of gaze. Note the absence of sursumduction, adduction, and deorsumduction of the right eye. Although not obvious in the views, a slight intorsion of the right eye was observed when the view was directed to the inferior left.*

A patient with oculomotor ophthalmoplegia may present signs and symptoms of ptosis; a lateral squint due to loss of muscles served by the oculomotor nerve; a normal pupil reflex, direct, consensual and near; and a possible exophalmos since the extraocular muscles are relaxed.[5] Duke-Elder also suggests the possibility of accommodative deficiency due to a paresis of the ciliaris muscle,[6] amblyopic pupillary paresis,[7] atypical (non-syphilitic) Argyll Robertson pupil,[8] and a tonohaptic reaction.[9] Similarly, a patient with abducens ophthalmoplegia will exhibit an inability to abduct. Diabetic ophthalmoplegia has a very characteristic sign in that associated with the motor weakness, there is no loss of pupillary function. This sparing is believed to be due to the noninvolvement of the circumferential portion of the nerve with the ischemia.[10]

Differential diagnosis of the condition is required to determine correct treatment. The ophthalmoplegia as noted before, can be elicited by many causes, but a close observation of signs and symptoms will provide proper guidance. The cardinal sign of the condition is the degree of pupillary activity. An aneurysm would be indicated if a diminished pupillary reaction was also observed with the motor weakness. Confirmation would be found in the results of a carotid angiogram.[11] Conversely, the absence of pupillary involvement should be an indication of diabetic involvement. It should be noted that the presence of overt diabetes need not be indicated, and that the ophthalmoplegia may be the primary symptom of the diabetic condition. A 3-hour or 5-hour glucose tolerance test should indicate if diabetes is present. Caird and his co-workers carefully note that if diabetic involvement is at all suspect, then carotid angiography should be deferred until the diabetic suspicion is discounted.[12]

One further possibility in the presence of a pupil-sparing ophthalmoplegia should be made to rule out the presence of myasthenia gravis.[1] A close investigation as to the time and periods of onset of the ophthalmoplegia would be indicative.

cont'd on pg. 111

BOOK REVIEWS

Visual Optics and Refraction – a clinical approach, 2nd ed., David D. Michaels, M.D., The C.V. Mosby Co., St. Louis, 1980, 743 pages $77.00 Canadian.

The second edition of Visual Optics and Refraction – a clinical approach, by David D. Michaels, has been expanded extensively from the 1st edition published in 1975. In addition, new chapters have been added in several areas.

The text is divided into three sections entitled basics, technique, and management. Chapters 1 and 2 deal with elementary aspects of light, color, optics and vision. Emphasis is placed on clinical aspects of optics and vision. These materials are not usually available in a basic text. Chapter 4 describes spectacle optics in terms of the eye. Chapter 5 carries the subject further to discuss clinical aspects of the physiology of vision including psychophysics of binocular vision, contrast thresholds and color vision. References in these chapters are extensive and up-to-date.

Part II of the text includes 10 chapters and 1 appendix. The subject matter is clinical in nature and it ranges from principles of refraction to basic pharmacology. Chapter 7 has a unique title called "symptoms" relating clinical history, symptoms, and diagnosis. It can only be written by someone who possesses a wealth of experience in the clinical sciences of vision. Objective and subjective refractive techniques are brought up to date in this part of the book and a list of the available modern electronic optometers is included. The chapters on ocular motility, accommodation and vergence cover not only the basic sciences but place heavy emphasis on technique and solution of clinical problems.

The chapter on vision in children begins with applied embryology and ends with functional evaluation. In between, the author discusses some ocular features of childhood diseases, functional disorders and examination techniques. The appendix to this part on the clinical use of statistics, is quite useful to the busy practitioner although its content is limited. However, part III that follows the appendix begins with some statistics thus making the transition from the section on "technique" to the section on "management" rather smooth. After describing aspects of ametropia, anisophoria and aniseikonia, the author devotes a whole chapter to presbyopia including a section on pathophysiology of the aging eye. Aphakia, is dealt with extensively in Chapter 19. Optical characteristics of cataract spectacles, contact lenses and intraocular lenses are also covered. Chapter 20 is on low vision. It is a welcome addition for any practitioner who deals with low vision patients occasionally. An appendix to the chapter also gives a list of sources for low vision aids. In a similar fashion Chapter 21 deals with contact lenses. At the conclusion of the chapter, a list of addresses of major contact lens laboratories is included. Strabismus is the title of the last chapter. It touches on all aspects of strabismus with a long list of references for the serious reader to refer to.

The second edition is substantially richer, and longer than the first by over 200 pages. The book can be treated as a source of reference in any ophthalmic practitioner's office. The author has provided adequate descriptions of recent advances in vision particularly on refraction and contrast sensitivity measurements. Perhaps the greatest value of this book lies in Dr. Michaels' ability to translate and apply theoretical knowledge in vision to clinical aspects of vision that confront the practitioner daily in his/her practice. It is also a most appropriate text for undergraduate courses of visual or physiological optics.

George C. Woo, O.D., Ph.D.

Optics for Clinicians by M.L. Rubin, 2nd Edition, Triad Scientific Publisher, Gainmesville, Florida, 1974.

The objective of the author is to present an elementary, general purpose, practitioner's text of optics that is both reasonable in length and sufficient in depth to satisfy the everyday clinical refractionist. To this end, he has been successful. This text is divided into two large sections, one on basic optics and the other on visual optics. In addition, a small section is devoted to light.

In basic optics, the author employs examples, diagrams and tables to illustrate the principles of vergence and lenses, cardinal points, Snell's law of refraction, prisms and astigmatic refraction. Unlike other texts on elementary optics, the author also discusses the Maddox rod, the optical cross, and transposition of cylinders in the same section. This section probably serves the needs of residents in ophthalmology. For optometry students and optometrists, this section involves pleasant and interesting reading.

The visual optics section deals with model eyes, accommodation, refractive error, correction of ametropia, use of cross cylinders in refraction, the stenopeic slit, telescopic systems, optometers, aniseikonia, prismatic effect of lenses, optics of bifocals and aberrations. A section on instrumentation including ophthalmoscopy, retinoscopy, lensometry and keratometry is also presented. Throughout this section, both clinical points and examples are used extensively by the author quite effectively by citing real situations in practice. The style of writing is very easy to follow making reading an interesting task. This, I believe, is a major accomplishment by the author. This section is useful to both the student as well as the practitioner. Rereading of the material as the author stated will maintain and strengthen one's basic foothold in practical optics.

Perhaps the small section on the physical nature of light is the weakest portion of the text.

In summary, it is an elementary text that deserves the attention of any clinician engaging in optics.

G.C. Woo

Optics, Ninth Edition, W.H.A. Fincham and M.H. Freeman, Butterworths, Toronto, 1980, 498 pages, hard cover, illustrated.

Nearly all Canadian optometrists will remember Fincham's *Optics* from their school days. Although it was a most excellent book, many optometry students found it a bit on the austere side. For those, the 9th edition, by Fincham and Freeman, is a pleasant surprise and a refreshing improvement on the older editions.

The first edition of Fincham's *Optics* was printed in 1934. The book was improved steadily and meticulously through the many ensuing editions, becoming a polished and exact source of information, particularly in geometrical optics. With the advent of the 8th edition, relatively large changes were made, consisting mainly in Freeman's revisions of the chapters on physical optics. In the 9th edition, Freeman's contributions have been greatly expanded.

This edition differs greatly from previous ones both in physical appearance and content. Thus, its page size has been increased from 5½ x 8½ in. to 6 x 9 in. This permits the use of slightly larger diagrams. The wider margin results in a less crowded appearance than in previous editions. More photographic plates have been added, such as for example a reproduction of a double-swept contrast/frequency grating, a photograph of strain patterns rendered by polarization and a diagram of a fibre optics face plate – all relatively recent developments in the optical sciences.

As for contents, the chapters on geometrical optics remain largely unchanged, as they were originally written by Fincham. On the other hand, the chapters on polarization and aberrations have been greatly changed. More modern material and more explicit diagrams have been introduced.

A completely new chapter deals with the optical properties of the eye. It includes recent developments on the schematic eye, chromatic aberration of the eye, diffraction and the eye, and aberrations of the crystalline lens and cornea. It also includes a discussion of the optical performance of the eye in terms of the line and point spread functions, modulation transfer functions, and contrast threshold functions with the sine wave gratings. The chapter reflects the tremendous expansion of knowledge that has taken place in this area of optics in recent times.

The new chapter contains some inaccuracies. One example is the reproduction of Campbell and Green's data in Figure 20.16, pertaining to the relationship between contrast sensitivity and defocus. Because of the smoothing out of the original data points, the functions are shown as having discrete minima at certain dioptral values of the independent variable. In fact, these functions usually show a plateau, or at least many irregularities through the near-focus range. Disconcerting is also the omission from the Figure of the very important function representing low frequencies. This is the type of inaccurate and misleading reproduction that will be perpetuated in students' notes and in other textbooks. It would have been far more informative to show the curves as they appear in the original article. However, in the context of the book as a whole, this is a minor criticism.

In the various sections of the book, several features of immedite interest to the optometrist have been added. Examples are the laser optometer, photochromic spectacles, and a more detailed chart summarizing the characteristics of various types of ophthalmic glass. New and very useful material has been added to the appendix section. Thus, there are computer programmes for ray tracing. The optical symbols used in the book have been set out in a table with references to the pertinent sections in the text.

On the whole, *Optics* by Fincham and Freeman remains a concisely written book presenting a wealth of information on a relatively broad spectrum of topics. It is highly recommended as a reference book for the optometrist.

Arnulf Remole, B.F.A., O.D., M.S., Ph.D.

Erratum

In the book review by Prof. Anthony Cullen, published in the March 81 issue, two sentences were omitted in the middle of paragraph four — pg. 56. Paragraph 4 is reproduced below. The missing sentences from the original are in italics.

Recurrent herpes simplex (HSV) and the mechanisms of herpetic latency are described; methods of recurrence prevention of HSV ocular are proposed an include the moderation or elimination of triggering factors such as ultraviolet exposure, fever, stress namd corneal insult. The insideous location of the HSV virus in sensory nerves ensures its protection from elimination from the system using current therapautic techniques. A problemless extended wear (EW) *contact lens has long been the summa perfectionis of contact lens research. Unfortunately, Anthony Nesburn's chapter on EW Lenses concentrates on those EW* lenses approved or approved for investigation by the U.S. — F.D.A. and is too parochial for the international contact lens community. The suggestion that cycloplegia during the first few days of extended wear is helpful because of local edema and mild iritis may raise a few eyebrows but most will accept the "cardinal rule" that pain, irritation or redness in previously comfortable EW patients must be treated as infection until proven otherwise. perry Binder concludes, at the end of his comprehensively referenced chapter on orthokeratology that "The large amount of charlatanism that has tainted orthokeratology has discouraged scientific investigation of the process. Studies such as those

performed by Kerns have helped place orthokeratology in its proper perspective".

Contact Lenses; Volume I Butterworth's Woburn Mass. Edited by Janet Stone & Anthony J. Phillips 375 Pages. Price (U.S.) $79.95

This book is a new edition in 1980 of an original text from 1972. Because of the rapid expansion in contact lens materials and technology in the past decade, the second edition offers both student and experienced practitioner alike, an updated source of reference for hard contact lenses.

The manuscript is well organized, progressing from the history of contact lenses and fundamental aspects, to advanced clinical techniques. An excellent chapter entitled, "Drugs and Solutions in Contact Lens Practise and related Microbiology" is co-authored by G.A. Hopkins, who taught at the School of Optometry in Waterloo for one term. The chapter clearly defines the various preserving agents in contact lens solutions and discusses chemicals for use with both hydrophobic and hydrophilic lenses.

An excellent colour plate section is also included in the book with above average examples of Burton lamp patterns and anterior segments with the biomicroscope. Contingent with this chapter is a chapter on external eye photography which although not exhaustive in its content, provides good basic informative for the optometrist who is interested in this aspect of practise.

Among the appendices is a very complete table of various contact lense solutions, manufacturer's names, list of preserving agents and additional remarks.

Volume 2 of this series was not available for me to review but would appear to have tremendous appeal to Canadian Optometrists because of its considerable content regarding hydrophilic lenses. Chapters that would likely be of considerable interest to us all were for example; the verification of soft contact lenses; toric contact lens fitting; modification procedures; and finally special types of contact lenses and their uses.

In general, I think the two volumes are very well prepared and would be a worthwhile addition to the Optometrist's library who is keenly interested in contact lens theory and the provision of contact lens therapy.

G.A. Grant, O.D.

COMING EVENTS

SEPTEMBER 1981

11-20
Scope Canadian International Educational Conference
BANFF, ALTA.

Contact: Felton H. Gordon
Scope
6055 Barfield Rd.
N.E., Suite 210
Atlanta, GA 30328

17-20
New Brunswick Optometric Society Annual Meeting
ST. ANDREWS, N.B.

Contact: Dr. Tom Hickey
(506) 454-0223

25-27
Opti-Fair West
ANAHEIM-CALIFORNIA

Contact: Cristina Grande
Optifair Inc.
500 Summer St.
Stamford, CT, 06901

Sept. 29-Oct. 2

oth European Microfilm Convention
COLOGNE — GERMANY

Contact: Veranstalter
Verwaltung in
Wirtschaftund
offentichler Hand e.v.
Postfach 5129, D-6236
Eschborn 1
West Germany

OCTOBER

2-4
Ontario Optometrist Annual Northern Convention — Zone 3
MACKINAC ISLAND - MICHIGAN

Contact: O.A.O.
(416)-923-1173

3-4
4th International Medical Symposium on Soft Contact Lenses
PARIS — FRANCE

Contact: Bev J. Hildemann
International
Professional Services
Administrator
Bausch & Lomb, Inc.,
Rochester, NY.

10-11
3rd International Symposium on Contact Lenses
QUEBEC CITY — QUEBEC

Contact: A.P.O.Q.
614 St. Jaques St. West.
Suite 302
Montreal, Quebec H3C 1E2
(514)-849-8051

14-15
20th Annual 10A & AAO Fall Education Seminar
BLOOMINGTON - IN.

Contact: Indiana Optometric Assn.
511 Illinois Bldg.
Indianapolis, IN 46204

17-19
Northeast Congress of Optometry
BOSTON — MA

Contact: Catherine A. Kennedy, O.D.
11 Waverly Oaks Road
201
Waltham, Ma 02154
(617)-893-6451

Oct. 24-Nov. 7

Scco Mediteranean Study Cruise

Contact: Cont. Ed. Office
Southern California College
of Optometry
2001 Associated Rd.
Fullerton Ca.
(714)-870-7226

Oct. 31-Nov. 5

15th World Congress on Optometry
EAST BERLIN — LENINGRAD

Contact: H.F. Ryder
TMS 600 DeKalb Pike
King of Prussia, P.A.
19406
(215)-265-5424

Oct 31-Nov 6

College of Optometrists in Vision Development Annual Meeting
SAN DIEGO — CA

Contact: Robert M. Wold, O.D.
P.O. Box 285
Chula Vista, CA 92012

NOVEMBER

5-7
Southwest Contact Lens Society Colorado Springs, CO.

Contact: Thomas G. Beall, O.D.
1410 14th St.
P.O. Box 808
Plano, TX 75074

12-14
Alberta Optometric Association Annual Meeting/Interdisciplinary Symposium/Continuing Education
CALGARY, ALTA

Contact: A.O.A. - Bonnie Werner
(403) 468-1203

12-14
Saskatchewan Optometric Association Annual Meeting
REGINA, SASK.

Contact: Dr. Robert Gulka
(306) 242-8086

Prince Edward Island Optometric Association Annual Meeting
CHARLOTTETOWN, P.E.I.

Contact: Dr. Murray Rusk
(902) 892-6107

15-19
26th National/International Contact Lens Congress
LAS VEGAS, NV

Contact: L. Allen Prechtel, O.D.
18 S. Michigan Ave.
Chicago, Il. 60603

DECEMBER

6-8
Northwest Congress of Optometry
PORTLAND — OREGON

Contact: Tole N. Greenstein, O.D.
621 High Street
Oregon City, OR 97045

12-15

Annual Meeting — American Academy of Optometry
ORLANDO — FL

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8677 Mentor Ave.
Mentor, Ohio 44060

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14-16
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MARCH

3-7
Ontario Optometric Association Annual Meeting
Toronto, Ont.

Contact: OAO
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APRIL

11-4
Manitoba Optometric Society Annual Meeting
WINNIPEG, MAN.

Contact: Dr. Harry Basman
M.O.S. Exec. Dir.
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MAY

11-14
S.O.S. Continuing Education
SASKATOON, SASK.

Contact: Dr. R. Gulka
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JULY

1-4
4th Asian-Pacific Optometric Congress
MANILA-PHILIPPINES

Contact: 4th Asian-Pacific
Optometric Congress
Room 211, Executive Wing
Century Park Sheraton
Malate, Manila,
Philippines

Searles Case Report
cont'd from pg. 106

Treatment of the ophthalmoplegia depends on the cause. Diabetic ophthalmoplegia can be adequately controlled by the proper regulation of the diabetes, depending on the age and condition of the patient. As noted before, the condition normally is self-limiting and resolution normally occurs after three months.

Conclusion

The important signs to note are the weakness of all structures supplied by the oculomotor nerve with pupillary sparing. Usually in the case of an aneurysm, the pupil reflexes would be involved, but their absence does not rule it out. Also, a blood glucose tolerance test is easier to perform and less dangerous for the patient than carotid angiography. It must be carefully noted in the history whether the patient has a predeliction towards diabetes, since the ophthalmoplegia may be the first indication of the condition. Also, myasthenia gravis should be part of the differential diagnosis if the glucose tolerance test results are inconclusive. Careful examination and scrutinous history taking will aid with the proper diagnosis.

Acknowledgements

I wish to thank L.S. Landecker, MD. FRCP(C) for his clinical guidance and patience and for offering technical assistance in the manuscript; and A. P. Cullen, OD. PhD. for assisting me in the research aspects.

References

1. Duane, Thomas D., MD, PhD. "Infranuclear Disorders of Eye Movements", Ch. 12. Clinical Ophthalmology, Vol. 2. Harper and Row. (Hagerstown, 1979). p. 12.
2. Harrison's Principles of Internal Medicine. 7th ed. Ed. Maxwell M. Wintrobe, et al. McGraw-Hill. (New York, 1974). "Diabetes Mellitus" Ch. 88. p. 539.
3. The Merck Manual of Diagnosis and Therapy. 13th ed. Ed. Robert Berkow, et al. Merck & Co. (Rahway, 1978). Sect. 12, Ch. 7. p. 1290.
4. Harrison's Principles of Internal Medicine. Ch. 88. p. 548.
5. Gray's Anatomy. from the 15th English edition. Ed. T. Pickering Pick. Bounty. (New York, 1977) p. 722.
6. Duke-Elder, Stewart. System of Ophthalmology. Vol. V. Kimpton. (London, 1970). p. 462.
7. Duke-Elder, Stewart. System of Ophthalmology. Vol. XII. Kimpton. (London, 1971). p. 655.
8. Duke-Elder, Stewart. System of Ophthalmology. Vol XII. p. 664.
9. Duke-Elder, Stewart. System of Ophthalmology. Vol. XII. p. 688.
10. Goldstein, Jack E., and David G. Cogan. "Diabetic Ophthalmoplegia with Special Reference to the Pupil". Arch. Ophthalmol. Vol. 64:592-600. 1960.
11. *The Merck Manual.* Sect. 19, Ch. 18. p. 1712.
12. Mausolf, Frederick A. The Eye and Systemic Disease. Mosby. (Saint Louis, 1975). p. 196.

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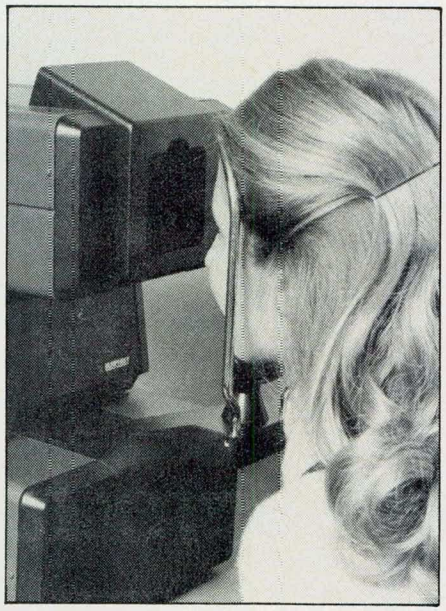

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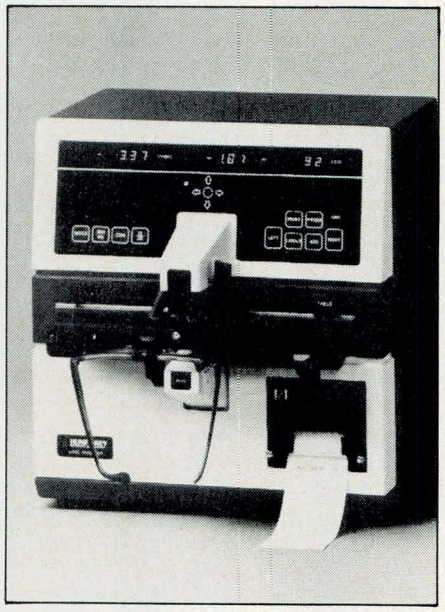

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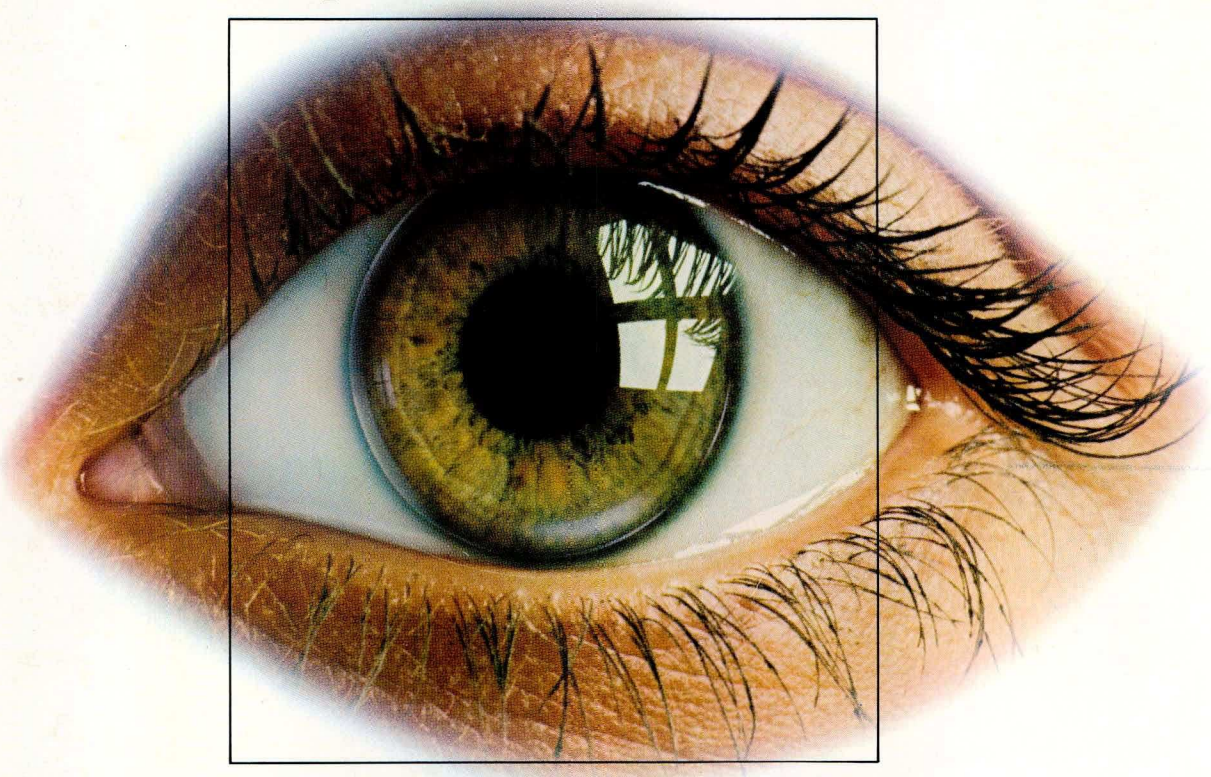
HYDROCARE®

The complete soft lens care system...



that prevents protein build-up

Hydrocare® Protein Remover Tablets

Weekly use of these tablets containing stabilized papain removes and prevents build-up of protein and diminishes the frequency of inorganic films. Starter Pack: 12 tablets with mixing vials. Refill Pack: 24 tablets.

Allergan Preserved Saline Solution

A sterile, buffered, isotonic solution for daily rinsing and heat disinfection.

Hydrocare® Cleaning/ Soaking Solution

Daily use of this sterile, preserved, buffered, isotonic solution hydrates, disinfects and removes oily contaminants with one solution.

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