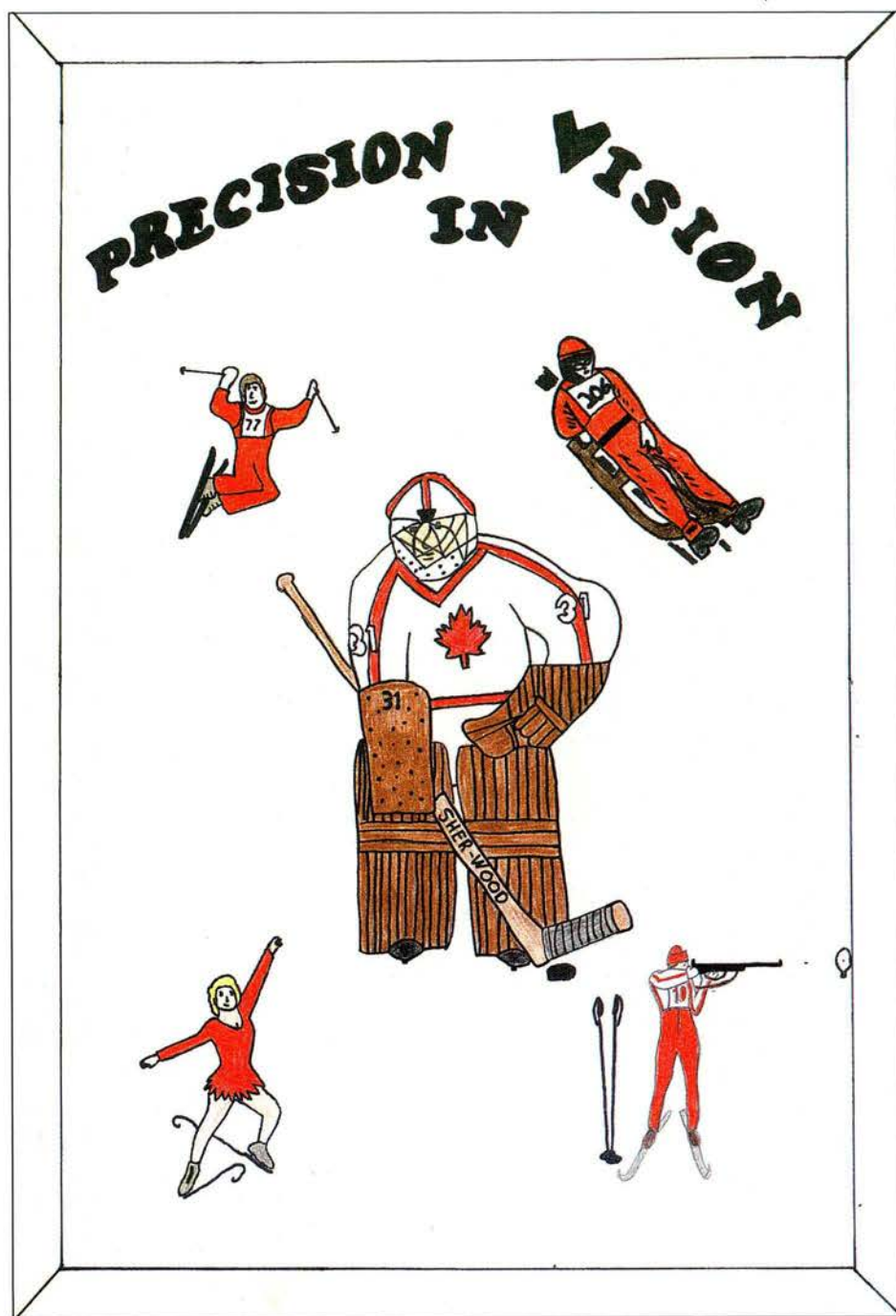


CJO **RCO** **PERMANENT**

Canadian Journal of Optometry • Revue Canadienne d'Optométrie

Vol. 50 No. 2

Summer/Été 1988



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CONFÉRENCES

- Lentilles rigides perméables aux gaz et solution des cas problèmes
- Les lentilles rigides en port prolongé; comparaison des matériaux et tendances européennes
- Le dilemme des solutions: la bonne solution, la bonne lentille et le bon oeil
- Larmes et lentilles rigides perméables aux gaz (avec film)
- Les aspects légaux d'une pratique en lentilles cornéennes
- L'ajustement de lentilles souples bifocales: Développements actuels et anticipés
- Exposé de cas problèmes rencontrés en port prolongé souple en Europe
- Étude clinique sur les yeux secs et l'hyperhémie de la conjonctive
- Rayons ultraviolets, filtres et lentilles cornéennes
- La transmissibilité d'oxygène, nouveaux matériaux rigides et souples, en relation avec le métabolisme cornéen
- Pathologie des lentilles souples à port prolongé
- Lentilles jetables

LECTURES

- Rigid gas permeable problem solving
- Rigid extended wear lenses
- Solution dilemma, the good solution with the right lens, with the good eye
- Investigation of the factors affecting contact lens wetting (with motion picture)
- Legal aspects of contact lens practice
- Bifocal contact lenses: present and future developments

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- Contact lens infections — a European view/10 year follow-up of an aphakic extended wear lens trial
- The clinical informations on dry eyes and the hyperhemia of the conjunctiva
- Ultraviolet radiation, filters and contact lenses
- Oxygen transmissibility, new materials, rigid and soft, in relation with the corneal metabolism
- Clinical management of complications associated with soft extended wear contact lenses
- Disposable lenses

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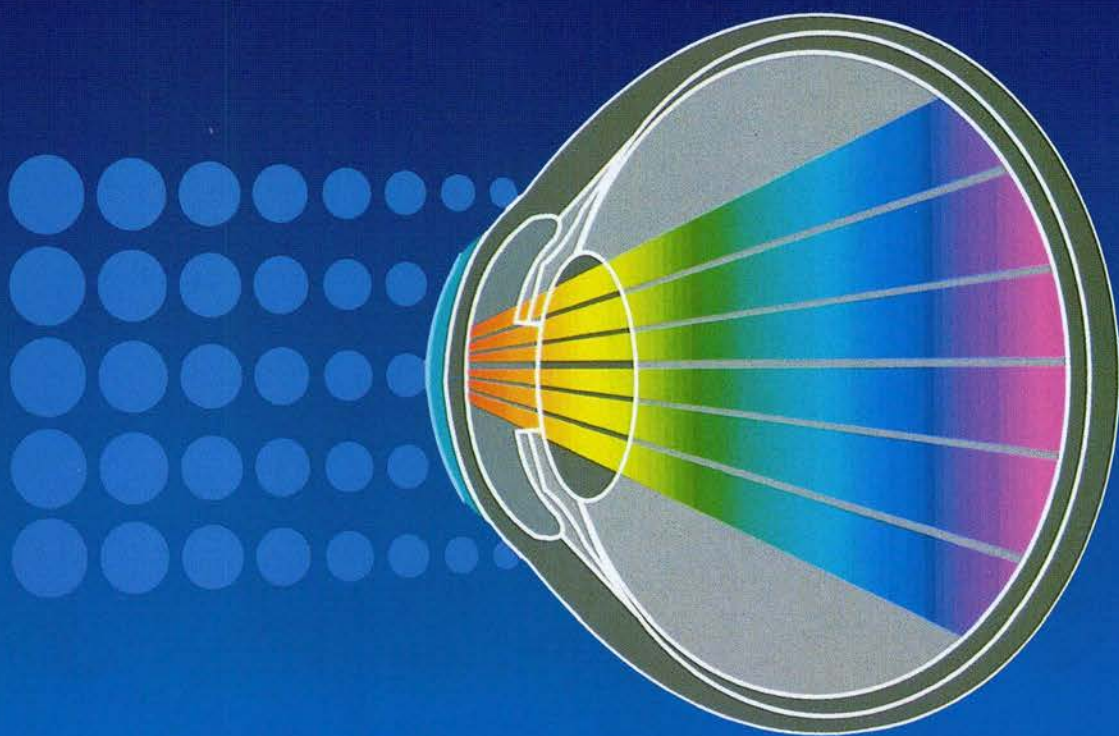
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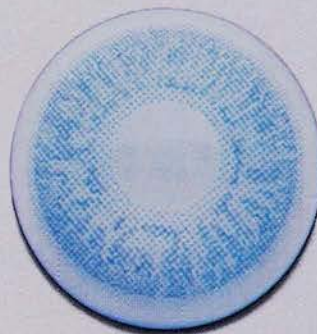
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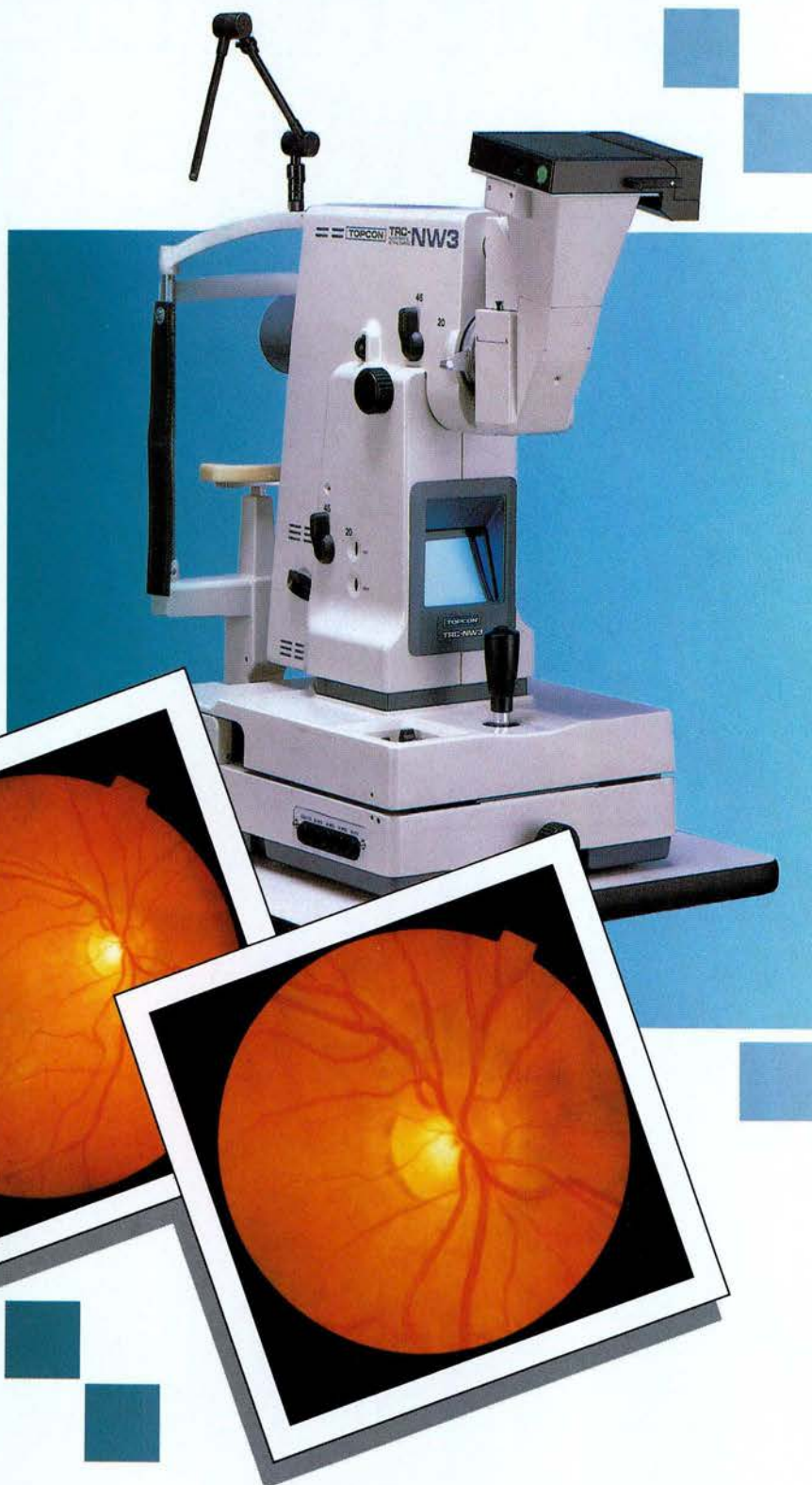
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PRESIDENT'S PODIUM / MOT DU PRÉSIDENT

Introducing CAO's New President Dr. Thomas L. Adamack

CAO Council is pleased to announce that, effective July 1, 1988, Dr. Tom Adamack, Fernie, BC, becomes the 29th President of the Canadian Association of Optometrists.

Born July 31, 1948 (the same year, incidentally, that CAO was "born") in Lafleche, Saskatchewan, Dr. Adamack spent much of his childhood on a farm in the southern part of the province. He received his Bachelor of Arts from the University of Saskatchewan in 1970 and was accepted into the Doctor of Optometry program in 1969 at the University of Waterloo, graduating in 1973.

His first practice was in Lethbridge, Alberta with Dr. Walter Mitson. In addition, Dr. Adamack augmented his clinical practice by serving a term as Clinical Instructor at the Waterloo School of Optometry in the Fall of 1974.

In December of that year, he moved to Fernie, British Columbia, where he has been ever since, with the exception of the last half of 1985 when he did a locum for Dr. Elaine Campbell in Georgetown, Grand Cayman Island.

Fernie is located very close to the Alberta border and Dr. Adamack, in fact, maintains satellite practices in Elkford, BC and Blairmore, Alberta in the Crow's Nest Pass. In 1981, he was joined in his practice by Dr. Don Vinge. Dr. Adamack is presently licensed to practice in three provinces: Alberta, BC and Ontario.

Active in the politics of the profession, he was named to the BC Association of Optometrists' Council in 1976, ultimately serving as their President from 1981-1983. In 1985, while still serving as past President of the BCO, he was appointed as that province's Councillor to CAO.

Outside the profession, Dr. Adamack has been active with the Chamber of Commerce and was a member of the Fernie City Council from 1977-1979. He is also involved in the Elk Valley Blazers, Fernie's Senior Hockey Club and served this year as Treasurer of the Western International Hockey League (WIHL).

Among his many other hobbies and interests, Dr. Adamack lists flying (he is a licensed private pilot), SCUBA diving, baseball, softball, skiing and, with his son, model rocketeering.

Dr. Adamack and his wife, Beverly have two children: a son, Aaron, 12 and a daughter, Denny, 10.

The CJO•RCO asked Dr. Adamack to introduce himself through our regular column for the Association's Senior Elected Official, the *President's Podium*. He replied almost immediately and we are delighted to present here his inaugural presentation as CAO President.

Communication: Not a One-Way Speech but a Two-Way Conversation

The opportunity to reach 2,700 optometrists through the simple act of setting pen to paper is a sobering thought to a new President. And yet, even as I write this message, it is with the intention of using a further technological intermediary — the Facsimile, or FAX, machine to get it to the CAO office where, presumably, it will be further processed through the CJO•RCO's typesetting and publishing operations before being communicated to you, the members of the Canadian Association of Optometrists.

So I am sending you a message, but am I, in fact, communicating?

As was done so effectively by Dr. Brisbin in this space, I too plan to use it to present some of my own goals and objectives which I hope to bring to the CAO President's portfolio as well as to inform you of some of the happenings at our National office in Ottawa.

I am sincerely looking forward meeting the ongoing challenges which we face as a profession, in both the short and long term, and to being an integral part of their resolution. To this end, I am also looking towards the continued support of our National office staff and their dedication to our profession.

In order to best address the challenges which face us, we are going to have to work as a team, one that includes all CAO Councillors, all provincial Executives (and their Councillors), both Schools of Optometry and, indeed, all optometrists across the country.

As Dr. Brisbin said in the last *President's Podium*, "We can't do it alone!"

But to return to the thoughts with which I opened this column, in order to be an effective team, we must **communicate**, not an easy job, and we must be doing so continually — each and every day.

At home, in our offices, with every one of our patients, we must communicate. With our peers and our professional colleagues, with teachers, physicians, nurses, school councillors and so on, we must communicate.

We must never stop educating the people with whom we come in contact, no matter at what level we are communicating — professional, political or even recreational.

But more than just sending our messages, we must also remember that it is not just what we say, or even how we say it. Rather, the success of any communication is determined by how it is *received*.

If a message of ours is not going to be received properly by the person or group for whom it is intended, then we are not doing our job as communicators.

At CAO's Interaction meeting in Saint John last year, our corporate members were telling us quite clearly that we had better hone our communicating skills.

(continued on page 127)

PRESIDENT'S PODIUM / MOT DU PRÉSIDENT

Présentation du nouveau président de l'ACO Dr Thomas L. Adamack

Le Conseil de l'ACO est heureux d'annoncer que le Dr Tom Adamack de Fernie (C.-B.) devient, à compter du 1^{er} juillet 1988, le 29^e président de l'Association canadienne des optométristes.

Le Dr Adamack est né le 31 juillet 1948 à Laflèche (Saskatchewan) et a passé une grande partie de son enfance dans une ferme du sud de la province. Il obtient son baccalauréat ès arts de l'Université de la Saskatchewan en 1970 et est accepté en 1969 au programme de doctorat en optométrie de l'Université de Waterloo; il est promu en 1973.

Il commence à exercer à Lethbridge (Alberta) aux côtés du Dr Walter Mitson. Il ajoute à son expérience en travaillant, à l'automne de 1974, comme enseignant clinique à l'école d'optométrie de Waterloo.

En décembre de la même année, il déménage à Fernie (Colombie-Britannique) où il a vécu depuis, sauf pendant la deuxième moitié de 1985, période pendant laquelle il remplace le Dr Elaine Campbell à Georgetown (île du Grand Cayman).

Fernie est tout près de la frontière de l'Alberta, ce qui permet au Dr Adamack d'exercer aussi à Elkford (C.-B.) et à Blairmore (Alberta) dans la passe du Nid-de-Corbeau. En 1981, le Dr Don Vinge se joint à son cabinet. Le Dr Adamack est actuellement autorisé à exercer dans trois provinces : l'Alberta, la Colombie-Britannique et l'Ontario.

S'intéressant activement aux aspects politiques de sa profession, il est nommé, en 1976, membre du Conseil de l'Association des optométristes de la Colombie-Britannique, dont il sera par la suite président de 1981 à 1983. Il est encore président de l'AOCB lorsque, en 1985, on le nomme conseiller de l'ACO pour cette province.

En dehors de la profession, le Dr Adamack a oeuvré au sein de la Chambre de commerce et été membre, de 1977 à 1979, du Conseil municipal de Fernie. De plus, il a fait partie des Elk Valley Blazers, l'équipe de hockey senior de Fernie, et occupé, cette année et l'an dernier, le poste de trésorier de la ligue de hockey international de l'ouest.

Parmi les nombreux autres loisirs et intérêts du Dr Adamack, mentionnons l'aviation (il détient une licence de pilote privé), la plongée sous-marine, le baseball, le softball, le ski et les modèles réduits de fusée qu'il lance avec son fils.

Le Dr Adamack et son épouse, Beverly, ont deux enfants : un fils, Aaron, et une fille, Denny, âgés respectivement de 12 et 10 ans.

La CJO•RCO a demandé au Dr Adamack de faire lui-même sa présentation dans la rubrique tenue par le premier dirigeant de l'Association, *Le mot du président*. Il a répondu presque immédiatement et nous sommes heureux de vous présenter, ici, son premier message en qualité de président de l'ACO.

Communication: Un dialogue plutôt qu'un discours monologué

La possibilité de rejoindre 2 700 optométristes à l'aide d'une plume et d'une feuille de papier offre de quoi réfléchir à votre nouveau président. J'ai rédigé mon message en me proposant d'utiliser le nouveau moyen technique qu'est le facsimilé, ou FAX, pour le transmettre au bureau de l'ACO où, présumément, il suivra les étapes de la composition et de la publication qui vous permettront, vous les membres de l'Association canadienne des optométristes, d'en prendre connaissance dans la CJO•RCO.

Ainsi donc je vous envoie un message. Mais est-ce que je communique pour autant?

Tout comme le Dr Brisbin l'a si bien fait, j'entends moi aussi me servir de la présente rubrique pour exposer certains de mes buts et de mes objectifs que j'aimerais inclure dans mon mandat de président de l'ACO et vous informer de certaines des activités de notre bureau national à Ottawa.

J'espère sincèrement être à la hauteur des défis qui se posent à notre profession à court et à long termes et contribuer directement à la recherche de solutions. C'est pourquoi j'espère compter sur l'appui soutenu du personnel de notre bureau national et son dévouement à notre profession.

Ces défis exigent que nous travaillions tous en équipe, c'est-à-dire les conseillers de l'ACO, les comités de direction provinciaux (ainsi que leurs conseillers), les deux écoles d'optométrie et, bien sûr, les optométristes du pays.

Ainsi que le Dr Brisbin l'affirmait au dernier trimestre, dans le *Mot du président* : « Nous ne pouvons réussir seuls! »

Pour revenir à mon premier propos, je dirai que pour être une équipe efficace, nous devons communiquer, ce qui n'est pas plus facile que nécessaire, et ce jour après jour.

À la maison, dans nos cabinets, avec les personnes que nous soignons, nous devons communiquer. Avec nos pairs et nos collègues de travail, les enseignants, les médecins, les infirmières, les conseillers scolaires, pour ne nommer qu'eux, nous devons communiquer.

Nous ne devons jamais cesser de faire l'éducation des personnes que nous rencontrons, quel que soit le niveau où doit se faire la communication : sur les plans de la profession, de la politique ou même des loisirs.

Mais il ne suffit pas, pour nous, d'envoyer des messages. Nous devons nous souvenir que, plus que leur contenu ou leur formulation, la façon dont ils sont *reçus* est garant de leur succès.

Si la personne ou le groupe à qui notre message est destiné le reçoit mal, c'est que nous ne faisons pas notre travail de communicateurs comme il le faut.

À la réunion Interaction de l'ACO, à Saint John l'an dernier, nos associations membres nous ont fait savoir clairement qu'il nous faudra parfaire notre aptitude à communiquer.

Depuis, ce message a été repris par le Conseil et le bureau national de l'ACO, mais, à mon avis, nous pouvons promettre de faire encore mieux.

(suite à la page 127)



EDITORIAL/ÉDITORIAL

More on the Disposable Lens

From time to time, we find that one of our Editorials provokes a reaction. Quite frankly, we thrive on it because it means we're being read. A few issues ago, for example, we ran an Editorial on the disposable lens ("The Disposable Soft Lens — Boon or Disaster"; *CJO•RCO*, Autumn, 1987) and it has proven to be one of those rare occasions in which a chord — both abrasive and responsive — was struck in many of our readers. We heard from members of the profession and the ophthalmic industry, expressing both approval and disapproval of our opinions.

It has been almost a year now since the introduction of the first, commercial disposable lens "system" into the marketplace and, as yet, this writer has not witnessed a stampede to obtain the lens, either among the public or among the profession.

Certainly the public's interest has at least been addressed. The system's recent introduction into Canada was cause for national media attention. But we are not yet totally satisfied that our concerns, expressed in the above-noted Editorial have been allayed nor, indeed, even addressed in the rush to promote the novelty of the "disposable" concept.

For example, we expressed apprehension about the reduced patient/practitioner contact, a concern that was also addressed by two of our correspondents, as well as by some researchers in recent papers in the optometric press.

Dispensing the minimum number of lenses at any one time and refraining from supplying storage cases have been put forward as two possible measures to encourage patient compliance. But storage cases are all too readily available.

And, too, we should ask: are disposable lenses compatible with the array of solutions presently on the market? Can the material of disposable lenses be made incompatible with the present solutions and thus discourage storage attempts in a

Merely to promise the exact reproducibility of the lenses, for example, may well ensure the accuracy of replacement lenses, but only for those people who can be properly fitted from the currently limited parameters.

patient's effort to over-use the lens? Would requiring a patient to return the original container to obtain "a further supply", as one correspondent suggested, be a feasible and practical control tactic?

We also commented on the present limited parameters of the disposable lenses, a point which does not imply poor quality of manufacture, but simply suggests a neglect of the need for careful and accurate refraction, the very cornerstone of Optometry's reputation in this day and age. Merely to promise the exact reproducibility of the lenses, for example, may well ensure the accuracy of replacement lenses, but only for those people who can be properly fitted from the currently limited parameters. No one yet has come forward with an answer to these comments.

Perhaps a solution may be found in using a wide range of

manufacturers' products in order to obtain a variety of parameters or, alternatively, in custom ordering our lenses from the numerous small laboratories, rather than relying on the international chains who will not supply other than their mass produced lenses in limited parameters. We wonder, does it not seem strange that such an advanced technology cannot be used to produce a wider range of parameters? Can we not then justifiably ask if the manufacturer is interested in high quality vision care?

A wide variety of parameters is essential to accurate refraction and fitting. And yet, why do optometrists use more soft lenses than rigid lenses which are manufactured to any specification? This can be accounted for on the basis of many different factors: initial comfort; laziness on the part of the practitioner;

Should not the full ramifications, both short and long-term, of a "disposable" appliance, designed to be worn directly on the eye, be thoroughly investigated

the public popularity of soft lenses; a lack of equal attention by the manufacturer to rigid lenses; the present focus of instruction and design by our optometric institutions.

Ideally, we would hope that the overall decline in quality suggested by these factors would change, but in disposable contact lenses, we see only more of the same. In essence, demand by the patient overrides the practitioner in all too many circumstances. And today's patient is demanding fast, personal, convenient service, with a minimum home care compliance — requirements met all too readily in vision care by a product like the disposable contact lens. The practitioner, therefore, must comply or risk losing the patient.

On another point, the economics of the disposable lens are far from settled. When we mentioned mark-up in our first Editorial, it was to the horror of many practitioners who replied. In hindsight, while we are prepared to acknowledge it was an ill-advised choice of words, in some respects, with regard, to an over-the-counter sale, the term seems appropriate. Certainly, the term "professional fee" should have been employed when speaking of the system in terms of its being a health care service.

But meanwhile, while the marketing procedures put in place so far do indicate that the manufacturers intend this product to be supplied initially through the professions, the manner of its release does not allay a suspicion in this writer's mind that it may yet be a commercial market item to be supplied outside the jurisdiction of the profession. Such a conclusion has yet to be proven unreasonable by circumstance.

Even with the advantage of hindsight, it is difficult to identify the chronological sequence of events and ideas which led from the extended wear concept to the introduction of the disposable lens.

(continued on page 83)

Case Report: Presumed toxoplasmic optic neuritis

T.D. Williams *

Abstract

*Optic neuritis is regarded as a rather uncommon manifestation of toxoplasmosis. This report concerns a patient with suspected optic neuritis due to *Toxoplasma gondii*. (*T. gondii*).*

Abrégé

*La névrite optique est considérée comme une manifestation assez inhabituelle de la toxoplasmose. Ce rapport étudie le cas d'un patient que l'on soupçonne être atteint de la névrite optique causée par le *Toxoplasma gondii* (*T. gondii*).*

The patient is a Caucasian female. At age 28, when she was first seen, the right eye was ophthalmoscopically negative (Fig. 1A was taken in April 1982). The blindspot for the right eye (Fig. 2A) was also negative.

The main ocular abnormality was the presence in the left eye of around 8 heavily pigmented peripheral scars strongly suggestive of toxoplasmosis (Fig. 1D). These lesions were roughly 4 disc diameters inferior to the nerve head. There were also some pigment changes adjacent to the left optic nerve head (Fig. 1B). The blindspot for the left eye was considerably enlarged (Fig. 3A).

At age 30 (in March 1983), the patient began to experience symptoms in the right temporal field: she became aware of a positive scotoma which was fringed by flashing lights. The right blindspot (Fig. 2B) was now larger than that for the left eye. She was put under treatment by her physician with daraprim, sulfadiazine, and prednisone for three weeks. The treatment was discontinued after 3 weeks due to heartburn and spontaneous

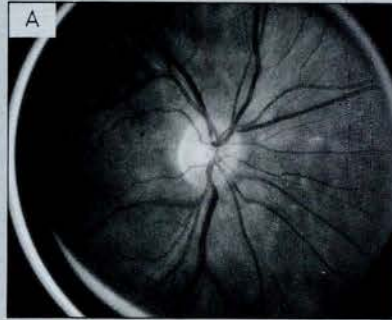


Figure 1A
Patient's right nerve head, age 28.

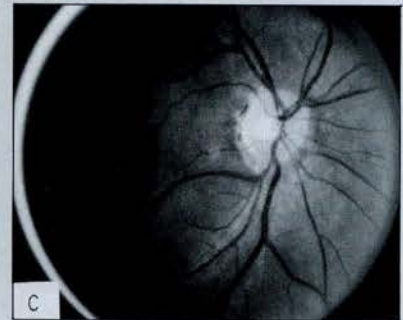


Figure 1C
Patient's right nerve head, age 32. There is now some visible pigment disturbance surrounding the disk. This has developed since the transient scotomas developed in the right visual field.

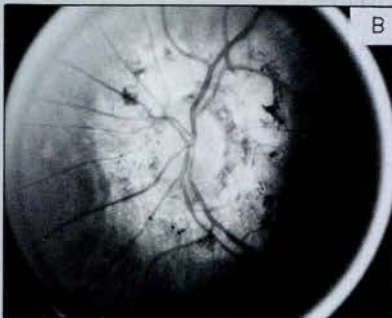


Figure 1B
Patient's left nerve head, age 28. Note extensive depigmentation surrounding nerve head.



Figure 1D
Patient's left eye, age 28, inferior to disk. Heavily pigmented scars of a sort commonly produced by toxoplasmosis.

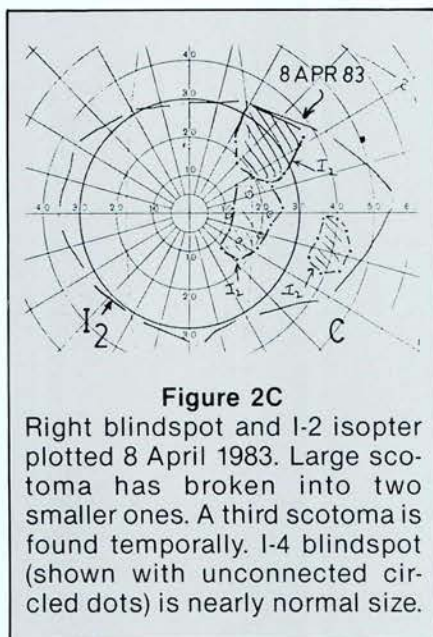
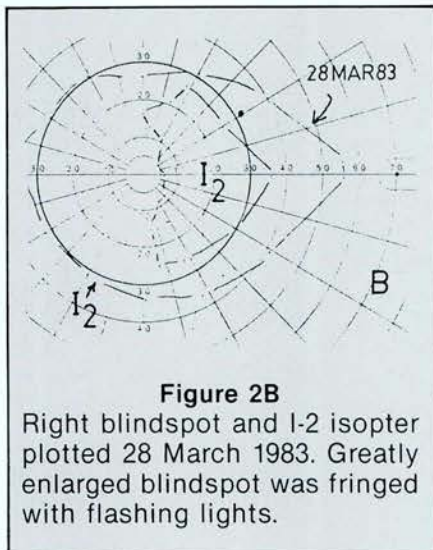
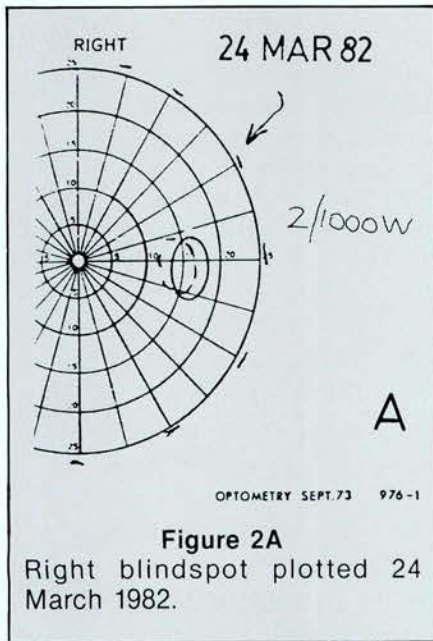
bruising of the skin. In the two months following onset of the symptoms, the scotoma broke up into smaller scotomas, and then finally cleared (Figs. 2C, 2D, 2E). In Fig. 2C, obtained about four weeks after onset of visual symptoms, it was possible to plot a near-normal sized blindspot using the Goldmann I-4 target: the circled, unconnected data points were obtained with this stimulus. The flashing lights were still reported by the patient for some weeks after the disappearance of the scotomas.

The right eye continued to appear ophthalmoscopically unremarkable in April 1983.

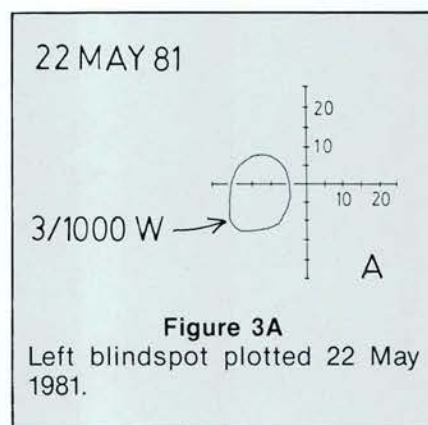
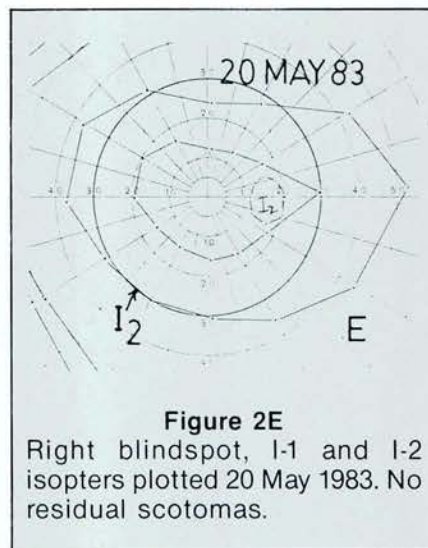
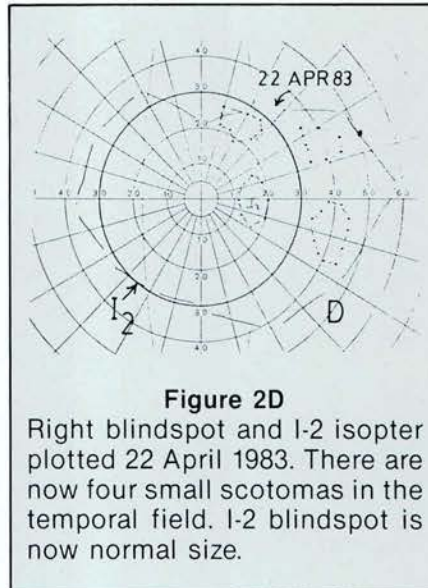
At age 32 (in November 1985), the patient began to experience symptoms involving the left temporal field: she was aware of a blind area and flashing lights. This started as an intermittent problem (it would come and go over a period of days), and became constant after December 1985. She was aware of a slight blurring in the vision of the left eye and noticed that colors were a bit duller.

*O.D., M.S., Ph.D.

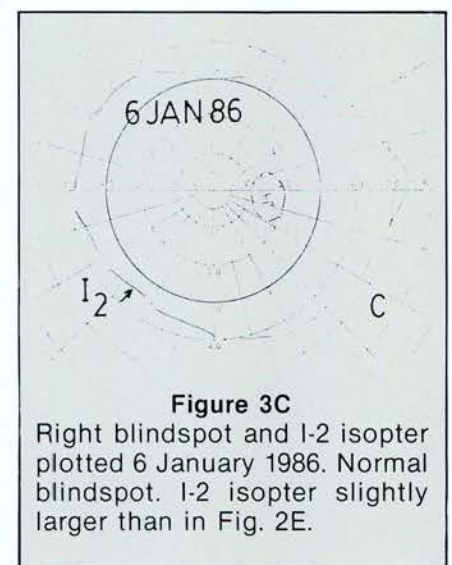
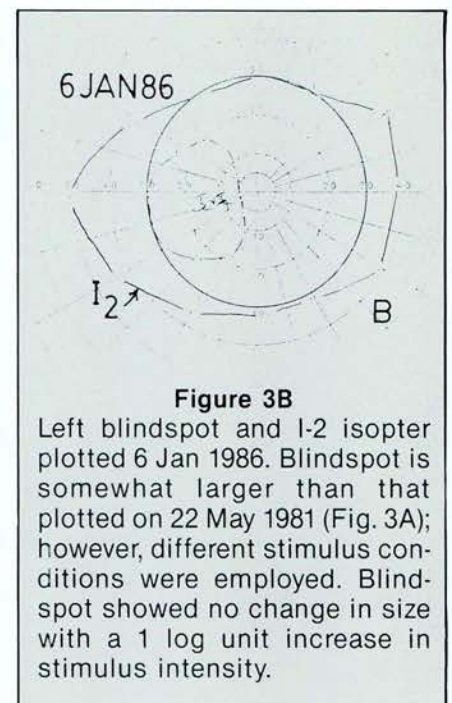
School of Optometry, University of Waterloo



Visual field testing on 6 January 1986 (Fig. 3B) showed a blindspot which was slightly larger than that measured previously. On 20 January 1986 (Fig. 3D) the patient reported that the flashing lights were smaller and less bothersome; the



scotoma in the left visual field had not increased in size; rather, it appeared slightly smaller than it had on 6 January 1986. Use of a stronger stimulus (Goldmann I-4) did not cause any reduction in the size of the blindspot. On 6 Feb 1986 (Fig. 3E), the patient reported less flashing in the left temporal field, and also that the dark spot was less noticeable. In addition, she described a new symptom: she saw tiny sparkles in the middle of the dark spot. This lasted over a period of 3 days. On 24 Feb 1986 (Fig. 3F), the enlarged blindspot was the same as it had been on 6 Feb 1986. As on 6 Feb 1986, it showed a slight reduction in size with increased target inten-



sity (smaller scotoma with the I-4 target), but did not decrease further with still stronger stimuli. In April 1986 (Fig. 3H), nearly six months after onset of the left eye symptoms, the blindspot remained unchanged.

The right ocular fundus (photographed 6 Jan 1986, Fig. 1C) now shows minor pigment changes adjacent to the nerve head. The left nerve head did not appear significantly different from the photographs taken in 1982.

A blood sample drawn on 6 Jan 1986 was negative for either IgM or IgG antibodies to *T. gondii* (ELISA). Previous antibody tests (IFA) on March 29, 1982 and 12 April 1982 were negative. These were done during a pregnancy, to make sure there were no complications for the fetus. The pregnancy was successful, and we have not found any indications of

ocular toxoplasmosis in any of her four children.

Comment

While optic neuritis is regarded as an unusual manifestation of toxoplasmosis, it has been reported before.¹

The heavily pigmented lesions in the patient's left eye are strongly suggestive of congenital toxoplasmosis. Reactivation of toxoplasmosis tends to excite a violent and often very localized response, apparently due to the immune system's readiness to produce antibodies. The optic neuritis in the right eye resolved quite well, in spite of the fact that therapy was given for three weeks only. The usual course of therapy for toxoplasmosis is four to six weeks.² This suggests that the problem for the right eye might have resolved without treatment, a notion which was confirmed by the resolution of the problem in the left eye without treatment.

This patient presents a rather atypical situation, in that the central visual acuity remained good throughout both episodes of presumed toxoplasmic optic neuritis. Moreover, optic neuritis is more commonly associated with central or centrocecal scotomas, while this patient showed field disturbances based on the blindspot alone.

The nature of the patient's symptoms seems at first glance to be different in the

two episodes. However, the presence of the flashing lights at the periphery of the scotomas is a common denominator. The major difference appears to be that in the earlier episode the scotoma was transient, while in the second it was not. When the blindspot and left fundus photograph are superimposed (Fig. 4), it appears that the blindspot roughly matches the area of pigment disturbance surrounding the nerve head. The blindspot plotted during the

At age 30 (in March 1983), the patient began to experience symptoms in the right temporal field: she became aware of a positive scotoma which was fringed by flashing lights.

second episode of photopsia is not substantially different from that plotted in May of 1981. Probably the flashing lights around the periphery of the blindspot (due to optic nerve irritation) are what drew the (previously existing) blindspot to her attention.

The pigment changes adjacent to the right nerve head, occurring as they did in the interval following the transient right visual field disturbance, do tend to support the notion of optic neuritis.

The fact that the patient has remained serologically negative for antibody to

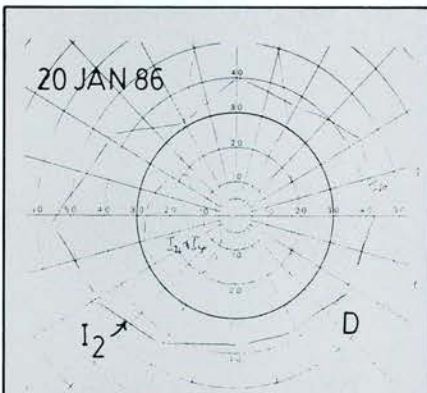


Figure 3D

Left blindspot and I-2 isopter plotted 20 Jan 1986. Unchanged from 6 Jan 1986.

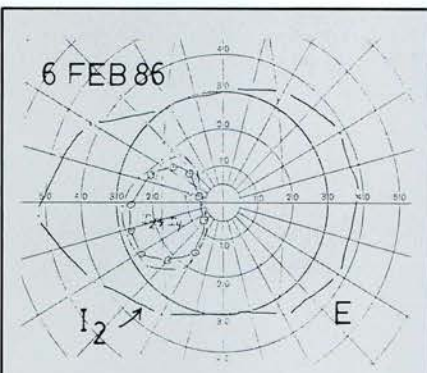


Figure 3E

Left blindspot and I-2 isopter plotted 6 Feb 1986. Blindspot shows a minor reduction in size with I-4 target, compared to I-2 target.

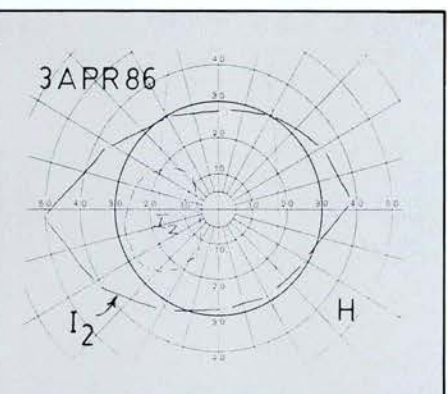
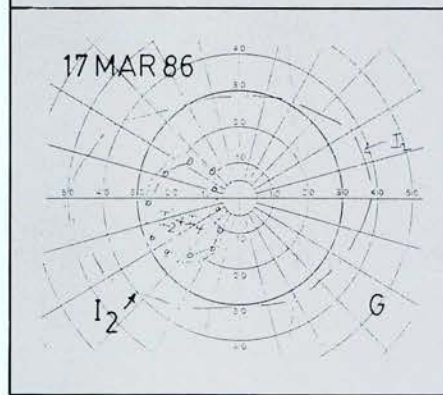
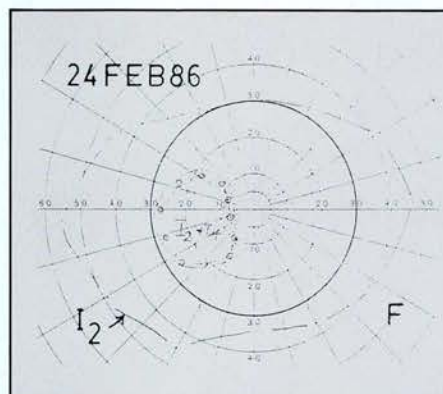


Figure 3F-H

Left blindspot and I-2 isopter data plotted on 24 Feb 1986, 17 Mar 1986, and 3 April 1986. No change in blindspot findings.

EDITORIAL/ÉDITORIAL

(continued from page 79)

We wonder, for example, was John de Carle's original idea of a continuous wear lens prompted by convenience or by a desire to push outward the boundaries of science? Whatever its initial intent, the idea of a lens for continuous wear was a concept which some manufacturers found irresistible and pounced on with masses of direct publicity and the now infamous "30-Day Lens" advertisements.

Experience, however (including the requirement by some unfortunate patients to have their "30-Day Lenses" surgically removed), soon revealed that such claims were placing wearers at risk. A host of new and unanticipated problems surfaced which demanded immediate attention. Ensuing research, in fact, triggered more questions than answers.

This writer has been unable to ascertain who proposed the "disposable" idea and when, although we have no doubt such claims will be forthcoming eventually by someone seeking a place in history under "convenience".

Some years ago, when the concept of "throw-away lenses" began to be bandied about, the usual perception expressed by the average practitioner could be summarized as "a cheap, mass-produced lens likely to be made available via over-the-counter sales, bypassing the practitioner entirely".

Fortunately, however, some type of relatively professional philosophy began to emerge. Practitioners recommended shorter wearing periods, closer and more frequent supervision, more thorough hygiene regimens.

But still some problems remained with their potential risks and, even today, research continues on lens materials, hygiene, manufacturing procedures and corneal physiology.

We were asking last Fall, and have yet to be talked out of still asking loudly and clearly, should not the full ramifications, both short and long-term, of a "disposable" appliance, designed to be worn directly on the eye, be thoroughly investigated and, further, should not we, the professionals from whom this latest convenience is being demanded, be satisfied — be fully satisfied — that this has been done before we start dispensing them to a convenience / throw-away obsessed public?

GMB

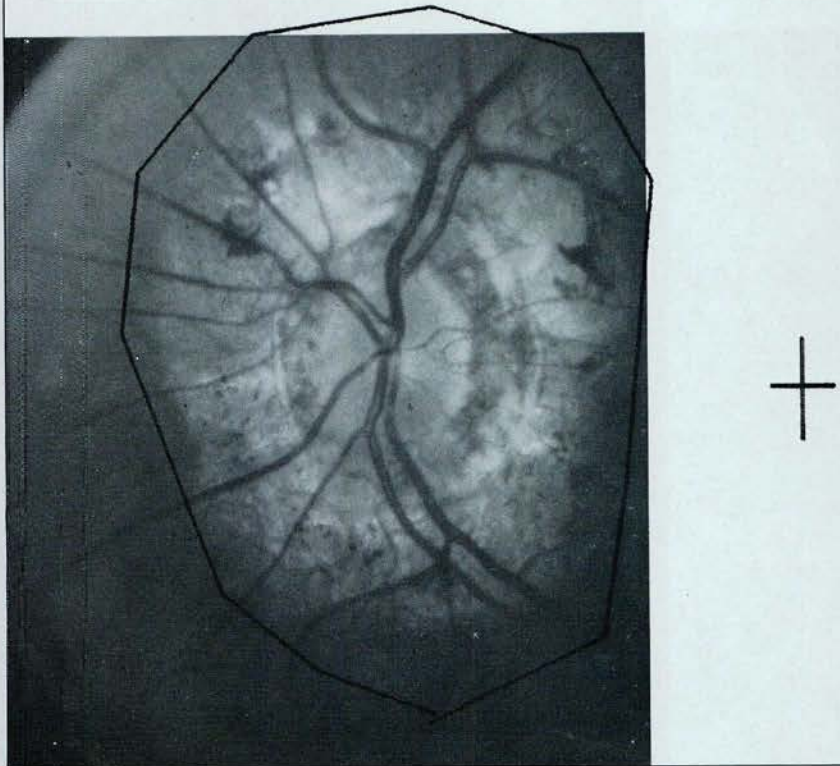


Figure 4

The left blindspot (1-2) has been superimposed on a photograph of the left nerve head, with suitable correction for magnification and position. There is a reasonably close agreement between the non-seeing area and the area of pigment disturbance.

T. gondii does not necessarily eliminate this organism as a possible cause for the episodes of optic neuritis, as the organism has a well-known ability to cause very localized problems (and antibody responses). In some instances, elevated antibody levels have been found only in the aqueous humor (when there was reactivation of ocular toxoplasmosis); in others³, the organism has caused recurrent abortion, and been demonstrated in uterine tissue, even though there were no antibodies in the blood. In this case, it is possible that antibody could have been measured in the cerebrospinal fluid, but a spinal tap did not appear to be justified, given the tendency of the patient to recover spontaneously.

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Errata

In the Spring, 1988 issue of the CJO•RCO, a story on the judging of the 1988 Save Your Vision Week poster contest wrongly identified Dr. Ralph Teeple as one of the Ottawa optometrists involved in the poster judging. The other Ottawa OD, in fact, was Dr. Jim Tripp. We apologize both to Dr. Tripp, who was there, and to Dr. Teeple, who wasn't (but probably would have been if he'd been asked).



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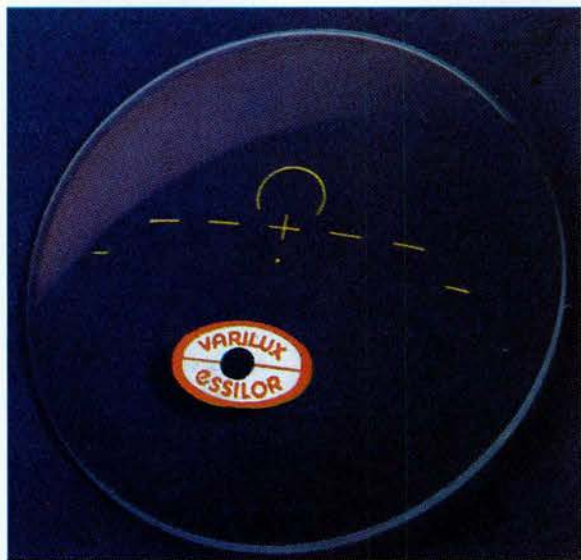
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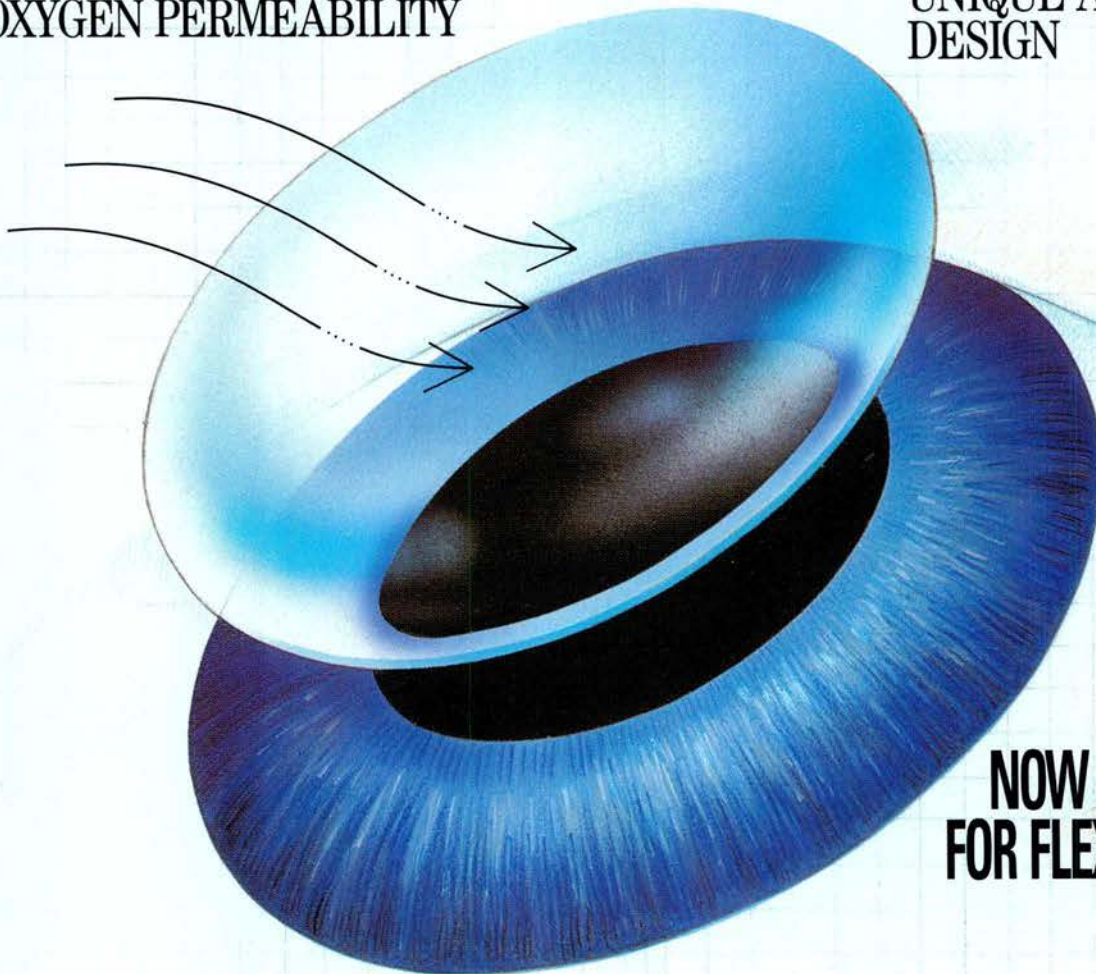
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Heritable Eye Conditions: Mode of Inheritance, Frequency of Occurrence and Estimated Risk to Offspring

M.A. Wilson *
W.M. Lyle **

Abstract

We examine the reported mode of inheritance and the reported prevalence of the following ocular conditions: aniridia, anophthalmia, choroideremia, coloboma of the iris, congenital glaucoma, congenital ptosis, ectopia lentis, keratoconus, microphthalmia, ocular albinism and retinitis pigmentosa. Based on a firm diagnosis, a family pedigree and an examination of as many members of that pedigree as possible it is sometimes possible to estimate the risk to the unborn child in a family where the condition has already appeared.

Abrégé

Nous avons étudié les modes de transmission connus et la prévalence statistique des maladies oculaires suivantes: l'aniridie, l'anophthalmie, la choroidémie, le colobome de l'iris, le glaucome congénital, la ptose congénitale, l'ectopie du cristallin, le kératocône, la microphthalmie, l'albinisme oculaire et la rétinite pigmentaire. À partir d'un diagnostic ferme, de l'arbre généalogique et de l'examen du plus grand nombre possible des membres de la famille, il est parfois possible d'évaluer les risques qui court l'enfant à naître d'une famille où ces maladies existent déjà.

Authors have published pedigrees showing the modes of inheritance of various ocular conditions. It is implied that if the mode of inheritance can be established then the risk to subsequent children in that family can be estimated for the purpose of genetic counselling. Obviously the starting point must be a precise diagnosis of the condition. However, risk estimates can provide only approximate values because of the number of sporadic cases and because of such factors as variations in penetrance and expressivity. Many conditions can be inherited in more than one genetic mode. Mutations are not predictable. Consanguinity and the interaction between genetic and environmental factors further complicate the problem. Environmental factors account for less than 10% of human malformations.¹

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The problems also include the following:

1. Many of these ocular conditions appear as a part of one or more syndromes each of which is likely to have its own mode of inheritance.
2. Many ocular anomalies which appear clinically to be single conditions are in fact made up of various subtypes with different modes of inheritance.
3. Few sources provide adequate data on prevalence or incidence and these data differ in different geographical areas.
4. Family pedigrees no matter how extensive or carefully prepared contain elements of uncertainty. As many family members as possible should be examined.

In this review our aim is to improve the optometrist's ability to estimate the risk when an inherited condition appears in a family. As they provide most of the primary vision care services in Canada, optometrists have considerable responsibility in the field of genetic counselling. We have tried to obtain prevalence or incidence rates for a given population and data indicating the mode of inheritance. Genetic information proved to be easier to obtain than epidemiological data for Canada, or for anywhere else. The literature search included the following ocular conditions: aniridia, anophthalmia, choroideremia, coloboma of the iris, congenital glaucoma, congenital ptosis, ectopia lentis, keratoconus, microphthalmia, ocular albinism, and retinitis pigmentosa (pigmentary retinopathy). (See Appendix.) For the registered blind population of the province of Newfoundland, in both 1981 and 1984 single-gene disorders accounted for 30% of the cases of total blindness and congenital defects for another 10 to 11%.² Nearly two-thirds of all inherited anomalies have associated ocular signs or symptoms.

Advances in the field of genetics and bioengineering have improved the techniques of antenatal diagnosis. Within the past 25 years the nature of genetic counselling has changed from a discussion of statistical probability to the ability to confirm before birth the presence or absence of many abnormalities for which the fetus is at risk.³ Parents are entitled to the best available information. This information should be presented with compassion and with tolerance for each person's viewpoint. Some parents consider abortion an unacceptable solution to a prenatally detected genetic problem. They do not want to terminate a pregnancy even when the fetus is known to be seriously defective.

The conditions to be described may be inherited in the autosomal dominant (AD), the autosomal recessive (AR), the X-linked recessive (XLR), or in the X-linked dominant (XLD)

manner. Some conditions are believed to depend on several genes, polygenic (P) or on several genes plus the influence of environmental factors, multifactorial (M).

If it is not clear that a condition is inherited its appearance in a family may be described as sporadic. Many of those cases are due to a new mutation. New mutations and many chromosomal anomalies can be passed to subsequent generations in the AD manner. Sometimes the term simplex is being used for isolated cases of an affected individual appearing in a family where there is no history of that condition elsewhere in the family pedigree.

Aniridia

Although these eyes are said to have aniridia there is always some remnant of the iris tissue present⁴ so a better name might be severe iris hypoplasia, or irideremia.⁵

Eyes with a hypoplastic iris often have other disorders,⁶ some congenital and others manifesting later. These include coloboma

Many conditions can be inherited in more than one genetic mode. Mutations are not predictable. In this review our aim is to improve the optometrist's ability to estimate the risk when an inherited condition appears in a family.

of the iris,^{4,7} mild iris hypoplasia in the other eye in unilateral cases,⁸ strabismus,⁴ nystagmus,⁹ corneal pannus,¹⁰ corneal dystrophy,¹¹ corneal astigmatism,¹¹ cataract,^{9,10} ectopia lentis,^{4,12} glaucoma,^{6,10,12} macular or foveal hypoplasia,^{6,9,13} optic disc hypoplasia,¹⁴ and absence of macular pigment.^{4,9} There is an association with Wilms' tumor of the kidney⁷ and a few have other genitourinary defects.⁵

Aniridia is bilateral in 98% of cases^{4,12} although the severity may differ between the two eyes.¹⁵

There are at least three types of congenital aniridia^{16,17} including at least two AR types. Gene mapping studies indicate that the gene for Type I aniridia is linked to acid phosphatase-1 (ACPI) on chromosome 2.^{18,19} Type II (Baltimore) aniridia has its gene on chromosome 11.²⁰ The genes for the syndrome of aniridia, Wilms' tumor, gonadoblastoma and mental retardation¹⁶ have been associated with a deletion at 11p13^{4,7,19} and linked to ACP2. The autosomal dominant combination may be called the WAGR syndrome.^{16,19} In the Rutherford, oculodental syndrome (AD), aniridia, dental defects, corneal anomalies, ectopia lentis and optic atrophy are the features.¹⁶

Almost all investigators agree that most aniridia is inherited in the autosomal dominant manner.^{16,20-24} with a penetrance of 67 to 90%. The genes for the dominant type of aniridia are located on chromosomes 1 and 2.⁴ Approximately two-thirds of children with aniridia have an affected parent.⁴ Incomplete penetrance may account for some reports of irregular dominant or variable inheritance.^{8,15,25}

A few cases appear to be inherited in the AR manner¹⁶ and this mode of inheritance is associated with a type of partial aniridia. On a worldwide basis consanguinity in aniridia families is unusual⁴ but in Japan in more than 15% of cases the parents of affected children are consanguineous.²⁶ Carriers of aniridia often show iris hypoplasia.

Possibly 1/3 of aniridia cases are sporadic.²³ Of the sporadic cases of aniridia, two-thirds represent a new AD mutation and are therefore transmissible.⁴ Genes at more than one chromosomal region may be involved, or the mutational event may take place in two steps.⁴

Aniridia is reported in 1/43 to 1/100 of those who have Wilms' tumor.^{4,27} Individuals with sporadic aniridia are more likely to develop a Wilms' tumor,^{23,28} from 1/5 to 1/3 of sporadic cases of aniridia have Wilms' tumor.^{7,21} Children with sporadic aniridia are at increased risk for the development of Wilms' tumor especially during the first five years of life.⁴ Wilms' tumor is often inherited in the AD manner although formerly considered to be AR.

Reports indicate that 10 to 20 people per million have aniridia.^{4,10,16,23} Of children under 20 years of age registered with the Canadian National Institute for the Blind, 1.6% had aniridia listed as the cause of their blindness.²⁹ Of those registered with the CNIB in Newfoundland in 1981, aniridia was responsible for blindness in 0.6%, which was 2% of those with an established genetic cause of blindness.³⁰ The 1985 Canadian data indicate a prevalence of 225 aniridia cases registered as blind with the CNIB.³¹ In British Columbia the incidence of aniridia is 86/million live births.³²

About 1/3 of cases of aniridia are sporadic, most of the rest are AD and a very few are AR. If one parent has aniridia the empirical risk that the parent's child will have aniridia is on the average greater than 33%.

Anophthalmia

Total absence of the eyeball is rare; usually a small globe can be found deep in the socket.³³ It is difficult to differentiate anophthalmia, extreme microphthalmia, and cryptophthalmia.^{15,20,33} In primary anophthalmia which is due to failure of outgrowth of the optic vesicle,^{34,35} the ectodermal elements are missing,³⁴ and even the optic nerves, chiasma and optic tracts may be absent.³⁶ Secondary anophthalmia follows degeneration of the optic vesicle.³⁵ Although colobomatous defects sometimes occur in these eyes,³⁷ other anomalies are uncommon.³³

Generally anophthalmia is inherited as an AR condition.^{15,16,34,38} The parents of an affected child are often related to each other. There are pedigrees showing AD inheritance^{26,34,37,39} especially when associated with colobomas. In the XLR syndrome of Lenz affected individuals not only have anophthalmia or microphthalmia but also microcephaly, abnormalities of vertebral column and digits, renal dysgenesis, dental anomalies, sometimes mental retardation and cataract.³⁶ A small group of patients have the triad of anophthalmia, orbital cyst, and coloboma which is generally sporadic⁴⁰ but occasionally runs in families or is environmentally determined.³³ Possibly these cases are examples of AD inheritance with reduced penetrance³⁷ or variable expressivity.³⁸

Reports indicate that in 2/3 of cases anophthalmia is bilateral^{15,33} but one must remember the possible confusion with microphthalmia, cryptophthalmia, and an orbital cyst.

The incidence of anophthalmia in the USA is decreasing.⁴¹ Anophthalmia is rare. Hereditary and familial cases are so uncommon¹⁵ that reliable data are difficult to obtain. Anophthalmia is 10 times more frequent in the mentally retarded.

Anophthalmia was listed by the CNIB as a cause of blindness in 0.4% of the children registered with them in 1970-73.³² Anophthalmia was the cause of blindness for 0.5% of persons

registered with the CNIB in Newfoundland and Labrador in 1981.³⁰ In 1985 there were 51 cases of congenital anophthalmia among those registered as blind with the CNIB.³¹ With six provinces participating, the Canadian Congenital Anomalies Surveillance System reported an average annual incidence for anophthalmia of 32.5/million live births for the years 1980 to 1983 inclusive.⁴² In British Columbia the frequency of congenital anophthalmia is 36/million live births.³²

Within the past 25 years the nature of genetic counselling has changed from a discussion of statistical probability to the ability to confirm before birth the presence or absence of many abnormalities for which the fetus is at risk.³

For the United States the incidence of anophthalmia is 17 to 43/million births.^{41,43} For New York State Gittelsohn and Milham⁴³ estimated that anophthalmia appears in 500/million single births, 700/million unlike-sex twins and in 1000/million like-sex twins.

In most cases anophthalmia is inherited in the AR manner, a small number are AD but anophthalmia in the Lenz syndrome is XLR. If the pedigree indicates AR inheritance and if there is one affected child in the family the theoretical risk to a subsequent child is 25%.

Choroideremia

Although formerly described as congenital absence of the choroid, choroideremia is now recognized as an abiotrophy of the choroid.^{44,45} Beginning soon after birth the choroid and pigmentary retinal epithelium gradually disappear in whole or in part^{45,46} but initially the macular area is spared.⁴⁵ The condition is a progressive, bilateral,³³ tapeto-choroidal dystrophy⁴⁷⁻⁴⁹ with a basic defect in the choriocapillaris⁴⁵ but others say in the retinal pigmented epithelium. Choroidal sclerosis was formerly considered to represent a stage in the evolution of choroideremia.¹⁶

Choroideremia produces progressive field constriction²¹ with macular sparing^{44,47,50} followed by progressive loss of central vision.^{21,50} Signs of the disease are present at birth⁵¹ or soon after^{44,50} with the result that affected males have obvious choroidal dystrophy and impaired night vision by 10 years of age.⁴⁶ Some central vision is retained until the fourth,⁵² or even the sixth decade.⁴⁴ In many cases the severity does not correlate closely with the age.^{8,21,52,53}

Choroideremia is an XLR condition.^{15,16,19,45,48,54} The penetrance is 100% in hemizygous males.⁴⁸

Gene mapping studies have identified a locus within the region Xq13-q24^{48,49,55} as the site of the gene responsible for choroideremia. This is distinct from the Xg blood group locus,^{44,48} from the locus for X-linked retinitis pigmentosa, and from the genes responsible for red-green colour vision anomalies.

Choroideremia is a rare condition⁴⁷ affecting 3/million in Maine⁴⁸ but as many as 25,000/million in some regions in Finland.¹⁶ The CNIB lists choroideremia as the cause of blindness in 0.3% of registered blind children.²⁹

Female carriers typically have normal vision⁴⁷ but show fundus changes^{19,44,50} with peripheral pigmentary mottling.^{8,45}

The variability evident in the fundus in the carriers is explained by the Lyon hypothesis,^{55,56} in which one or the other X chromosome in females is randomly suppressed in the second or third week of fetal life.

If the mother carries this gene then half her sons will be affected and half her daughters will be carriers. An affected father will have all carrier daughters and all normal sons. These proportions will differ if the other parent also has the same gene.

Congenital Glaucoma, Hydrophthalmia, Buphthalmia

Glaucoma in infants and children has been classified into three groups: group I, primary congenital or infantile glaucoma; group II, glaucoma associated with congenital anomalies; and group III, glaucoma secondary to other pathology.⁵⁷ Among patients with childhood glaucoma: about 20% are group I, 45% are group II, and 30% are group III.⁵⁷

The sclera of an infant stretches when the intraocular pressure becomes elevated, so the eyeball enlarges.⁴⁷ Congenital glaucoma has been called hydrophthalmia or buphthalmia. Congenital glaucoma is bilateral in 50 to 80% of cases.^{21,58,59} Even when the overt condition is unilateral the fellow eye often has abnormalities in the angle of its anterior chamber.²¹ From 25 to 40% of congenital glaucoma cases are detected at birth^{21,33} and 90% are diagnosed before the child is one year old.⁴⁷

The cause of the increased intraocular pressure is an abnormality of the angle of the anterior chamber.³³ Presumably the trabecular region is not sufficiently permeable,¹⁶ and the outflow of aqueous is obstructed. In addition to enlargement, affected eyes are likely to show corneal clouding,⁵⁷ blepharospasm,³³ tearing,¹² epiphora,²¹ and the patient has photophobia.⁶⁰

Congenital glaucoma has been associated with a number of inherited conditions,⁶¹ mostly AD, e.g. aniridia, Marfan's syndrome, microcornea or microphthalmia, neurofibromatosis, retinoblastoma, and Rieger's syndrome. From 20 to 40%^{59,62} of congenital glaucoma cases are hereditary. Probably 2/3 of congenital glaucoma cases are sporadic.^{21,61,62} For congenital glaucoma several pedigrees indicate an AR mode inheritance,^{58,61-63} although there are a few reports of AD^{35,59,62} and some evidence that multifactorial inheritance occurs.²⁵ If 2/3 of cases are sporadic then not many cases can be AR in spite of some estimates as high as 30%. In one AR syndrome congenital glaucoma is associated with mental retardation. Congenital glaucoma tends to occur in patients with homocystinuria (AR). An association of congenital glaucoma and congenital cataract with decreased renal ammonium production and mental retardation,¹⁶ occurs in the Lowe, oculocerebrorenal syndrome which is XLR.

More males than females have congenital glaucoma.^{47,57} The predominance of males is most evident when sporadic cases are examined. Seventy percent of the sporadic cases are males.⁶² Concordance in monozygotic twins has been reported to be 100%.⁵⁹

For AR conditions consanguinity is an important factor. If we assume that in most parts of the world cousin marriage constitutes 1% of marriages then it is interesting that consanguinity of the parents of children with congenital glaucoma is 4 to 8%.^{26,59,61,62} In some isolated communities (e.g. Freiberg, Germany) parental consanguinity in families with affected children is as high as 41% to 50%.^{51,61}

The 1985 Canadian data indicate 147 cases of congenital glaucoma registered as blind with the CNIB.³¹ Congenital glaucoma is listed as a cause of blindness of 1.5% of the children registered with the CNIB²⁹ and for 5.8% of the students in schools for the blind in the UK.²⁹ Congenital glaucoma causes 7.1% of cases of blindness in Japan.⁶⁴ In the USA 0.8% of deaf-blind youths and adults registered with the Helen Keller National Centre have congenital glaucoma listed as the cause of their visual loss.⁶⁵

Reports indicate the prevalence of congenital glaucoma to be: 80/million,²⁶ 80 to 100/million,^{12,57} 100/million,³³ 20 to 200/million,⁵⁹ and 122/million live births.³² Among ophthalmic patients the prevalence of congenital glaucoma is 100 to 400/million.³³ With six provinces participating, the Canadian Congenital Anomalies Surveillance System reported an average annual rate of 52.3/million live births (including a period of follow-up from birth to one year) for congenital glaucoma for 1980–1983 inclusive.⁴²

The percentage of affected persons in most pedigrees is close to the theoretical expected (25%) for a recessively inherited condition.²⁶

On the assumption that congenital glaucoma has a prevalence of 100/million and 2/3 of cases are sporadic then less than 1% of the population will be carriers of this gene. The risk to the unborn child in a family where a sibling is affected will be less than 25%.

Coloboma of the Iris

A coloboma means a missing part, a part removed. Colobomatous defects may occur anywhere in the circumference of the iris but are more frequently downward and inward or outward.^{15,33,51} This anomaly of the iris may be accompanied by colobomas of the anterior uvea,²⁶ choroid,⁸ retina,²⁶ or optic disc⁸ and corneal changes.^{66,67} Colobomas of the iris are more likely to occur where pupillary membranes or embryonic vessels persist.⁶⁸ Rarely renal malformation or anal stenosis has been reported,⁶⁹ in patients with iris colobomas. McKusick¹⁶ describes a complex syndrome called the CHARGE association. Only 8% of cases are familial, possibly AR. The affected child has coloboma of the eye, a heart anomaly, choanal atresia, retarded mental and physical development, microphallus, ear abnormalities or deafness and sometimes facial palsy, cleft palate and dysphagia.

Ocular colobomas may be a part of many disorders with multisystem involvement (Table 1). A coloboma is usually the result of a failure of closure of the fetal fissure.^{8,26} Most iris colobomas are sporadic,^{66,67} but of the hereditary cases the bulk are AD^{58,67,68}; only a few pedigrees show an AR pattern.^{66–68} The penetrance of the AD trait has been reported to be 20 to 30%⁶⁸ or 90%.²² There is some variability in expressivity.⁶⁸

Colobomas of the iris are a relatively common congenital abnormality.^{3,15} The incidence is 167 to 400/million.^{3,5,7} For the years 1980 to 1983 inclusive, with six provinces participating, the Canadian Congenital Anomalies Surveillance System reported an annual average of colobomas and other anomalies of the anterior segment in 86.8/million live births.¹⁶ The condition shows no gender predilection,^{5,7} and is as often bilateral as unilateral.^{3,5,7}

In those families where the condition follows the autosomal dominant mode of inheritance, and where penetrance is over 90%, one can anticipate that about 45% of the children will be affected if one parent is affected. If neither parent is affected the probability that they will have a child with an inherited colo-

TABLE 1
(based on reference 68)

Colobomas and retinal abnormalities:	Meckel-Gruber syndrome (AR), retinoblastoma (del 13q) (sporadic, AD), triploidy, trisomy 13, tuberous sclerosis (AD). Many cases due to new mutations. Warburg syndrome (AR).
Colobomas and single gene disorders:	Aicardi syndrome (XLD), basal cell nevus syndrome (AD), CHARGE association (sporadic, AR), Goltz focal dermal hypoplasia (XLD), Lenz microphthalmia syndrome (XLR), Meckel-Gruber syndrome (AR), Warburg syndrome (AR).
Colobomas and chromosomal abnormalities:	colobomas are common with: cat eye syndrome 4p, triploidy, trisomy 13. colobomas are uncommon with: trisomy 18, 11q, 13q, 18q, 13r, 18r.
Colobomas and multisystem disorders:	linear sebaceous nevus syndrome (AD), oculoauriculovertebral, Goldenhar syndrome (sporadic, AD, AR), Rubinstein-Taybi syndrome (M, AR).

boma of the iris is very small. Note however that sporadic cases are relatively common.

Congenital Ptosis

Blepharoptosis, when present at birth, suggests the possibility of a defective⁴⁷ or dystrophic levator.⁵⁸ There may be an arrest of differentiation of the extraocular muscles,^{16,33} often involving hypoplasia of the levator and/or the superior rectus.^{51,70} Ptosis is commonly accompanied by palsy of the superior rectus.^{8,16,33} In rare cases there is maldevelopment of the nucleus of the third cranial nerve.⁷⁰

Ptosis is a relatively common defect,⁴⁷ possibly affecting 1000/million, appearing especially in males,⁷¹ and 80% of cases are congenital.^{58,71} The congenital form may be unilateral³³ but in 25% of those affected it is bilateral.^{8,70} Most authors report that inheritance is AD.^{16,33,47} Penetrance is moderately high,⁵¹ averaging 60%,^{26,33,57} and there is some variability in expressivity.²⁶ Duke-Elder³³ described eight types of ptosis, but hereditary congenital ptosis occurs in three main types, simple; with external ophthalmoplegia; and with blepharophimosis or epicanthus.

If penetrance is 60% in an AD condition the risk to the child of an affected parent is about 30%.

Ectopia Lentis

An ectopic lens may appear as an isolated finding but is more likely to be associated with these conditions: Ehlers-Danlos syndrome (AD, AR or XLR), homocystinuria (AR),⁷² hyperlysinemia (AR), spherophakia, sulfite-oxidase deficiency (AR), Weill-Marchesani syndrome (AR),^{5,6} and with Marfan's syndrome (AD),^{72,73} and some cases of osteogenesis imperfecta (AD, AR). Ectopia lentis is occasionally associated with aniridia (sporadic, AD), megalocornea (sporadic, AD, AR), cornea plana (AR, AD), and pigmentary retinopathy (sporadic, AR, AD, XLR).^{72,73}

Simple ectopia lentis occurs as a congenital disorder or as a spontaneous late dislocation.⁷³ Trauma can cause dislocation of the lens at any age, and this is almost always unilateral.

Simple ectopia lentis is caused by hypoplasia of the zonule of Zinn,²¹ but a persisting vascular sheath of the lens may play a role.³³ The displacement of the lens is usually upward and temporally,^{72,73} may be stationary or progressive,²² and is usually bilateral.⁷³

The most common mode of inheritance for ectopia lentis is AD^{26,33,73} with variable expressivity.⁵¹ One AD form tends to be associated with a coloboma of the lens⁸ and the other AD type is of late onset and is associated with glaucoma.^{72,73}

Although AR inheritance of ectopia lentis occurs, it is less common than AD inheritance.^{8,22} Recessively inherited ectopia lentis tends to be associated with an ectopic pupil.^{21,51} Lens and pupil are likely to be decentered in opposite directions.

Among the blind children registered with the CNIB 1.5% are considered to be blind as a result of ectopia lentis.¹⁶ Dislocated lens was listed as the cause of blindness for 0.1% of those registered with the CNIB in Newfoundland in 1981, which was 0.4% of those with an established genetic cause of blindness.³⁰ In British Columbia in the period 1945 to 1984 ectopia lentis was found in 7/million live births.³²

Because ectopia lentis is often only one component of a syndrome and because the inheritance of ectopia lentis by itself may be AD or less commonly AR it is usually impossible to predict the risk to an unborn child. However when ectopia lentis forms part of a syndrome the mode of inheritance of the syndrome provides some guidance.

Keratoconus

Keratoconus is also called conical cornea, axial corneal dystrophy¹⁶ or dystrophy of the anterior corneal membranes.⁷⁴ It may be specified as anterior keratoconus⁷⁵ to differentiate it from the unrelated condition called posterior keratoconus.^{76,77}

Although described as axial ectasia of the cornea^{78,79} the apex of the cone is usually somewhat decentered⁷⁶ inferiorly and nasally,⁷⁷ but some say temporally. The corneal stroma becomes thinned,^{78,80} and hydroids of the cornea develops^{75,77} in 2 to 3% of cases.²¹ A deposit of iron pigment in the deep epithelium at the base of the cone produces Fleischer's ring in 50% of cases.^{21,76,77} The bulge in the cornea is responsible for the well-known clinical sign called Munson's sign.⁸¹

It is not clear what the relation is, but an associated history of allergies is reported in up to 70% of cases.^{76,77} The affected person tends to rub the eyes excessively.^{78,79,81} A connection between keratoconus and specific histocompatibility antigens has

been suggested which would support a genetic predisposition as being one factor involved.⁷⁹ However the relation has also been denied.^{77,82}

An early sign of keratoconus is irregular astigmatism,^{60,83} and this is readily apparent when keratometry is performed.^{77,81} The astigmatism produces a scissoring movement of the retinoscopic reflex. There may be an association between keratoconus and mitral valve prolapse.⁷⁶⁻⁷⁸

Keratoconus is sometimes associated with other ocular anomalies⁷⁴ including: those occurring in Down's syndrome,^{75,84} retinitis pigmentosa,^{53,76,81} blue sclerae,²⁶ and Leber's amaurosis congenita.^{76,81}

Keratoconus is rarely present at birth but develops in the second decade of life,^{33,81} and progresses slowly^{77,78,83} between the ages of 20 and 60 years or may become arrested at any time.^{75,76} Perforation is very rare⁷⁴ but has occurred in advanced cases especially in the acute type which sometimes develops in children with Down's syndrome.

Keratoconus is bilateral in 86 to 95% of cases.^{76,77} Although when first identified it may be unilateral the second eye usually becomes affected a few years after the first.

Hereditary influence occurs in 20% of cases.⁷⁷ The inheritance of keratoconus may follow AD or AR modes.^{8,16,22,53,74,76} The majority of cases are sporadic.^{21,76,78} Keratoconus may also be multifactorial,^{77,81} or run in families without following a recognizable pattern of inheritance.^{75,76} In pedigrees where the condition is AR the carriers frequently have high astigmatism.²⁶ Patients with keratoconus in one eye often have high astigmatism in the other eye.^{8,83} Relatives of patients with keratoconus commonly have high astigmatism, so probably high astigmatism is a *forme fruste* of keratoconus.^{53,74}

The prevalence of keratoconus varies in different countries⁸³ and ranges from 40 to 1000/million,^{76,78,83} and even higher rates have been reported.^{77,81} The incidence is higher in females (66.4% to 70%)^{76,77} although in a few regions investigators have found more affected males.⁷⁸ The mean annual incidence rate in the USA is 20/million.⁷⁸

Among children registered as blind with the CNIB, 0.1% have keratoconus listed as the cause.²⁹ In 1985 the CNIB reported 156 individuals with keratoconus were registered with them.³¹ In Kabul, Afghanistan a study found 0.14% of blind patients had keratoconus.⁸⁵

In view of the variety of modes of inheritance and the high frequency of sporadic cases, no reliable prediction of the risk to children in affected families is possible. However one investigator⁷ estimates that the risk to the child if one parent is affected is less than one in ten.

Microphthalmia

Microphthalmia, an abnormally small eye, is sometimes confused with anophthalmia^{36,86,87} or cryptophthalmia. Some use the term clinical anophthalmia or nanophthalmia. An eye with an axial length less than 20 mm can be classified as microphthalmic, however at birth a normal eye has an axial length of about 17.5 mm. Growth is rapid in the first year of life and the normal eye attains an axial length of over 22.5 mm by the age of three years. Microphthalmia is due to defective development of the primary optic vesicle⁸ with arrested development of all dimensions of the eye.⁵¹ Other ocular anomalies may be present including: colobomas,^{86,88} cataract,^{86,88} foveal hypoplasia,¹³ and high hyperopia,^{33,88} as well as skeletal, dental, urogenital and cardiovascular malfor-

mations,^{36,89} and mental retardation. About 8% of retarded patients in one study had microphthalmia.⁸⁶ Cryptophthalmia, syndactyly, deafness and internal organ anomalies, occur together in the Fraser syndrome (AR).¹⁶

Besides anophthalmia and cryptophthalmia it is necessary to differentiate microphthalmia from orbital cyst,^{27,40} phthisis bulbi,^{16,62} and Norrie's disease.^{2,38} Many have confused Norrie's disease (XLR) with microphthalmia. A congenital cystic eye results from partial failure of invagination of the primary optic vesicle.

Most cases of microphthalmia are sporadic.^{86,88} The etiology is unknown for over 60% of cases,⁶² although many are assumed to be genetically determined. Microphthalmia in one patient with retinopathy of prematurity has been confirmed by A-scan ultrasound.⁹⁰ The inheritance pattern is confused, both AR and AD pedigrees have been identified.^{62,88} Even X-linked¹⁹ and polygenic modes⁶² are occasionally described. Microphthalmia is often inherited in the AR mode,^{8,16} especially in such syndromes as: anophthalmia-microphthalmia-oligophrenia,⁸⁷ anophthalmia-microphthalmia-coloboma-mental retardation,⁸⁶ and anophthalmia-microphthalmia-coloboma-cystic eye.^{86,88}

Monogenic inheritance is responsible for about 1/3 of cases.⁶² The Lenz syndrome in which microphthalmia is associated with several other anomalies is XLR.^{17,19}

At birth the incidence of microphthalmia is 39 to 61/million.^{41,43} From 71 to 94 new cases are reported each year in the USA.⁴³ The prevalence of the condition is 39.3/million.⁶²

Among blind children registered with the CNIB 1.6% are blind due to microphthalmia,²⁹ and this group constitutes 1.2% of the registered blind of all ages.⁸⁸ A ten times higher prevalence of microphthalmia has been reported for Japan.⁶⁴ Microphthalmia was listed as the cause of blindness for 2.9% of those registered with the CNIB in Newfoundland in 1981.³⁰ Canadian data for 1985 indicate 341 individuals with microphthalmia are registered as blind with the CNIB.³¹

In view of the complicated and uncertain genetic pattern and the high frequency of sporadic cases no reliable prediction of risk can be made in most families although some estimate a risk of about 1/20 for the child of an affected parent.³⁸

Ocular Albinism

In many reports insufficient distinction is made between oculocutaneous albinism and ocular albinism. Both oculocutaneous albinism and ocular albinism have important and similar effects on the eye. We have chosen to discuss only ocular albinism here. By definition ocular albinism refers to a deficiency of pigmentation limited to the eye while hair and skin pigmentation are normal.⁹¹⁻⁹³ There is insufficient melanin in the retinal pigment epithelium, ciliary body and iris. The iris transilluminates so the eye shows a characteristic red pupillary reflex.⁹⁴ Affected individuals have nystagmus,⁹⁴⁻⁹⁷ reduced vision,^{96,98} and hypoplasia⁹⁶ or aplasia of the fovea or macula,^{13,98} and suffer from photophobia.^{96,99}

The laminar structure of the lateral geniculate nucleus is disrupted.⁹⁴ Pigment is important for axonal guidance during development of the optic nerve as well as for development of the auditory pathways.^{94,98} When ocular hypopigmentation with nystagmus is present there is a defect in the optic tract. Most of the fibers in the optic tract revert to the more primitive crossed arrangement,^{94,96,98} whereas in normal individuals 40 to 50% of the optic nerve fibers remain uncrossed.⁹⁴ A brain anomaly

results in faulty development of the abducens nucleus controlling the lateral rectus muscle,⁹⁶ and this is responsible for the nystagmus, however foveal hypoplasia may also play a role.

Ocular albinism is currently divided into five types¹⁶:

1. X-linked recessive, Nettleship-Falls type (XOAN).^{93,96}
2. X-linked recessive, Forsius-Eriksson type (XOAF).^{94,100}
3. X-linked recessive, Winship type (XOASD).¹⁶
4. Autosomal recessive, Witkop type (AROA).^{96,97}
5. Autosomal dominant, Lewis type (ADOA).^{96,100}

1. XOAN:

Affected individuals have a generalized disorder of pigment cells and giant skin melanosomes,^{93,99} so this type resembles oculocutaneous albinism. Caucasians have the typical albinotic fundus and their iris transilluminates readily.^{93,95} They have nystagmus and poor vision.¹⁰⁰ Head nodding or tilting is present in about one-half of affected males.²² Black patients have the macromelanosomes in their skin and near normal acuity, but show neither an albinotic fundus nor iris transillumination.^{95,100}

Carriers of XOAN have macromelanosomes in their skin and in their hair bulbs,^{99,102} and usually normal acuity. Nevertheless, because of Lyonization,^{92,103} females show various manifestations, including nystagmus, or partial iris transillumination,^{94,102} and some have diffusely distributed clumps of pigment in their fundus.^{8,33,99} According to the Lyon hypothesis one or the other of a female's X-chromosomes becomes suppressed in the second or third week of fetal life.

2. XOAF:

XOAF is rare in most countries but more common in Finland,¹⁰⁴ especially in offshore islands so it is sometimes called Aland Island disease.^{20,104} Those affected generally do not have easily transilluminated irises⁹³ but most have hypoplasia of the fovea.^{100,104} It is an incomplete form of ocular albinism,^{94,99} with local areas of fundus depigmentation.¹⁰⁴ These patients have a protanomalous colour vision defect,^{93,94,99} impaired vision in dim illumination, and high myopia.¹⁰⁰ Female carriers show no signs characteristic of this syndrome.^{100,104} Neither those affected nor the carriers have macromelanosomes in their skin.¹⁰⁰

3. XOASD:

Typical ocular albinism with the late onset sensorineural deafness is inherited as an XLR condition.¹⁶ They have macromelanosomes in their skin.

4. AROA:

Autosomal recessive ocular albinism may be called punctate ocular albinism⁹⁹ or albinoidism.¹⁶ When they are young it is difficult to distinguish these patients from those with oculocutaneous albinism; as they grow older AROA patients become somewhat pigmented.^{93,94} They have normal skin melanosomes, normal skin pigmentation, and normal hair bulbs.¹⁰⁰ Affected males or females have translucent irides, albinotic fundi, congenital nystagmus, poor vision and are photophobic.^{21,93} Carriers are not detectable,⁹⁹ have normal skin, and lack the fundus signs which are characteristic of carriers of XOAN.^{93,97}

5. ADOA:

Individuals with this uncommon type (Lewis) of ocular albinism have lentigines, deafness and vestibular abnormalities.^{94,100} Lentigines resemble freckles but the spots have a more regular border and show local proliferation of the rete ridges. The ocular

manifestations are similar to those occurring in XOAN and in AROA. Macromelanosomes are present in the lentiginos.¹⁰⁰

Gene mapping studies of ocular albinism have identified a region within Xpter-22 as the locus of the genes responsible for XOAN¹⁰³ and XOAF,¹⁷ and these are close to the genes associated with the Xg blood group.⁹⁴

Most cases of ocular albinism occur in males. XLR ocular albinism appears in 20/million newborn males.^{93,94} One author⁹³ suspects that the AR type of ocular albinism, though less well known, may be the most frequent type. Most albinos are born to non-albino parents.

In the UK, in a study of 165 patients with albinism,⁹⁷ 12.7% had XOAN, 9.1% were heterozygous carriers of XOAN, and 9.7% had AROA. In schools for the visually handicapped 9% of the children had subnormal vision due to albinism and of these 1% were ocular albinos.¹⁰⁵

In the period 1970 to 1973 the percentage of blind children registered with the CNIB who were albinos was 6.6%.²⁹ Among children newly registered as blind (in 1985) with the CNIB 6.9% were albinos.³¹ The 1985 Canadian national statistics indicate a total of 806 albinos registered as blind with the CNIB.¹⁰⁵ However, insufficient distinction has been made between oculocutaneous albinism and ocular albinism. In British Columbia under the heading of albinism there were 259/million live born children affected.³² If it is assumed that most cases of ocular albinism are XLR and the incidence in males is 20/million, then about 1/25,000 females is a carrier.

Retinitis Pigmentosa

Pigmentary retinopathy¹⁰⁶ seems to be a more appropriate name for the group of conditions which have been called pigmentary retinal dystrophy,¹⁰⁷ dystrophia retinae pigmentosa,⁵¹ retinopathia pigmentosa,¹³ and peripheral tapeto-retinal dystrophy,¹⁰⁸ as well as retinitis pigmentosa (RP) and choroidoretinal degeneration.

Retinal pigmentary disturbances somewhat similar to those seen in retinitis pigmentosa (atypical RP) are an incidental finding in many other conditions or syndromes.^{21,109} One of the most common extraocular conditions associated with RP is a hearing deficit.^{54,110} The combination of RP and impaired hearing includes some cases of Usher's syndrome and this syndrome constitutes 12 to 30% of RP cases.^{110,111} In the USA 36% of deaf-blind youths and adults registered with the Helen Keller National Centre had RP as the cause of their visual loss.⁶⁵

Pigmentary retinopathy has been described as a failure of the retinal pigmentary epithelial cells to dispose of the cast-off discs from the photoreceptor cells of the retina. Recent studies suggest that reduced levels of interphotoreceptor retinoid-binding protein may be an early stage in the degenerative process of pigmentary retinopathy.¹¹³ Human HLA-DR (class II) antigens have been reported in RPE cells of patients with pigmentary retinopathy.¹¹³ There is an abnormality of the cilia in other parts of the body.¹¹⁴

When pigment migrates from the retinal pigmentary epithelium^{115,116} into the retina the fundus picture shows characteristic "bone-spicule" clumps of pigment,^{55,116,117} typically starting in the equatorial region.^{118,119} Almost always the condition is bilateral.⁵⁸ Later, in 80 to 90% of cases¹⁰⁷ the retinal arterioles become attenuated,^{54,56,117} and the optic disc takes on a waxy appearance,^{116,118} but this sign is not always present.⁵⁶

Early in the course of the disease the electroretinogram becomes abnormal,^{56,106,116} or even extinguished. The scotopic

b wave shows the most marked reduction and typically becomes abnormal before fundus signs or decreased acuity are detected.

RP patients have impaired vision in dim illumination, often called night-blindness.^{58,106,109} Poor night vision appears very early in the course of the disease and occurs in 96.5% of cases.¹¹⁰

A doughnut-shaped or ring scotoma in the mid periphery expands progressively,¹¹⁷⁻¹¹⁹ both peripherally and centrally, and is present in 94.5% of cases.¹¹⁰ Macular vision is spared in the early stages,^{47,119} but in 70% of cases¹⁰⁸ central vision becomes impaired eventually.^{116,118} Of those affected many are myopic.

Colour vision is altered in 22% of RP patients¹⁰⁸ and the typical defect is a blue-yellow one.¹²⁰ About 10% of affected females report a very rapid vision loss during pregnancy.¹⁰⁶

Most RP patients have the expected rod-cone dystrophy, but a few have cone-rod dystrophy which produces pigmentary changes in the macula and early effects on central vision.

The inheritance of retinitis pigmentosa can be classified into four types.¹²¹⁻¹²⁵

1. Autosomal dominant (AD RP) (RPI). Probably four or more subtypes exist.
2. Autosomal recessive (AR RP). Probably there are several subtypes.
3. X-linked recessive (XL RP) (RP2)
4. Sporadic, isolated, simplex or multiplex cases.

1. AD RP:

For AD RP the frequency is 30/million¹⁰⁹ to 65/million¹²⁰ depending on geographical location. The penetrance is 90.6%.¹²⁴ The mean age of onset of AD RP has been reported to be 18.7±2 years,^{106,125} 19 years,¹²¹ 24.7 years (China),¹⁶ and sometimes not appearing until the age of 30 years.²¹ Among those with AD RP, 95% are symptomatic by 50 years of age.^{123,125} Autosomal dominant retinitis pigmentosa has a later onset,^{54,58,108} slower progression,^{56,58} and a better prognosis^{106,121} than the other forms of pigmentary retinopathy. Many retain useful central vision even after 60 years of age. AD RP is a milder disease than the other types.^{21,47,125} They have on the average less than 2D of myopia.

The gene responsible for AD RP is located on chromosome number 1,^{18,20} but there may be four or more subgroups of AD RP.^{126,127} Most are rod-cone type.

2. AR RP:

For AR RP the frequency ranges from 50 to 300/million,^{55,110} but in some localities has been estimated to be as high as 500/million.¹²⁵ In these families consanguinity is 20 to 30%.⁵⁵ When the disease is severe, inheritance is four times more likely to be AR than XLR.¹²⁴

In autosomal recessive RP, onset is reported to occur at 16 years,¹⁰⁸ 16.2±0.96 years,¹²⁵ 18.4±0.7 years,¹⁰⁶ 20 years,²¹ and 22.9 years (China).¹⁶ By the age of 40 years, 88 to 95% are symptomatic.^{36,37}

Because certain forms of RP are inherited as autosomal recessives attention has been paid to the frequency of consanguinity in affected families. Although consanguinity is relatively infrequent in the USA,^{106,124} it is higher in some countries ranging from 17 to 50%.^{51,107,124} The prevalence of AR RP may be confused because Usher's syndrome is also AR and has an estimated prevalence of 44/million in the USA.⁶⁵

There may be several subtypes of AR RP. Three severe forms and one milder one, all AR, have been described.¹⁶ Two identified forms are a milder, later onset one¹²⁸ and a severe, early

TABLE 2
Estimated world-wide frequency of the different forms of RP.

Genetic form	Percent of cases	Percent of families	Approximate ^a average %	Prevalence ^a approximate
AD RP	17.4	19.8	19	38/million
AR RP	47.0	23.3	35	70/million
XLR RP	6.5	11.1	9	18/million
Other types ^b	29.1	45.6	37	74/million

^a Assuming an average prevalence worldwide of 200/million.^{108,135}

^b Mostly sporadic, isolated or simplex cases.

onset form.^{54,126} Those with the early onset form are more likely to have cataract and early macular degeneration.¹¹⁸ AR RP is associated with severe vision impairment.¹²⁴ Some central vision is commonly maintained until the age of 45 to 60 years, even though many AR cases are of the cone-rod type. Some of the patients with AR RP have deafness,⁵⁴ so probably belong in Usher's syndrome. Usher's syndrome can be divided into a severe form and a mild form,¹¹¹ in fact there are four subtypes of Usher syndrome. Conditions frequently associated with Usher's syndrome are cataract and mental deficiency.¹¹¹ RP with deafness may be caused by a pleiotropic gene.⁵

Frequency of heterozygous carriers of RP is reported to be 1/42,⁵⁵ 1/50,¹¹⁰ 1/32 to 1/70,⁵⁶ 1/80.¹¹⁸ Most heterozygous carriers of the gene for AR RP have a characteristic tapetal reflex³⁸ and some show other effects of the disease.²² When RP is associated with other systemic or ocular anomalies the inheritance pattern is most likely to be AR. Those with AR RP have on the average over 2D of myopia.

3. XL RP:

Some estimates of the frequency of XL RP are 10/million,¹⁰⁹ 12/million,¹¹⁹ 15/million,⁴⁸ and 20/million.¹²⁸

The onset of XL RP occurs at the age of 5 years¹⁶ (China), 9 years,¹⁰⁸ and 9.1±1.2 years.¹²⁵ By the age of 18 years 92 to 95% have symptoms.^{123,125}

The X-linked form of RP produces the most severe vision defects.¹³⁰ Nearly all have the rod-cone type of RP. Central vision is usually lost in the patient's fourth decade of life. The average refractive error in this group is over 5D of myopia.

The gene for XL RP lies within Xp21-cen¹⁷ and the location has recently been refined to Xp11.0-11.3.^{48,129} This gene locus is close to the site which can be identified by the probe L1.28, which therefore permits carrier detection.¹⁰⁹ The locus is distinct from that for choroideremia, and from that for the Xg blood group.⁴⁸ This form of XL RP can be detected by chorion biopsy during pregnancy.¹²⁹

Heterozygous carrier females show a brilliant silvery or golden tapeto-retinal reflex,^{130,131} but the effects on the eyes of these carriers vary,^{124,130} presumably the variation is a consequence of Lyonization.⁵⁸

4. Sporadic, Isolated, Simplex or Multiplex Cases:

A new classification scheme for the pigmentary retinopathy group of diseases was introduced by Massof and Finkelstein.^{114,117} They divided the disease into simplex RP and multiplex RP. The sporadic, isolated or simplex type (i.e. single cases in a pedigree) comprise up to half the cases.¹⁰⁸ Multiplex cases are those cases where two or more affected individuals are identified in a pedigree but a genetic pattern is not apparent. No genetic basis can be found for 1/3 of cases.²² Possibly 68% of

all simplex cases are AR.⁴³ The assumption has frequently been made that all sporadic cases are AR.¹³²

The frequency of RP varies in different parts of the world and ranges from 40/million in the UK⁶⁴ to 500/million in Israel.¹²⁵ For North America the reported figures are in the vicinity of 200/million,¹³³ to 270/million.^{51,108,110,124} but the prevalence is much higher in the Navajo population.¹³⁴ A 1982 US National Retinitis Foundation survey found a prevalence of 350/million, but for 10% of these cases RP was an incidental finding in another syndrome.¹⁰⁶

From a survey of the relative frequency of the different genetic forms of retinitis pigmentosa by cases prepared by 16 investigators and by families prepared by 10 investigators in different countries we estimate the prevalence shown in Table 2.

Since effective treatment for RP is not available, genetic counselling may be the most useful service we can provide for families with RP. RP tends to be more severe in males than in females.¹³⁶ Low vision aids are usually helpful.

The 1985 data indicate that 2701 individuals with RP were registered as blind with the CNIB.³¹ As a cause of blindness RP was considered responsible for 3.3% of the blind who were newly registered with the CNIB in 1985.¹⁰⁵ The proportion of blindness ascribed to RP in various countries is: USA 0.5%,¹¹⁸ UK 2%,⁶⁴ Japan 8.1%.⁶⁴ Green and Johnson found RP was responsible for 7.4% of the blind registered with the CNIB in Newfoundland in 1981, and these constituted 31% of those patients with an established genetic cause of blindness.³⁰

Probably 75% of RP patients will not pass the disease to their children, some will however be carriers.

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APPENDIX

	ICD ^a Numbers	McKusick ^b Numbers	NSPB ^c Numbers	Modes of inheritance
aniridia	743.4	10620, 10621 19407	575	Sporadic 33%, most of the rest AD, a few AR.
anophthalmia	743.0	20690	125	Mostly AR, a few AD, and in one syndrome XLR.
choroideremia	363.5	30310	530	XLR
coloboma of the iris	743.4	12020	590	Mostly sporadic, some AD, or AR.
congenital glaucoma	743.2	23130, 23140 30900	115	Sporadic 60 to 80%, a few AR and one XLR syndrome.
congenital ptosis	743.6	17830	—	AD with 60% penetrance.
ectopia lentis	379.3	12960, 22520	420	Mostly AD, some AR.
keratoconus	371.6	14830, 24450	370	Sporadic 80%, some multifactorial, a few AD, and a few AR.
microphthalmia	743.1	25150, 30970, 30980	—	Sporadic 60%, a few AR, a few XLR and a very few AD and some polygenic.
ocular albinism	743.8	10347, 20331 30050, 30060 30065	—	Mostly XLR, one AR and one AD type.
retinitis pigmentosa	362.7	18010, 26800 31260	650	About 37% are sporadic, 35% AR, 19% AD, and 9% XLR.

(a) International Classification of Diseases: Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death, Vol. 1. Geneva, World Health Organization, 1977.

(b) McKusick VA. *Mendelian Inheritance in Man*. 7th ed. Baltimore: Johns Hopkins Press, 1986.

(c) Manual on use of the NSPB Standard Classification of Causes of Severe Vision Impairment and Blindness. Part II, Subcommittee on Classification of Blindness, Committee on Operational Research, National Society for the Prevention of Blindness Inc. (undated).

The Canadian
Association
of Optometrists



l'Association
Canadienne
des Optométristes

Annual Report

1987

Rapport Annuel

Introduction

What is the Canadian Association of Optometrists?

The Canadian Association of Optometrists (CAO) is the national organization representing the interests of optometrists in Canada.

CAO, on behalf of the profession of Optometry, works with government, industry, other health professionals, vision care patients and the public at large.

The Association has six major areas in which it concentrates its activities:

i. Political Action and Government Liaison

CAO maintains an established network of contacts with elected and administrative government officials.

The Association monitors existing and proposed legislation to ensure that Canadians will continue to have unrestricted access to the full range of vision and eye care services.

As might be expected, the greater part of this legislation is largely the responsibility of the Ministry of National Health and Welfare. However, health related legislation is by no means limited to this Ministry exclusively. To cite just one other example, the Ministry of Transport is responsible for the legislation which governs the visual requirements of air and seagoing pilots licensed in Canada.

ii. Public Relations

CAO acts as the national co-ordinator for a number of programs which focus on specific vision issues or, alternatively, may be designed to improve the more general awareness among Canadians of good vision and eye care practices.

For example, **Save Your Vision Week in Canada** is an annual campaign designed to promote the theme, "Life Is Worth Seeing!" In addition to receiving the support of the Prime Minister of Canada, Save Your Vision Week has attracted the participation of several prominent Canadians as Honorary Chairperson for the event:

1989: Internationally syndicated cartoonist Lynn Johnston

1988: Edmonton Oiler Captain Wayne Gretzky;

Introduction

Qu'est-ce que l'Association canadienne des optométristes?

L'Association canadienne des optométristes (ACO) est l'organisme national représentant les intérêts des optométristes au Canada.

Au nom de la profession, l'ACO collabore avec le gouvernement, l'industrie, les autres professionnels de la santé, les patients ayant besoin de soins de la vue et le grand public.

L'Association concentre ses activités dans six principaux secteurs:

i Action politique et liaison avec le gouvernement

L'ACO entretient un réseau de contacts avec des députés et des hauts fonctionnaires.

L'Association suit de près l'évolution des lois en vigueur et celle des projets de loi, afin de veiller à ce que les Canadiens continuent d'avoir librement accès à toute la gamme des services de soins de la vue et des yeux.

Comme on peut s'y attendre, la plus grande partie de la législation pertinente relève du ministère de la Santé nationale et du Bien-être social, mais elle n'est nullement limitée à ce ministère. Pour ne citer qu'un seul exemple, disons que le ministère des Transports est responsable de la législation régissant l'acuité visuelle requise des pilotes d'avion et des pilotes de navire licenciés au Canada.

ii Relations publiques

L'ACO est le coordonnateur national d'un certain nombre de programmes axés sur des questions particulières de vision ou conçus pour sensibiliser davantage les Canadiens aux bonnes pratiques de soins de la vue et des yeux.

Par exemple, la Semaine de la vision au Canada est une activité annuelle axée sur le thème « La vie, faut voir ça! ». Notre Semaine est honorée de l'appui du Premier ministre du Canada et elle a aussi obtenu la participation de plusieurs personnalités canadiennes, à titre de présidents honoraires :

1987: Wildlife artist and conservationist Robert Bateman;
1986: Astronaut Marc Garneau;
1985: Olympic Gold Medalist (Women's Sport Pistol) Linda Thom.

iii. Personnel and Economics

CAO maintains an ongoing statistical database that incorporates a wide variety of factors to aid in the future planning of the disposition of optometrists throughout Canada.

Like any profession, Optometry is faced with practitioners who will eventually reach either full or partial retirement. Balancing this drop in the country's number of active optometrists is an annual influx of new graduates from Canada's two Schools of Optometry.

The Association considers such things as present training facilities, provincial personnel requirements and overall national population statistics in an effort to ensure that the optometric vision and eye care needs of Canadians will be met fully in the future.

CAO, on behalf of the profession of Optometry, works with government, industry, other health professionals, vision care patients and the public at large.

iv. Publications

The official national publication of CAO is *The Canadian Journal of Optometry* * *la Revue Canadienne d'Optométrie*. A quarterly, the *CJO*RCO* publishes recent optometric research and clinical case studies, as well as current information concerning public health/vision and eye care issues.

CAO also publishes a number of pamphlets devoted to specific eye care and/or safety oriented topics: vision and sports, vision and aging, vision and driving, contact lenses, children's vision, vision in the workplace and visual display terminals.

In addition, certain special publications are also issued from time to time. These publications may be for the general public, government officials, the media or even our own members, the 2,700 optometrists of Canada.

v. Optometric Professional Development

Professional Development (PD) or Continuing Education (CE) is largely the responsibility of the provincial Association through which an optometrist is licensed to practise in Canada.

CAO, however, does provide a biennial CE opportunity through its national Congress. The Congress is a forum through which CAO presents speakers on new or updated practice techniques, in addition to exhibits of the latest developments in instruments, appliances, frames, pharmaceuticals and publications available for the optometrist.

vi. Industry and Professional Relations

CAO's leaders work to promote the profession of Optometry at several levels: national, provincial, community and individual.

They do so in a number of ways:

- encouraging and promoting interprofessional cooperation within the community between, for example, optometrists and public health officials; between optometrists and teachers; between optometrists and employment safety officers.

1989: Lynn Johnston, l'auteur de bandes dessinées publiées internationalement
1988: Wayne Gretzky, le capitaine des Oilers d'Edmonton
1987: L'artiste de la faune et écologiste Robert Bateman
1986: L'astronaute Marc Garneau
1985: La médaillée d'or olympique (pistolet de sport dames) Linda Thom.

iii Effectif et situation économique

LACO s'est dotée d'une base de données statistiques constamment mise à jour et incorporant toute une gamme de facteurs, afin de contribuer à la planification de la répartition des optométristes dans l'ensemble du Canada.

Comme n'importe quelle autre profession, l'optométrie doit faire face au problème de la retraite totale ou partielle de ses membres. Le nombre d'optométristes actifs tendrait donc à baisser, si les anciens n'étaient pas remplacés par les nouveaux diplômés des deux Écoles d'optométrie du Canada.

L'Association tient compte dans sa base de données d'éléments tels que les installations actuelles de formation, les besoins en personnel des provinces et les statistiques globales de la population nationale, afin de veiller à ce que les besoins de soins optométriques de la vue et des yeux des Canadiens soient entièrement satisfaits dans l'avenir.

iv Publications

La publication nationale officielle de l'ACO est la *Canadian Journal of Optometry* • *Revue Canadienne d'Optométrie*. La *CJO* • *RCO* est une publication trimestrielle où paraissent des comptes rendus de recherches optométriques récentes et d'études de cas cliniques, de même que de l'information à jour sur des questions liées à la santé publique et aux soins de la vue et des yeux.

LACO publie en outre plusieurs brochures consacrées à diverses questions de soins des yeux et autres questions de sécurité : vue et sports, vue et vieillissement, vue et conduite automobile, verres de contact, vision des enfants, vision au travail et terminaux à écran.

Au nom de la profession, l'ACO collabore avec le gouvernement, l'industrie, les autres professionnels de la santé, les patients ayant besoin de soins de la vue et le grand public.

L'Association publie parfois des documents spéciaux, à l'intention soit du grand public, soit des hauts fonctionnaires, députés et ministres, soit des médias, soit même de ses membres, les 2 700 optométristes canadiens.

v Perfectionnement professionnel en optométrie

Le perfectionnement professionnel (ou l'éducation permanente) sont largement du ressort des associations provinciales qui délivrent aux optométristes leur licence de pratique au Canada.

Néanmoins, l'ACO offre un mécanisme biennal d'éducation permanente grâce à son Congrès national. Le Congrès est une tribune à laquelle l'ACO invite des conférenciers à expliquer des méthodes entièrement nouvelles ou améliorées de pratique, en plus d'accueillir des exposants montrant les tout derniers instruments, appareils, montures, produits pharmaceutiques et publications à la disposition des optométristes.



L-R/G-D

Dr. Scott Brisbin, Dr. Burt Holmes, Président I.O.O.L.

- meeting jointly with leaders in other health care professions, e.g. medicine, nursing, pharmacy, to discuss general public health care issues of importance to Canadians of all ages.
- meeting internationally to discuss vision and eye care issues and services around the world. Standards of optometric practice in Canada are as high as, if not higher than, those anywhere in the world. Groups like the American Optometric Association and the International Optometric and Optical League have much both to teach to, and to learn from, Canadian optometrists.

CAO and its Member Associations

Membership in CAO is automatically extended to those practitioners who are registered in good standing with a provincial Association of Optometrists. Following are the addresses of CAO and the ten provincial optometric Associations in Canada:

Canadian Association of Optometrists

Suite 301-1785 Alta Vista Drive
Ottawa, ON
K1G 3Y6
Tel. (613) 738-4400

Alberta Association of Optometrists

2-9333-50th Street
Edmonton, AL
T6B 2L5
Tel. (403) 468-1203/1305

British Columbia Association of Optometrists

125-10431 Shellbridge Way
Richmond, BC
V6X 2W8
Tel. (604) 270-9909

vi Relations avec l'industrie et avec les autres organisations professionnelles

Les dirigeants de l'ACO s'efforcent de faire progresser la cause de l'optométrie aux niveaux national, provincial, communautaire et individuel.

Ils le font de diverses façons :

- en encourageant et en favorisant la coopération entre les professions au niveau communautaire, par exemple entre les optométristes et les responsables des services d'hygiène publique, entre les optométristes et les enseignants et entre les optométristes et les agents chargés d'assurer la sécurité dans le milieu de travail;
- en rencontrant les dirigeants des autres groupes de spécialistes de la santé, par exemple les médecins, les infirmières et les pharmaciens, pour dialoguer sur des questions générales d'hygiène publique importantes pour les Canadiens de tous les âges;
- en rencontrant des représentants d'associations professionnelles du monde entier pour dialoguer avec eux de problèmes et de services de soins de la vue et des yeux. Les normes de pratique optométrique canadiennes sont au moins aussi élevées, sinon plus élevées que celles de n'importe quel autre pays du monde. Des groupes tels que l'American Optometric Association et l'International Optometric and Optical League ont beaucoup à montrer aux optométristes canadiens, et beaucoup aussi à apprendre d'eux.

L'ACO et ses associations membres

La qualité de membre de l'ACO est automatiquement accordée aux praticiens membres en règle d'une association provinciale d'optométristes. Voici les adresses de l'ACO et des dix associations provinciales d'optométrie au Canada :

Association canadienne des optométristes

Pièce 301-1785, promenade Alta Vista
Ottawa (Ontario)
K1G 3Y6
N° de tél. (613) 738-4400

Alberta Association of Optometrists

2-9333-50th Street
Edmonton (Alberta)
T6B 2L5
N° de tél. (403) 468-1203/1305

British Columbia Association of Optometrists

125-10431 Shellbridge Way
Richmond (C.-B.)
V6X 2W8
N° de tél. (604) 270-9909

Manitoba Optometric Society

846-167 Lombard Avenue
Winnipeg (Manitoba)
R3B 0V3
N° de tél. (204) 943-9811

Association des optométristes du Nouveau-Brunswick

461, rue King, pièce 1
Fredericton (Nouveau-Brunswick)
E3B 1E5
N° de tél. (506) 458-8759

Manitoba Optometric Society

846-167 Lombard Avenue
Winnipeg, MB
R3B 0V3
Tel. (204) 943-9811

New Brunswick Association of Optometrists

461 King Street, Suite 1
Fredericton, NB
E3B 1E5
Tel. (506) 458-8759

Newfoundland Association of Optometrists

PO Box 2284
Station C
St. John's, NF
A1C 6E6
Tel. (709) 895-2679

Nova Scotia Association of Optometrists

PO Box 2718, Station M
Halifax, NS
B3J 3P7
Tel. (902) 835-2020

Ontario Association of Optometrists

212-40 St. Clair Avenue West
Toronto, ON
M4V 1M2
Tel. (416) 923-1173

Prince Edward Island Association of Optometrists

No. 147 St. Peter's Road
Charlottetown, PEI
C1A 5P6
Tel. (902) 566-1663

Association des Optométristes du Québec

133 ouest de la Commune
4^e étage — Vieux Montréal
Montréal, Québec
H2Y 2C7
Tél. (514) 849-8051

Saskatchewan Association of Optometrists

910-119-4th Avenue South
Saskatoon, SK
S7K 5X2
Tel. (306) 652-2069

CAO Executive and Council for 1987

President: Dr. Scott Brisbin, Edmonton AL
President-elect: Dr. Tom Adamack, Fernie, BC
Secretary-Treasurer: Dr. Jean-Marie Rodrigue, Montréal, Qué
Past President: Dr. Bruce Rosner, Winnipeg, MB

In addition, the following Councillors served in 1987 as representatives of their respective corporate members in CAO:

Alberta (as alternate delegate during Dr.

Brisbin's term as President): Dr. Grant Campbell

Saskatchewan: Dr. Jim Krueger and Dr. Claude Hutton

Newfoundland Association of Optometrists

C.P. 2284
Succursale C
St. John's (Terre-Neuve)
A1C 6E6
N^o de tél. (709) 895-2679

Nova Scotia Association of Optometrists

C.P. 2718, succursale M
Halifax (Nouvelle-Écosse)
B3J 3P7
N^o de tél. (902) 835-2020

Ontario Association of Optometrists

212-40 St. Clair Avenue West
Toronto (Ontario)
M4V 1M2
N^o de tél. (416) 923-1173

Prince Edward Island Association of Optometrists

No. 147 St. Peter's Road
Charlottetown (Î.-P.-É.)
C1A 5P6
N^o de tél. (902) 566-1663

Association des optométristes du Québec

133 ouest, de la Commune
4^e étage — Vieux Montréal
Montréal (Québec)
H2Y 2C7
N^o de tél. (514) 849-8051

Saskatchewan Association of Optometrists

910-119-4th Avenue South
Saskatoon (Saskatchewan)
S7K 5X2
N^o de tél. (306) 652-2069

Direction et Conseil d'administration de l'ACO, 1987

Président : D^r Scott Brisbin, Edmonton (Alberta)
Président élu : D^r Tom Adamack, Fernie (C.-B.)
Secrétaire-trésorier : D^r Jean-Marie Rodrigue, Montréal (Qc)
Président sortant : D^r Bruce Rosner, Winnipeg (Manitoba)

En outre, les conseillers suivants ont représenté en 1987 leurs associations provinciales respectives à l'ACO :

Alberta (délégué suppléant pendant le mandat du docteur Brisbin à la présidence) : D^r Grant Campbell
Saskatchewan : D^r Jim Krueger et D^r Claude Hutton

Manitoba (délégué suppléant pendant le mandat du docteur Rosner comme président sortant) : D^r Greg Perkins
Ontario : D^r Margaret Hansen des Groseilliers
Nouveau-Brunswick : D^r Joe White
Nouvelle-Écosse : D^r Michael Duffey

Manitoba (as alternate delegate during Dr. Rosner's term as Past President):

Dr. Greg Perkins

Ontario:

Dr. Margaret Hansen des Groseilliers

New Brunswick:

Dr. Joe White

Nova Scotia:

Dr. Michael Duffey

Prince Edward

Island:

Dr. David McKenna

Newfoundland:

Dr. Douglas Côté

Political Action

Given the geographical location of CAO's national office — the nation's capital — it is not surprising that the Association has as one of its principal mandates the continued co-ordination of its ongoing program of federal political action.

In 1987, CAO continued to batter its administrative ram against the wall that is the Ministry of External Affairs and its inexplicable unwillingness to expand the list of accepted passport guarantors to include optometrists.

Given the geographical location of CAO's national office — the nation's capital — it is not surprising that the Association has as one of its principal mandates the continued co-ordination of its ongoing program of federal political action.

It is a battle from which the Association, however, will not back away. The Ministry, headed by the Right Hon. Joe Clark, failed in 1987 to provide any reasonable grounds for its continued refusal to add the Doctor of Optometry to its approved list of professional guarantors and, as a result, CAO remains committed to the issue on its members' behalf.

If it seems a puzzle to the non-optometrists, the simple fact of the Ministry's continued refusal is what keeps the issue afire.

Why is it so important to CAO to see our members accorded the same privilege in the eyes of the federal government as veterinarians, chiropractors, police officers and physicians, for example? One answer is simply because it seems so important to the federal government to continue to deny Optometry that right. It has become a symbol of the unjustified prejudice and discrimination against Optometry which has emerged in so many governmental actions for so many years.

Late in the Autumn, however, CAO's entire political action program suffered a minor setback with the necessary termination of the part-time position of Governmental Affairs Co-ordinator.

But as the year ended, the Association had consolidated much of the responsibility for political action in the Executive Director's office and the "back burners" were once again being warmed up in preparation for 1988.

Dial-the-President

In another first for the profession in Canada, on a beautiful Spring day last year, CAO President Dr. Scott Brisbin sat himself down for nine hours in CAO's Conference Room and opened up a nationwide telephone call-in opportunity for any Canadian optometrist who wished to discuss a CAO issue.

Île-du-Prince-

Édouard :

Dr. David McKenna

Terre-Neuve :

Dr. Douglas Côté

Action politique

Compte tenu de l'endroit où le bureau national de l'ACO est situé — dans la capitale du Canada — il n'est pas surprenant que l'une des principales missions de l'Association soit la poursuite de la coordination de son programme permanent d'action politique au palier fédéral.

En 1987, l'ACO a continué d'essayer de percer la résistance inexplicable du ministère des Affaires extérieures à l'idée d'ajouter les optométristes à la liste des garants reconnus pour les demandes de passeport.

L'Association n'a pas l'intention d'abandonner la partie. En 1987, le ministère, dirigé par le Très honorable Joe Clark, n'a toujours pas réussi à nous donner de motifs raisonnables pour expliquer son refus d'ajouter les docteurs en optométrie à sa liste approuvée de garants. L'ACO demeure donc déterminée à gagner la bataille au nom de ses membres.

Ceux qui ne sont pas optométristes se demanderont peut-être de quoi il retourne; le fait est que, si le Ministre ne persistait pas à refuser, il n'y aurait pas de problème.

Pourquoi est-il si important pour l'ACO que le gouvernement fédéral accorde à ses membres les mêmes privilèges qu'aux vétérinaires, chiropraticiens, policiers et médecins, par exemple? C'est, entre autres raisons, que le gouvernement fédéral semble tenir énormément à persister à refuser l'égalité à l'optométrie. Cette volonté est devenue le symbole des préjugés et de la discrimination à l'endroit de l'optométrie qui, depuis de nombreuses années, caractérisent nombre de mesures gouvernementales.

Malheureusement, vers la fin de l'automne, le programme d'action politique de l'ACO a subi un revers quand il a fallu éliminer le poste à temps partiel de coordonnateur des affaires gouvernementales.

Pourtant, à la fin de l'année, l'Association avait compensé largement en confiant la responsabilité de l'action politique au bureau du directeur général, où l'on se préparait de plus belle à la campagne de 1988.

Ligne directe au président

Par une belle journée de printemps, le président de l'ACO, le docteur Scott Brisbin, a créé une nouvelle première pour la profession au Canada en s'installant pendant neuf heures dans la Salle de réunion de l'ACO pour donner à tous les optométristes canadiens désireux de parler de questions intéressant leur Association l'occasion de téléphoner à leur président.

La réaction a été extraordinaire : le docteur Brisbin a parlé avec les membres de toute une série de questions, de la Semaine de la vision au rôle et à la structure de l'Association nationale. Il a conclu que le succès de cette première expérience montre clairement qu'il vaudrait la peine de rouvrir tous les ans la ligne directe au président.

Personnel du bureau national de l'ACO

Au début du dernier trimestre de l'année 1987, les membres de la direction et du Conseil de l'ACO ont eu une dure décision à prendre.

Pendant les trois premiers trimestres de l'année, l'Association avait largement dépassé son budget de fonctionnement, en raison

Response was tremendous as Dr. Brisbin conversed with OD's on matters ranging from Save Your Vision Week to the role and structure of the national Association. He said afterwards that the success of Dial-the-President's inaugural experiment in 1987 clearly pointed to the value of its being considered annually.

CAO National Office Staff

As 1987 entered its last quarter, members of the Executive and Council of CAO were faced with a difficult decision.

The first three quarters of the year had seen the Association incur a substantial overrun on its operating budget, reflecting (i) the acquisition of the network computer system that is currently in use at the national office, (ii) less revenue than had been anticipated from the 1987 Biennial Congress, as well as (iii) the purchase of a huge inventory of French language public relations material which will gradually be sold in the coming years.

Council decided that, in addition to its operating at a reduced budget for 1988, CAO's rebuilding of a cash reserve had to be a priority as the Association entered the New Year. They directed Mr. Lambert to review national office staffing in terms of alternative ways and means of realizing the Association's priorities.

As a result, there was a restructuring of the national office's administrative personnel which saw all four part-time positions of Governmental Affairs Co-ordinator (Alex Saunders), Office Manager (Ruth Wilcox), COETF Secretary (Deanna Verhey) and Receptionist (Annette McDonald) terminated at year end 1987.

It was not the happiest of times at the national office; the termination of team staff positions is never pleasurable. But as the year drew to a close, signs were pointing once more in a positive and much more optimistic direction for the CAO's remaining administrative personnel.

As CAO entered 1988, the Association's office in Ottawa reflected a new flavour and new priorities as the new members of our support staff acclimatized themselves to the personalities, perils and politics of the profession of Optometry. In its new, trimmed down roster, the national office staff consists of the following full-time employees under **Executive Director** Gérard Lambert:

Director of Communications:	Mr. Michael J. DiCola
Executive Secretary:	Ms. Chantal Wall
Secretary of Finance:	Ms. Joyce M. Corey
Secretary/Receptionist:	Ms. Lisa Turcotte

Dr. Scott Brisbin and the Council of CAO were quick to extend a warm welcome to Joyce and Lisa who, as new staff personnel replacing three positions between the two of them, faced a substantial acclimatization challenge heading into 1988.

CAO Opens Its New Administrative Office

Although unofficially operating out of new offices since November of 1986, CAO did not officially open its new premises until April 1, 1987.

The occasion was a festive affair and featured a special opening ceremony attended by Dr. Maureen Law, Deputy Minister of National Health and Welfare. On Optometry's side, CAO Council had scheduled a meeting in the capital at the same time. The Ontario Association of Optometrists was also holding its 1987 Annual General Meeting in Ottawa and, in addition, several representatives from l'Association des Optométristes du Québec, including François Charbonneau, Executive Director, made the trip from Montréal to attend the official opening.

(i) de l'acquisition du réseau informatique actuellement utilisé au bureau national (ii) de recettes inférieures aux prévisions du Congrès biennal de 1987 et (iii) de l'achat d'un énorme inventaire de documents de relations publiques en français, qu'on vendra graduellement d'ici quelques années.

Le Conseil a décidé qu'il fallait réduire les dépenses de fonctionnement pour 1988 et que l'ACO devait se donner pour priorité de reconstituer ses réserves de liquidités dès le début de la nouvelle année. Il a donc ordonné à M. Lambert de repenser l'effectif du bureau national, afin de trouver les moyens de respecter les priorités de l'Association.

Il y a donc eu restructuration du personnel administratif du bureau national. Les quatre postes à temps partiel du coordonnateur des affaires gouvernementales (Alex Saunders), de la chef de bureau (Ruth Wilcox), de la secrétaire du FFOCE (Deanna Verhey) et de la réceptionniste (Annette McDonald) ont été abolis à la fin de l'année 1987.

Ce fut une période malheureuse pour le bureau national : abolir les postes de membres de l'équipe n'est jamais agréable. Néanmoins, à la fin de l'année, le personnel administratif restant avait de nouveau des raisons d'envisager l'avenir avec bien plus d'optimisme.

Compte tenu de l'endroit où le bureau national de l'ACO est situé — dans la capitale du Canada — il n'est pas surprenant que l'une des principales missions de l'Association soit la poursuite de la coordination de son programme permanent d'action politique au palier fédéral.

Au début de 1988, l'atmosphère du bureau de l'Association avait changé; elle reflétait les priorités nouvelles, à mesure que les nouveaux membres du personnel de soutien se mettaient au diapason des personnalités, des dangers et des problèmes et politiques de l'optométrie. La nouvelle équipe réduite du bureau national comprend quatre employés à temps plein relevant du **directeur général** Gérard Lambert :

Directeur des communications :	Michael J. DiCola
Secrétaire de direction :	Chantal Wall
Secrétaire aux finances :	Joyce M. Corey
Secrétaire-réceptionniste :	Lisa Turcotte

Le docteur Scott Brisbin et le Conseil de l'ACO se sont empressés de souhaiter une cordiale bienvenue à Joyce et à Lisa, deux nouvelles employées remplaçant trois personnes à elles deux. Elles ont bien réussi à s'acclimater, dès le début de 1988.

L'ACO ouvre ses nouveaux bureaux

L'ACO occupe ses nouveaux bureaux depuis novembre 1986, mais elle ne les a pas officiellement ouverts avant le 1^{er} avril 1987.

Dans une atmosphère de fête, l'ACO avait organisé une cérémonie d'ouverture à laquelle a participé le docteur Maureen Law, sous-ministre de la Santé nationale et du Bien-être social. Pour assurer une présence forte de l'optométrie, le Conseil avait fait coïncider une réunion dans la capitale avec l'ouverture. En outre, l'Ontario Association of Optometrists tenait aussi son assemblée générale annuelle de 1987 à Ottawa, et plusieurs représen-



L-R/G-D

Dr. Maureen Law, Dr. Scott Brisbin

Invitations had also been sent to all of CAO's new health care "neighbours" from the various Association head offices located in Ottawa and, in particular, along Alta Vista Drive, as well as to senior representatives from the many service organizations who, over the years, have maintained a strong business relationship with CAO.

CAO received a warm welcome to its new location from the 130 guests in attendance and the evening marked the formal beginning of an excellent opportunity to establish Optometry's presence in the south Ottawa community of national health care providers.

"Merry-Tyme Mingle": Our 20th Biennial Congress

The Autumn, 1987 issue of the *CJO•RCO* carried a detailed review of the activities surrounding the national Association's 20th Biennial Congress.

Local Arrangements Committee Chairperson Dr. Barbara Ifody and the optometrists of New Brunswick (along with many of their spouses) showed clearly just how hospitable and well-organized a Maritime convention can be.

Augmented by the historical surroundings of "The Greatest Little City in the East" — Saint John — 1987's "Merry-Tyme Mingle" attracted a record number of optometrists, spouses, children and exhibitors to Atlantic Canada.

From Delancey's Brigade's opening musket salvo to the final notes of The Thomists' distinctive Big Band sound at the closing banquet, 1987's Congress combined only the very best in business and social activity.

The occasion also featured another first for CAO — the first time that the Canadian National Institute for the Blind (CNIB) participated directly in the Biennial Congress. In addition to attending a special meeting of the Low Vision Section of CAO, the CNIB's Executive Director and President also met directly with CAO past President Dr. Bruce Rosner, Chairman of the Section.

tants de l'Association des optométristes du Québec, notamment son directeur général, François Charbonneau, sont venus de Montréal pour assister à la cérémonie.

LACO avait envoyé des invitations à tous ses nouveaux « voisins » professionnels de la santé des sièges sociaux des diverses associations établies à Ottawa et plus particulièrement le long de la promenade Alta Vista, ainsi qu'aux dirigeants de nombreuses organisations de services qui ont toujours eu d'excellentes relations d'affaires avec l'ACO, au fil des années.

LACO a été chaleureusement accueillie dans ses nouveaux locaux par les 130 invités présents. La soirée a marqué le début officiel d'une excellente occasion pour l'optométrie de s'imposer dans la collectivité nationale des professionnels de la santé établis dans ce quartier du sud d'Ottawa.



Suite du Directeur général

Executive Director's Office

« Merry-Tyme Mingle », notre 20^e Congrès biennal

Nous avons publié dans le numéro de l'automne 1987 de la *CJO•RCO* un compte rendu détaillé des activités qui ont entouré le 20^e Congrès biennal de l'Association.

La présidente du Comité d'organisation locale, le docteur Barbara Ifody, et ses collègues optométristes du Nouveau-Brunswick (dont beaucoup étaient accompagnés de leur conjoint) nous ont vraiment montré jusqu'à quel point une convention dans les Maritimes peut être chaleureuse et bien organisée.

Dans le superbe décor historique de « la plus grandiose des petites villes de l'Est » — Saint-Jean — le « Merry-Tyme Mingle » de 1987 a attiré un nombre record de participants, optométristes, conjoints, enfants et exposants, dans la région de l'Atlantique.

De la première salve de mousquets de la brigade Delancey jusqu'aux dernières notes de The Thomists, l'orchestre du banquet de clôture, le Congrès de 1987 a su combiner à merveille les meilleurs aspects de la poursuite des affaires de l'Association et d'une rencontre sociale.

En outre, pour la première fois dans l'histoire de l'ACO, l'Institut national canadien pour les aveugles (INCA) a directement participé au Congrès biennal. En plus d'avoir assisté à une réunion spéciale de la section de la basse vision de l'ACO, le directeur général et le président de l'INCA ont aussi rencontré directement le président sortant de l'ACO, qui est président de la section.



Dr. Les Clements N.B.A.O. Président de l'A.O.N.B.

1987 President's Award

Another highlight of the 1987 Biennial Congress was the presentation of CAO's President's Award to the Registrar of the College of Optometrists of Ontario, Dr. Irving Baker.

In whittling down his introduction to a bare-bones outline of Dr. Baker's contribution to Canadian Optometry, Past President Dr. Bruce Rosner still found he needed a good twenty minutes to review it for the benefit of the assembled guests.

Both the presentation and Dr. Baker's own remarks were detailed in the Winter, 1987 issue of the *CJO•RCO*.

Interaction '87

In 1987, the annual CAO Interaction meeting was also held in conjunction with the Biennial Congress.

The subject was **The Role and Structure of the Canadian Association of Optometrists** and the meeting was the culmination of a year-long process designed to assess CAO's strengths and weaknesses in its service to the 2,700 optometrists of Canada.

A joint gathering of Canada's national and provincial optometric leaders, Interaction '87 was planned as a review of the

Prix du président de l'ACO

Le Congrès biennal de 1987 a aussi été marqué par la présentation du Prix du président de l'ACO au registraire du Collège des optométristes de l'Ontario, le docteur Irving Baker.

Même en se limitant au strict minimum, le président sortant, le docteur Bruce Rosner, a eu besoin d'un bon 20 minutes pour commencer à exposer aux invités toute la contribution du docteur Baker à l'optométrie canadienne.

Le texte de l'exposé du docteur Rosner et celui de la réponse du docteur Baker ont été reproduits dans le numéro de l'hiver 1987 de la *CJO•RCO*.

Les optométristes (ou les amis de l'optométrie, dans le cas de la toute dernière section) qui aimeraient plus d'information sur l'une ou l'autre des sections de l'ACO sont priés d'écrire à la Section, aux soins du bureau national.

Interaction 87

En 1987, la réunion annuelle d'Interaction de l'ACO a été combinée, elle aussi, avec le Congrès biennal.

La réunion était axée sur **Le rôle et les structures de l'Association canadienne des optométristes** : c'était le point culminant d'un processus d'une durée d'un an, grâce auquel l'ACO peut évaluer les points forts et les faiblesses des services qu'elle offre aux 2 700 optométristes du Canada.

Interaction 87 a réuni les dirigeants nationaux et provinciaux de l'optométrie canadienne, qui ont réévalué le mandat de l'Association nationale, tel qu'il est actuellement mis en oeuvre par l'ACO. La réunion devait aussi être une occasion de parler des propositions des associations membres au sujet des moyens susceptibles d'amener le bureau national à mieux refléter leurs priorités. Au cours de la journée de discussions, les participants ont formulé toute une série de propositions et de commentaires constructifs, dont beaucoup seront manifestement retenus et mis en oeuvre au cours des années à venir.

Sections de l'ACO/Formation des Amis de l'optométrie canadienne

Les Amis de l'optométrie canadienne sont la nouvelle section de promotion de l'optométrie; la première section provinciale, celle de l'Alberta, a été fondée en 1987 à l'Assemblée générale annuelle de l'Alberta Association of Optometrists. Le président de l'ACO, le docteur Scott Brisbin, et son épouse Calli avaient l'idée en tête depuis des années. Le docteur Brisbin en a parlé dans le Mot du président de la *CJO•RCO* et Calli Brisbin a été élue première présidente de la section albertaine.

La section des Amis de l'optométrie canadienne est la seule des sections de l'ACO dont les membres n'ont pas besoin d'être optométristes. Elle a pour objet de réunir les amis de la profession convaincus de son mérite au point d'être disposés à s'engager pour élargir le rôle de l'optométrie dans le système canadien des soins de santé.

national Association's mandate as is presently being realized by CAO. The meeting was also planned as an occasion to discuss corporate member suggestions for ways and means by which the National office's role could be refined to reflect their priorities. The daylong session produced a series of positive commentaries and suggestions, many of which undoubtedly will be further assessed and implemented in the years ahead.

...CAO Sections/Formation of FOCOS

FOCOS is the Friends of Canadian Optometry Section and its first provincial chapter, in Alberta, was inaugurated in 1987 at the Annual General Meeting of the Alberta Association of Optometrists. FOCOS had been a pet project of CAO President Dr. Scott Brisbin and his wife, Calli, for a number of years. Dr. Brisbin has written about it in his CAO President's Podium column in the *CJO•RCO* and Calli has been elected the first President of the Alberta Chapter.

The only CAO Section open to non-optometrists, FOCOS is designed to draw together those supporters of the profession who have come to believe in, and are prepared to work towards, the goal of expanding Optometry's role in the Canadian Health Care Delivery System.

The principle behind the formation of CAO Sections has been essentially to offer interested optometrists the opportunity to exchange information and to attend gatherings of other optometrists interested in a specialty area of vision and eye care.

Members (or friends, in the case of FOCOS) interested in further information about any of CAO's Sections are invited to write to the Section, in care of the national administrative office.

Adding FOCOS to the roster brings the total number of CAO Sections to seven, including Aviation Vision, Children's Vision, Contact Lenses, Low Vision, Sports Vision and Voluntary Optometric Services.

Members (or friends, in the case of FOCOS) interested in further information about any of CAO's Sections are invited to write to the Section, in care of the national administrative office.

The Canadian Optometric Education Trust Fund (COETF)

What does a Loyalist drummer have to do with funding optometric education in Canada? Until Friday, August 7, 1987, nothing whatsoever. But on that day, along with National COETF Fundraising Chairman Dr. Reid MacDuff, a young member of Saint John, New Brunswick's Delancey's Brigade held centre stage in the Loyalist Room in the City's Harbour Square Trade and Convention Centre.

The occasion was the finale — the Grand Prize Draw — of the Canadian Optometric Education Trust Fund (COETF)'s 1987 Campaign to initiate Phase 2 of its fundraising program, a large part of which hinged on an appeal to the ophthalmic industrial community.

Their purpose (that is, Dr. MacDuff and the Loyalist drummer) was to command the attention of some 400 Congress attendees filling the room — not too difficult a task when one

Fondamentalement, les sections de l'ACO ont toujours été fondées parce qu'on voulait donner aux optométristes la possibilité d'échanger de l'information et de rencontrer des collègues qui partageaient leur intérêt pour une spécialité des soins de la vue et des yeux. Avec la création de cette nouvelle section des Amis de l'optométrie canadienne, l'ACO compte désormais sept sections, les six autres étant Vision en aviation, Vision des enfants, Verres de contact, Basse vision, Vue et sports et Services optométriques bénévoles.

Les optométristes (ou les amis de l'optométrie, dans le cas de la toute dernière section) qui aimeraient plus d'information sur l'une ou l'autre des sections de l'ACO sont priés d'écrire à la Section, aux soins du bureau national.

En 1987, l'ACO a été très honorée de pouvoir nommer Robert Bateman président honoraire de cette semaine d'activités.

Fonds de fiducie des optométristes canadiens pour l'éducation (FFOCE)

Quel est le rapport entre un tambour loyaliste et le financement de l'éducation en optométrie au Canada? Rien du tout, jusqu'au vendredi 7 août 1987. Ce jour-là, un jeune tambour de la Brigade Delancey de Saint-Jean du Nouveau-Brunswick était aux côtés du président de la campagne de financement du FFOCE, le docteur Reid MacDuff, au beau milieu de la salle Loyalist, au Centre des congrès et des conférences d'Harbour Square, à Saint-Jean.

Le tambour et le président étaient réunis pour la finale — le Grand tirage — de la Campagne de 1987 du Fonds de fiducie des optométristes canadiens pour l'éducation, qui lançait la Phase 2 de sa campagne de souscription, dont une grande partie dépendait de la réaction de la communauté industrielle ophthalmologique.

Si le docteur MacDuff et le jeune tambour étaient là, c'était pour attirer l'attention des quelque 400 participants au Congrès réunis dans la salle. Et ce n'était pas très difficile, si l'on songe que l'heureux gagnant du premier prix allait gagner un magnifique voyage organisé en Champagne, à bord d'une péniche-hôtel de luxe.

Au début de l'année, les membres du Conseil d'administration du Fonds avaient consacré une énergie débordante à la rédaction du scénario et à la production de «COETF Update» (Le point sur le FFOCE), une vidéo publicitaire de 15 minutes présentée comme une émission d'informations et conçue pour présenter le Fonds aux profanes et pour rafraîchir la mémoire de ceux dont l'appui n'a pas été sollicité depuis bientôt dix ans, particulièrement les optométristes diplômés depuis 1978.

«COETF Update» a été présentée en première pendant les festivités qui ont précédé le tirage. Le message a été très bien reçu. La Campagne a connu dès le début un succès remarquable : Allergan/Humphrey et les Services optométriques de l'Association des optométristes du Québec (SOAQO) ont tous deux remis une somme importante au FFOCE, comme on a pu le lire dans le numéro de l'automne 1987 de la *CJO•RCO*, avec les résultats du tirage.

Entre-temps, le Fonds continuera à se servir de la vidéo comme un élément essentiel de ses présentations des deux ou trois prochaines années, chaque fois qu'il organisera des activités locales, provinciales ou nationales de souscription.



Delancey's Brigade

considers that one lucky ticket holder was to receive the first prize of a lavishly appointed tour of France's Champagne district aboard a luxury hotel barge.

Earlier in the year, the Trustees had spent a tremendous amount of energy in the scripting and production of "COETF Update", a fifteen minute promotional video developed along a newscast format. The program's purpose is to introduce the Fund to the uninitiated, and to re-introduce the Fund to those whose last direct appeal had been made almost a decade previous, particularly those optometrists who have graduated since 1978.

"COETF Update" was also unveiled as part of the preamble and festivities leading to the draw and was very well received. As a measure of the inaugural success of the Campaign, Allergan/Humphrey and les Services Optométriques de l'Association des Optométristes du Québec (SOAOQ) each provided a substantial corporate donation to the COETF (as was reported in the Autumn, 1987 *CJO•RCO*, along with the draw results).

The video, meanwhile, is planned as the foundation for the next two to three years' of the Fund's local, provincial or national fundraising events.

Save Your Vision Week in Canada 1987

"Red Fox on the Prowl" and "Evening Lady" are two splendid works of art produced by renowned Canadian wildlife artist Robert Bateman. The first depicts a sharply alert red fox about to enter an area of low, dense brush, soon to leave you, the

Semaine de la vision au Canada 1987

« Renard roux chassant » et « La Dame du soir » sont de splendides tableaux du célèbre peintre canadien de la faune Robert Bateman. Le premier représente un renard roux prêt à s'enfoncer dans un taillis d'épaisses broussailles, où il disparaîtra bientôt, tous les sens en éveil, en ne laissant derrière lui que la trace de ses pas dans la neige.

« La Dame du soir » représente, dans une lumière chaude, un jeune gerfaut femelle perché sur un surplomb rocheux au-dessus de ce qui pourrait être le lac Supérieur, en début de soirée.

Dans les deux cas, il ne fait aucun doute que « La vie, faut voir ça! », et c'était le thème de la Semaine de la vision au Canada.

En 1987, l'ACO a été très honorée de pouvoir nommer Robert Bateman président honoraire de cette semaine d'activités. Les deux tableaux de M. Bateman ont été les points focaux de la campagne.

« Renard roux chassant » a inspiré un poster primé, tandis que « La Dame du soir » a été reproduite sur la couverture du numéro de l'hiver 1986 de la *CJO•RCO*. En outre, M. Bateman a autorisé son éditeur, Mill Pond Press, à donner à l'ACO le droit d'utiliser cinq autres de ses oeuvres dans une annonce d'intérêt public télévisée pour la campagne « La vie, faut voir ça! » de 1987.

Robert Bateman est membre de pas moins de dix-neuf organisations nationales et internationales de préservation des ressources naturelles et humaines du monde. L'ACO est très heureuse d'avoir pu obtenir son appui pour ses campagnes nationales, provinciales et locales de préservation de la vue.

viewer, with only his footprints in the snow as a sign he was there at all.

"Evening Lady" is a warmly lit view over the shoulder of a young, female gyrfalcon perched on a rocky outcrop overlooking what might be Lake Superior early in the evening.

Both leave no doubt whatsoever that Life, indeed, Is Worth Seeing, the theme of Save Your Vision Week in Canada.

For 1987, CAO was delighted and proud to present Robert Bateman as the Honorary Chairperson for the week-long event. Mr. Bateman's two paintings, noted above, were the focal points of this year's campaign.

"Red Fox on the Prowl" was incorporated into an award winning poster and "Evening Lady" graced the cover of the Winter, 1986 issue of the *Canadian Journal of Optometry* * *la Revue Canadienne d'Optométrie*. In addition to these paintings, Mr. Bateman authorized his publisher, Mill Pond Press, to extend to CAO the rights to use five other of his works in the production of a 1987 "Life Is Worth Seeing" 30-second Public Service Announcement for television.

For 1987, CAO was delighted and proud to present Robert Bateman as the Honorary Chairperson for the week-long event.

Mr. Bateman himself is a member of no less than nineteen national and international organizations dedicated to the preservation of the world's natural and human resources. It was a distinct pleasure for CAO to be able to affiliate him with our own national, provincial and local campaigns dedicated to the preservation of our sense of sight.

To cap off the 1987 Save Your Vision Week observances, CAO was pleased to present a cheque to the Canadian Wildlife Foundation in honour of, and in appreciation for, Mr. Bateman's participation as Honorary Chairperson. The cheque was later presented in a Centre Block office on Parliament Hill by CAO Executive Director Gerard Lambert and Director of Communications Mike DiCola to Senator Rhéal Belisle, President of the Foundation and Mr. Kenneth Brynaert, Executive Director of the Canadian Wildlife Federation, of which the Foundation is a charitable arm.

CJO • RCO/Special Low Vision Issue

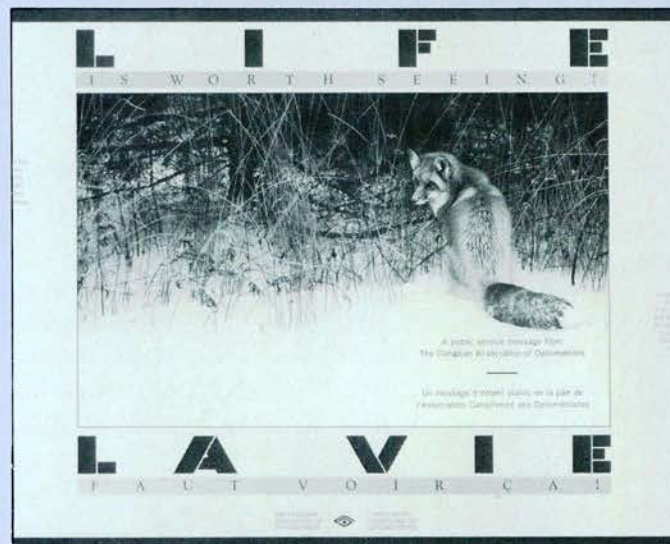
The official publication of the Canadian Association of Optometrists, the *CJO•RCO*, continued to present a number of valuable new research papers, as well as volumes of Association news, to the 2,700 Doctors of Optometry who hold Association membership in Canada.

In 1987, the summer issue was a unique theme presentation devoted entirely to papers that were delivered several months previously at the International Symposium on Low Vision, held at the School of Optometry, University of Waterloo.

The papers, like the forum itself, transcended all professional boundaries in the authors' common goal of improving the lot of the low vision patient in Canada and, ultimately, around the world.

Symposium organizers Drs. George C.S. Woo and J. Graham Strong were able to take a great deal of pride in the results of the event, a pride shared by the *CJO•RCO* in having had the occasion to publish several of the best of the featured presentations.

Enfin, pour bien marquer la Semaine de la vision 1987, l'ACO s'est fait un plaisir de remettre un chèque à la Fondation canadienne de la faune en remerciement des services de M. Bateman comme président honoraire. Le chèque a été présenté après la fin de la Semaine au sénateur Rhéal Belisle, président de la Fondation, et à M. Kenneth Brynaert, directeur général de la Fédération canadienne de la faune, dont la Fondation est l'organisme de charité, dans un bureau de l'Édifice du Centre de la Colline du Parlement, par le directeur général de l'ACO, Gérard Lambert, et par le directeur des Communications, Mike DiCola.



CJO • RCO/Numéro spécial sur la basse vision

La publication officielle de l'Association canadienne des optométristes, la *CJO•RCO*, a continué à faire paraître de nombreux rapports de recherches ainsi que d'abondantes nouvelles sur l'Association pour les 2 700 docteurs en optométrie membres de l'ACO au Canada.

Le numéro de l'été 1987 était consacré entièrement à des communications présentées plusieurs mois auparavant au Symposium international sur la basse vision à l'École d'optométrie de l'Université de Waterloo.

Les communications, tout comme le symposium lui-même, transcendent toutes les spécialités professionnelles, car tous les auteurs sont animés du même désir d'améliorer le sort des patients souffrant de basse vision au Canada et dans le monde entier.

Les organisateurs du symposium, les docteurs George C.S. Woo et J. Graham Strong, ont de quoi être très fiers des résultats obtenus, et la *CJO•RCO* partage leur fierté, car elle a eu le plaisir de publier plusieurs des meilleures communications présentées à cette occasion.

Vingt ans d'optométrie à Waterloo

L'année 1987 sera celle du 20^e anniversaire de l'optométrie à l'Université de Waterloo. Afin de marquer cet événement, l'École et l'Université se sont donné la main pour organiser une série d'activités et de cérémonies sans précédent.

Le Dr E.J. «Ted» Fisher, le premier doyen de l'École, qui a réussi à obtenir l'affiliation des optométristes ontariens à une

20 Years of Optometry at Waterloo

1987 marked the twentieth anniversary of Optometry at the University of Waterloo. To celebrate and acknowledge this event, the School and the University combined to offer an unprecedented series of activities and honours.

Dr. E.J. "Ted" Fisher, who had served as the School's first Dean, and who was instrumental in securing Ontario Optometry's University affiliation during the turbulent mid-60's, was awarded the distinction of being named a Professor Emeritus of the University of Waterloo.

There is, therefore, no one single catch-all phrase to capture the ups and downs of 1987.

In another, quite extraordinary decision, the Board of Governors of the University also voted to offer an O.D. degree "Ad Eundem Gradum" (literally, "To the Same Grade") to every optometrist who had been graduated from the Ontario College of Optometry before its affiliation with the University was made official in 1967. Over two hundred optometrists accepted the distinction, instantly adding their names to the roster of Waterloo alumni as a result, truly a unique event in the history of Optometry in Canada.

Conclusion

It is a tradition in the format of an Annual Report for the reporting body, in its concluding summary, to attempt to label the past year.

The Challenge of Change, A Year of Transition, A Year of Rebuilding, Consolidation and Co-ordination, Looking to the Future — these are all examples of the slogan type of labels which may appear in an organization's annual report to its members.

Yet looking again at the preceding stream of titles, there is a valid reason for applying any and all of them to CAO in 1987. As a National Association, CAO met and overcame a wide variety of challenges last year. In settling into its Alta Vista environment, reassessing and adjusting its roster of office support personnel, certainly the Association faced transition, rebuilding, consolidation and co-ordination, some of it self-initiated, some of it imposed by external circumstances.

And, of course, as 1988 brings with it its own promises of major changes in the federal political scene, CAO's activity in 1987 was geared to setting the foundation for the future profile of Optometry in Canada's Health Care System.

There is, therefore, no one single catch-all phrase to capture the ups and downs of 1987. Your Council and staff, however, take a good deal of pride in the image of the profession as it is presented and sustained by CAO's activities. Operating with a relatively small group of dedicated people, representing a numerically small group of professional members, CAO's public profile is certainly no less visible and no less efficient for its smaller resource base. In fact, we undoubtedly benefit from this fact.

To turn a ponderously loaded supertanker, after all, requires ten miles of open ocean. In a sloop, on the other hand, a crew may change direction almost instantaneously as the circumstances of the wind require.

université au cours de la période turbulente du milieu des années 1960, s'est vu décerner le titre de professeur honoraire de l'Université de Waterloo.

Le Conseil des gouverneurs de l'Université a pris une décision tout à fait exceptionnelle en votant d'offrir un diplôme en optométrie « Ad Eundem Gradum » (littéralement « Au même niveau ») à tous les optométristes diplômés de l'Ontario College of Optometry avant que l'affiliation du Collège à l'Université ne devienne officielle, en 1967. Plus de 200 optométristes ont accepté cet honneur, et leurs noms ont immédiatement été ajoutés à la liste des diplômés de l'Université de Waterloo, en un geste absolument unique dans l'histoire de l'optométrie au Canada.

Conclusion

À la fin d'un rapport annuel, la tradition veut que l'organisme qui dépose le rapport tente, dans sa conclusion, de définir l'année dont il a parlé.

Défi du changement, Année de transition, Année de reconstruction, de regroupement et de coordination, Vers l'avenir-toutes ces formules pourraient figurer, comme des slogans, dans le rapport annuel d'une organisation à ses membres.

Et pourtant, si l'on étudie d'un peu plus près cette série de titres, il faut bien reconnaître que tous et chacun d'entre eux s'appliquent fort bien aux expériences qu'a vécues l'ACO en 1987. En tant qu'association nationale, l'ACO a dû relever toute une série de défis l'année dernière. Pour s'installer dans ses nouveaux quartiers de la promenade Alta Vista, pour réévaluer la

Il n'y a par conséquent aucun slogan simple et facile qui rende compte de tous les hauts et les bas de l'année 1987.

situation de son personnel de bureau et pour faire les modifications qui s'imposaient, elle a sûrement dû traverser une période de transition, de reconstruction, de regroupement et de coordination, dans certains cas de son propre chef et dans d'autres cas en raison de la conjoncture extérieure.

Bien entendu, tout comme l'année 1988 promet de nous apporter de grands changements sur la scène politique fédérale, l'activité de l'ACO en 1987 a tout entière consisté à jeter les bases de l'image future de l'optométrie dans le système canadien des soins de santé.

Il n'y a par conséquent aucun slogan simple et facile qui rende compte de tous les hauts et les bas de l'année 1987. Néanmoins, votre Conseil et le personnel du bureau national sont fiers de l'image de la profession qui est projetée par les activités de l'ACO. Un groupe relativement restreint de personnes dévouées représentant un petit nombre de spécialistes projetée de façon très efficace une image publique très positive de l'ACO, malgré des ressources très limitées. En fait, même les limites de nos ressources sont parfois un avantage.

Alors qu'il faut 15 kilomètres pour faire tourner un superpétrolier lourdement chargé, quelques marins suffisent à la manoeuvre d'un petit voilier, qui peut réagir quasi instantanément aux fluctuations du vent.

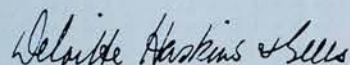
Suite 630
99 Bank Street
Ottawa, Ontario K1P 6B9
(613) 563-0321
Cable DEHANDS

AUDITORS' REPORT

To the Members of
The Canadian Association of Optometrists:

We have examined the balance sheet of the Canadian Association of Optometrists as at December 31, 1987 and the statements of loss and surplus and of changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the Association as at December 31, 1987 and the results of its operations for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.



Deloitte, Haskins and Sells
Chartered Accountants

February 10, 1988

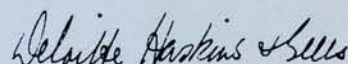
Suite 630
99 Bank Street
Ottawa, Ontario K1P 6B9
(613) 563-0321
Cable DEHANDS

RAPPORT DES VERIFICATEURS

Aux membres de
L'Association canadienne des optométristes

Nous avons vérifié le bilan de L'Association canadienne des optométristes au 31 décembre 1987 ainsi que l'état des résultats et de l'excédent cumulatif et l'état de l'évolution de la situation financière de l'exercice terminé à cette date. Notre vérification a été effectuée conformément aux normes de vérification généralement reconnues, et a comporté par conséquent les sondages et autres procédés que nous avons jugés nécessaires dans les circonstances.

A notre avis, ces états financiers présentent fidèlement la situation financière de l'Association au 31 décembre 1987 ainsi que les résultats de son exploitation pour l'exercice terminé à cette date selon les principes comptables généralement reconnus, appliqués de la même manière qu'au cours de l'exercice précédent.



Deloitte, Haskins and Sells
Comptables Agréés

le 10 février 1988

**CANADIAN ASSOCIATION
OF OPTOMETRISTS
STATEMENT OF LOSS AND
SURPLUS
YEAR ENDED
DECEMBER 31, 1987**

**L'ASSOCIATION CANADIENNE
DES OPTOMETRISTES
ETAT DES RESULTATS ET DE
L'EXCEDENT CUMULATIF
DE L'EXERCICE TERMINE LE
31 DECEMBRE 1987**

	1987		1986	
REVENUE	Actual	Budget (Note 7)	Actual	Budget (Note 7)
Membership contributions —				
Schedule 1	\$367,458	\$368,380	\$320,884	\$316,000
Literature sales	6,345	15,000	27,805	3,000
Investment income	8,457	5,000	11,985	4,000
1987 congress (net of expenses)	(3,128)	16,000	—	—
Administration fees — related organizations	27,000	14,620	13,788	25,000
Canadian Journal of Optometry —				
Net income (loss) — Schedule 2	(3,327)	—	29,964	—
Agenda roster	2,334	2,000	2,346	2,555
Optometrist desk reference (net)	6,445	2,000	(1,824)	2,000
Miscellaneous	2,058	1,000	2,697	—
	413,642	424,000	407,645	352,555

EXPENSES				
Bad debts	150	—	765	—
Bank charges and interest	388	500	493	500
Committee travel and administration	3,165	10,000	2,186	15,855
Consultation fees	—	15,000	—	25,000
Depreciation	9,424	—	4,697	3,000
Equipment rental	2,072	5,000	3,825	4,005
Employee benefits	12,646	10,000	10,249	9,000
Executive Director and Assistants				
General	10,000	10,000	9,000	9,000
Travel	7,000	7,000	6,500	5,000
Insurance	—	1,000	491	750
International Optometric and Optical League	6,007	6,500	6,768	7,210
Loss on disposal of fixed assets	2,635	—	—	—
Maintenance and repairs	221	2,500	469	2,500
Meetings	50,650	70,000	92,191	57,700
Miscellaneous	2,777	1,000	3,739	1,000
Postage	15,889	8,000	4,184	8,000
President				
Office	10,000	10,000	10,000	10,000
Travel	31,994	15,000	24,114	13,000
Printing and office supplies	21,175	15,000	11,619	9,000
Professional fees	14,478	20,000	22,284	17,535
Public information	54,519	31,000	45,254	15,000
Relocation costs	2,242	—	7,194	—
Rent, light and cleaning	47,970	25,000	16,912	17,000
Salaries	157,738	148,000	112,281	111,000
Subscriptions	1,832	2,500	2,573	2,500
Telephone and telegraph	14,557	10,000	9,188	8,000
Translation	3,810	1,000	252	1,000
	483,339	424,000	407,228	352,555

NET (LOSS) INCOME	(69,697)	\$ —	417	\$ —
SURPLUS, BEGINNING OF YEAR	5,959		5,542	
APPROPRIATION FROM RESERVE FOR WORKING CAPITAL	65,000		—	
SURPLUS, END OF YEAR	\$ 1,262		\$ 5,959	

REVENUS	
Contributions des membres —	
Annexe 1	\$316,000
Ventes littéraires	
Revenu d'investissement	
Congrès de 1987 (net)	
Cotisations — organismes apparentés	
La Revue Canadienne d'Optométrie — Bénéfice net (perte nette) —	
Annexe 2	
Agenda-liste	
Annuaire des optométristes (net)	
Divers	

FRAIS	
Créances irrécouvrables	
Frais bancaires et intérêt	
Déplacements et administration des comités	
Frais de consultation	
Amortissement	
Location de matériel	
Charges sociales	
Haute direction et assistants	
Général	
Déplacements	
Assurances	
International Optometric and Optical League	
Perte sur l'aliénation d'immobilisations	
Entretien et réparations	
Réunions	
Divers	
Poste	
Président	
Bureau	
Déplacements	
Imprimerie et fournitures de bureau	
Honoraires professionnels	
Information publique	
Frais de déménagement	
Loyer, électricité et entretien	
Salaires	
Souscriptions	
Téléphone et télégraphe	
Traduction	

(PERTE NETTE) BENEFICE NET

EXCEDENT CUMULATIF, DEBUT
DE L'EXERCICE

AFFECTATION DE RESERVE
POUR FONDS DE ROULEMENT

EXCEDENT CUMULATIF, FIN DE
L'EXERCICE

**CANADIAN ASSOCIATION OF
OPTOMETRISTS
BALANCE SHEET
DECEMBER 31, 1987**

	1987	1986
ASSETS		
CURRENT ASSETS		
Cash	\$ 34,683	\$ 9,600
Deposit certificates	6,128	61,426
Accounts receivable	15,938	24,274
Due from related organization (Note 3)	1,870	2,438
Prepaid expenses	8,507	10,000
	<u>67,126</u>	<u>107,738</u>
FEDERAL GOVERNMENT RELATIONS FUND — Schedule 3	15,874	21,715
FIXED ASSETS (Note 4)	<u>35,180</u>	<u>34,417</u>
	\$118,180	\$163,870
LIABILITIES		
CURRENT LIABILITIES		
Accounts payable and accrued charges	\$ 48,403	\$ 41,196
Due to Federal Government Relations Fund	15,816	—
Deferred revenue	6,825	—
	<u>71,044</u>	<u>41,196</u>
MEMBERS' EQUITY		
FEDERAL GOVERNMENT RELATIONS FUND — Schedule 3	15,874	21,715
RESERVE FOR WORKING CAPITAL (Note 5)	30,000	95,000
SURPLUS	<u>1,262</u>	<u>5,959</u>
	<u>47,136</u>	<u>122,674</u>
	\$118,180	\$163,870

**L'ASSOCIATION CANADIENNE DES
OPTOMETRISTES
BILAN
AU 31 DECEMBRE 1987**

ACTIF	
ACTIF A COURT TERME	
Encaisse	
Certificats de dépôt	
Débiteurs	
Avances à des organismes liés (note 3)	
Frais payés d'avance	
FONDS DES RELATIONS AVEC LE GOUVERNEMENT FEDERAL — Annexe 3	
IMMOBILISATIONS (note 4)	
PASSIF	
PASSIF A COURT TERME	
Créditeurs et frais courus	
Avances du Fonds des relations avec le gouvernement fédéral	
Revenu reporté	
AVOIR DES MEMBRES	
FONDS DES RELATIONS AVEC LE GOUVERNEMENT FEDERAL — Annexe 3	
RESERVE POUR FONDS DE ROULEMENT (note 5)	
EXCEDENT CUMULATIF	

**CANADIAN ASSOCIATION OF
OPTOMETRISTS
STATEMENT OF CHANGES IN
FINANCIAL POSITION
YEAR ENDED
DECEMBER 31, 1987**

	1987	1986
INCREASE (DECREASE) IN CASH RESULTING FROM:		
OPERATING ACTIVITIES		
Operations		
Net (loss) income	\$ (69,697)	\$ 417
Items not affecting cash		
Depreciation and amortization	9,424	4,697
Loss on disposal of fixed assets	2,635	—
	<u>(57,638)</u>	<u>5,114</u>
Changes in working capital components		
Accounts receivable	8,336	(16,549)
Due from related organizations	568	4,105
Prepaid expenses	1,493	(10,000)
Accounts payable and accrued charges	7,207	24,301
Due to Federal Government Relations Fund	15,816	—
Deferred revenue	6,825	—
Cash generated from operations	<u>(17,393)</u>	<u>6,971</u>
INVESTING ACTIVITIES		
Additions to fixed assets	(14,155)	(59,159)
Allowance for leasehold improvements from landlord	—	31,140
Cash used for investing activities	<u>(14,155)</u>	<u>(28,019)</u>
FINANCING ACTIVITIES		
Proceeds on disposal of fixed assets	1,333	—
DECREASE IN CASH AND DEPOSIT CERTIFICATES	<u>(30,215)</u>	<u>(21,048)</u>
CASH AND DEPOSIT CERTIFICATES, BEGINNING OF YEAR	71,026	92,074
CASH AND DEPOSIT CERTIFICATES, END OF YEAR	\$ 40,811	\$ 71,026

**L'ASSOCIATION CANADIENNE DES
OPTOMETRISTES
ETAT DE L'EVOLUTION DE LA
SITUATION FINANCIERE
DE L'EXERCICE TERMINE LE 31
DECEMBRE 1987**

AUGMENTATION (DIMINUTION) DE L'ENCAISSE RESULTANT DE:
ACTIVITES D'EXPLOITATION
Exploitation
(Perte nette) bénéfice net
Eléments n'affectant pas l'encaisse
Amortissement
Perte sur l'aliénation d'immobilisations
Evolution des postes du fonds de roulement
Débiteurs
Avances à des organismes liés
Frais payés d'avance
Créditeurs et frais courus
Avances du Fonds des relations avec le gouvernement fédéral
Revenu reporté
Encaisse provenant de l'exploitation
ACTIVITES D'INVESTISSEMENT
Acquisitions d'immobilisations
Subvention du locateur pour améliorations locatives
Encaisse utilisée pour l'investissement
ACTIVITES DE FINANCEMENT
Produit de l'aliénation d'immobilisations
DIMINUTION DE L'ENCAISSE ET CERTIFICATS DE DEPOT
ENCAISSE ET CERTIFICATS DE DEPOT, DEBUT DE L'EXERCICE
ENCAISSE ET CERTIFICATS DE DEPOT, FIN DE L'EXERCICE

**CANADIAN ASSOCIATION OF
OPTOMETRISTS
NOTES TO THE FINANCIAL STATEMENTS
DECEMBER 31, 1987**

1. DESCRIPTION OF BUSINESS

The Canadian Association of Optometrists is a national organization formed by the Optometric profession to act on its behalf with government, industry, vision care patients, the public at large, other health professionals, as well as its own professional membership with respect to issues of vital interest to optometrists.

2. SIGNIFICANT ACCOUNTING POLICY

Fixed assets

Furniture and fixtures, equipment and leasehold improvements are stated at cost and depreciation is recorded using the straight-line method.

3. RELATED PARTY TRANSACTIONS

During the year the Canadian Association of Optometrists provided administrative services to the Canadian Optometric Education Trust Fund as follows:

Value of Services Provided in 1987		Amounts Receivable At December 31, 1987
Actual	Budget	
\$12,000	\$10,000	\$1,870

4. FIXED ASSETS

	Cost	Accumulated Depreciation	Net Book Value	Depreciation Rates
Furniture & fixtures	\$28,971	\$23,434	\$ 5,537	10 yrs.
Computer equipment	33,695	7,811	25,884	5 yrs.
Leasehold improvements	4,860	1,101	3,759	5 yrs.
	<u>\$67,526</u>	<u>\$32,346</u>	<u>\$35,180</u>	

5. RESERVE FOR WORKING CAPITAL

The reserve for working capital was established by the Board of Directors to ensure that the Association will be adequately funded to support future operations. Appropriations from operations to the working capital reserve will be approved by the Board each year until a balance representing 50% of the previous year's operating expenditures is attained.

	1987	1986
Balance, beginning of year	\$ 95,000	\$95,000
Appropriation during the year	(65,000)	—
Balance, end of year	<u>\$ 30,000</u>	<u>\$95,000</u>

6. LEASE COMMITMENTS

The Association's office premises are under lease until October 31, 1991 at an annual rent of \$26,815.

7. COMPARATIVE FIGURES

Certain of the prior year's comparative figures have been reclassified to conform to the current year's presentation.

The budget figures are presented for reference only and are not covered by the audit opinion of Deloitte Haskins & Sells.

**L'ASSOCIATION CANADIENNE DES
OPTOMETRISTES
NOTES AFFERENTES AUX ETATS FINANCIERS
LE 31 DECEMBRE 1987**

1. DESCRIPTION DE L'ENTREPRISE

L'Association canadienne des optométristes est un organisme national mis sur pieds par cette profession afin d'agir en son nom auprès des gouvernements, de l'industrie, des patients, du grand public, des autres professionnels du milieu de la santé et de ses propres membres en ce qui a trait aux questions d'importance pour les optométristes.

2. PRINCIPALE CONVENTION COMPTABLE

Immobilisations

L'équipement de bureau, l'équipement informatique et les améliorations locatives sont comptabilisés au coût et sont amortis selon la méthode de l'amortissement constant.

3. OPERATIONS ENTRE APPARENTES

Au cours de l'exercice, L'Association canadienne des optométristes a fourni des services administratifs au Fonds de fiducie des optométristes canadiens pour l'éducation:

Valeur des services fournis en 1987		Comptes débiteurs au 31 décembre 1987
Réel	Budget	
\$12,000	\$10,000	\$1,870

4. IMMOBILISATIONS

	Coût	Amortissement Accumulé	Valeur Comptable Nette	Taux D'Amortissement
Equipement de bureau	\$28,971	\$23,434	\$ 5,537	10 ans
Equipement informatique	33,695	7,811	25,884	5 ans
Améliorations locatives	4,860	1,101	3,759	5 ans
	<u>\$67,526</u>	<u>\$32,346</u>	<u>\$35,180</u>	

5. RESERVE POUR FONDS DE ROULEMENT

Le comité d'administration a établi une réserve pour fonds de roulement afin d'assurer le financement adéquat d'exploitations futures. Le comité propose d'effectuer des virements annuels du compte d'exploitation à la réserve jusqu'à ce que cette dernière atteigne un solde de 50% des dépenses d'exploitation de l'exercice antérieur.

	1987	1986
Solde, début de l'exercice	\$ 95,000	\$95,000
Virement au cours de l'Exercice	(65,000)	—
Solde, fin de l'exercice	<u>\$ 30,000</u>	<u>\$95,000</u>

6. ENGAGEMENTS EN VERTU DE BAUX

Les bureaux de l'Association sont situés dans des locaux loués dont le bail vient à échéance le 31 octobre 1991. Le loyer annuel à payer en vertu du bail s'élève à \$26,815.

7. CHIFFRES CORRESPONDANTS

Le classement de certains chiffres de l'exercice précédent a été modifié pour les rendre conformes à la présentation adoptée pour l'exercice écoulé.

Le budget est présenté pour fins de comparaison seulement et n'est pas couvert par le rapport des vérificateurs.

SCHEDULE 1**ANNEXE 1**

**CANADIAN ASSOCIATION OF
OPTOMETRISTS
MEMBERSHIP
CONTRIBUTIONS
YEAR ENDED
DECEMBER 31, 1987**

**L'ASSOCIATION CANADIENNE
DES OPTOMETRISTES
CONTRIBUTIONS DES
MEMBRES
DE L'EXERCICE TERMINE LE
31 DECEMBRE 1987**

	1987		1986		
	Actual	Budget	Actual	Budget	
British Columbia	\$ 54,600	\$ 55,380	\$ 51,622	\$ 47,750	Colombie Britannique
Alberta	54,600	55,640	55,000	53,000	Alberta
Saskatchewan	24,960	24,700	22,250	22,750	Saskatchewan
Manitoba	19,600	19,760	18,550	18,250	Manitoba
Ontario	104,700	110,000	85,169	85,300	Ontario
Quebec	65,000	60,000	48,260	50,450	Québec
New Brunswick	19,240	19,500	18,250	17,000	Nouveau Brunswick
Nova Scotia	14,098	13,260	12,033	12,000	Nouvelle Ecosse
Prince Edward Island	2,080	1,560	1,500	1,500	Île-du-Prince-Edouard
Newfoundland	8,580	8,580	8,250	8,000	Terre-Neuve
	\$367,458	\$368,380	\$320,884	\$316,000	

SCHEDULE 2**ANNEXE 2**

**CANADIAN ASSOCIATION OF
OPTOMETRISTS
CANADIAN JOURNAL OF
OPTOMETRY
YEAR ENDED
DECEMBER 31, 1987**

**L'ASSOCIATION CANADIENNE DES
OPTOMETRISTES
LA REVUE CANADIENNE
D'OPTOMETRIE
DE L'EXERCICE TERMINE LE 31
DECEMBRE 1987**

	1987	1986	
REVENUE			REVENUS
Advertising	\$ 59,684	\$ 79,374	Publicité
Subscriptions and miscellaneous	1,367	1,040	Souscriptions et divers
Investment income	390	1,281	Revenu d'investissement
	61,441	81,695	
EXPENSES			FRAIS
Bad debts	850	86	Créances irrécouvrables
Bank charges and interest	19	—	Frais bancaires et intérêt
Honorarium	450	675	Honoraires
Mailing	5,521	5,299	Courrier
Management fee	15,000	9,107	Honoraires de gestion
Miscellaneous and translation	1,291	1,698	Divers et traduction
Printing	41,637	34,866	Imprimerie
	64,768	51,731	
NET (LOSS) INCOME	\$ (3,327)	\$29,964	(PERTE NETTE) BENEFICE NET

SCHEDULE 3

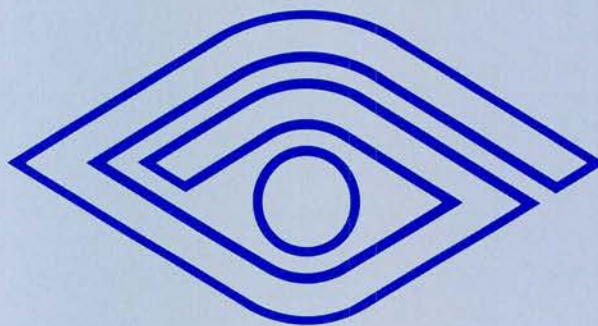
**CANADIAN ASSOCIATION OF
OPTOMETRISTS
SCHEDULE OF FEDERAL
GOVERNMENT RELATIONS FUND
YEAR ENDED
DECEMBER 31, 1987**

	1987	1986
REVENUE		
Investment income	\$ 1,182	\$ 1,777
EXPENSES		
Bank charges and interest	63	82
Postage	—	291
Legal fees	6,345	599
Committee expenses	—	2,348
Office supplies	—	20
Miscellaneous	615	623
Translation	—	347
	<u>7,023</u>	<u>4,310</u>
NET LOSS	5,841	2,533
SURPLUS, BEGINNING OF YEAR	21,715	24,248
SURPLUS, END OF YEAR	\$ 15,874	\$ 21,715
REPRESENTED BY:		
Cash in bank	\$ 58	\$ 30
Deposit certificates	—	21,625
Accrued interest	—	60
Due from general fund	<u>15,816</u>	<u>—</u>
	\$ 15,874	\$ 21,715

ANNEXE 3

**L'ASSOCIATION CANADIENNE DES
OPTOMETRISTES
FONDS DES RELATIONS AVEC LE
GOUVERNEMENT FEDERAL
DE L'EXERCICE TERMINE LE 31
DECEMBRE 1987**

REVENUS	
Revenu d'investissement	
FRAIS	
Frais bancaires et intérêt	
Poste	
Frais légaux	
Frais des comités	
Fournitures de bureau	
Divers	
Traduction	
PERTE NETTE	
EXCEDENT CUMULATIF, DEBUT DE L'EXERCICE	
EXCEDENT CUMULATIF, FIN DE L'EXERCICE	
REPRESENTE PAR	
Encaisse	
Certificats de dépôt	
Intérêt couru	
Avances au Fonds général L'Association canadienne des optométristes	



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Poster Contest Follow-up



We have been told the setting was, to say the least, chaotic. The night of Wednesday, March 9, the Edmonton Oilers had just lost on home ice to the Montréal Canadiens and no one on the team was feeling great about that.

We have also since been told that Team Captain Wayne Gretzky was really not in the mood to see anyone. But in the corridor outside the Oilers' dressing room, along with a scattering of sports reporters and photographers, CAO President Dr. Scott Brisbin, official Oiler photographer Bob Mummery, 1988 Save Your Vision Week national poster contest winner Donny Newberry and his dad, Don were told, "If you want to wait. . .", but not in the most hopeful of tones.

As the story was told to us, the opening of the Oiler Dressing Room door was sudden and unexpected but, nonetheless, Donny Newberry and party were escorted in.

There followed a brief meeting, a congratulations from Wayne on the poster designed by Donny, a short chat about almost anything except the game and, sometime during the proceedings, Bob Mummery (just as surprised as everyone else that the hoped-for opportunity hadn't been dissolved by the game's final score) managed to capture the moment.

Finally, we were told that Donny may have felt a little disappointed about having to impose on Wayne after the Oilers' loss. We were also told that Wayne himself was personally devastated by the team's performance that night — the game, after all, is his profession and the Coliseum crowd are his greatest fans.

But look at the dressing room picture. It shows a young Canadian boy and a young Canadian hockey legend in a moment that shows perhaps thoughtfulness, but no disappointment. During that meeting, Wayne's attention, we were told,

was directed entirely at our young contest winner. He's that kind of person, an exemplary ambassador for Save Your Vision Week in Canada.

On behalf of CAO and Canada's 2,700 optometrists, we thank Wayne and the entire Oilers' organization for helping us

promote "Life Is Worth Seeing!" so successfully this year. And we'll leave the final word on the subject to 11-year old Donny Newberry, whose prize, we were advised, included his first-ever flight and first trip outside the province of Ontario:

March 23

Dear Sirs:

I would like to thank-you for the trip to Edmonton and for the chance to meet Wayne Gretzky. It was a dream come true. The air plane was great. Looking out the windows and seeing the clouds. It was floating. The Hotel was fantastic. The rides were great. It was very nice of Mr. Brisbin to meet us at the airport and to take us around. I would like to thank him for letting his son David spend the day with me. It was great fun. Thank-you also for the plaque of my poster. I would like to thank Mr. Lambert for the Dominos. Dad and I both enjoy playing them.

Your truly
Donny Newberry

The Contacscope™

A New Device For Patient Ocular And Contact Lens Surface Self Evaluation

J.E. Josephson *
B.E. Caffery **

The ContacScope™ is a new device which employs a concave magnifying mirror and a light to illuminate the ocular surface. The purpose of the device is so that patients can evaluate the surface of their contact lenses for the presence of deposits and, also, to help patients to check the position of the contact lens on their eye. It is also being promoted as a device for patient detection of early vascularization.

We observed that patients found this device fairly useful for seeing the deposit buildup on contact lenses, although sometimes a non-wetting surface can be very deceiving to a patient and make him or her feel that the lens is not in good condition when in fact it may be that the patient is staring and causing the surface to appear hydrophobic. However, this feature may be very useful in getting the patient into the office for professional evaluation.

With regards to claims of detecting vascularization early, this is highly unlikely as the vascular changes that take place are so slight that, by the time the patient notices any changes, the vascularization has gone beyond the point of "acceptability". In addition, this type of observation and monitoring must be left up to the practitioner and should be reason for the patient to return to the practitioner's office. It should not be promoted as a patient monitoring device for checking vascularization.

The device is useful for checking contact lens position when the lens is on centre. However, when the lens is off centre, patients found that it was much more difficult for the device to be used for that purpose.

In our office we had 24 patients use the device to try and observe their deposit buildup on the contact lens surfaces.

Although patients thought that the device was fun to use because it made their eye visible in a way that they had never seen it before, many found it difficult to use. We found that no patient was interested in buying this device for the purposes suggested. Therefore, practitioners would have to promote or prescribe it to patients.

As practitioners, we found it a very useful device to employ in the office to demonstrate defects or deposits on contact lenses and special observations or changes in the ocular surface.

In summary, we felt this device was better in the hands of the practitioner for patient demonstrations, than as a device that could be dispensed to the patients for the purpose of monitoring their own eyes.

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Toronto, ON

Considerations Pratiques sur l'Anisométrie Paradoxe

J. Hallak *
C. Beaulne **

Abstract

After their definition of "paradoxical anisometropia", the authors present a clinical case to explain their point. Data are given on the prevalence of this visual problem as well as practical considerations towards its efficient therapy.

Résumé

Après avoir défini le concept d'anisométrie paradoxale, les auteurs présentent un cas type à titre d'illustration. Des données sur la prévalence de ce problème visuel sont fournies et enfin des considérations pratiques sont apportées de façon à entreprendre un traitement efficace.

Introduction

L'anisométrie prononcée et non compensée implique habituellement que l'acuité visuelle soit plus réduite dans un oeil que dans l'autre; l'acuité binoculaire attendue est alors au moins égale à celle du meilleur oeil. Il est également fréquent de constater que l'oeil le plus amétrope présente un certain niveau d'amblyopie, surtout dans les cas hypermétropes avancés.

Nous avons rencontré un cas paradoxal où l'acuité binoculaire était inférieure à l'acuité monoculaire du meilleur oeil. L'illustration du cas qui va suivre nous a conduits au concept "d'anisométrie paradoxale", terme qui s'applique bien aux sujets antimétropes (anisométrie mixte telle que hypermétropie vs emmétropie, hypermétropie vs myopie, emmétropie vs myopie) présentant une acuité visuelle binoculaire moindre que la meilleure des deux acuités monoculaires.

Cas type

Dans un cas publié antérieurement,¹ le sujet, une dame d'un peu plus de 39 ans, avait commencé le port de lunettes dès l'âge

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de 16 ans. C'est à ce moment qu'elle avait réalisé que sa vision laissait à désirer, notamment à l'école. Cependant, la première paire de lunettes qui lui fut fournie n'était pas confortable et lui occasionnait des maux de tête; ses lunettes furent changées souvent depuis ce moment-là. La formule des lentilles de ses lunettes actuelles se lit comme suit:

O.D. $-1.50 -0.50 \times 6$ A.V. 6/6

O.S. $-0.50 -0.50 \times 3$ 6/6-

Ces lunettes semblent les plus confortables.

Par contre, la rétinoscopie (skiascopie) a révélé des résultats entièrement différents, c'est-à-dire:

O.D. $-0.75 -0.75 \times 30$

O.S. $+2.50 -0.25 \times 165$

Les autres données de base sont les suivantes:

Kératométrie: O.D. 42,25 43,50 à 2°

O.S. 42,25 43,50 à 5°

Profondeur de la chambre antérieure: O.D. Grade III

O.S. Grade III

Présence d'un croissant myopique: O.D. Imperceptible

O.S. Absent

Considérations sur la nature de l'anisométrie: antimétropie ou anisométrie mixte de +3,50 dioptries.

Si on se réfère à la formule mentionnée plus haut, le sujet pouvait plus difficilement tolérer une compensation intégrale et semblait se satisfaire davantage du compromis suivant, soit:

O.D.: $-1,25 -0,50 \times 10$

O.S.: $+0,50 -0,25 \times 165$

Cette dernière formule permettait au sujet, à l'aide des "Wirt Stereo dots" (anneaux stéréoscopiques de Wirt) d'obtenir une acuité stéréoscopique de 30% ou 200 (deux cents) secondes d'angle.

Quelques mois plus tard, la formule des lentilles fut changée pour la suivante:

O.D.: $-1,00 -0,75 \times 10$

O.S.: $+1,25 -0,75 \times 170$

et l'acuité stéréoscopique fut améliorée à 50% ou 100 (cent) secondes d'angle.

Dans la discussion de ce cas intéressant, nous pouvons considérer les éléments suivants:

1. Nous avons envisagé que, de façon générale, l'oeil du sujet jeune commence par être hypermétrope et progresse vers l'emmétropie ou la myopie avec l'âge. Borish³ cite les recherches de Baldwin (1957), Sorsby (1961) et Hirsch (1962) au soutien de cet aspect.

2. L'oeil le plus hypermétrope de notre sujet était toujours l'oeil gauche. Donc, avant l'âge de 10 ans, l'oeil droit était plutôt emmétrope et devint l'oeil dominant et fixateur du sujet. Nous avons vérifié cette dominance en utilisant le test de la cache alternée, tandis que le sujet fixait une cible à 6 m à travers un trou (10 × 15 cm) dans une carte tenue à bout de bras.
3. C'est plutôt l'oeil dominant qui suit le processus d'emmétropisation, tandis que l'oeil le plus hypermétrope ne change que très peu. Hirsch (1962) avait fait une remarque analogue (Cité par Borish³). Plus récemment, Friedman et al.,⁴ ont remarqué, dans une étude chez des jeunes sujets anisométropes sans strabisme, que le processus d'emmétropisation a lieu presque uniquement dans l'oeil dominant; tandis que l'oeil le plus hypermétrope, ou l'oeil amblyope, ne change pratiquement pas.

Ainsi donc, notre sujet s'est retrouvé avec un oeil droit qui devenait de plus en plus myope, de sorte que vers l'âge de 16 ans, le port de lunettes est devenu nécessaire pour corriger sa vision: l'oeil gauche, pour sa part, est demeuré hypermétrope et plutôt constant. Les toutes premières lunettes prescrites à cet âge étaient

L'anisométrie prononcée et non compensée implique habituellement que l'acuité visuelle soit plus réduite dans un oeil que dans l'autre; l'acuité binoculaire attendue est alors au moins égale à celle du meilleur oeil.

vraisemblablement correctes théoriquement, mais le sujet n'avait pu tolérer une telle différence de puissance entre les deux lentilles, surtout prescrite d'un seul coup. Le sujet a préféré d'autres verres correcteurs avec une prédilection pour les lunettes actuelles, bien que la puissance des lentilles soit concave pour l'oeil gauche qui est hypermétrope. La raison pour cette préférence est sans doute que la lentille concave facilite la suppression de la vision binoculaire et c'est alors l'oeil dominant qui reste "en charge", sans rivalité.

Prevalence

La question surgit alors à savoir combien de sujets présentent un tel problème d'interférence binoculaire. Nous avons sélectionné, parmi la population clinique que l'un de nous dessert,² des sujets anisométropes, d'antimétrie variable, âgés entre 15 et 66 ans; la différence dioptrique entre les deux yeux variait de -3,25 à +5,50 d. Les valeurs négatives correspondent aux cas "emmétropie vs myopie" ou "myopie vs myopie" alors que les valeurs positives correspondent aux cas "hypermétropie vs emmétropie ou myopie". Nous avons trouvé qu'environ 20% des cas sélectionnés parmi trente (30) sujets manifestent une certaine interférence binoculaire; autrement dit, 20% des antimétropes présentent une anisométrie paradoxale selon la définition donnée antérieurement. Cependant, parmi les sujets sélectionnés, soit trente (30) sujets, le pourcentage de porteurs de lentilles compensatrices est de 85% malgré une apparente absence d'interférence, c'est-à-dire que malgré le fait que l'acuité binoculaire soit comparable à la meilleure des acuités monoculaires, le sujet préfère porter quand même des lunettes, surtout s'il est fatigué ou s'il doit exécuter des tâches de précision.

Si on considère l'étude récente de Fledelius⁵ (cet auteur a examiné un grand nombre de sujets dans l'un des hôpitaux Danois), on constate qu'il a trouvé 6% d'anisométropes en-

dessous de 2.00 dioptries et 3.2% dont l'anisométrie est au-delà de 2.00 d., d'où un total de 9.2%. Kehoe et Lebensohn (cités par Borish³) ont rapporté 10.3% d'anisométrie entre 1.00 et 2.00 d.; Giles (cité par Borish³) a estimé qu'en Angleterre le pourcentage d'anisométrie se situe autour de 7.4%. Nous avons donc adopté une incidence d'anisométrie — au-delà de 1.00 d. — d'environ 9%. D'après Fledelius⁵, environ 11% de ces anisométropes sont des antimétropes. Autrement dit,

La question surgit alors à savoir combien de sujets présentent un tel problème d'interférence binoculaire.

1% (soit 11% de 9%) de la population est antimétrie. Ce chiffre de 20% (de nos sujets anisométropes avec interférence binoculaire), indique antérieurement, devient donc 0.2%. Ainsi le taux de prévalence de la population totale présentant une anisométrie paradoxale s'élève à 0.2% et à 4 fois plus, soit 0.8%, pour la population qui préfère obtenir des lentilles compensatrices bien que l'acuité binoculaire soit bonne et acceptable sans compensation.

Il y a lieu remarquer aussi que c'est l'oeil le plus myope qui est l'oeil dominant dans 93% des cas considérés dans notre étude, ce qui confirmerait la validité des hypothèses formulées pour expliquer l'évolution de l'anisométrie du cas-type présenté.

Considérations pratiques

Nous distinguerons d'abord deux groupes de sujets anisométropes sans strabisme, c'est-à-dire le groupe des sujets jeunes et adolescents et celui des adultes.

Dans le cas du premier groupe, celui des sujets jeunes et adolescents, il est très important de corriger la réfraction, autant que possible, d'après la rétinocope, d'où la nécessité d'une rétinocope la plus précise possible. L'oeil le plus hypermétrope doit pouvoir accommoder au maximum et aussitôt que possible.

Il y a lieu de remarquer aussi que c'est l'oeil le plus myope qui est l'oeil dominant dans 93% des cas considérés dans notre étude.

Le Grand⁶ et Borish,³ entre autres, indiquent que l'accommodation est simultanée et plutôt égale (une différence de 0.75 d. est parfois possible) dans les deux yeux. Si donc, l'oeil n'accommoder pas, le processus d'emmétropisation cité antérieurement^{3,4} n'aura pas lieu et il y aura anisométrie progressive. L'oeil le plus hypermétrope reste tel quel alors que l'autre tend vers la myopie ou l'emmétropie. On peut commencer par prescrire des lentilles compensatrices avec la moitié de la différence dioptrique entre les deux yeux, quitte à augmenter la puissance de la lentille pour l'oeil le plus hypermétrope quelques mois plus tard. L'occlusion du bon oeil (l'oeil le moins hypermétrope) durant quelques heures par jour est une bonne idée pour aider à la stimulation de l'accommodation de l'oeil ouvert. Gettes⁷ a utilisé avec succès l'occlusion de l'oeil le moins hypermétrope avec des gouttes cycloplégiques. Si l'anisométrie est assez grande, les lentilles de contact présentent une solution intéressante. La loi de Knapp concernant le grandissement des images au niveau rétinien ne semble pas jouer un rôle important. Dans

le cas de l'anisométrie due plutôt à une différence de longueur axiale entre les deux yeux, les lentilles compensatrices conventionnelles placées au foyer antérieure de l'oeil, donnent — théoriquement — d'après Knapp, des images de grandeur égale. Cependant Rose et Levinson⁸ ont constaté que l'utilisation des lentilles de contact n'engendre pas l'aniseiconie. Avant eux, Von Noorden et Ayala⁹ avaient fait des remarques semblables. A leur suite, Rabin et al.¹⁰ ont confirmé l'hypothèse de Rose et al.⁷ en constatant que la différence de grandeur des images entre les deux yeux, soit l'aniseiconie mesurée, n'est pas uniquement dépendante de facteurs dioptriques; des facteurs anatomiques interviennent et l'aniseiconie peut être aussi attribuable à une différence dans la densité des récepteurs rétiniens, ce qui explique les résultats données par les lentilles de contact. Enfin, si les théories précédentes d'emmétropisation ou d'orientation vers la myopie sont vraies, on doit s'attendre à une baisse du montant de l'anisométrie avec l'âge, chez des sujets jeunes qui reçoivent assez tôt les soins appropriés.

Il est de première importance de procéder à la rétinoscopie avec soin avant de passer à un examen subjectif de la vision.

Le deuxième groupe, celui des adultes, s'avère un cas plus compliqué. Il y a déjà pour ces sujets un "modus operandi" auquel ils sont en train de s'adapter ou auquel ils sont déjà adaptés. La tâche des praticiens est donc de modifier cette adaptation à une vision binoculaire erronée. Cette modification doit être exécutée par étapes et on peut se demander parfois s'il est bien nécessaire de déclencher ce changement chez le sujet. La réponse est affirmative⁹: modifier la prescription petit à petit vaut la peine. Il s'agit de savoir cependant quelle est la limite; cela dépendra de l'âge du sujet et de son niveau d'adaptation. Rappelons-nous cependant que la majorité des cas étudiés² (85%) avait malgré tout préféré le port de lunettes. Etant donné que la solution sera le port de lunettes, il vaut mieux utiliser la prescription correcte et permettre au sujet de posséder un rudiment d'acuité stéréoscopique.

Il est de première importance de procéder à la rétinoscopie avec soin avant de passer à un examen subjectif de la vision. La raison est simple: le sujet tend vers une prescription fautive pour l'oeil hypermétrope. Dans un bon nombre de cas étudiés², soit 7/27 (25%), les sujets ont amené le praticien à commander une lentille correctrice "concave" pour l'oeil hypermétrope. Pour le sujet cependant, une telle paire de lunettes ne fait que favoriser la suppression de la vision de l'oeil hypermétrope et ne fait que donner une fausse impression de confort.

Conclusion

Il nous semble que 0.2% de la population présente un anisométrie paradoxale où l'acuité binoculaire est moindre que la meilleure des acuités visuelles monoculaires. Il semble aussi que quatre fois ce nombre (0.8% de la population) exigent le port de lunettes la plupart du temps, en particulier au moment où ils sont sous tension. Il est donc très important de procéder à un examen visuel très méticuleux, incluant une évaluation soignée de la réfraction objective, pour arriver à la prescription la plus précise possible. Ces sujets anisométriques ou antimétriques ont tendance à se retrouver avec une prescription erronée, surtout du côté de l'oeil le plus hypermétrope. Par ce moyen,

il leur est plus facile de supprimer l'information visuelle provenant de cet oeil hypermétrope. Chez les sujets jeunes, cela peut avoir des conséquences graves.

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The Canadian Journal of Optometry la Revue Canadienne d'Optométrie

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Contributions are invited in the form of original case studies, research papers, clinical evaluations, editorial comments/opinions, book reviews or letters to the Editor. In the case of a major paper or case study, the submission will be evaluated in terms of its originality, relevance, documentation, clarity and significance to the profession of Optometry.

Each manuscript submitted to the CJO•RCO must be done so on the condition that neither it, nor its essential substance, has been previously published or accepted for publication elsewhere.

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Three copies, one of which must be the original (including the originals for all illustrative material), must be sent via First Class Mail to the Senior Editor, CJO•RCO, c/o CAO, Suite 301-1785 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. Please include a cover letter which identifies a person responsible for the article and includes both a mailing address and a (day) telephone number.

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Manuscript must be typewritten/word-processed, double-spaced, printed on one side of white, 8½×11 paper, with margins of at least 1¼ inches. Where possible, neither a paragraph nor a sentence should be broken at the end of a page. Pages are to be numbered.

Style

All standard abbreviations, units of measurement and acronyms, e.g. NSERC, OHIP, VDT are acceptable but must be preceded, in the first instance of their use in a submission, by the full name for which it stands. For drugs and other products, generic names should be used. Proprietary or trade names should be indicated parenthetically. Numbers one through ten should be spelled out and units of measurement should be in SI (Système Internationale) format.

The CJO•RCO assumes no responsibility for manuscripts lost in either the original or subsequent mailings to and from the author(s) or reviewer(s). The principal author should ensure (s)he has a complete copy of the submission prior to mailing it to the CJO•RCO. All original material becomes the property of the CJO•RCO and will be returned to the author(s) only if requested in writing with the original submission. Otherwise, all original material is customarily saved for the duration of the publication year for a particular volume, after which it is discarded.

For first-time authors, a sample copy of the CJO•RCO will be provided upon written request for same. Comments and questions are invited and should be directed to the CJO•RCO, c/o CAO, Suite 301-1785 Alta Vista Drive, Ottawa, ON, K1G 3Y6.

La Revue canadienne d'optométrie
The Canadian Journal of Optometry

Directives à l'intention des auteurs

Introduction

La RCO•CJO est la revue officielle de l'Association canadienne des optométristes (ACO) et son objet premier est de publier des articles cliniques, théoriques et éditoriaux sur les aspects actuels de la pratique optométrique, ainsi que sur la recherche et le développement des soins de la vue et des yeux dans le système des soins de santé au Canada.

La Revue invite les auteurs à lui envoyer des études de cas originales, des documents de recherche, des évaluations cliniques, éditoriaux, opinions, analyses de livres ou lettres au rédacteur en chef. S'il s'agit d'une étude de cas ou d'un document important, il sera évalué en fonction de son originalité, de sa pertinence, de la documentation, ainsi que de sa clarté et de son importance pour l'optométrie.

Chaque manuscrit présenté à la Revue doit n'avoir jamais été publié ou accepté pour publication ailleurs, même sous une forme abrégée.

Présentation des manuscrits

On doit envoyer trois exemplaires, dont l'original (y compris les originaux des illustrations), par courrier de première classe au rédacteur principal de la RCO•CJO a/s ACO, pièce 301, 1785, promenade Alta Vista, Ottawa (Ontario), K1G 3Y6. Prière de joindre une lettre d'accompagnement contenant les renseignements voulus sur la personne responsable de l'article, ainsi qu'une adresse de retour et un numéro de téléphone où on peut rejoindre cette personne pendant la journée.

Mécanisme d'examen

Dès réception des manuscrits, la RCO•CJO en accuse réception, après quoi ils sont examinés par au moins deux spécialistes du domaine sur lequel porte l'article. La Revue étant trimestrielle, il se passe inévitablement beaucoup de temps entre l'accusé de réception et la date de publication (9 à 12 mois, actuellement). Lorsque l'examineur remet ses observations à la Revue, le dossier complet est retourné à l'auteur principal, auquel on demande au besoin de corriger l'article, s'il y a eu des erreurs factuelles ou des omissions.

Si les remarques de l'examineur sont de nature plus esthétique, c'est-à-dire des questions de style ou de présentation, le ou les auteurs ont la liberté de décider si les modifications constituent vraiment des améliorations. La version modifiée présentée à nouveau par l'auteur après révision est celle qui sera publiée. Toute modification demandée par l'auteur après la composition de l'article ne sera faite que s'il reste du temps et sera facturée à l'auteur à compte de modification, à raison de 30 \$ la page.

Résumé

Chaque article doit être accompagné d'un résumé (maximum 200 mots). Idéalement, le résumé sera fourni dans les deux langues, mais la Revue pourra au besoin établir une traduction. Le résumé doit être factuel, et non éditorial ou polémique. On doit y énoncer les principales constatations de l'article, la méthode expérimentale et les conclusions.

Tableaux et illustrations

Les tableaux et illustrations doivent être d'excellente qualité et se prêter à la reproduction. Les tableaux sont habituellement composés par la

Revue; ils doivent être clairs et précis, et appuyer sans le reprendre le matériel contenu dans le texte. Les données tabulaires doivent être clairement structurées en tableau ou colonne selon les besoins.

Identifier chaque tableau par un numéro ou une légende. Les figures ou illustrations dessinées doivent être de qualité professionnelle ou photographiées. On demande des photographies noir et blanc ou des dessins contrastés. Les photocopies ne peuvent être acceptées comme illustrations originales. (S'il faut retourner les illustrations originales après publication, l'auteur doit en faire la demande à la Revue lors de la présentation du manuscrit.)

Dans la préparation des illustrations originales, l'auteur doit tenir compte du phénomène de réduction et le compenser pour que l'illustration soit lisible même après réduction à la largeur normale d'une colonne de la Revue.

Les figures et photographies doivent être clairement étiquetées: nom de l'auteur principal et numéro d'illustration; il faut indiquer où se trouve la partie supérieure de la photographie ou de l'illustration.

La ligne de conduite actuelle de la RCO interdit l'impression de photographies ou d'illustrations couleurs, à moins que les auteurs n'acceptent au préalable et par entente écrite d'assumer le coût de la séparation des couleurs et les frais supplémentaires de production.

Préparation du manuscrit

Le manuscrit doit être dactylographié ou préparé sur machine de traitement de textes, à double interligne, et imprimé d'un seul côté sur du papier blanc format lettre, avec marges minimales de 1,25 pouce. Dans la mesure du possible, éviter de séparer une phrase ou un paragraphe en fin de page. Ne pas oublier la pagination.

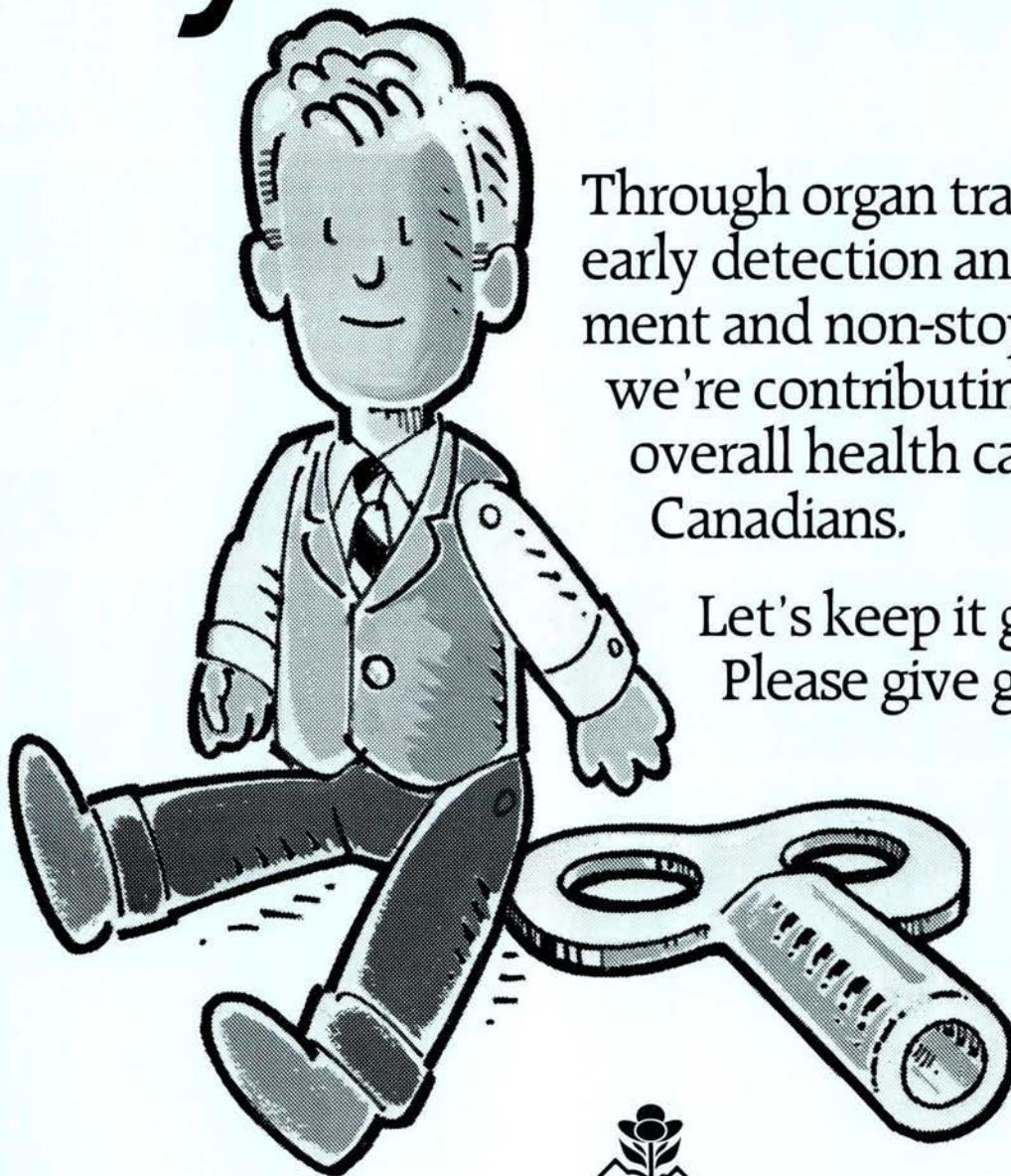
Style

Tous les sigles habituels, unités de mesure ou abréviations, p. ex., OHIP, NSERC, etc., sont acceptables, mais doivent être précédés, à la première occurrence, par le nom complet qu'ils représentent. Dans le cas des médicaments ou autres produits, utiliser les noms génériques. Les noms commerciaux ou brevetés doivent figurer entre parenthèses. Les chiffres de 1 à 10 s'écrivent en lettres et les unités de mesure sont celles du SI (système international).

La Revue n'assume aucune responsabilité à l'égard des manuscrits perdus par la poste à l'une ou l'autre des étapes. L'auteur principal doit s'assurer que son document est complet, avant de l'envoyer à la RCO. Tout document original devient la propriété de la Revue et ne sera retourné à l'auteur que si une demande écrite en ce sens l'accompagne l'original. Autrement, toute la documentation originale est habituellement conservée pour la durée de l'année de publication d'un volume en particulier, après quoi elle est jetée.

Les auteurs qui n'ont jamais publié dans la Revue pourront recevoir sur demande un numéro-échantillon de la RCO. Les questions ou observations sont les bienvenues et doivent être adressées à la RCO•CJO, a/s ACO, pièce 301, 1785, prom. Alta Vista, Ottawa (Ontario) K1G 3Y6.

The key is in your hands.



Through organ transplants,
early detection and treat-
ment and non-stop research,
we're contributing to the
overall health care of all
Canadians.

Let's keep it going.
Please give generously.



The Kidney Foundation of Canada
Improving the odds. On Life.

THIMEROSAL



ALKYL TRIETHANOL

AMMONIUM CHLOR-

IDE



POLYQUAT



CHLORHEXIDINE



DYMED



PRESERVATIVE- FREE



One step. That's all it takes for this preservative-free solution to disinfect and neutralize all soft contact lenses, converting to a sterile, unpreserved saline with the unique AODisc™.

AOSEPT™
Pure & Simple



VISION CARE NEWS/ACTUALITÉ OCULO-VISUELLE

Centre for Contact Lens Research Established at Waterloo

The Senate of the University of Waterloo has officially approved the establishment of a Centre for Contact Lens Research on campus.

In recent news release, Dr. Jacob G. Sivak, Director of the University's School of Optometry, noted that the Senate's decision ratifies an institution that has been operating on a provisional basis for a year at the School.

The Centre's priorities, said Dr. Sivak, will include new CL materials and technology; enhanced education for UW's Optometry students; increased research funding; public awareness of both risks and benefits associated with CL wear; conference/educational program sponsorship; consulting services and research report publication.

Membership in the Centre — the CCLR — is open to faculty members at the School, as well as those of l'Ecole d'optométrie, Université de Montréal and "independent eye care practitioners and researchers". CL manufacturers are also being invited to join under an affiliate membership category.

For further information:

Dr. Jacob G. Sivak,
Associate Dean of Science
Director, School of Optometry
University of Waterloo
Waterloo, ON
N2L 3G1
Tel. (519) 885-1211, ext. 3174

Vision Institute Announces 1988 Fundraising Prizes

The Vision Institute of Canada, a charitable institute dedicated to clinical services, teaching and research, has announced the prizes available to be won by supporters of its 1988 fundraising campaign, culminating at a November 11 Seminar and prize draw to be held in Toronto's Sheraton Centre Hotel. (The campaign, in fact, is actually the Institute's Sixth Annual. The first five were held under their previous name — the Optometric Institute of Toronto.)

For 1988, the grand prize is \$25,000.00, second prize is a one-week vacation for

two in Nassau, plus \$500.00 spending money. There will also be several other cash prizes.

As in the past, only 1,000 tickets are to be sold, and these will be priced at \$100.00 each.

Further information:

Dr. M. J. Samek
Executive Director
Vision Institute of Canada
Suite 301 - 815 Danforth Avenue
Toronto, Ontario
M4J 1L2
Tel. (416) 461-6222

I.O.O.L. 1988 Meeting Report

Deliberations at this year's General Delegates Meeting of the International Optometric and Optical League (I.O.O.L.), held April 27 - May 5, spanned two countries — beginning in Sydney, Australia and concluding in Christchurch, New Zealand.

Not only was it the first time in the League's history that their Annual Meeting was split in this way, it was the first time ever that it had been held anywhere in the Southern hemisphere.

CAO past President and I.O.O.L. Vice-President Dr. Roland des Groseilliers of Ottawa assisted President Dr. G. Burt Holmes in chairing this year's meeting, a highlight of which was the presentation of the League's first International Optometrist of the Year Award to Dr. Claro Cinco.

Resident in the Philippines, Dr. Cinco is co-founder and Foundation President of the International Federation of Asian Pacific Optometrists. His activity on the profession's behalf is world-renowned among League members and includes a significant contribution to the advancement of Optometry in the Asian Pacific area.

1988 also saw five new Associate National memberships approved by the League, from Belgium (College der Optometristen Van België); Germany (Vereinigung Deutscher Contactlinsen-spezialisten); Hong Kong (the Hong Kong Society of Professional Optometrists); Indonesia (the Indonesian Optical Association) and the Trinidad and Tobago Association of Optometrists.

The League's next General Delegates Meeting is slated for May 7 - 11, 1989 in Luxembourg and, in following years, Washington, D.C. (1990); the U.K. (1991) and Spain (1992).

Polymer Technology Publishes Study of E-W Lens-Induced Corneal Swelling

Following is an abstract of a paper which has appeared in a recent issue of *The CLAO Journal* (May, 1988).

We compared the lens-induced overnight corneal swelling, overall clinical performance and subjective responses to a silicone acrylate and a fluorosilicone acrylate lens material in a double blind clinical investigation. Fourteen subjects were fitted with a Paraperm EW lens on one eye and a Boston Equalens on the other eye, to be worn in extended wear for a period of 3 months. Ultrasonic pachometry was performed immediately upon awakening to measure the lens-induced overnight changes in corneal thickness. No significant difference between these lens materials was found in either overnight swelling response or refractive change. Lens stability and a subjective preference for surface wettability were both found to be advantages of the fluorosilicone acrylate material. A relationship between corneal molding and the hypoxic response of the cornea was absent in this study.

Readers of the *CJO/RCO* who are interested in a copy of the paper are invited to contact:

James G. Burke
Country Manager, Canada
Polymer Technology Corporation
6 Autumn Lane
Barrie, Ontario
L4N 6G8
Tel. (705) 721-1647

VISION CARE NEWS/ACTUALITÉ OCULO-VISUELLE

Coming Events

NOTE: For further information on an event sponsored by the Canadian Association of Optometrists, contact the CAO office in Ottawa. For an event sponsored by a provincial Association or Society of Optometrists, contact the respective hosting organization. The address for an international or outside Canada event is included with the item.)

1988

April 30 - October 30:

Expo Down Under (World Expo 88)
Brisbane, Australia

Information:

The Communications Division
World Expo 88
234 Grey Street
PO Box 1988
South Bank, South Brisbane
Queensland, 4101
Australia
Tel. 07-840-1988

AUGUST / AOÛT

27: Saskatchewan Association of Optometrists
Council Meeting
Saskatoon, SK

SEPTEMBER / SEPTEMBRE

TBA: Saskatchewan Association of Optometrists
5th Annual Sand Pail Golf Tournament
Yorkton, SK

15 - 17: New Brunswick Association of Optometrists
Keddy's Brunswick Inn
Moncton, NB

23 - 24: Newfoundland Association of Optometrists
Annual General Meeting
Gander, NF

24 - 25: Alberta Association of Optometrists
Annual General Meeting
Grande Prairie, AL

OCTOBER / OCTOBRE

7: Association des Optométristes du Québec

Réunions annuelles de la L.S.O.
Hotel Reine Elizabeth
Montréal, Qué

8 - 9: Association des Optométristes du Québec

10^e Colloque International sur la Lentille de Contact
Hotel Reine Elizabeth
Montréal, Qué

TBA: Manitoba Optometric Society
Semi-Annual Meeting

TBA: Nova Scotia Association of Optometrists
Annual General Meeting
Halifax, NS

NOVEMBER / NOVEMBRE

TBA: Prince Edward Island Association of Optometrists
Annual General Meeting

3 - 6: Saskatchewan Association of Optometrists
Council Meeting
Regina, SK

4 - 5: Saskatchewan Association of Optometrists
79th Annual General Meeting
Regina, SK

4 - 7: 5th International Retinitis Pigmentosa Congress
Hyatt Regency Hotel, Melbourne, Australia

Information:

RP Australia
Conference Secretary
46A Oxley Road
Hawthorn 3122
Victoria, Australia
Tel. (03)819-6590

1989

February

13 - 15: Optical Society of America Topical Meeting
"Noninvasive Assessment of the Visual System"
Eldorado Hotel
Santa Fe, New Mexico

Information:

Optical Society of America
Visual System
1816 Jefferson Place NW
Washington, DC
20036, USA

March

24 - 30: Seventh Asian Pacific Optometric Congress

Malaysia

Part 1: March 24, 25 at the Shangri-la Hotel (Kuala Lumpur)

Part 2: March 26 - 30 at the Tanjung Aru Beach Hotel (Kota Kinabalu, Sabah, North Borneo)

Information:

IFAPAO Secretary-General
Dr. Damien P. Smith
7 Cookson Street
Camberwell 3124, Victoria
Australia
Tel. (03) 882-9122

June

22 - 25: Optics Asia '89 International Exhibition

(Singapore Optical Trade Association)

World Trade Centre, Singapore

Information:

ITP Services (Private) Limited
994 Bendemeer Road
No. 04 - 03
Singapore 1233
Attn. Jimmy Bong
Director and Project Manager

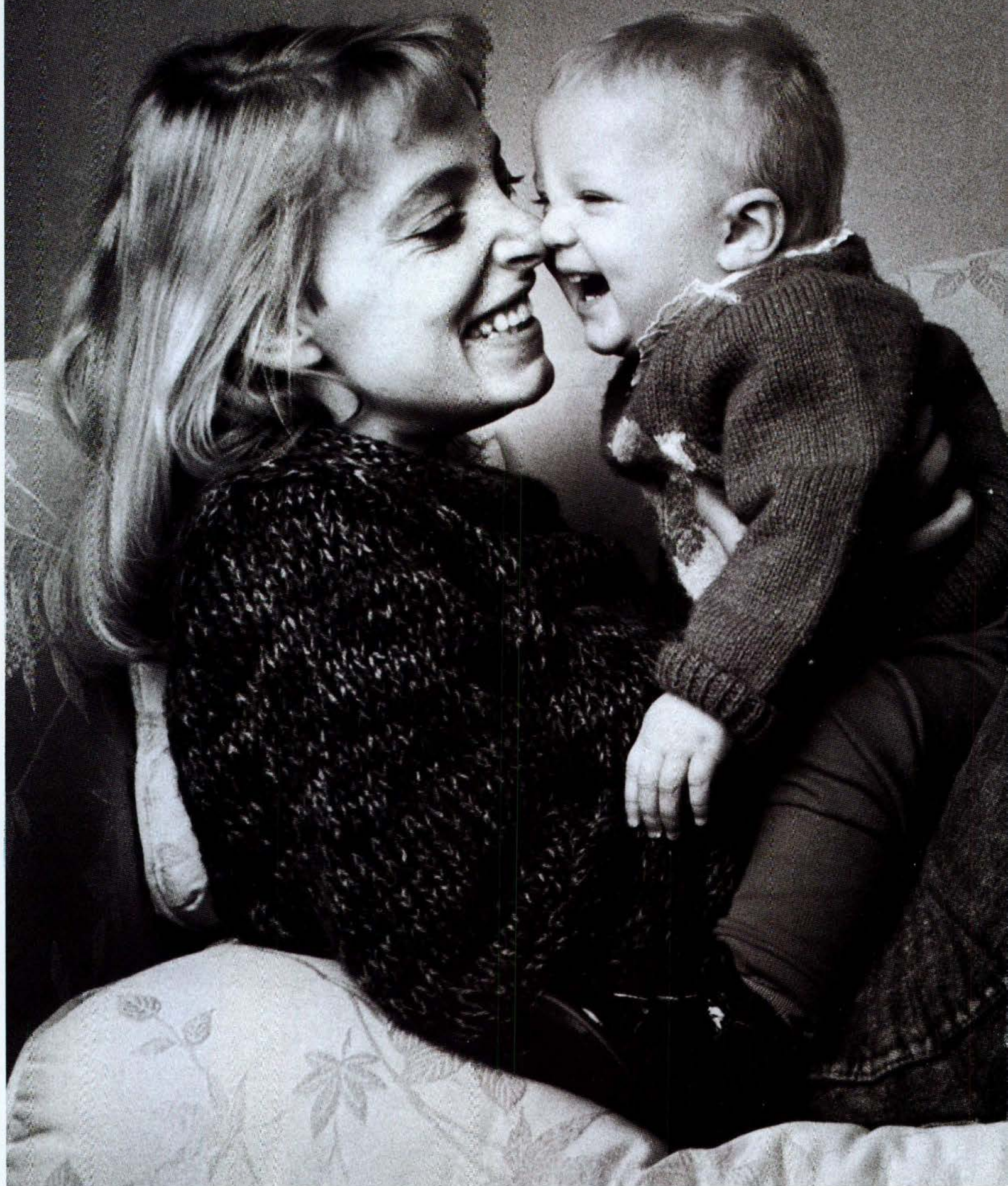
Help **BREAK
THE PATTERN
OF POVERTY**

Please contribute to:

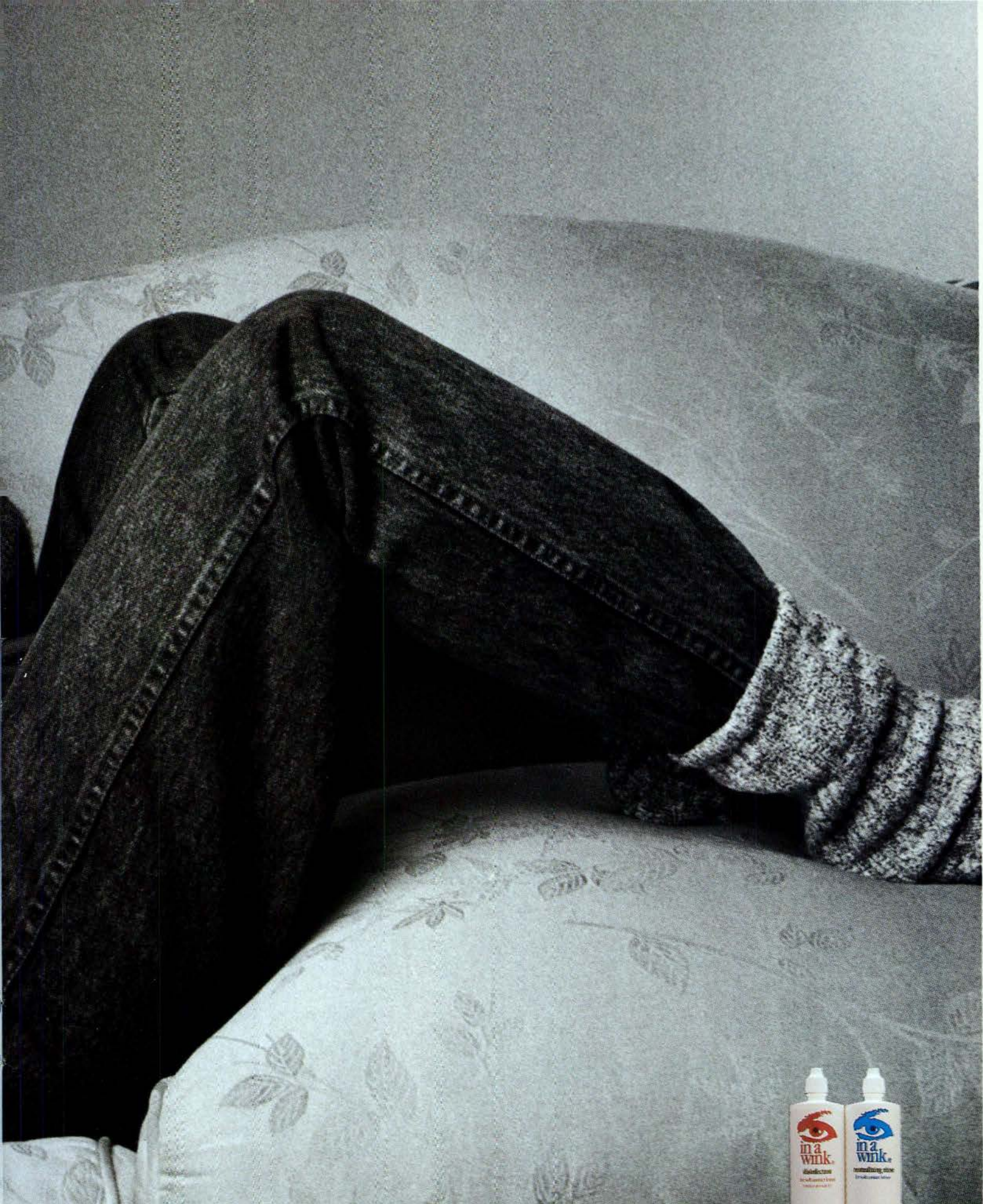
**USC
Canada**

56 Sparks
Ottawa
K1P 5B1

(613) 234-6827



How many hours do you think she can spare for lens care?

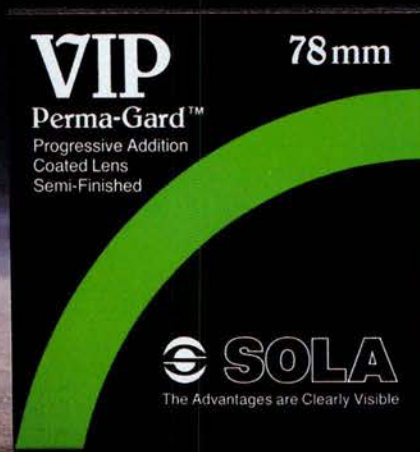


With In a Wink, all she needs is 25 minutes. Because that's all it takes to disinfect and neutralize soft contacts once they've been cleaned. For lens care when there's no time to spare.



**In A Wink
Fast & Flexible
CIBAVision.**

No single progressive lens works for everyone. Not even ours.



**For Current
Bifocal Wearers**

As a concerned eyecare professional, you know there's no single progressive that's right for everyone. Especially when patients run the gamut from new presbyopes to experienced bifocal wearers.

Today, Sola greatly expands your ability to satisfy more patients, more precisely, with the first complete family of progressives.

The VIP for bifocal wearers. The exciting new XL for new presbyopes.

Sola VIP.

Still the first choice for flat top wearers.

Current bifocal patients are your largest market for progressives. And fussy as they are, no lenses can please

them like the patented Sola VIP.

VIP offers, in a single lens, both of the qualities essential to success with these tough customers: large viewing zones and good peripheral clarity.

Wider reading zones, less astigmatism.

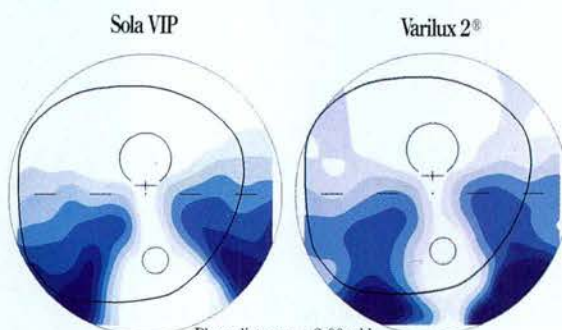
To prove the point to yourself, just compare the VIP to the Varilux 2. As you can see, our near zone is much larger — large enough for even picky patients.

Equally important, our peripheral clarity is unsurpassed, without the accompanying distance area astigmatism that hampers Varilux lenses.

And, not least of all, the VIP has a generous corridor to assist the mid-range vision of maturing eyes.

What design promises, experience proves: VIP is clearly best for fast, lasting satisfaction with bifocal patients.

But even we have to admit, today there's something even better for new presbyopes . . .



Plano distance +2.00 add.
Each plotted line from the center represents increases in the astigmatism of about 0.5D.

Progressive lens analyses were conducted at Sola in Petaluma, California. Details are available on request.

Perma-Gard is a trademark of Sola Optical USA, Incorporated. Varilux 2 is a registered trademark of Essilor International. © 1987 Sola Optical USA, Inc.

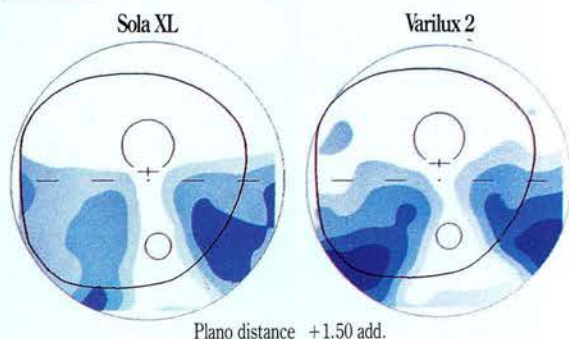
Introducing the Sola XL.



For New
Presbyopes

Now you can give new presbyopes the special attention they deserve, too. With the breakthrough design of the new Sola XL.

A stunning advance in progressive technology, the new XL offers up to twice the peripheral clarity of other progressives. In fact, it's so clear, it feels like a single vision lens.



Sola XL. Precisely right for new presbyopes.

New presbyopes adapt almost instantly to the new Sola XL. Because there's almost nothing to adapt to.

Unlike the popular Varilux 2, the XL's asymmetrical design virtually eliminates disturbing temporal astigmatism. And where astigmatism can't be avoided, it's still no problem. Because it's concentrated in areas you can quickly edge away.

The spacious corridor is another feat of engineering — and another welcome freedom for new presbyopes. They get the true all-distance vision that other lenses merely promise. While your staff gets fast, easy fitting.

The Sola XL — it's the ideal combination of clarity and comfort that new presbyopes deserve, but could never have on their eyes before.

VIP For Current Bifocal Wearers	XL For New Presbyopes
---	---------------------------------------

The first family of progressive lenses.

The new XL for new presbyopes . . . the proven, patented VIP for current bifocal customers. Both with free Perma-Gard™ protection.

Two progressives that meet the distinct needs of a unique group of patients. Together, they represent a progressive family that reflects your high standards, and assures your success. Twice over.

SOLA
The advantages are clearly visible.



SECTIONS

Introduction

Sections is planned as a regular feature of the CJO•RCO in which news, reports and information will be presented on the activities of CAO Sections. In this issue, the focus is on Sports Vision — an appropriate introduction to **Sections**, given this past winter's Calgary Olympics, the Seoul Games and the occupation of our Honorary Chairperson for Save Your Vision Week 1988, Wayne Gretzky.

As of Summer, 1988, the Council of the Canadian Association of Optometrists has approved the establishment of a total of seven CAO Sections at the following annual membership fee rates:

<i>Aviation Vision:</i>	\$50.00
<i>Children's Vision</i> (two-year membership):	\$25.00
<i>Contact Lenses:</i>	\$25.00
<i>F.O.C.O.S. (Friends of Canadian Optometry Section):</i>	\$25.00
<i>Low Vision:</i>	\$50.00
<i>Sports Vision:</i>	\$50.00
<i>Voluntary Services:</i>	\$25.00

In addition, individual CAO Councillors have also accepted to serve as CAO Council Liaisons for each of the Sections as follows:

Aviation Vision:	Dr. Michael Duffey (NS)
Children's Vision:	Dr. Margaret Hansen des Groseilliers (ON)
Contact Lenses:	Dr. Grant Campbell (AL)
F.O.C.O.S.:	Dr. Scott Brisbin (President)
Low Vision:	(To Be Announced)
Sports Vision:	Dr. David McKenna (PEI)
Voluntary Services:	(To Be Announced)

Section Correspondence

Individual optometrists who wish to correspond with any Section regarding its activities, or regarding membership in a Section, are invited to do so by writing to the (Name) Section, c/o The Canadian Association of Optometrists, Suite 301-1785 Alta Vista Drive, Ottawa, ON, K1G 3Y6. Correspondence will be forwarded from CAO to the appropriate Section Liaison contact.

Section Membership

Membership in any CAO Section, with the exception of F.O.C.O.S., is limited to optometrists who are members in good standing of at least one Canadian provincial Association of Optometrists. The annual Section membership fees are as noted above. Optometrists wishing to join any Section of CAO should complete the application form contained in this issue and forward it, along with the required payment for each Section's membership, to CAO.

The Canadian Association of Optometrists — Application for Section Membership —

I would like to apply for membership in the following Section(s) of CAO:

- ☐ Aviation Vision (\$50.00)
- ☐ Children's Vision (\$25.00/2years)
- ☐ Contact Lenses (\$25.00)
- ☐ F.O.C.O.S. (\$25.00)
- ☐ Low Vision (\$50.00)
- ☐ Sports Vision (\$50.00)
- ☐ Voluntary Services (\$25.00)

NAME: _____

MAILING ADDRESS: _____

Postal Code

Telephone

I am a member of the Canadian Association of Optometrists.

Return this form to: CAO, Suite 301-1785 Alta Vista Drive, Ottawa (Ontario) K1G 3Y6

(Signed)

(Date)

(Return with required membership fees)

Calgary Optometrists at the Olympics

Members of CAO's Sports Vision Section were extremely active in serving the vision and eye care requirements of athletes at the XV Winter Olympic Games, held in Calgary.

In 1985, Dr. George H. Edworthy was appointed by the Council of the Alberta Association of Optometrists to Chair the Olympic Eye Care Committee to oversee vision and eye care both for athletes and their support staff members.

In a report to the CJO•RCO, Calgary optometrist Dr. George Edworthy provided the following information:

At that time (1985), the whole slate of Olympic organizing support Committees was just being drawn up and local Olympic officials did not see eye care as a high priority. Dr. Edworthy reports that two years of frustration and "one-sided discussion" followed but, finally, it was announced that the Calgary Sports Vision Centre, under Dr. Edworthy, would provide Sports Vision

SECTIONS

Care (optometric Vision Analysis, Sports Vision Counselling, prescribing for new and existing vision anomalies, replacement of lost or broken ophthalmic prescriptions and hard and soft contact lens service) to the athletes and their staff who might require it.

Suppliers were obtained for ophthalmic materials, contact lenses, spectacle frames, prescription manufacturing and cases. In acknowledging this support, Dr. Edworthy advised that the following "graciously gave of their time and materials":

Ciba Vision Inc.

Nordic Optical

North American Vision Company Inc. — Roger Wetzel

"W" Optical Calgary — Brian Wing

Contact lenses used, he noted, were: Ciba Spectrum soft lenses and North American Vision Company's SGP2 hard gas permeable.

There was even an "official" Olympic ophthalmic frame: the Windsor II — Unisex, male/female in Havana colour.

Ciba Vision provided a total of eleven fitting sets of 200 lenses on consignment to each optometrist for the immediate dispensing to participating athletes. Nordic supplied 100 of their own frames, four of which went to each participating optometrist and the balance to "W" Optical for fabrication.

Ten optometrists, all of whom were located within two miles of the Olympic Polyclinic, volunteered their time and expertise to supply emergency vision care to the athletes attending the XV Winter Olympic Games:

Dr. George Edworthy

Dr. Charles Klettke

Dr. Ivan McNabb

Dr. Paul Dame

Dr. Gene Edworthy

Dr. Ron Moore

Dr. Bruce Redmond

Dr. Richard Snell

Dr. George Stonecypher

Dr. Dick Watts

Dr. Mike Bruhjell, Canmore, volunteered to provide care to the athletes who were housed at the Nordic Centre.

The schedule was organized on a rotating basis every 10 days over the 30 days that athletes were in Calgary and Canmore. The chairman was on call all 30 days, 24 hours a day and each optometrist was on call for 3 days, once every 10 days, for a twenty-four hour period.

The Polyclinic was also given a list of optometrists with their home and office telephone numbers, as well as their office addresses.

An athlete was first seen in the Polyclinic emergency centre by one of a dozen General Practitioners who were on a rotating schedule. The athletes who needed (or requested) vision care were referred day or night to the optometrist on call.

The chairman also met with the Polyclinic's head physician, Dr. Catherine Kuzyk and all physicians who would be staffing the emergency centre to explain what optometric services would be provided.

The athletes were driven to our offices by OCO volunteers, accompanied by a volunteer interpreter when necessary. Secu-

rity, as it turned out, was not an issue, even with Soviet athletes! If soft contact lenses were prescribed, they were dispensed immediately from the Ciba lens inventory, and the necessary follow-up care provided.

If hard lenses were prescribed, the North American Vision Company manufactured the lens that afternoon and following morning. If ophthalmic lenses were prescribed, the frame sizing was completed and, in most cases, the completed glasses were ready when the athlete, driver and interpreter arrived at Brian Wing's laboratory immediately following the optometrist's examination.

The service provided by the optometrists, hard contact lens laboratory and especially Brian Wing at "W" Optical was superb. The materials supplied by Ciba and Nordic Optical, i.e. the Olympic contact lenses and frames, were also greatly appreciated by the athletes and optometrists.

The optometrists and suppliers will receive a certificate in the future as thanks for their contribution to the XV Winter Olympic Games by the Medical Services Committee of OCO.

As a profession and as suppliers of a service, we provided both the service and care to our standards and it was provided flawlessly. We are happy and satisfied that we have done our part for the athletes of the XV Winter Olympic Games.

George H. Edworthy

B.Sc., O.D., F.A.A.O.

Tests for evaluating visual skills in sports

R.A. Rosere *

*B.A., B.Sc., O.D., F.A.A.O.

This article will present a step by step approach for testing Sports Vision Visual Skills.

This is only my particular method at this time. Everyone has, of course, his or her own ideas and may do different tests in the various skill areas. I try to follow the American design as much as possible so that I can eventually compare their results and mine. However, it is not always feasible due to equipment availability and, thus, other tests must be substituted. Also, I am always making changes where I feel a test is not giving me good information for a certain skill in a particular sport, and so I occasionally try new techniques to improve my evaluations.

After I collect all my data I then score each skill area. I presently test in 14 different areas — (See Figure 1).

I have a scoring key for every test I do in order to be consistent in my evaluation. I often do more than one test for each visual skill. After each test, I then give a score from 1 (very poor) to 5 (excellent) for each skill. The scores are totalled to give what I call a "Sports Vision Average". This allows me to compare the athletes not only in each individual skill but also on an overall basis. I plot this in a graph form which makes it easier to show a coach, trainer, athlete or parent how the performance was generally, and to suggest what areas need improvement. It also provides a basis to compare athletes on the same team and, as well, other athletes in the same sport, — a simple, but effective method. (See Figure 2)

SECTIONS

Figure 1
VISUAL SKILLS PROFILE

Rating	Very Poor	1
	Poor	2
	Good	3
	Very Good	4
	Excellent	5
1.	Static Visual Acuity	_____
2.	Dynamic Visual Acuity	_____
3.	Eye Tracking	_____
4.	Accommodation	_____
5.	Eye Teaming (Binocular Fusion)	_____
6.	Depth Perception (Stereopsis)	_____
7.	Peripheral Awareness	_____
8.	Visual Reaction Time	_____
9.	Eye-Hand Coordination and Central-Peripheral Awareness	_____
10.	Balance + Eye-body Coordination	_____
11.	Balance + Peripheral Awareness	_____
12.	Vision & Balance	_____
	Sports Visual Skills Total	_____
	Sports Visual Skills Average	_____

Visual Skills — Tests

First, I like to do a complete visual analysis to get accurate information with regard to refractive status, etc. and, of course, overall ocular health.

1. Static Visual Acuity:

The best Snellen acuity monocularly and binocularly is recorded for a test distance of 20 feet, aided if the athlete wears a correction while playing his or her sport. (Note, if a correction is normally used, this should be worn for all visual skills tested.)

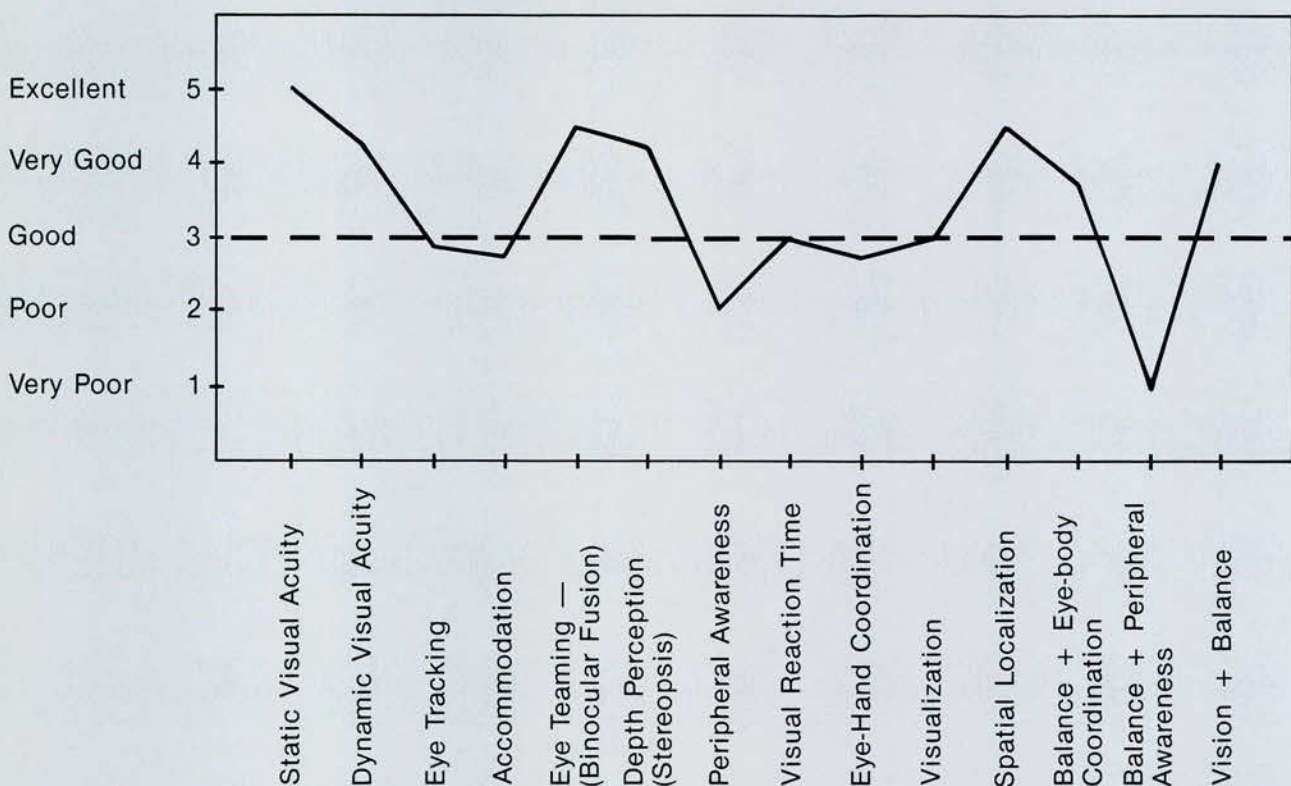
2. Dynamic Visual Acuity:

Two tests —

(a) Using a Sherman disc on a record player which has 3 speeds, 33 1/3, 45 & 78 RPM — the athlete bounces on a small trampoline 10' away and the smallest letters he or she can read correctly, size & speed, is recorded. (Monocular and Binocular). (A Sherman disc is a round card which fits over the record player spindle and has various letters and numbers in rows & groups at both a 20/30 and 20/60 demand at 10'.)

(b) Next, a letter size of 20/40 is projected with what I call the Rosere Dynamic Vision Tester at a 10' test distance and the fastest speed at which they are able to see the letter correctly is recorded. Three trials are made here — The Dynamic Vision Tester is a small variable motor device which rotates a mirror.

Figure 2
VISUAL SKILLS PROFILE GRAPH AVERAGE = 3.336



SECTIONS

The rotating mirror reflects Snellen letters onto a screen 10' from the athlete and the speed can be varied from 100 RPM's to 20 RPM's.

In testing, I start at the fastest speed and slowly reduce it until the athlete can correctly name the letters.

3. Eye Tracking:

(a) Pursuits, saccades and rotations are performed at near and the results noted. Here I look for smoothness and quickness of performing these tasks. Jerkiness, overshoots, etc. are all noted for scoring purposes.

(b) Here also a King-Devick test is projected at 10' by means of an overhead projector. This test consists of reading numbers in a normal reading sequence. There are three different parts to this test, which progresses in difficulty. The total time to do all three is recorded as well as the number of errors.

(c) The Groffman tracing test is projected onto a screen at a 10' distance and the athlete has to track lines from the top of the screen to the bottom through the maze of the overlapping lines. The accuracy and time is noted.

4. Accommodation:

(a) In 30 seconds, it is recorded how many cycles the subject takes to clear ± 2 D lenses with a 20/40 demand at 16". It is also noted how fast the athlete can clear the print with each change of demand.

(b) Testing is also done on the facility to change from a 40 cm to a 3 m visual target (20/80 demand) and again back to the 40 cm target. The number of cycles is recorded in a 30-second time period. This is repeated using a 20/20 demand at 40 cm and 6 meters.

5. Eye Teaming (Binocular Fusion):

The data from the visual analysis workup is used here. (Von Graefe) or the Telebinocular tests of Keystone; fusion, vertical and horizontal phorias at distance and near are tested.

6. Depth Perception (Stereopsis):

(a) Keystone Multi-Stereo Test performed in the Telebinocular.

(b) AO Vectographic slide at distance.

(c) Randot test at near.

The degree of stereopsis is recorded and the time to perform the tests noted as well.

7. Peripheral Awareness:

The Wayne Peripheral Awareness Trainer (PAT) is used. Two trials are performed and the average taken. This test is performed presenting stimuli in eight distinct visual field locations. The subject is placed 2 feet from the PAT and instructed to maintain fixation on the central light. He or she moves a joystick in the direction of the light as quickly as he or she is aware of its being lit.

8. Visual Reaction Time:

(a) Using a Lafayette shutter control with a Kodak projector, several groups of numbers are presented at .10 second. The number of errors are recorded and the largest span of recognition noted.

(b) With a Bassin Reaction Timer (available from Lafayette, Indiana; or Technolab in Montreal), stimuli are presented at varying speeds and reaction times recorded. This instrument consists of a runway (7½') with a series of red lamps (48). The lamps, in succession, light from one end of the track to the other. The athlete must either break a photoelectric beam when the last light is lit or press a button control. Speeds tested range from 10 mph to 150 mph. (Runway modules, 30" in length with 16 lamps can be used to expand the system).

(c) The new computerized Wayne Saccadic Fixator is used with a program to test visual motor reaction and response. The athlete presses and holds a button on the instrument and as soon as he or she is aware of another's being lit somewhere on the display board, (s)he must remove his or her finger and hit the one which is lit. The time it takes to release the held button and the time taken to press the new lit button are both displayed on the instrument and recorded.

9. Eye-Hand Coordination and Central-Peripheral Awareness:

(a) The new computerized Wayne Saccadic Fixator instrument is also used here. The program is one where the subject must press as many lights as possible in 30 seconds. As (s)he presses the lights, the speed at which they are presented is automatically increased. The score is the correct number of "hits" multiplied by the highest stimuli speed. (Note: This instrument is capable of a multitude of different programs for testing and training).

(b) *Eye Span* (available from Bernell)

The instrument tests in Mode A for proaction time and Mode B for reaction time, at .75 sec. The Eye Span is an instrument consisting of 64 red-light buttons. In Mode A, the athlete presses as many as possible in 30 seconds. The buttons light at random after each one is pressed. In Mode B, the stimuli do not wait to be pressed but move on to other lights randomly at a speed of .75 seconds and the athlete must press the button while it is lit to score a point.

(c) The new Wayne Fixator is used to measure similarly to the above Eye Span. In parts b and c, the score is recorded as follows:

$$\text{Part A) = } \frac{\text{Score}}{60} = \text{ratio}$$

$$\text{Part B) = } \frac{\text{Score}}{30} = \text{ratio}$$

$$\text{Rosere Sports Vision Average = } \frac{\text{Part A + Part B}}{2}$$

10. Balance + Eye-body Coordination:

(a) Using the Wayne Saccadic Fixator with a balance board the subject has to maintain balance (i) while both eyes are open and straight ahead, (ii) eyes closed, and (iii) finally with eyes open and doing tracking exercises. The tests are performed for 15 seconds each time and the number of times the athlete goes off balance are recorded.

(b) The athlete here is asked to move the balance board bodily in the direction of the light which appears on the fixator. The number of lights "hit" are recorded for three trials of 15 seconds each.

SECTIONS

11. Balance + Peripheral Awareness:

Here the Wayne Peripheral Awareness Trainer is used with the balance board and the subject has to move the board as quickly as possible towards peripheral visual stimuli while maintaining central fixation. The time required to move the board in the direction of the lights is recorded. This is displayed on the PAT.

12. Balance + Vision:

This test is done on a standard 2' x 4', 10' long balance board. The subject has to maintain gross motor balance under various test conditions, such as saccades, pursuits, rotations and near point of convergence tasks, walking the board with eyes opened and closed, etc.

Figure 3
DARTMOUTH OPTOMETRIC CENTER
SPORTS VISION SCREENING

Name _____ Age _____ Team/Organization _____
Yrs. of experience _____
Sport _____ Position _____ at this level _____ Date _____

Case History Circle or fill in required information (Question 1-19). If you have questions regarding any of these items please ask a doctor for assistance. This screening is designed specifically for athletes. The purpose is to evaluate the efficiency of those visual skills necessary for peak sports performance. Our goal is to assist you in reaching your potential. Please consider all questions carefully and answer as thoroughly and accurately as possible.

YES NO 1. Have you ever had a **complete visual examination** by an eye care practitioner?

- a. If yes, when was your first examination? _____
b. If yes, when was your most recent examination? _____
c. What is the name of your eye doctor and where does he/she practice? _____

YES NO 2. Have you ever been involved in a visual training program? (Remedial or enhancement)

- a. If yes, when and for what reason(s)? _____
b. If yes, do you feel it was successful? _____
Explain _____

YES NO 3. Do you wear glasses? _____

- a. If yes, how old are they? _____
Are they satisfactory at present? YES NO
When used? Near distance Far distance Both
During sports? YES NO
b. If no, have you ever had glasses in the past? YES NO If yes, when/why did you stop wearing them? _____

YES NO 4. Do you presently wear contact lenses? If yes, what type? soft rigid gas perm

- a. If yes, do you wear them during sport? YES NO
Do you wear them all day? YES NO
When did you last have them checked by your eye care practitioner? _____
List any problems with your present lenses _____

- b. If no, have you ever had contact lenses in past? YES NO If yes, when/why did you stop wearing them? _____

YES NO 5. Do you ever see blur?

- a. If yes, where? Near distance Far distance
How often _____
b. During sports? YES NO How often _____

YES NO 6. Do you ever see double?

- a. If yes, where? Near distances Far distances
How often _____
During sports? YES NO How often _____

YES NO 7. Do you ever feel you have difficulty "keeping your eye" on a moving object (i.e. ball, puck, etc.)? If yes, please cite examples and describe _____

YES NO 8. Do you notice variations in your performance during a game or event?

YES NO 9. Do you notice variations in your performance over a period of time such as in a tournament?

10. Performance is most consistent a. early b. later during sports performance

YES NO 11. Is performance consistent during critical competition situations?

YES NO 12. Is your performance the same for night competition as for day competition?

YES NO 13. Do you experience loss of concentration during sports performance? If yes, explain _____

YES NO 14. Cite examples related to questions 8-13. _____

YES NO 15. Are you experiencing any visual difficulties? If yes, please describe _____

YES NO 16. a. Please rate your feeling regarding the importance of vision in your sport. (1=not important, 9=extremely important, circle one) 12
3 4 5 6 7 8 9

b. How do you feel vision is important in your particular sport? _____

YES NO 17. Do you use visualization/imagery techniques? If yes, please describe _____

YES NO 18. Have you ever had an injury, surgery, infection or disease, involving your eyes? If yes, explain _____

19. Further information (List any other visual performance concerns you may have) _____

SECTIONS

Finally, I also test for eye dominance, done by either a simple "tube sighting" test, or the "Benton test" for eye dominance.

Other information gathered is the case history, which basically determines how an athlete's vision affects his or her particular sports activity. This can be a very useful and necessary procedure. (See Figure 3 — based on that recommended by AOA Sports Vision Section).

Most of the above testing procedures and instrumentation can be adapted for enhancement techniques also.

Appendix A shows the recording form used for all the tests mentioned.

These ideas are intended for those optometrists who are interested in providing a Sports Vision segment in their practices. Hopefully, more people will share their own ideas and results so we can eventually standardize evaluation procedures

and test criteria. I feel that the recently formed Sports Vision Section of the Canadian Association of Optometrists will be an excellent means to accomplish this goal.

References

1. Seiderman, Arthur, and Schneider, Steven. The Athletic Eye. Hearst Books, N.Y. 1983
2. Coffey, Bradley, and Reichow, Alan. Vision Evaluation, Revised Testing Protocols, Sports Vision Section, AOA, 1986
3. Sports Vision Guide book. Sports Vision Section, American Optometric Association.

APPENDIX A Sports Vision Evaluation

1. (a) Static Visual Acuity (b) Static Retinoscopy

Aided Unaided

O.D. O.D.
O.S. O.S.
O.U. Rx O.D.
O.S.

2. Dynamic Visual Acuity (c) ROTATOR (Rosere DVAT)

(Sherman disc) 10' O.U. Letter Size _____
Speed _____ Max RPM'S _____
Letter Size _____ Avg. _____

3. Eye Tracking (a) Near (b) Projected - Far

Pursuits 1 2 3 4 5 (Groffman)
Saccades 1 2 3 4 5 1 2 3 4 5
Rotations 1 2 3 4 5

(c) Projected King-Devick

Test #1 Test #2 Test #3
Time
Errors

4. Accommodation

(a) 16" O.U.
Time 30 seconds # of cycles _____
+2.00 Fast Moderate Slow Can't Clear
-2.00 Fast Moderate Slow Can't Clear

(b) Accommodative/Vergence

Time 30" # of cycles _____
20/80 _____ CPM
20/20 _____ CPM

4. (c) Accommodative/Vergence

1. 20/80 U's at 10' DUS - 20 N 401
U's at 16" DUS - 20 N 801

RRUULLDR
ULRDDRLU
LDDLRLUR
DRLUULRD
LURRDDLL

Score #cycles in 30" _____ CPM
Errors _____

2. 20/30 U's at 15' DUS - 100 F 201
U's at 20" DUS - 100 80 1

RLUULRDDUURLURLUDLLD
DDRRURRUDRLURLUUDRLL

R L D U L D U R R L D D L U U R L D D R
U U L D D L R D U R L R D D L U R L D U

Score #cycles in 30" _____ CPM
Errors _____

5. Eye Teaming (Fusion)

Keystone	Distance	Near	Von Graefe
Vertical			∞
Horizontal			16'
Fusion (f-ball)			

6. Stereopsis

(a) Multi-Stereo Test Score _____ % (Near) Time _____
(b) Stereopsis _____ (Far) Time _____
(c) Randot Test _____

7. Peripheral Awareness

P.A.T. Scores (Clockwise)
Test distance 2' (180°) Trial #1 Trial #2
Position 90° #1 Seconds
(8-Position Test) 2 _____
3 _____
5 _____
6 _____
7 _____
8 _____
Total _____ Avg. _____

8. Visual Reaction Time

(a) Tachistoscope .05" .10"
Span 3 4 5 6 7 8 9

(b) Bassin Reaction Times

Speed	Trial #	Speed
10 MPH	1	110 MPH
	2	
	3	
	4	
	5	Avg. _____
	6	10 MPH
Avg. _____		Post 110 MPH
		Trials

(c) Vision Reaction Time

Speed .10
Digits 898 (Demo)
782 # of errors _____ /74
5687 number

1

SECTIONS

Sports Vision Visual Skills Test Results — Tennis & Baseball

R.A. Rosere *

Introduction

There has been a growing interest in the visual abilities of athletes as a speciality within Optometry known as Sports Vision becomes firmly established.

A need to know what visual skills are important for an athlete in a given sport and what levels are necessary to provide consistent performances, especially under stress, will be imperative.

The evaluation of visual skills of 26 tennis players, ages 10 to 17, was performed from 1985 to 1987. These players were selected from a year-round tennis training program for elite juniors in cooperation with Tennis Canada and the Nova Scotia Tennis Association.

Visual skills for 24 baseball players, ages 16 to 20, members of the Nova Scotia summer games baseball team of 1985, were also tested.

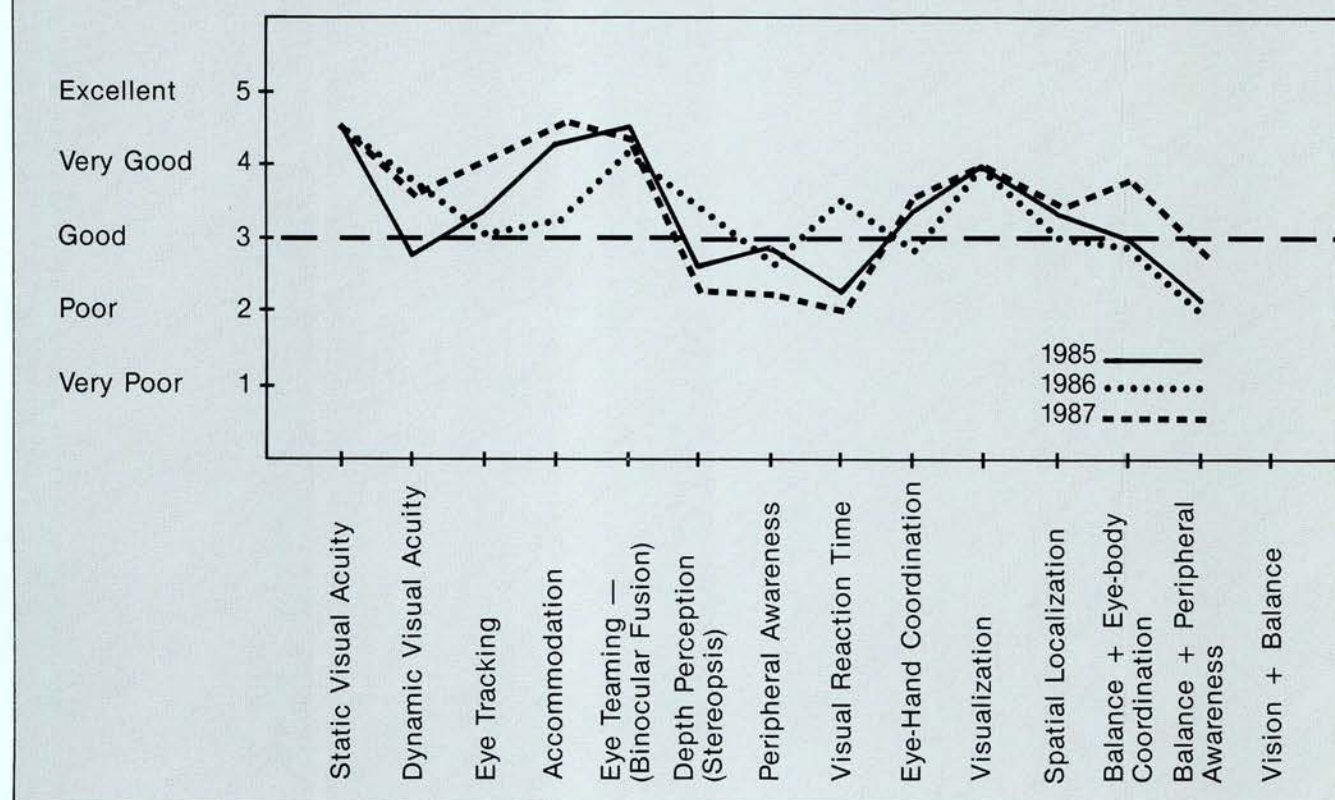
The tennis players were tested in 13 different skill areas while the baseball players were tested in 11. The areas tested are listed in Figures I and III.

*B.A., BSc., O.D., F.A.A.O.

Figure 1
Tennis Player Results

SKILL	1985 10 players-	1986 9 players-	1987 7 players-	Total 26 players
1.Static Visual Acuity	4.50	4.56	4.43	4.50
2.Eye Teaming	4.60	4.44	4.21	4.42
3.Accommodation	4.25	4.44	3.21	3.97
4.Visualization	3.85	3.89	3.86	3.87
5.Eye Tracking	3.40	4.06	3.04	3.50
6.Dynamic Visual Acuity	2.75	3.53	3.64	3.31
7.Spatial Localization	3.40	3.44	3.0	3.28
8.Eye-Hand Coordination	3.40	3.56	2.79	3.25
9.Balance + Eye-Body Coordination	3.0	3.75	2.86	3.20
10.Depth Perception	2.70	2.50	3.40	2.87
11.Peripheral Awareness	2.88	2.39	2.71	2.66
12.Visual Reaction Time	2.25	1.89	3.54	2.56
13.Balance + Peripheral Awareness	2.3	2.89	2.0	2.40
Total	43.28	45.34	42.69	43.79
Visual Skills Average	3.33	3.49	3.28	3.37

Figure 2
Visual Skills Profile Graph



SECTIONS

For purposes of this report, when comparing the results, we will only look at the 11 areas which were tested for both sports. The two areas not tested for the baseball players were balance + eye-hand coordination and balance + peripheral awareness.

Results

Figure I shows the results of evaluating 26 tennis players over a three-year period. The results are displayed in order of the best to the worst for the combined total of the three years. The score shown is the average given for each skill of all the players. The skill for every player was given a score of between 1 and 5, 1 being very poor and 5 being excellent.

From the results in Figure I and the graph in Figure II, we can see similarities between the three years listed and also note which skills scored the best and which the worse.

The graph seems to indicate that, for the three different years tested, the pattern for skill level is similar in most cases.

Figure III shows the results of the testing of 24 baseball players in 1984-85. The scores indicate a higher skill level than for the tennis players. The average age level was higher here than for the tennis players. These were also athletes who were the final selections for the Summer Games team. Thus, they could be considered to be of superior athletic ability and some, in fact, have now gone on to play professionally.

Comparison of the combined scores for the tennis and baseball players is shown by the graph in Figure IV indicating some similarities in visual skills performance.

For the tennis players, the best skills (>3.50) were:

Static Visual Acuity
Eye Teaming
Accommodation
Visualization
Eye Tracking

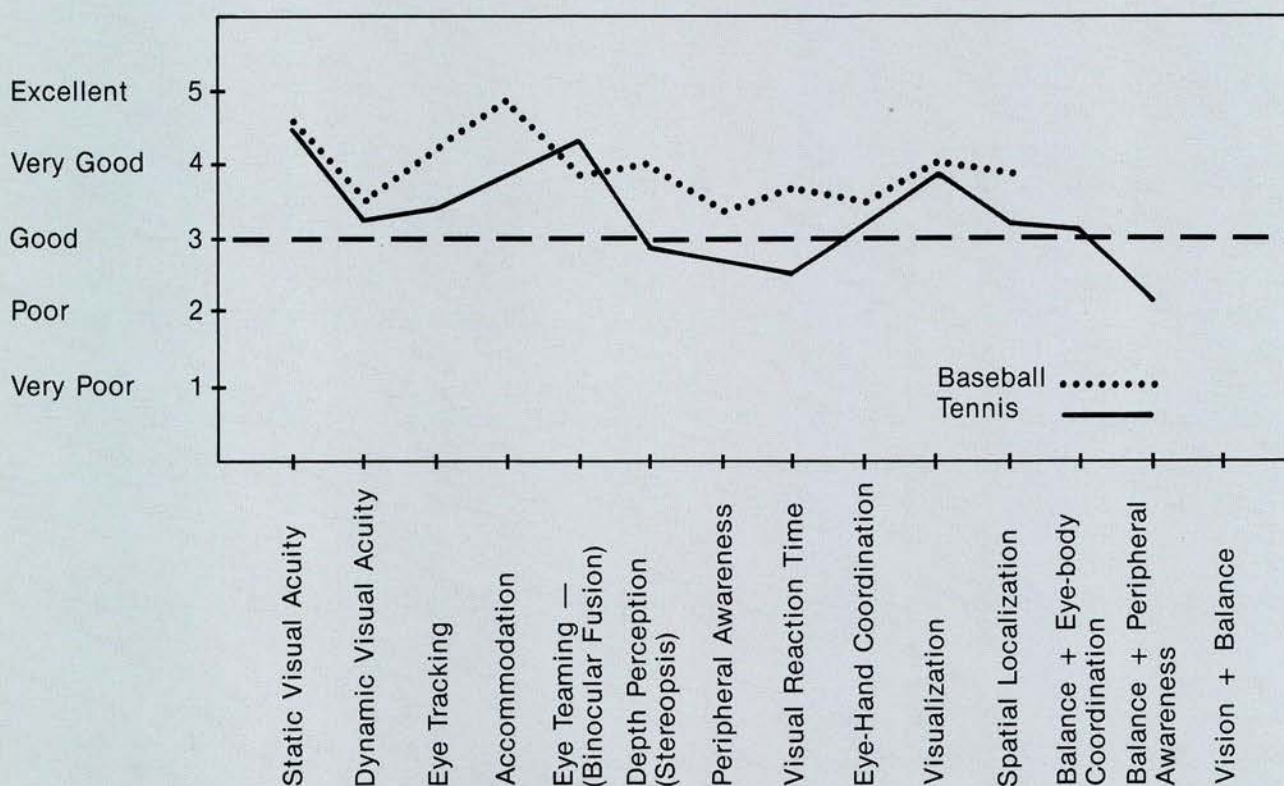
Figure 3
Baseball Players' Results — 1985

SKILL

1. Accommodation	4.88
2. Static Visual Acuity	4.73
3. Eye Tracking	4.40
4. Depth Perception	3.94
5. Visualization	3.94
6. Spatial Localization	3.90
7. Eye Teaming	3.83
8. Visual Reaction Time	3.75
9. Eye-Hand Coordination	3.60
10. Dynamic Visual Acuity	3.58
11. Peripheral Awareness	3.40

Total	43.95
Visual Skills Average	4.0

Figure 4
Visual Skills Profile Graph



SECTIONS

The baseball players' best skills (>4.0) were:

Accommodation
Static Visual Acuity
Eye Tracking

The two worst skills tested for tennis were:

Peripheral Awareness
Visual Reaction Time

And for baseball, they were:

Peripheral Awareness
Dynamic Visual Acuity

Discussion

These results by themselves do not necessarily reveal which skills are the most or least important for tennis and baseball. This would have to come from testing athletes who are already very proficient in these sports.

Because of the age of these players and their inexperience, we can only look at the results and see areas which seem to be deficient where enhancement might help their performance. We assume that these particular skills are important for the sport.

More studies of elite athletes will show us which skills are the most related to a particular athletic function. The results from these evaluations can be studied, conclusions about deficient areas more accurately determined and, thus, enhancement programs established.

Conclusion

From these evaluations emerge such questions as "Which visual skills are most important and which skills least important for different sports?" "Will we eventually be able to suggest players for certain sports or positions on team sports based on their performance in visual skill areas?" "Will we be able to predict the top performers in competitions based on their visual skills level?"

Much more testing of our athletes will have to be performed and in a standardized way for us to be able to answer some of these questions. Already, in the United States, the Sports Vision Section of the American Optometric Association has tested thousands of athletes at the National Olympic Festivals in the last several years. This testing has recently become more standardized and, in the near future, the results of these evaluations could prove to be very helpful. Perhaps the recently established Sports Vision Section of the Canadian Association of Optometrists will be able to arrange testing of Canadian Olympic athletes. This would provide Canadian optometrists with direct, first-hand experience in testing sports visual skills and provide us with data from which to develop profiles of visual abilities in sports.

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1. Seiderman, Arthur, and Schneider, Steven.
The Athletic Eye.
Hearst Books, N.Y. 1983
2. Coffey, Bradley, and Reichow, Alan.
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Testing Protocols, Sports Vision Section, AOA, 1986
3. Sports Vision Guide book. Sports Vision Section, American Optometric Association.

PRESIDENT'S PODIUM/MOT DU PRÉSIDENT

(continued from page 77)

Since that time, this message has already been addressed by CAO at the Council and National office staff level and I think we can promise to do even better.

Also at a national level, a second major Association priority is headed **Federal Government Relations** and, not surprisingly, the first "sub-head" under this banner headline is **communication**. Between our national office (representing our profession and the vision and eye care needs of the public we serve) and the myriad of Federal Government Departments lie a vast number of channels along which messages must be directed by us — and received by them.

This is no small task as those of you who have tangled with the enormity and the complexities of the Federal Government's bureaucratic organization will already know. But an awareness of the scope of the challenge makes it no less a necessity and, so far as I will be concerned, no less a priority.

At the risk of over-repeating a message already heard in this column — we can't do it alone.

For this reason I am counting on the support of the members of our profession to get the job done — to enable us, on your behalf, to ensure that the quality of eye care we provide is the best possible service for all Canadians — from Vancouver Island to Newfoundland.

I welcome your comments.

Dr. T.L. Adamack, President

(suite de la page 78)

Autre grande priorité de l'Association à l'échelle nationale : les relations avec le gouvernement fédéral, lesquelles ont aussi comme condition, personne ne s'en étonnera, la communication. Entre notre bureau national (qui représente notre profession et, pour ce qui est de la vue et des soins ophtalmiques, le public que nous servons) et la myriade de ministères du gouvernement fédéral, multiples sont les voies que peuvent emprunter les messages que nous leur adressons et que nous recevons d'eux.

Ce n'est pas une mince tâche. Ceux qui ont eu affaire à l'étendue et à la complexité de l'appareil bureaucratique fédéral le savent. Toutefois, la connaissance de l'envergure d'un défi n'en diminue pas pour autant le côté pressant ni, quant à moi, l'aspect prioritaire.

Au risque de répéter un message maintes fois lancé dans la présente rubrique, nous ne pouvons réussir seuls.

Je compte donc sur l'appui des membres de notre profession pour que soit fait ce qui doit se faire, pour nous permettre d'assurer, en votre nom, que la qualité des soins ophtalmiques que nous offrons à l'ensemble des Canadiens, de l'île de Vancouver jusqu'à Terre-Neuve, soit la meilleure possible.

Je vous saurais gré de me faire part de vos commentaires.

**Le président,
Dr T.L. Adamack**



BOOK REVIEWS/LU POUR VOUS

History of the American Academy of Optometry by James R. Gregg, O.D. 207 pp., illustrated, hardcover. American Academy of Optometry, 1987. \$25.00

History of the American Academy of Optometry chronicles the evolution of the Academy from its inception in 1922 to the end of 1987.

Unfortunately, Optometry Professor Gregg's style is characterized by a bleak, documentary prose as he charts optometrists' ascent from our self-taught origins in the rear of jewelry stores to our contemporary professional office environments on a par with MD's and DDS's. The writing does not jump off the page.

Carefully apportioning praise where it is due and admitting his personal bias in telling the story, he presents us with what amounts to a series of reflections. The reader, however, should not look for any revealing detail in what seems like intense agonizing over such crucial issues as association/dissociation with the medical fraternity. Neither is there so much as a word about the influence of instrumentation technology on the makeup of sessions.

But perhaps worst of all, Gregg makes no attempt to set events in an historical context. The reader may well wonder, for example, what society as a whole was doing during the Academy's proceedings and how the two interrelated. In other words, the broad scope of events is missing. How did the Academy help shape Optometry in the field and what actual control, if any, was exerted over wayward members? Even more importantly, what did the average optometric patient think of the changes in the profession being encouraged by the Academy? But look for no answers here. Even World War II is summed up in just one sentence!

The reader may well wonder,
for example, what society as a whole
was doing during the Academy's proceedings
and how the two interrelated.

Gregg's point of view goes beyond his self-confessed bias and is, in fact, protective of the Academy. He makes no exploration, for example, of why certain optometrists chose not to join the organization.

Unquestionably, the author is qualified to write the book — if the reader defines "qualified" in terms of past optometrical publications rather than literary talent. But *History* . . . reads like the Minutes of a meeting. Sentence after sentence begins "It . . .", "The . . .". As a result, it is a slow read, a process further hampered by the annoying recurrence of inexplicably blank pages — wastefully and unnecessarily inserted throughout. (There were 13 of them in my copy.)

Taking *History* . . . solely as a source of information, the browsing reader will find it fairly well-researched, albeit lacking the tight editing of a good Government of Canada publication. The recreational reader, however, would be well advised to look elsewhere. Even banquets are reduced to audit/inventories of

menus, desserts and methods of preparation (barbecued pork, roasted quarters of beef, etc.).

C.C. Koch's authoritative personal influence on the makeup of the Academy's Executive Council is admitted in an intriguing footnote — but minus the hoped-for details. This particularly noteworthy man's character is never really revealed to us

It is hard to believe that this book was
written in 1987. Its monosexual terminology
makes one think that a women's
"movement" had never occurred.

and we are left to our own imaginings based on two widely divergent accounts. In one, Gregg reprints two glorious paragraphs from Koch's 1973 eulogy. Subsequently, it is noted by Gregg that when the "Koch Era" ended, several years would be required to piece things together during "the struggle" that followed what is by now referred to as "the disarray".

Actually, I suspect that Koch's personal philosophy went far in influencing the Academy's exclusively male membership in its early years. As a female practitioner in a profession whose female membership is fast heading towards the majority, I find this to be a particularly demeaning feature of *History* . . .

As far along as 1969, Koch makes reference to the "OD and his patients". It is hard to believe that this book was written in 1987. Its monosexual terminology makes one think that a women's "movement" had never occurred. Invited to the Academy meetings were scientists, educators and media representatives, yet whose professions seem not to have included any worthy "ladies". Early on, for example, while Gregg indicates an awareness that Optometry does include women, he mentions us briefly only twice more and, even then, in the rather insensitive venue of a footnote in both cases. In the final, curtly dismissive allusion, the reader is informed that very few women were "involved in Optometry in 1950 and the next several decades" and no more is said on the subject, leaving me to wonder if some unmentioned inadequacy perceived by Gregg contributed to this insignificance.

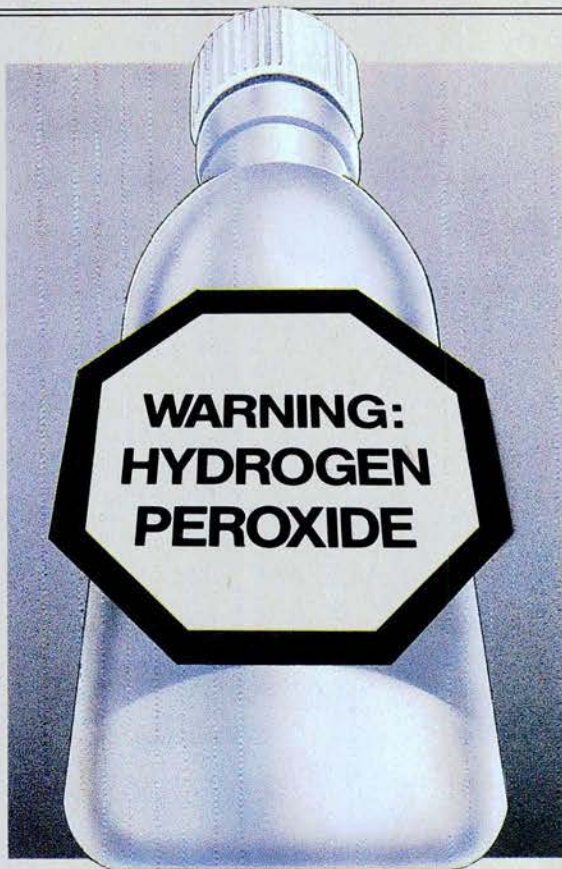
Food descriptions, on the other hand, merit substantial space in the main text. So do "Wives' Programs" at the Academy's meetings. Indeed, one even finds an indexed reference to "Ladies' Program at Annual Meetings".

But Gregg's omission of professional women in the Index can certainly not be attributable to lack of space. He finds room for, as an example, "holier-than-thou attitude". And neither is it as though he dislikes females. On the contrary, if one appears accommodatingly in the company of an OD as "beauteous", or "dressed in a ball gown", or even voicing approval of a post-lecture barbecue, Gregg finds her alright. He even admits to "consulting" one of them in the course of preparing his manuscript!

No female face, however, intrudes upon the array of forty-eight countenances whose photographs appear throughout *History* . . ., forty-nine if one counts Gregg's.

(continued on page 131)

WHY TAKE THE RISK?



The use of hydrogen peroxide systems has raised questions concerning potential risks to the eyes of contact lens wearers.

PROBLEM

Many patients don't consistently take the time to properly disinfect their lenses – In haste they may neutralize them improperly or even forget to neutralize them.

RESULT

Hydrogen peroxide enters the eyes – The corneal threshold for hydrogen peroxide is 50 parts

per million in solution, therefore neutralization would only have to reduce the hydrogen peroxide to ≤ 50 ppm, and the patient would not feel the peroxide from the lens.¹

SHORT-TERM EFFECTS

"Ocular exposure to 3 percent hydrogen peroxide,...can result in stinging, tearing, hyperemia, blepharospasm, edema, and possibly permanent corneal damage."²

LONG-TERM EFFECTS

Hydrogen peroxide may increase the risk of intra-ocular complications – Studies have raised the concern that if hydrogen peroxide can pass through the cornea and into the anterior chamber, it could possibly have long-term effects on intra-ocular structures, such as the crystalline lens.¹

Hydrogen peroxide may accelerate the natural decline in endothelial cell numbers – Studies have demonstrated definitively with rabbits that hydrogen peroxide is highly toxic to the endothelium, and that long-term damage can occur.^{1,2} "Levels as low as 2 ppm caused immediate severe swelling in isolated rabbit corneas."² The concentration currently being used for lens disinfection is 30,000 ppm.

DON'T TAKE THE RISK.

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Recommend the OPTI-TAB one-step disinfection system for:

Safety

OPTI-TAB chlorine tablets have no harsh chemicals or preservatives, to cause irritation to your patients' eyes. No neutralization step means a safer, simpler product. Years of international experience have demonstrated the safety of the OPTI-TAB system.³

Simplicity

Patients like the one-step system and find it easy to use. The unit dose tablet form makes the system practically foolproof.⁴

Efficacy

The OPTI-TAB system was found to be an effective disinfecting system, with both bactericidal and fungicidal activity.³

Use OPTI-TAB with Alcon's Opti-pure aerosol saline, a preservative free, sterile saline solution.

Safety and Simplicity = Compliance

1. Kersley JH. (Chairman) Contact lens care into the future. Highlights of a roundtable discussion. Core communications, Toronto, Ontario, 1987. 2. Gyulai P. Relative neutralization ability of six hydrogen peroxide disinfection systems. *Contact Lens Spectrum*, p. 62-68, May 1987. 3. Data on File. Alcon Canada Inc. Mississauga, Ontario. 4. Parker JH. The influence of material structure upon C.L. cleaning. *Contact Lens Forum*, p. 27-44, June 1983.

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BOOK REVIEWS/LU POUR VOUS

(continued from page 128)

Women aside, the book's complimentary little vignettes of the Academy's early life ignore relevant information about these pioneers' profiles: the effect of the extra work on health and income, time spent in clinical practice, relations with medicine, age of entering members, retirement age, cause of death (particularly if job-related), percentage of offspring entering the same or allied profession, the effects of its progressively enhanced status as a profession and reasons for memberships being withdrawn.

What, we wonder, were the stresses and satisfactions involved in practising Optometry at the time? Did membership in the Academy accentuate or alleviate them? How did non-members fare under some of the foregoing headings, particularly in comparison with members? Did Academy membership decrease the occurrence of malpractice litigation? Did solo practitioners tend to join more readily than those working in partnership or group practices? Was there an undefined support system to aid handicapped members in the mold of an "old boys;" network? Were the first Academy members able to give more time to Academy

Only the food eaten at the Toronto meetings received good coverage. Canada, in fact, is not even listed in the Index.

pursuits because of higher incomes than their professional, non-member peers? How did these incomes compare to those of other health professionals? Or did one become a member simply to make a public statement of dissociation from the "store-fronters"?

A personality profile of the kind of practitioner attracted to membership in the Academy would have made very interesting reading, comparing, for example, one with an edge in technical ability to another possessing superior interpersonal skills.

Much of the "trivia" that is there, meanwhile, would be better left to appendices. Meticulously listed changes in the price of the Academy Journal would have been put to better use in seeking to explain changes in annual membership fees.

And what of the participation by Canadians? Readers are told that 1954 saw Toronto used as the site of the Annual Meeting, hosted by Dr. E.J. Fisher. (As of 1969, the Academy already had 100 Canadian members). Typically, only the food eaten at the Toronto meetings received good coverage. Canada, in fact, is not even listed in the Index.

Meanwhile, although a total of twenty-eight countries now contribute members to the Academy, only Great Britain is identified (other than the US and Canada). In addition, Armed Forces uniforms are very prominent at Academy meetings but the Forces membership is not discussed at all.

In *History* . . . 's preface, it is pointed out that this is not an official statement by the Academy. In fact, it turns out to be not much more than an accommodating archival document, ready for some future historian. The reader comes away knowing not much more about the organization's past than could be gleaned much more quickly by reading the book's chronological appendices.

The definitive, analytical history of the Academy has yet to be written (regrettably, since its most fitting title has now been usurped). Such a work demands a commanding narrative, liberally spiced with anecdotes derived from such a prominent body's birthpangs. As optometrists, we need no longer continue proving how respectable we are now by ignoring our less professional, perhaps even our embarrassing past. We are, after all, a jewel in the crown of world health care.

Helen Feeley, B.A., O.D., F.A.A.O.
Optometrist, Author
Ottawa, Ontario

Spatial Cognition: The Structure and Development of Mental Representations of Spatial Relations by D. Olson and E. Bialystok Hillsdale, N.J. Lawrence Erlbaum Associates, 1983, 277 pp.

L'objectif visé par les auteurs du volume était de synthétiser les connaissances actuelles sur le développement de la représentation de l'espace. Les quatre premiers chapitres sont consacrés à la description des paramètres sous-jacents à ce phénomène et à la formulation des théories susceptibles de l'expliquer. Les sept chapitres suivants contiennent des données empiriques qui démontrent l'application de ces théories à divers phénomènes de représentation de l'espace. Le dernier chapitre est consacré à un résumé des théories, à la description des données empiriques et aux applications possibles de ces théories.

Les deux premiers chapitres décrivent les structures cognitives sous-jacentes au développement de la représentation de l'espace; cette description n'est toutefois pas faite exclusivement en termes de géométrie euclidienne. Ces chapitres contiennent malheureusement plusieurs raisonnements circulaires. Le troisième chapitre qui traite de la représentation de la forme contient une section particulièrement intéressante sur la spécialisation hémisphérique. Les auteurs décrivent leur théorie au quatrième chapitre et tentent d'établir une relation entre la perception et la représentation de l'espace.

Les nombreuses expériences décrites dans les sept chapitres suivants sont de valeur inégale. Les travaux sur la perception de l'horizontale, de la verticale, de la perspective, de la notion d'angle, de l'effet oblique et de l'entraînement à la représentation de l'espace seraient susceptibles de présenter un intérêt particulier pour un praticien.

Le dernier chapitre devrait d'abord être étudié par le lecteur qui dispose de peu de temps. Il contient une synthèse remarquable dans laquelle chaque paramètre est discuté séparément. La comparaison avec la théorie d'Helmholtz sur la perception et la représentation de l'espace est particulièrement intéressante.

Ce volume devrait faire partie de la bibliothèque ou du moins de la bibliographie d'un optométriste intéressé au développement de la perception de l'espace chez l'enfant.

J. Létourneau, Ph.D.
Professeur titulaire
Ecole d'Optométrie
Université de Montréal

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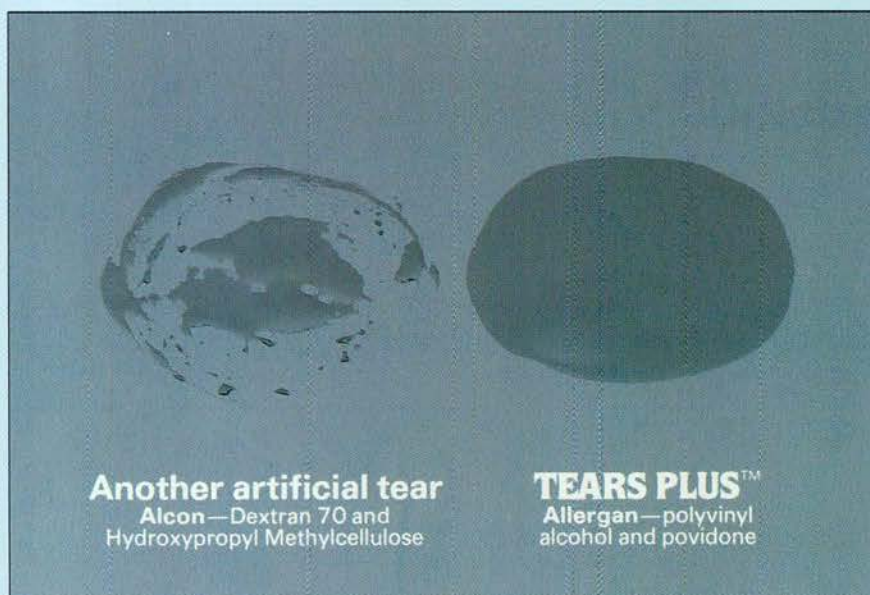


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