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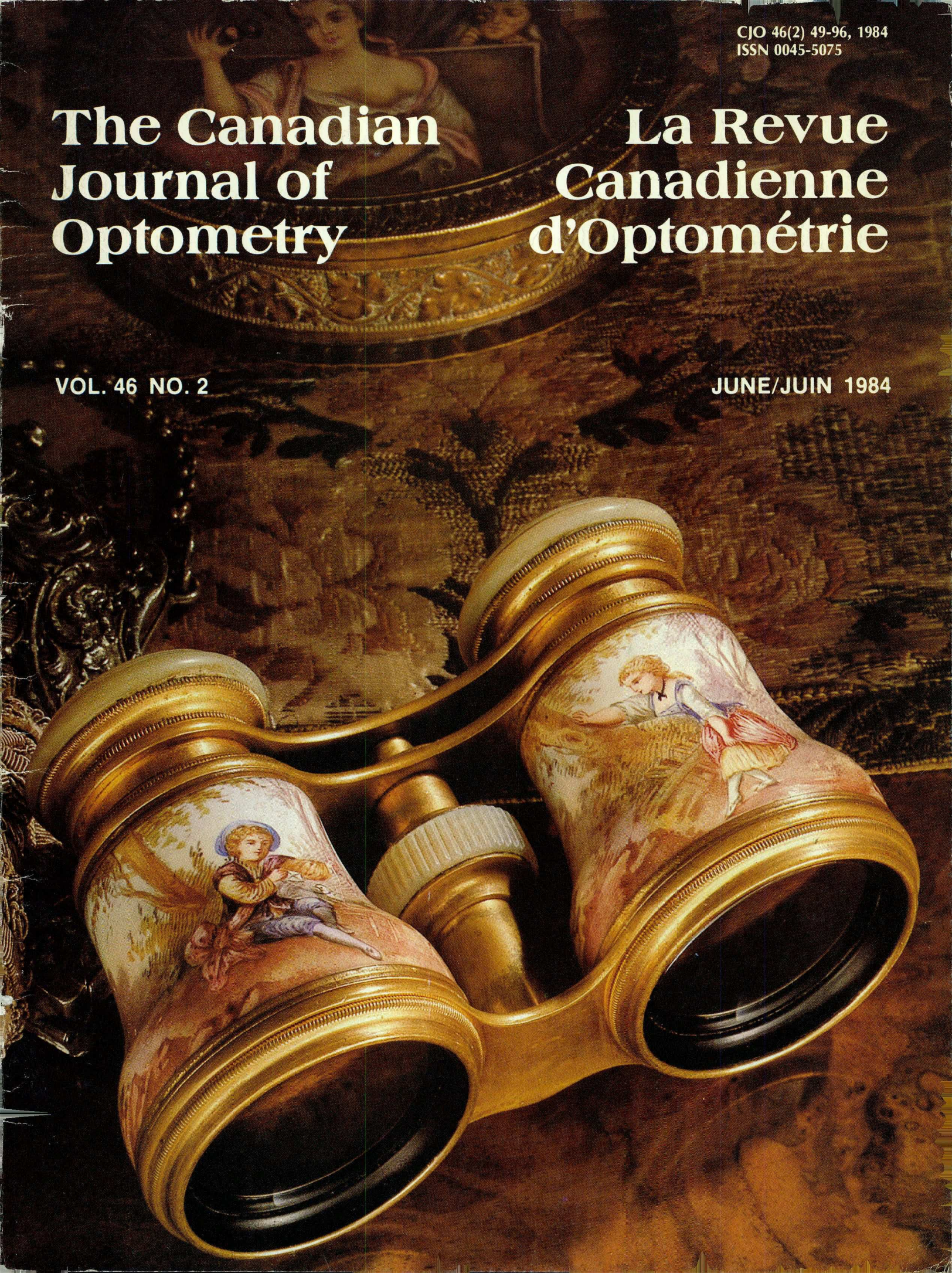


# Let's clear up a few things about anti-reflection coatings.

Anti-reflection coatings on CR-39 provide very valuable properties you may not be aware of.

First, they *do* reduce reflections.

Second, by doing so, they allow up to 5% more light through the lens for an image with more contrast. They actually boost light transmission from 91% to 96%.

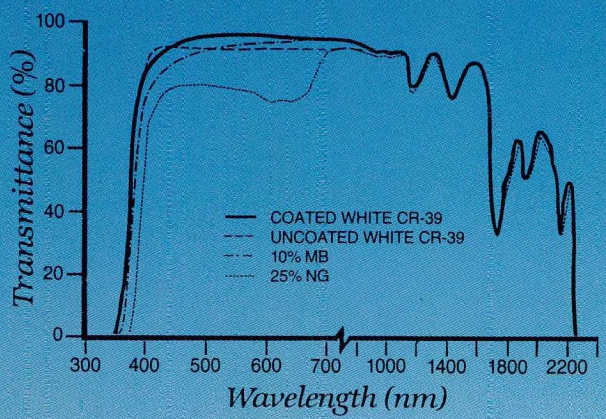
Third, they do form a protective surface on the lens. And, if the lens has been tinted, coatings seal the tint coat in, providing protection against fading.

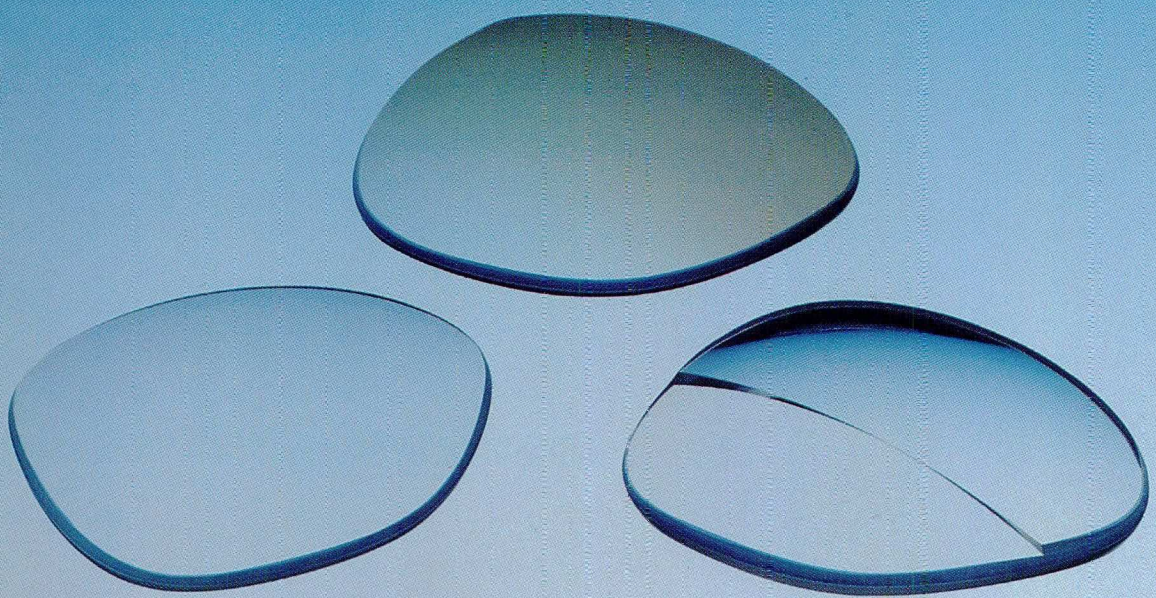
An anti-reflection coating on CR-39 should be recommended where glare and false images caused by light reflections on the lens can lead to eyestrain and headache. People who have to drive at night, work in rooms with fluorescent light, or with computers, are exposed to these problems.

The biggest misconception is that you have to send to Europe for this kind of quality. Europe has now come to you.

Optocoating uses the most advanced, high vacuum technology developed by our parent company in Germany. Our Mississauga laboratory processes orders the day they are received and the coated lenses can usually be sent out the same night.

Anti-reflection coatings have other important advantages that increase user comfort and safety. They're all described in a free brochure available from your lab.



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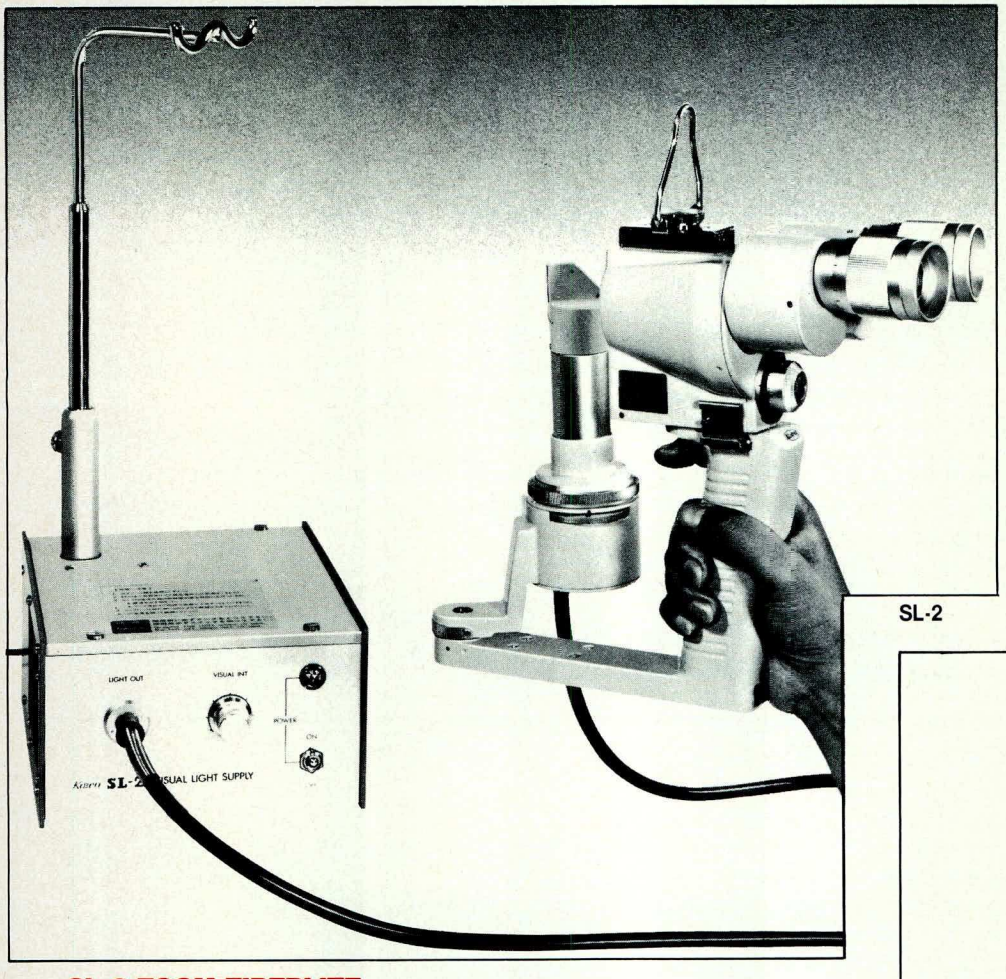
# KOWA SLIT LAMPS
# from Imperial Optical Canada

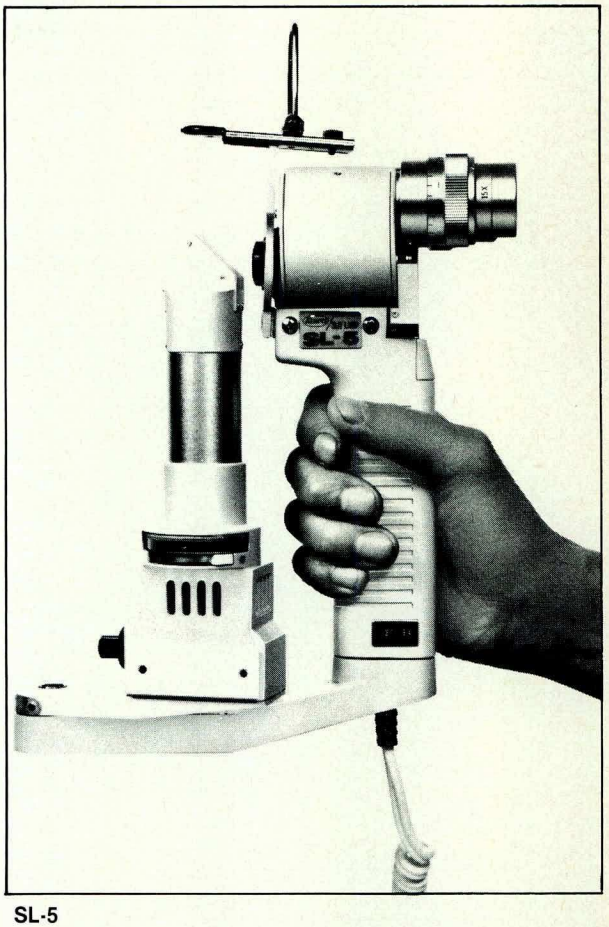



SL-2

## KOWA PORTABLE SLIT LAMPS

Imperial brings you 2 portable slit lamp microscopes which allow you to examine your patients either seated opposite you on a stool or confined to their beds, i.e. with no restriction of their postures.

These new units answer the demand by active practitioners for "a lighter, more compact, and easy to use slit-lamp". Although they are light and compact, their performance is so outstanding that it equals non-portable units.



SL-5

### SL-2 ZOOM FIBERLITE PORTABLE SLIT LAMP Cat.# 433040

**FEATURES:**

- Light weight compactness because of no lamp housing in the body. (Microscope weighs only 1500 grams)
- Brilliant sights with sophistic light guide (fiberlite).
- 5X - 20X continuous zoom stereoscopic observation by single hand.
- Sharp and bright slit and spot images. Slit width is adjustable from 0 to 10mm without steps.
- Built-in green and cobalt filters.
- Variable brightness control.
- Designed not only for hand use but also fixable to its stand just like a larger lamp.

### SL-5 PORTABLE SLIT LAMP Cat.# 433100

**FEATURES:**

- Portable, light and compact slit-lamp microscope, can be used in any patient posture. (Microscope weighs only 900 grams)
- Sharp and bright slit illumination allows you to use it in the bright light of your consulting rooms.
- Bright and sharp image. The magnification can be changed by inter-changing the eyepieces.
- Three stage slit width (0.1, 0.2, and 0.8mm), plus 10mm ϕ spot.
- Built-in blue filter is inserted at the press of a lever.
- Reticles in both oculars provide a measure to assess the object.
- An ON/OFF switch on the grip turns on the illumination when you raise the slit-lamp and turns off when you put it on the hanging rack.
- Provides 10X and 15X (and optionally 20X) magnification.
- Carrying case.

IMPERIAL OPTICAL CANADA

## The Mert deForest Memorial Fund

Every optometrist in Canada has recently received a personal letter from Dr. Sadie Lampard, soliciting your support for "A Joint Project of the COETF and the Mert deForest Memorial Fund."

The project was initiated for the express purpose of documenting optometric history in this country before any more written records and first-hand accounts are irretrievably lost to us.

I would like to affirm that the project has received the full and enthusiastic approval and endorsement of the National Board of Trustees of the COETF. On their behalf, we encourage all members to support this important *national* effort being co-ordinated by Drs. Lampard and Gerry Leinweber, both members of the Alberta Optometric Association, and Dr. Bill Lyle, University of Waterloo School of Optometry.

This chronicle will be viable if $50,000.00 can be raised for its research, writing and initial printing. Donations should be made to the Mert deForest Memorial Fund **in care of the COETF** (to ensure tax deductibility).

I ask that you please join in support of this project.

Yours fraternally, **Dr. Scott Brisbin, National Chairman**
**Canadian Optometric Education Trust Fund**

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All gifts are deductible for income tax purposes under Department of National Revenue Registration No. 0474601-25-10. Official receipt will be mailed on receipt of gift.

**NOTE:** Nous vous demandons d'établir vos chèques comme suit: Fonds de Fiducie des Optométristes Canadiens pour l'Education Enregistré auprès du Ministère du Revenu National sous le No. 0474601-25-10, tous les dons sont exempts d'impôts. Dès réception de votre contribution, un reçu officiel vous sera envoyé.

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The CJO is a quarterly publication with offices in Ottawa at the Canadian Association of Optometrists, Ste. 207-77 Metcalfe St., Ottawa, Ontario K1P 5L6. Telephone (613) 238-2006.

**COVER**

Cover photograph reprinted by permission and courtesy of Carl Zeiss Ltd.

**ERRATA**

In the case report by Dr. K.M. Robertson, *Improvement of Visual Function of a Cerebral Palsied Child . . .*, published in our March, 1984 issue, a small gremlin reversed two paragraphs at the top of page 41. "Sensory Fusion" and the three lines immediately beneath should have appeared at the top of Column 2; "Ocular Health" and the five lines immediately beneath it should have appeared at the top of Column 1.

The Editors apologise for any confusion which might have resulted.

# EDITORIAL

## A Co-operative Attitude

There has always existed a close and sympathetic relationship between optometry and the ophthalmic industry. One could not exist without the other. The relationship has not always been ideal, but there has always existed a degree of mutual trust and respect which has benefitted both parties.

For the greater part, this relationship has been a business one but it has also nurtured many long-lasting personal friendships which motivate the individuals to support each other. The practitioner, by employing the technical services of the laboratories and distributors, helps keep these firms in business. The industry responds by subsidizing optometric functions and providing funds and materials for research, prizes and scholarships or outright donations to our teaching institutions. Advertising in the Canadian Journal of Optometry is another manner of contributing, by helping to make the publication financially viable.

No universal policy for making contributions exists and the decision depends on the administration of each firm. It is satisfying to note that the majority of optical firms do make some contribution, but there are a number who have no consistent policy. Most, if not all, will make indirect contributions by renting an exhibit booth at a congress or convention. This practice should be encouraged, not only for the camaraderie such meetings create, but also because it helps keep practitioners current in the developments in the industry. However, the profession should not abuse this aspect and should organize the programme such that exhibitors get full value for the money and the time they spend for such ventures.

Of greater importance to the future of the profession are contributions to more lasting projects such as bursaries and scholarships, grants for research and development of clinical practice, trust fund donations and capital grants to our teaching institutions. These contributions are usually of considerable monetary value. One could not reasonably expect all firms to contribute to all such projects. One firm may prefer grants for R & D; another, because of its services, may opt for bursaries or prizes; while still others would consider the trust fund more worthwhile.

A small annual contribution to the Canadian Optometric Education Trust Fund should actually be within the reach of most companies, and would be of real value to the profession. The COETF will strengthen the profession, indirectly benefitting the contributing companies. This, then, should be looked upon by the companies as an investment in *their* future too.

It is only fair that practitioners encourage and patronize those firms who have in the past and continue to commit a significant portion of their revenue to optometric projects. Similarly, practitioners would expect that firms heavily patronized by optometrists would manifest some responsibility in this matter, particularly those few firms who have not set any policy in this matter.

In all fairness to the contributing firms, practitioners should not let a few cents, or even dollars, deter them from patronizing these firms who by their contributions manifest loyalty and faith in optometry the profession.

**GMB**

# GUEST EDITORIAL

## The Canada Health Act — Perceptions from the Field

So now we have a new Canada Health Act — Bill C-3.

A lot of work has gone into the Act, on our behalf, by members of CAO and the national staff to ensure that Section 4(3) of the previous Medical Care Act was retained in some form.

The status quo, plus some, has been upheld.

The terminology of the section in question previously restricted the Act to the use of the term "medical practitioner" which meant that, for other health care practitioners to be included in Federal funding, they had to be "specified by the Governor in Council and, if the provincial law so provides, be deemed to be (providing) services rendered by a medical practitioner that are medically required." The new Act now entitles the provinces to include as insured services "similar or additional services rendered by other health care practitioners."

The provincial governments in nine out of ten

provinces have already recognized optometry's role as a primary health provider in their health insurance plans. So what happens next? In which direction should optometry and the other health professions be headed?

One of the stated objectives of the Canada Health Act is to "facilitate reasonable access to health services without undue financial or other barriers." Costs to both the federal and provincial governments are of major concern in the provision of health care. The system wants to reach *all* those in need regardless of economic situation, geographical location or level of care required. Universal accessibility is the goal.

By penalizing those provinces who allow extra-billing, over billing, hospital user fees, etc., the federal government hopes to remove the economic barriers which have reduced accessibility to the health care system and threaten to lead to the development of a two-tiered system of health care. But the future costs of the system need to be looked at now.

Our population is aging, and requires care. Technological change in medicine is a reality, and an expensive one. We do not solve these problems, however, by prohibiting extra-billing. A few specialists who extra-bill to augment their private incomes will be upset. But those hospital administrators trying to purchase much-needed equipment, and those individuals trying to find chronic care space for their elderly parents, will still be in distress. The cries from the hospitals, the health care practitioners and the public for increased funding from all levels of government will only grow louder.

The patient, as an individual, has changed as well. Patients are often called "health consumers" and their attitude toward the health care professions is not as passive as it once was. They are better educated and more knowledgeable than ever before and consumer associations now do reports on health care in much the same manner as they do on imported cars and humidifiers for the home.

A system in which only a limited number of highly qualified health care professionals are allowed to bill the health insurance program directly has to be expensive. At present, many services are being provided by, and therefore billed by over-qualified personnel. Not every health care need requires the training and expertise of a physician. The use of nurse practitioners as primary health providers in some remote communities, and in urban health centres, is an excellent example of a successful and viable alternative to our more widely accepted present system. And what of the areas in which a physician is not always the most appropriately qualified individual for the patient's needs? The role, for example, of the nutritionist and dietician in a prevention oriented system of education is not generally utilized at present. These individuals are generally found in institutions where a patient's first contact is through a physician and, frequently, it is after they have already developed specific medical problems.

Should we not be looking at these alternatives to our present physician dominated, healing oriented health care system as a means of trying to reduce our health care costs? The long term advantages of a prevention and health promotion approach to health care do not seem to be given any serious consideration. Our new Canada Health Act, which tries to give some direction to the approach of health care plans in the provinces, has not dealt with this concept at all and, in fact, a rather drastic shift in the attitude of both the public and the politicians would be required to bring it about. Counselling a famiy on nutrition, diet, stress management, etc., is certainly not as glamourous as performing triple bypass surgery, but it might be as much of a life saving exercise, and it certainly costs less.

Canada is one of the few Western countries which does not license mid-wives. Clinical psychologists in private practice are not covered by health insurance programs in many provinces. Nurse practitioners, nutritionists and dietitians have already been mentioned. Physiotherapists are another excluded group. The appropriate use of these health care practitioners is an option to be considered when trying to control our health care costs while still providing accessibility. If these groups, through their provincial associations, were to negotiate with the provincial governments for inclusion in the health insurance program, they could begin the shift of the health care system from its present, relatively exclusive status, to a more open system.

With a new multi-faceted health care system, we should be able to provide efficient, prevention oriented care at a reduced cost. The barriers to universal accessibility need not exist.

**Joyce Barbour, O.D.**
**Ottawa**

## "They Also Serve . . ."

In submitting a brief to the Government of Canada, protocol requires that the authors of the brief be present when it is submitted. This ensures that any questions coming from the government representatives can be directed straight to those identified as responsible for the submission.

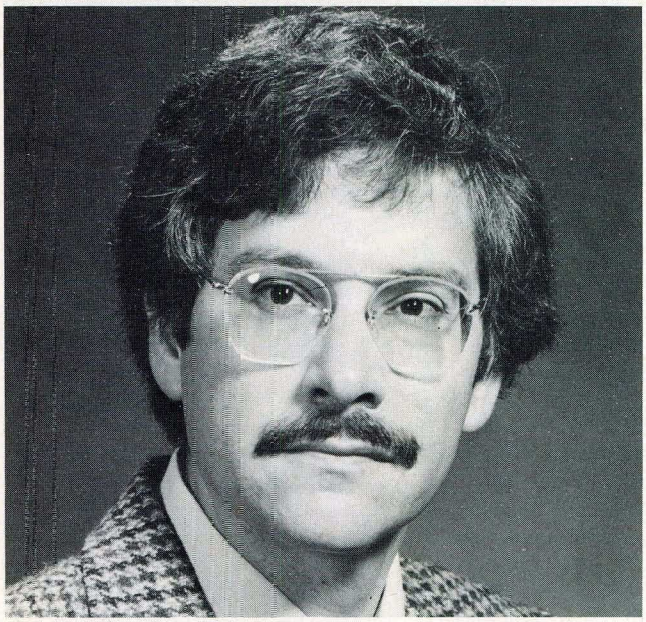
Readers of our March issue, with the full text of the C.A.O. Brief to the House of Commons Standing Committee on Health, Welfare and Social Affairs, will note that the authors of the brief are identified as Drs. des Groseilliers, Hansford, Brown, Woodruff and Mr. Lambert. There is another.

Dr. Hervé Landry, unfortunately, was due back in Moncton on the day the brief was slated for presentation to the Committee. As a result, he was omitted from the roll of authors of the brief because of the above protocol practice. It must be noted, however, that any appreciation to the above authors will have to include equal thanks to Dr. Landry who, with the others, logged the long hours of preparation, discussion, draft writing and re-writing of the final version of the brief. The result of their work speaks for itself — optometry and other non-medical health professions will continue to be assured of coverage under provincial health care schemes. We will not argue with those who point out that for optometry, nothing really was gained over what was in the 1966 Medical Care Act but, for a few dangerous moments, we were in danger of losing even that. To the above, and to all those members of the C.A.O. Political Action Group, goes a well-deserved round of thanks on behalf of this profession to which so many have dedicated themselves.

**MJD**

## New Director for Waterloo's School of Optometry

Effective July 1, Professor Jacob G. Sivak will assume the position of Director of the School of Optometry, University of Waterloo, for a three-year term.

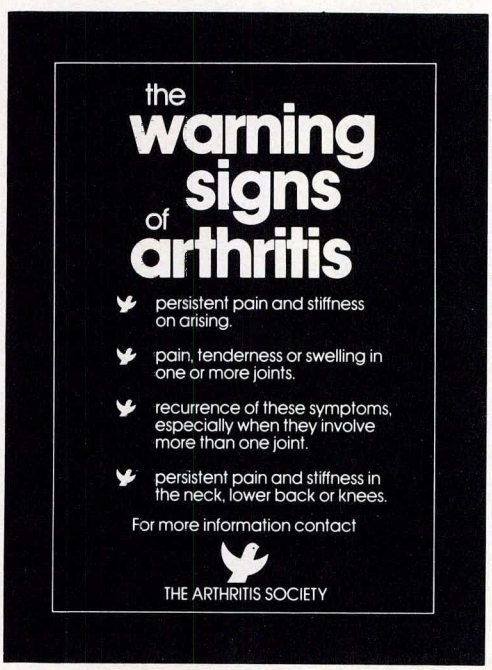


*Dr. Sivak*

Dr. Sivak has been a member of the university faculty since 1972, becoming a full professor in 1980. An active researcher throughout his years at Waterloo, Dr. Sivak has published numerous papers on the evolutionary development of the eye as an optical instrument, and on applied matters dealing with clinical methodology and instrumentation. He is a Fellow of the American Academy of Optometry.

His particular interest as regards the future of the School is in the application of new developments in science and technology to the clinical program.





# Ophthalmic Preparations of Interest to Optometrists

W.M. Lyle*
D.C. Lutzi**

**Editor's Note:**

**This paper is a continuation of the tabulated listing of nearly 200 ophthalmic preparations begun in the March '84 CJO. It is too lengthy to publish in one issue of the CJO, so it will be presented in parts. The subject is tabulated in the following sections:**

- **Tear Supplements and Substitutes, Comfort Solutions.**
- **Vasoconstrictors, Decongestants, Astringents and Antihistamines.**
- **Topical Antibiotic, or other Antibacterial Preparations.**
- **Mydriatics / Cycloplaegics or both.**
- **Ophthalmic Ointments.**
- **Enzymatic Cleaners, Proteases and Lipases.**
- **Thermal Disinfection and Rinsing of Soft Lenses, Storage Solutions.**
- **Chemical Cleaning and Disinfecting Solutions or Systems for Soft Lenses.**
- **Solutions Designed for Use With Hard Lenses.**
- **Solutions Designed for Use With Hard Gas-Permeable Lenses.**
- **Diagnostic Aids.**
- **Ocular Lubricants, Eyewashes, Irrigating Solutions, Cushioning Solutions or Ointments.**
- **Topical Anaesthetics.**
- **Hypertonic Solutions or Ointments.**
- **Drugs to Treat Glaucoma.**

**Readers will also note that some preparations will appear under more than one of the above descriptive headings.**

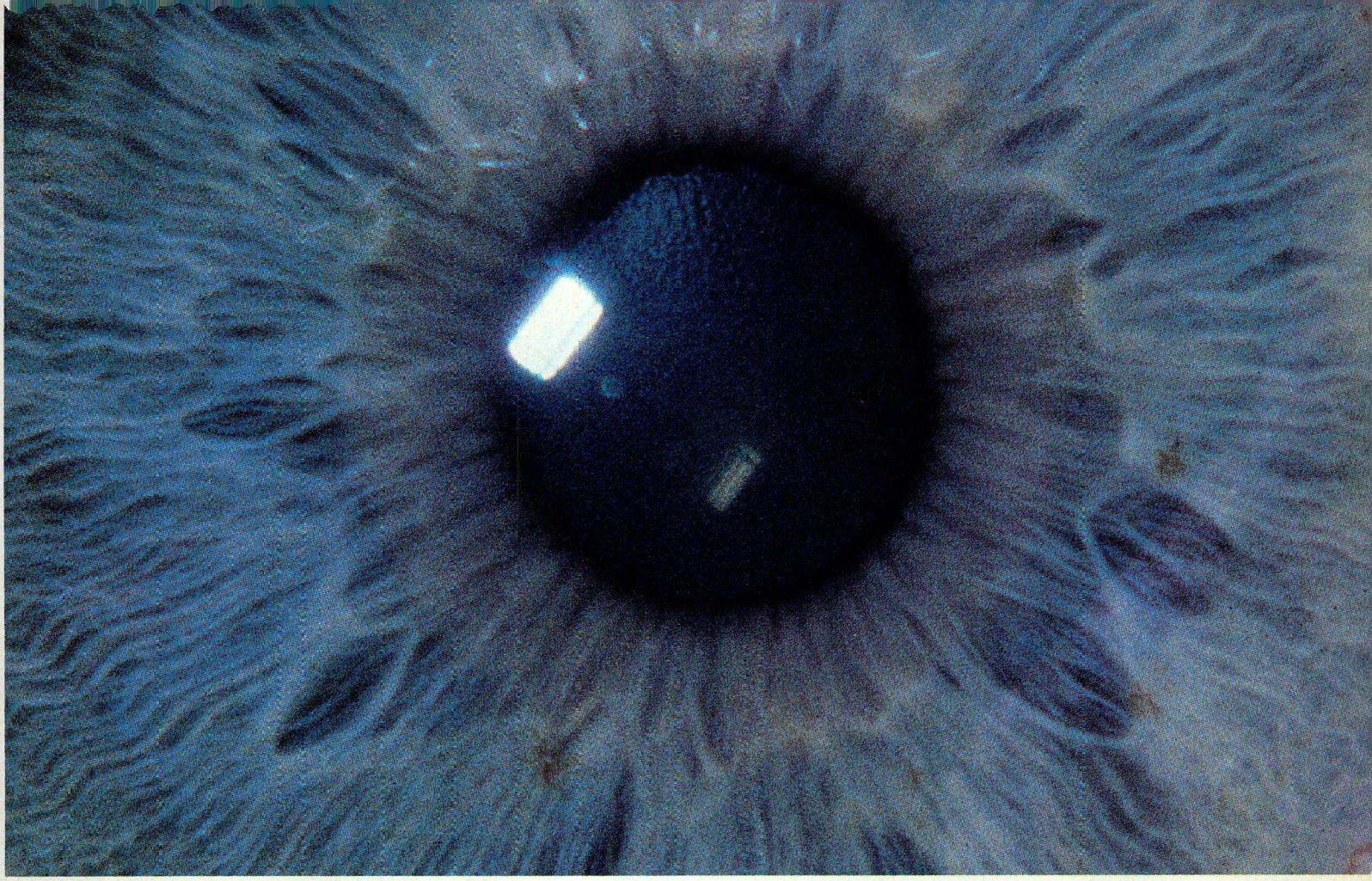
*Optometrist, M.S., Ph.D.,
Member of Faculty, F.A.A.O.
School of Optometry, University of Waterloo
**O.D. Waterloo, Ontario

**Editors' Note:** In Part I of this paper (March, 1984), we inadvertently omitted Dr. Lutzi's name as co-author of the paper. The CJO apologizes to Dr. Lutzi for this oversight.

## 2. Vasoconstrictors, Decongestants, Astringents and Antihistamines

| Product (Manufacturer or Distributor) | Viscosity Agent | Vasoconstrictor | Preservative | Buffer | Purpose or Other Ingredients |
|---|---|---|---|---|---|
| Albalon-A Liquifilm (Allergan) | polyvinyl alcohol 1.4% | naphazoline HCl 0.05% | benzalkonium chloride 0.004%, disodium edetate | sodium acetate, sodium citrate, citric acid, sodium hydroxide | Ocular antihistamine and sympathomimetic decongestant. Antazoline phosphate 0.5%, sodium chloride. Isotonic. |
| Albalon Liquifilm (Allergan) | polyvinyl alcohol 1.4% | naphazoline HCl 0.1% | benzalkonium chloride 0.004%, disodium edetate | citric acid, sodium citrate, sodium hydroxide | Sympathomimetic ophthalmic decongestant. Sodium chloride, purified water. |
| Clear Eyes (Abbott) | hydroxypropyl-methylcellulose 0.15% | naphazoline HCl 0.12% | benzalkonium chloride 0.01%, disodium edetate 0.1% | boric acid, sodium borate | Sympathomimetic ocular decongestant. Isotonic. |
| Collyre Bleu Laiter (Clear Blue) (Laiter) | | naphazoline nitrate 0.05% | methylene blue 0.02% | | Sympathomimetic ocular decongestant. Amylocaine HCl 0.2%, (an anesthetic), sodium chloride 0.825% and distilled water. |
| Collyrium with Ephedrine Soothing Eye Drops (Wyeth) | | ephedrine HCl 0.1% | thimerosal not over 0.002% | boric acid 2.62%, sodium borate 0.38% | Sympathomimetic vasoconstrictor and ocular astringent. Sodium salicylate 0.056% and antipyrine 0.4%. Isotonic. pH about 6.8. |

| | | | | | |
|---|---|---|---|---|---|
| Degest 2 (Barnes-Hind) | hydroxyethylcellulose, povidone | naphazoline HCl 0.012% | benzalkonium chloride 0.0067%, disodium edetate 0.02% | sodium citrate, citric acid | Sympathomimetic ocular decongestant. Antipyrine 0.1%. Isotonic. pH 6.2. |
| Dew Drops (Pharmavite) | | phenylephrine HCl 0.02% | | boric acid 1.116%, borax 0.19% | Sympathomimetic ocular decongestant. |
| EFA "Emergency" Eye Drops (Accurate) | | phenylephrine HCl 0.02% | | boric acid 1.116%, sodium borate 0.19% | Ophthalmic solution. Sympathomimetic decongestant. |
| Epifrin (Allergan) | | | benzalkonium chloride 0.004%, disodium edetate | | Sympathomimetic mydriatic and vasoconstrictor used for glaucoma therapy. L-epinephrine HCl 0.5%, 1%, or 2%, sodium metasulfite and purified water. Prescription may be required. |
| Epinal (Alcon) | | | benzalkonium chloride 0.01% | boric acid | Sympathomimetic mydriatic used for glaucoma therapy. L-epinephrine as the borate 1%, acetylcysteine and ascorbic acid. Prescription may be required. |
| Epitrate (Ayerst) | polyoxypropylene-polyoxyethylene-diol | | chlorobutanol 0.55%, disodium edetate | | Sympathomimetic mydriatic used for glaucoma therapy. L-epinephrine bitartrate 2%, sodium metabisulfite and sodium chloride. Prescription may be required. |
| Eppy-N½% or N1%. (Barnes-Hind) | polyoxyl 40 stearate, povidone | | benzalkonium chloride 0.01% | boric acid | Sympathomimetic mydriatic used for glaucoma therapy. Contains epinephryl borate USP 0.5% or 1%, and erythorbic acid. Prescription may be required. pH 7.4. |
| Glaucon (Alcon) | | | benzalkonium chloride 0.01% | | Sympathomimetic mydriatic mostly used for glaucoma therapy. Contains epinephrine HCl 1% or 2% and sodium metabisulfite. Prescription may be required. |
| Muro's Opcon (Herdt & Charton) | hydroxypropyl-methylcellulose | naphazoline HCl 0.1% | benzalkonium chloride 0.01%, disodium edetate | anhydrous sodium carbonate, boric acid | Sympathomimetic ocular decongestant. Sodium chloride. |
| Muro's Opcon A (Herdt & Charton) | hydroxypropyl-methylcellulose | naphazoline HCl 0.025% | benzalkonium chloride 0.01%, disodium edetate 0.1% | boric acid, sodium borate | Sympathomimetic ocular decongestant. Contains pheniramine maleate 0.3%, sodium chloride and potassium chloride. |
| Mydfrin (Alcon) | | phenylephrine HCl 2.5% | benzalkonium chloride 0.01%, disodium edetate 0.05% | boric acid | Sympathomimetic, vasoconstrictor, mydriatic. Sodium bisulfite. |
| M-Z Solution (CooperVision) | | phenylephrine HCl 0.12% | benzalkonium chloride 0.1%, disodium edetate 0.01% | boric acid, sodium carbonate | Sympathomimetic ocular decongestant, also contains zinc sulfate 0.25%, piperocaine hydrochloride 0.75% and potassium chloride. |
| Naphcon-A (Alcon) | | naphazoline HCl 0.025% | benzalkonium chloride 0.01%, disodium edetate 0.01% | boric acid, sodium carbonate | Sympathomimetic ocular decongestant and antihistamine. Pheniramine maleate 0.3% and sodium chloride. |
| Naphcon Forte (Alcon) | | naphazoline HCl 0.1% | benzalkonium chloride 0.01%, disodium edetate 0.05% | boric acid | Sympathomimetic ocular decongestant. Contains sodium chloride and potassium chloride. |
| Neo-Synephrine (Sterling Products) | | phenylephrine HCl 0.125% | thimerosal 0.001% | sodium citrate | Sympathomimetic ocular decongestant. Sodium chloride. Isotonic. |
| Neo-Synephrine (Sterling Products) | | phenylephrine HCl 2.5% | benzalkonium chloride 0.01% | sodium phosphate | Sympathomimetic ocular decongestant, and mydriatic. Sodium chloride. |
| Ocuclear Ophthalmic Solution (Schering Canada) | | oxymetazoline HCl 0.025% | benzalkonium chloride 0.01%, disodium edetate 0.01% | sodium hydroxide, boric acid | Sympathomimetic ocular decongestant. Contains sodium chloride, 1.2%. pH 6.4. |
| Phenylzin (CooperVision) | hydroxypropyl-methylcellulose 0.1% | phenylephrine HCl 0.12% | benzalkonium chloride 0.01%, disodium edetate 0.01% | boric acid 1.1%, sodium carbonate 0.02% | Sympathomimetic ocular decongestant. Zinc sulfate 0.25%, sodium bisulfite 0.01%, and potassium chloride. |
| Prefrin-A (Allergan) | polyvinyl alcohol 1.4% | phenylephrine HCl 0.12%, | benzalkonium chloride, disodium edetate | sodium citrate, boric acid | Sympathomimetic ocular decongestant and antihistamine. |



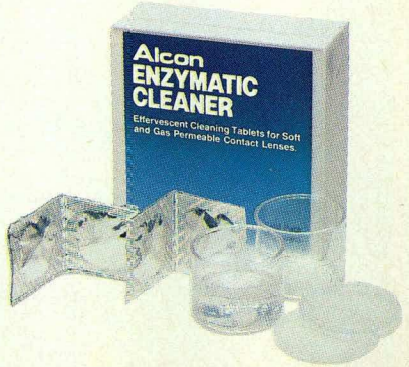
# NEW FROM ALCON RESEARCH AN OUTSTANDING ENZYMATIC CLEANER.

Results of testing, equivalent to over 100,000 days of patient use, indicate that weekly use of the Alcon Enzymatic Cleaner "is both safe and effective for removing pre-existing deposits and maintaining lens surfaces free of deposits."[1]

AN UNRIVALLED PROFILE.

☐ Effective against the full spectrum of deposits (protein, lipids and mucous). ☐ Promotes clarity, visual acuity and comfort. ☐ Prolongs lens life and lens wearing time. ☐ Significantly less sensitizing than papain. ☐ Effervescent tablet quickly dissolves to an odourless solution. ☐ Cleans in 2-4 hours. ☐ Works with any preserved saline solution. ☐ Approved for all hard, soft and gas permeable contact lenses.

## Alcon Enzymatic Cleaner ...Outstanding.

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| | | | | | |
|---|---|---|---|---|---|
| | | | | | Pyrilamine maleate 0.1%, antipyrine 0.1%, sodium chloride, sodium bisulfite and purified water. |
| Prefrin Liquifilm (Allergan) | polyvinyl alcohol 1.4% | phenylephrine HCl 0.12% | benzalkonium chloride 1:25,000 (0.004%), disodium edetate | sodium phosphate, sodium acetate, sodium citrate | Sympathomimetic ocular decongestant and antihistamine. Antipyrine 0.1%, sodium chloride, potassium chloride and sodium bisulfite. Isotonic. pH 6.6. |
| Vasoclear (CooperVision) | | naphazoline HCl 0.02% | benzalkonium chloride 0.01%, disodium edetate 0.03% | | Sympathomimetic ocular decongestant. Lipiden polymeric vehicle and sodium chloride. |
| Vasocon (CooperVision) | | naphazoline HCl 0.1% | phenylmercuric acetate 0.002% | boric acid 1.2%, sodium carbonate anhydrous | Sympathomimetic ocular decongestant. Sodium chloride. Isotonic. |
| Vasocon-A (CooperVision) | | naphazoline HCl 0.05% | phenylmercuric acetate 0.002% | boric acid 1.2%, sodium carbonate anhydrous | Sympathomimetic ocular decongestant and antihistamine. Antazoline phosphate 0.5% and sodium chloride. Isotonic. |
| Visine A.C. Eye Drops (Leeming Div. Pfizer Inc.) | | tetrahydrozoline HCl 0.05% | benzalkonium chloride 0.05%, disodium edetate 0.1% | boric acid sodium borate | Sympathomimetic vasoconstrictor to relieve minor eye irritation caused by allergies and/or colds. Contains zinc sulphate 0.25% and sodium chloride 0.1%. Hypotonic or isotonic, pH about 6.4. |
| Visine Eye Drops (Leeming Div. Pfizer Inc.) | | tetrahydrozoline HCl 0.05% | benzalkonium chloride 0.05%, disodium edetate 0.1% | boric acid, sodium borate | Sympathomimetic vasoconstrictor. To relieve minor eye irritation. Sodium chloride 0.22%. pH about 6.4. |
| Zincfrin (Alcon) | | phenylephrine HCl 0.12% | benzalkonium chloride 0.01% | citrate | Sympathomimetic vasoconstrictor and ocular astringent. Zinc sulfate 0.25%. |
| Zincfrin-A (Alcon) | | naphazoline HCl 0.05% | benzalkonium chloride 0.01% | citrate, boric acid | Ocular astringent, sympathomimetic decongestant, and antihistamine. Antazoline phosphate 0.5%, zinc sulfate 0.125%. |

# 3. Topical Antibiotic, or Other Antibacterial Preparations

| | | | | | |
|---|---|---|---|---|---|
| Baciguent Ophthalmic Ointment (Upjohn) | | | chlorobutanol 5 mg/g (= 0.5%) | | Topical antibiotic ophthalmic ointment. Bacitracin 500 IU/g, mineral oil and white petrolatum. |
| Neo-Bace (Pharmavite) | | | | | Ophthalmic antibiotic ointment. Contains polymyxin B sulphate 5000 IU/g and bacitracin 400 IU/g. |
| Polysporin Eye/Ear Drops (B.W. Inc.) | | | | | Antibiotic. Polymyxin B sulfate 10,000 IU/ml, gramicidin 0.025 ug/ml in a saline vehicle. |
| Polysporin Ointment (B.W. Inc.) | | | | | Antibiotic ointment. Contains polymyxin B sulfate 10,000 IU/g, bacitracin 500 IU/g, white petrolatum. |
| Stye (Commerce Pharmaceutics) | | | | | Ophthalmic ointment. Boric acid 5%, cod liver oil, zinc sulphate 0.25% and yellow mercuric oxide 1%. |

# 4. Mydriatics/Cycloplegics or both.

| | | | | | |
|---|---|---|---|---|---|
| Atropine Ointment (Alcon) | | | methylparaben 0.05%, propylparaben 0.01% | | Anticholinergic mydriatic, cycloplegic. Atropine sulfate, (dl-hyoscyamine) 1.0%, white petrolatum, mineral oil and anhydrous lanolin. Also available as 1% solution. |

| | | | | | |
|---|---|---|---|---|---|
| Cyclogyl (Alcon) | | | benzalkonium chloride, disodium edetate 0.01% | boric acid | Anticholinergic cycloplegic and mydriatic. Cyclopentolate HCl 1%, potassium chloride and sodium carbonate or hydrochloric acid to adjust pH. |
| Isopto Atropine (Alcon) | hydroxypropyl-methylcellulose 0.5% | | benzalkonium chloride 0.01% | boric acid | Anticholinergic cycloplegic and mydriatic. Atropine sulfate 1%. Sodium hydroxide or hydrochloric acid to adjust pH. Isotonic. |
| Isopto Homatropine (Alcon) | hydroxypropyl-methylcellulose 0.5%, Polysorbate 80 | | benzalkonium chloride 0.001% in the 2% solution. Benzethonium chloride 0.005% in the 5% solution. | | Anticholinergic cycloplegic and mydriatic. Contains homatropine hydrobromide, 2% or 5%, and sodium chloride. |
| Mydfrin (Alcon) | | phenylephrine HCl 2.5% | benzalkonium chloride 0.01%, disodium edetate 0.05% | boric acid | Sympathomimetic, vasoconstrictor, mydriatic. Sodium bisulfite. |
| Mydplegic (CooperVision) | | | benzalkonium chloride 0.01%, disodium edetate | boric acid, sodium carbonate | Anticholinergic cycloplegic and mydriatic. Cyclopentolate HCl 1% and potassium chloride. |
| Murocoll-2 Solution (Herdt & Charton) | | phenylephrine HCl 10% | benzalkonium chloride 0.01%, disodium edetate 0.1% | | Sympathomimetic mydriatic and anticholinergic cycloplegic. Scopolamine hydrobromide 0.3%. |
| Mydriacyl (Alcon) | | | benzalkonium chloride 0.01%, disodium edetate 0.01% | buffers | Anticholinergic mydriatic and cycloplegic. Contains tropicamide 0.5%, or 1% and sodium chloride. Isotonic. |
| Neo-Synephrine (Sterling Products) | | phenylephrine HCl 10% | benzalkonium chloride 0.01% | sodium phosphate | Sympathomimetic mydriatic. |

# 5. Ophthalmic Ointments.

| | | | | | |
|---|---|---|---|---|---|
| Atropine Ointment (Alcon) | | | methylparaben 0.05%, propylparaben 0.01% | | Anticholinergic mydriatic, cycloplegic. Atropine sulfate, (dl-hyoscyamine) 1.0%, white petrolatum, mineral oil and anhydrous lanolin. Also available as 1% solution. |
| Baciguent Ophthalmic Ointment (Upjohn) | | | chlorobutanol 5 mg/g (=0.5%) | | Topical antibiotic ophthalmic ointment. Bacitracin 500 IU/g, mineral oil and white petrolatum. |
| Duolube (Herdt & Charton) | | | none | | Ocular lubricant. Non-medicated ointment containing white and liquid petrolatum. |
| Duratears (Alcon) | | | methylparaben 0.05%, propylparaben 0.01% | | Ocular lubricant. Containing white petrolatum 94%, anhydrous liquid lanolin and mineral oil 3%. |
| Lacri-Lube (Allergan) | | | chlorobutanol 0.5% | | Ocular lubricant ointment. Contains white petrolatum 55%, mineral oil 42.5% and nonionic lanolin derivatives. |
| Muro 128 (Herdt & Charton) | hydroxypropyl-methylcellulose, propylene glycol | | methylparaben 0.023%, propylparaben 0.01% | | Relieves corneal edema. Both a hypertonic solution and an ointment are available. Both contain sodium chloride 5%. |
| Neo-Bace (Pharmavite) | | | | | Ophthalmic antibiotic ointment. Contains polymyxin B sulphate 5000 IU/g and bacitracin 400 IU/g. |
| Polysporin Ointment (B.W. Inc.) | | | | | Antibiotic ointment. Contains polymyxin B sulfate 10,000 IU/g, bacitracin 500 IU/g, white petrolatum. |
| Stye (Commerce Pharmaceutics) | | | | | Ophthalmic ointment. Boric acid 5%, cod liver oil, zinc sulphate 0.25% and yellow mercuric oxide 1%. |

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# A Clinical Evaluation of a Multipurpose Soft Contact Lens Solution: Unicare®

M.G. Callender*
A. Chan**

**Abstract**

*A three-month study was conducted to establish the safety and efficacy of Unicare® — a multipurpose soft contact lens solution. Patient acceptance of the solution was good in spite of one case of an adverse ocular response among the twenty-one subjects evaluated.*

**Abrégé**

*Nous avons institué une étude, d'une durée de trois mois, pour établir la sûreté et l'efficacité de Unicare® — une solution à fins multiples pour les lentilles souples. L'accueil de ce produit a été satisfaisant malgré un cas d'effets secondaires sur les 21 personnes participant à l'étude.*

## Introduction

Since the introduction of hydrophilic soft contact lenses several chemical disinfection regimes have been developed as an alternative to heat disinfection.[1,2,3]

While these chemical systems have increased the longevity of the soft lens and reduced the formation of tenacious surface deposits, they have increased the incidence of eye irritation.[4,5,6] The complexity of some of these chemical systems predisposes the patient to developing red eyes due to an incompatibility of the ocular tissues with the solution and/or patient noncompliance with the prescribed procedures.[5]

The purpose of this study was to evaluate the safety and efficacy of Unicare®, a multipurpose soft contact lens solution, for a period of three months.

## Materials and Methods

### 1. Care System

The care system consisted of a multipurpose solution, Unicare®, which is designed to clean, disinfect and rinse the soft contact lens. The main components of this solution are buffered saline with Poloxamer 407, a surfactant, and thimerosal as the preservative. Each bottle is supplied with a disposable case.

### 2. Selection of Subjects

Subjects were screened to exclude those with any obvious ocular pathology, known allergies, subnormal tear production, low tear break-up time (BUT) and other health problems contraindicating contact lens wear.

A total of 21 subjects (13 female and 8 male) between the ages of 16 and 62 were selected (Table I). One subject was a presbyope and the rest were young myopes. Six of these myopes had previously worn soft contact lenses.

### 3. Lens Selection and Evaluation

Table II lists the number of subjects fitted with each of the four types of soft lenses used in the study. All lenses were of the ultrathin design to allow for optimum corneal physiology. The presbyope was fitted with Ciba bifocal soft lenses.

Each lens received from the manufacturers was analyzed for deposits using the Rudko technique for inspection and classification (Table II)[7]. In addition, a spectrophotometric analysis was done in the lens optic zone on a Zeiss DMR21 spectrophotometer at wavelengths 500nm and 280nm respectively. Wavelength 500nm was selected to obtain baseline data for visible light transmittance which for a new lens should be at least 97% T. Wavelength 280nm was chosen for protein detection since most protein absorption occurs with UV radiation.

### 4. Initial and Follow-up Procedures

At the initial visit baseline data were collected on visual acuity, refractive status, biomicroscopy, pachometry, keratometry and lens performance. Each subject was supplied with the new pair of lenses and the Unicare® system. Instructions were given on the recommended procedure for using this system. It was stressed that the case should be cleaned and filled daily with fresh Unicare®. Additional bottles of the solution were dispensed on request or at the follow-up visits. There were four follow-up visits — 1 week, and 1, 2, and 3 months after lens delivery. Additional visits were scheduled when problems occurred.

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At each follow-up visit the procedures used at the initial visit were repeated to assess the biocompatibility of the solution and lens with the eye. Any abnormalities were noted and quantified. In addition, each lens was examined for deposits according to the Rudko procedure. The three month visit also included a spectrophotometric analysis of each of the lenses worn for this period.

## Results

### 1. Patient Response

The results show that the overall response to the Unicare® system was good. Twenty of the 21 subjects completed the study with minimal adverse effects. The one subject who was discontinued developed an intolerance to the Unicare® solution after two weeks of use. This adverse reaction was characterised by a progressive increase in corneal staining and injection together with complaints of persistent burning and stinging. The lenses were purged and the subject was put on the same heat disinfection procedure she had used prior to this study.

A more complete listing of the signs and symptoms associated with the use of Unicare® is given in Table III. Among the objective ocular manifestations the appearance of debris in the tear film was most prominent during the first month. The composition of this debris appeared to be mucus, dead cells and the viscosity-building additives of the solution.

### 2. Lens Deposits

Visual inspection of the lenses under 7X magnification at each visit showed a tendency toward an increase in frequency of deposits with time. Sixteen of the forty-two lenses showed deposits. Table IV lists the classification of these deposits.

Spectrophotometric analysis at wavelength 500 nm showed no significant change in visible light transmission. However, at wavelength 280 nm UV transmittance was reduced in a few lenses. The absorption of UV radiation is indicative of the presence of a proteinaceous deposit. The number of lenses showing deposits by this method was less than that found with visual inspection (Table IV). The reason was that the observed deposits were randomly scattered on the lens surfaces and in many instances were located outside of the central 0.1 mm slit area measured by the spectrophotometer.

## Conclusions

This study demonstrates the safety and efficacy of the Unicare® solution. Biomicroscopy data for the three-month study indicate that the solution does not have an adverse effect on most subjects. At the time of writing eighteen subjects have been using the solution for more than ten months without any signs of an adverse response. One subject developed an intolerance and two have voluntarily switched to another care system after completion of the study period. Symptoms of stinging on insertion and dryness may discourage some users. However the incidence of this occurrence is low and is not unlike that observed with other chemical disinfection systems now available.

The presence of deposits on some lenses suggests that the solution is not as effective as a cleaner. Therefore those patients who show a greater tendency to coating lenses because of the nature of their tear chemistry, should be given a weekly enzymatic cleaner.

Since this formulation contains thimerosal, judicial use of the system should be considered in light of the reports of thimerosal sensitivity among the population[9,10,11]. Preventive efforts should be aimed at screening prospective contact lens wearers and stressing proper cleaning techniques to avoid the complex created by thimerosal binding to the proteinaceous deposits. Such a complex can act as the irritant or allergen[12].

Patient acceptance of the solution was judged to be good. Those with previous contact lens wear experience felt it was a more convenient system for their lifestyle and that lens maintenance cost was less. While reduction in time and cost for lens maintenance are attractive features for the patient, the practitioner is assured of patient compliance because of the simplicity of this multipurpose solution.


## Acknowledgement

This study was supported by a grant from ICN Canada Limited.


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**Table I Patient Profile**

| | | No. of Patients |
|---|---|---|
| **Age** | less than 20 | 2 |
| | 20 to 30 | 15 |
| | 30 to 40 | 3 |
| | 40+ | 1 |
| **Sex** | M | 18 |
| | F | 3 |
| **Refractive error** | Myope | 20 (average -3.25D) |
| | Hyperope | 1 |
| **Previous Contact Lens Experience** | Y | 6 |
| | N | 15 |

**Table II Study Lenses**

| Manufacturer | Type | No. of Patients |
|---|---|---|
| Union Optics Corp. | Aquaflex St. | 3 |
| Bausch & Lomb | U3 & U4 | 7 |
| Ciba Vision | Ciba Thin | 10 |
| Hydron | Hydron 06 | 1 |

**Table III Frequency of the signs and symptoms during the three month investigation**

| Conditions | Initial | 1 week | 1 month | 2 month | 3 months |
|---|---|---|---|---|---|
| **Signs** | | | | | |
| Injection | | | | | |
| Mild | 0 | 2 | 1 | 1 | 1 |
| Severe | 0 | 1 | 0 | 0 | 0 |
| Straining | | | | | |
| Mild | 0 | 2 | 1 | 0 | 0 |
| Severe | 0 | 1 | 0 | 0 | 0 |
| Striae | 0 | 0 | 0 | 0 | 0 |
| Edema | 0 | 0 | 0 | 0 | 0 |
| Infiltrate | 0 | 0 | 0 | 0 | 0 |
| Poor tear quality (mucous debris) | 0 | 4 | 2 | 1 | 1 |
| Conjunctival changes | | | | | |
| Mild | 0 | 1 | 2 | 2 | 2 |
| Moderate | 0 | 0 | 0 | 0 | 0 |
| Severe | 0 | 0 | 0 | 0 | 0 |
| Vascularization | 0 | 0 | 0 | 0 | 0 |
| Total # | 21 | 21 | 20 | 20 | 20 |
| **Symptoms** | | | | | |
| Burning/Stinging | | | | | |
| Transient | 0 | 5 | 4 | 4 | 4 |
| Persistent | 0 | 1 | 0 | 0 | 0 |
| Dryness | 0 | 5 | 4 | 3 | 3 |
| Discomfort | 0 | 2 | 2 | 2 | 1 |
| **Total # patients** | | | | | |
| positive | 0 | 8 | 6 | 6 | 6 |
| negative | 21 | 13 | 14 | 14 | 14 |

**Table IV Classification and Frequency of Deposits Observed on Lenses**

| Number of lenses with deposits | | | | | $T_{280}$ < 85% |
|---|---|---|---|---|---|
| **Rudko's classification** | **1 wk.** | **1 mo.** | **2 mo.** | **3 mo.** | **3 mo.** |
| I | 42 | 38 | 27 | 26 | 0 |
| II | 0 | 2 | 7 | 10 | 4 |
| III | 0 | 0 | 6 | 6 | 2 |
| IV | 0 | 0 | 0 | 0 | 0 |

N.B. $T_{280}$ for new lenses ranges between 85% and 93% with the average = 91%.
$T_{500}$ averaged about 97% all through the study.

# CONTACT LENS

# Extended Wear Silicone Contact Lenses in the Correction of Aphakia

**D. Champagne***

**Editor's Note**

The following paper is one of several submitted to the CJO by Dr. M. Callender, School of Optometry, University of Waterloo. Written by students in one of his final-year classes, each represents a considerable amount of research and preparatory work in readying the paper for final submission. The editors of the CJO are pleased to present the first of what we hope will be regular submissions by graduating students and their instructors.

## Introduction

The increasing number of elderly people in our population has been accompanied by a corresponding increase in the number of aphakic patients. Fortunately, the eye care field has seen a rapid increase in the options available for the visual correction of this group.

The purpose of this paper is to briefly review these options with particular emphasis on the use of extended wear contact lenses for the correction of aphakia. The major portion of this paper will concern itself with the use of silicone lenses on an extended wear basis.

## Options Available For The Treatment of Aphakia

A variety of ophthalmic devices and surgical procedures exist for the visual correction of the aphakic patient. These include spectacle lenses of various designs, hard contact lenses with different amounts of oxygen transmissibility, soft contact lenses representing a variety of hydrogel polymers and water contents and several flexible silicone lenses. Surgical implantation of intraocular lenses is also an alternative. Naturally, all of these methods have both advantages and disadvantages.

Spectacles were the earliest form of correction, but their disadvantages are numerous. Lens thickness and magnification properties of the lens on the eye can be unsightly. Magnification may be increased 25 percent compared to the normal eye, resulting in spatial disorientation and distortions. In the unilaterally aphakic patient, image size differences between the two eyes eliminate the use of binocular vision. Field limitations such as reduced field of view are a problem with some lens designs. Prismatic effect produces the jack-in-the-box phenomenon and ring scotoma. Other disadvantages include aberrations (eg. pin cushion effect), fluctuating vision caused by changes in vertex distance, fusion problems, aniseikonia and anisophoria. Needless to say, adaptation to such changes can be difficult and frustrating.[1,4,10,18]

When compared to spectacles, contact lenses have several advantages. These include reduced magnification to levels of 5-10 percent, reduction or elimination of spatial distortion, visual fields that are nearly full, elimination of prismatic effects, good binocular vision and stereopsis and better single vision for the unilateral aphakic patient. Cosmesis and comfort (in terms of reduced weight) are greatly improved.[10,18] The disadvantages of daily wear contact lenses are primarily related to the type of patient who undergoes cataract surgery. Both the elderly and very young children are often unable to fulfill the requirements of lens handling, insertion, removal and daily maintenance. Other problems include frequent lens loss and damage, lens discoloration with hydrogel lenses and lens intolerance.[10,16,18]

Intraocular lens implants were initially thought to offer the ideal solution to the problem of aphakic correction. They seemed to possess all of the advantages of contact lenses, but required no handling or maintenance. There has been a marked increase in the number of ophthalmologists who are employing implant techniques with greater frequency. Boyd and Roper-Hall state that, during a two year period, 6000 surgeons implanted 260,000 lenses in 3000 U.S. hospitals.[5] However, good success with lens implants is directly related to good microsurgery techniques. Known complications include secondary infections, iritis and iris degeneration, eventual dislodging of the implant and corneal edema due to irreparable endothelial cell damage.[1,15] Although the utilization of intraocular lens implants will probably increase as techniques improve, this option is at present usually reserved for the elderly, for those patients

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unsuitable for contact lenses and for unilateral aphakics with no internal ocular pathology.[1]

For those patients with contraindications to intraocular lens implants who lack the ability to handle daily wear contact lenses, the extended wear contact lens may be the ideal solution.

## Extended Wear Contact Lenses and Corneal Physiology

The minimum corneal oxygen need varies between 2-5 percent (equivalent atmospheric) depending upon the individual.[11] Current contact lens philosophy suggests that the cornea recovers during the evening from the stress of contact lens wear during the day. By comparison, extended wear contact lenses are thought to perform so well under open eye conditions that they allow the cornea to recover from the oxygen deprivation experienced while the lids are closed during sleep.[3] Corneal metabolism is affected during sleep by a drop in available oxygen from a PO2 of 155mmHg to 55mmHg, a decrease in tear osmolarity and an increase in tear acidity and corneal temperature.[3,12] The latter causes an increase in oxygen consumption. Reduced pH and tear osmolarity contribute to corneal edema.[3]

Thus, a lens which is suitable for extended wear must allow the passage of sufficient oxygen, especially when the lids are closed, to permit normal corneal physiology. The concept of prolonged lens wear was introduced in the early 1970's when John DeCarlé used an experimental hydrogel polymer to create the Permalens.[9] The oxygen permeability (DK value) of hydrogels is dependant on the water content of the material. The ability of a given lens to supply oxygen to the cornea is called its transmissibility (T) and is a function of both the permeability and the thickness (L) of the lens material (T=DK/L).[12] Since the design of a high plus lens requires a significant center thickness, a hydrophilic aphakic contact lens must rely on a high permeability (and thus a high water content) to provide an adequate corneal oxygen supply.[12]

Unfortunately, this high water content renders the hydrophilic lens very fragile and susceptible to deposits. Although longer lens life due to reduced handling is a theoretical advantage of extended wear lenses, high water content lenses are actually subject to loss, breakage, tearing and discoloration. Lens deposits are also a problem, the most common being lipid, calcium, protein and lysozyme.[3,7] Despite the high DK values exhibited by these lenses, the thickness required for adequate durability and ease of handling reduces their transmissibility to levels where anoxic syndrome can be present under extended wear conditions. This syndrome includes combinations of pain, photophobia, severe conjunctival injection, obvious edema, corneal striae and epithelial punctate staining. These problems which are associated with extended wear hydrogel lenses have encouraged the search for more suitable lens materials, one of which is silicone.

## Advantages of the Silicone Lens

Silicone is physiologically inert and biologically and chemically neutral.[10] It has the highest permeability of all of the currently available contact lens materials (DK=600 x $10^{-11}$ ($cm^2$/sec) (m10/m1xmmHg)), and this permeability is not significantly affected by lens thickness.[2,8] Silicone transmits oxygen freely (16-18% equivalent $0_2$ transmission for the Danker lens; 18.7% equivalent $0_2$ transmission for the Dow Corning Silsoft) thus reducing corneal anoxia and edema.[2,8] This oxygen transmission is approximately 37 to 40 times greater than hydrophilic material of equivalent thickness and average hydration (40% $H_20$).[2] The difference is less when the hydrogel lens is very thin or of high water content but, as previously mentioned, such a lens then becomes more fragile and difficult to handle. When compared to hydrogel and non gas permeable hard lenses, silicone lenses have been found to produce a reduced corneal consumption of glycogen and a reduced corneal production of lactic acid.[1] Changes in corneal curvature and spectacle blur are rarely produced by this lens.[2,10]

Silicone has a higher tensile strength than hydrogel materials and thus provides the durability required in extended wear applications.[2] Silicone also has a high thermal conductivity. Compared to PMMA, silicone dissipates corneal surface heat more rapidly, thus reducing metabolic requirements for oxygen.[2,14]

Silicone is a material with near zero water content. For example, the polydimethyl siloxane used in the Danker lens has a percent of hydration less than 0.3.[10] Thus water and chemical substances are not absorbed into the lens. A wide variety of highly effective antibacterial and cleaning agents may be used and washed off the lens prior to insertion. Fluorescein may be used as a fitting aid.[2,10] Topical medication may be used without concern for excessive accumulation of the drug within the lens.[2,16]

Optical clarity is stable as compared to the fluctuations which may occur with a hydrogel lens.[2] Visual acuity is generally better since all manifest astigmatism in the aphakic is corneal and, if not too excessive, is thus nearly completely neutralized by the tear lens.[1,14]

In summary, the silicone elastomers provide the strength and durability of PMMA and thick low water content hydrogels and the oxygen permeability of ultra-thin or high water content hydrogels.

## Disadvantages of the Silicone Lens

Silicone is not without its disadvantages. Pure silicone is hydrophobic, thus producing a lens which is uncomfortable and has a poor optical

surface.[14] Two processes are available to render the lens hydrophilic. The first consists of a chemical modification of the surface which substitutes hydrophilic hydroxyl (OH) groups for some of the hydrophobic methyl ($CH_3$) groups.[6] However, this coating tends to break down in 12 to 72 weeks for the Danker lens and recoating does not give satisfactory results.[1,10] Molecular grafting with a hydrophilic substance such as vinyl has also produced a coat which eventually breaks down.[1,10] The second method involves copolymerization with other materials such as PMMA or CAB (eg. the Boston and Polycon lenses).[10] However, this defeats the purpose of extended wear since oxygen permeability is significantly reduced.

The mechanical properties of silicone make its manufacture difficult. Lens modification is not possible and exact duplication is not always satisfactory.[1,10]

Silicone is susceptible to protein, lipid and mucus deposits which reduce wettability, visual acuity, comfort and gas permeability.[1,7,8,13] However, these deposits are more easily eliminated than with hydrogel lenses and use of both a surfactant and an enzyme cleaner is recommended.[1]

Prior to adaptation, silicone lenses are less comfortable than HEMA but more comfortable than PMMA.[8,14] Adaptation is rapid however. Voerste (1978) reported that patients who changed from gel lenses to silicone lenses became the most enthusiastic wearers after overcoming their initial skepticism during the first week.[8]

Despite the fact that the silicone lens is extremely permeable to oxygen, lens movement is required for continual wetting of the cornea and the removal of metabolic by-products and cellular debris.[3,14] Loss of lens movement has been one of the major problems associated with this lens. It has been hypothesized that the elastic character of the silicone lens can produce a one-way valving system. Blinking compresses the lens against the cornea and tears are forced from beneath the lens. As the lid retracts, the pressure is removed from the lens surface, permitting the peripheral portion of the lens to exert its elastic character and close like a valve, thus obstructing the inflow of tears.[7,14] A proper fit and prompt follow-up visits are essential in order to ensure continual lens movement.

## Fitting Philosophy

The examination and contact lens fitting of the aphakic patient is a specialized domain whose description is beyond the scope of this paper. A brief summary follows. Fitting is usually not attempted until at least 4 weeks after surgery in order to allow time for wound healing and to prevent the rupture of fine vessels around the iridectomy site and the posterior surface of the corneal section.[12] Generally, eyes that have undergone phakoemulsification heal faster and may be ready for contact lens fitting 4 to 6 weeks after surgery.[12] Intracapsular lens extraction may require up to 12 weeks for complete healing.[12] Fitting and power determination should not be attempted until the subjective refraction, the retinoscopic refraction and the keratometer readings have stabilized.[10,12]

In addition to the usual contraindications to contact lens wear, the aphakic must be evaluated for certain problems such as incomplete postoperative healing, structural abnormalities of the lids, poor patient hygiene or lack of cooperation for follow-up visits and the inability to remove the lenses in case of emergency.[12,14]

The special considerations involved in the fitting of silicone contact lenses are due to the previously mentioned problems with loss of lens movement on the cornea. Morgan states that the rule of thumb is to use the flattest base curve that produces reasonable centration and gives stable vision. He states that this is usually accomplished by fitting on low K.[14] Both Kaye and Bernstein suggest starting with a base curve at least 0.50 to 1.00 D. steeper than the flattest corneal meridian, depending upon the amount of corneal cylinder.[2,10] They both mention that a trial lens set is essential for the fitting procedure. An optimum fit allows a 0.5 to 1.0 mm excursion upon blinking.[2,10,14] The fluorescein pattern should show adequate tear flow centrally and under the peripheral curves. Perfect centration is rare due to lens weight and corneal topography, and a low riding position is normal.[2,10]

## Conclusion

The silicone lens is a viable alternative when an extended wear contact lens has been judged to be the best solution for the aphakic patient. According to Hales, this is especially true in the pediatric aphakic group because most surgeons are reluctant to implant a lens in an infant or small child and because children have trouble handling contact lenses.[7]

The two major problems associated with the silicone lens are the occasional loss of lens movement on the cornea and the deterioration of the hydrophilic lens surface. The loss of lens movement can be prevented by a proper fit and conscientious follow-up care. As for the breakdown of the lens surface, further research and development will hopefully solve this problem.

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# ADMINISTRATION

## Annual Report 1983

*1983 was a year of considerable change for the Canadian Association of Optometrists, at the administrative level. With the coming on stream of a new Executive Director, and the redefinition of other executive positions, the Association office in Ottawa has begun to take on a new focus and, it naturally follows, a new thrust in its approach to the myriad of challenges which continue to face us.*

### Summary — The Role of C.A.O.

The Canadian Association of Optometrists is a federation of ten Canadian provincial optometric associations. It acts as the recognized voice of Canadian optometry in all areas of national concern to the profession. In addition, the Association serves to coordinate the activities of its ten corporate members with the goal of increasing public, government and interprofessional awareness of the nature and scope of service provided by the optometric practitioner.

The Association is also continually trying to improve not only the science of optometry, but also the level of vision care services available to the Canadian public. It does this by closely monitoring, and providing input to those government programs, existing and proposed, which have a direct bearing on optometric health care. In addition, C.A.O. promotes regular continuing education programs and active participation by its members in other programs and organizations dedicated to promoting public health in general and the conservation of vision in particular.

The annual activity of the national Association represents not only the optimum use made of yearly dues payments by its 10 corporate members, but also the substantial voluntary efforts of over 100 optometrists from all parts of the country who serve in the various Executive and internal committee capacities required to maintain the extensive scope of Association activities.

### C.A.O. Council

During 1983, the national office in Ottawa was well-served by C.A.O. president, Dr. Roland des Groseilliers, also of Ottawa. By spending no less than one day a week at the administrative office, Dr. des Groseilliers was able to keep an extremely active hand in virtually every sphere of administrative

## Rapport Annuel 1983

*1983 a été l'année des grands bouleversements, au niveau administratif, pour l'Association canadienne des optométristes. Avec l'arrivée d'un nouveau directeur général, et la redéfinition d'autres postes de direction, le bureau de l'Association à Ottawa a commencé à se donner une nouvelle mission et, partant, une nouvelle orientation face aux mille et un défis auxquels nous restons confrontés.*

### Sommaire — Le Rôle de L'A.C.O.

L'Association canadienne des optométristes est une fédération de dix associations provinciales d'optométristes du Canada dans tous les domaines d'intérêt national pour la profession. En outre, l'Association a pour rôle de coordonner les activités de ses dix associations membres, ayant pour objectif de sensibiliser le public, les gouvernements et les autres professions à la nature et à l'étendue des services que dispense l'optométriste praticien. En outre, l'Association cherche constamment à améliorer non seulement l'optométrie comme science, mais encore le niveau des services de soins de la vue offerts au public canadien. À cette fin, elle suit de près les programmes gouvernementaux, existants et proposés, qui ont des incidences directes sur les soins optométriques de santé et qui y contribuent. En outre, l'A.C.O. fait la promotion de programmes réguliers d'éducation permanente et favorise la participation active de ses membres à d'autres programmes et organismes voués à la promotion de la santé publique en général et à la conservation de la vue en particulier.

L'activité annuelle de l'association nationale traduit non seulement l'utilisation optimale des cotisations annuelles de ses 10 associations membres, mais également les efforts bénévoles considérables de plus de 100 optométristes de tous les coins du pays qui occupent diverses fonctions de direction et siègent aux différents comités internes requis pour maintenir la gamme variée des activités de l'Association.

### Le Conseil de L'A.C.O.

En 1983, le bureau national d'Ottawa a été bien servi par le président de l'A.C.O., le Dr Roland des Groseilliers, également d'Ottawa. En passant au moins une journée par semaine au bureau

*CAO COUNCIL — 1983. TOP: L-R. Bell, Patriquin, Zenner, Graham, Winter, Krueger, Lambert (G), Brisbin. BOTTOM: L-R. Rosner, Rosere, des Groseilliers, MacDuff, Schaefer.*

activity undertaken during his term of office. The Executive of the Association Council consisted of the following optometrists: Dr. Reid MacDuff, Gander, Newfoundland: past-President; Dr. Ralph Rosere, Dartmouth, Nova Scotia: President-elect and Dr. Bruce Rosner, Winnipeg, Manitoba: Secretary Treasurer. Council itself was made up of the following provincial representatives: British Columbia: Dr. Rix Graham; Alberta: Dr. Scott Brisbin; Saskatchewan: Dr. James Krueger; Ontario (serving as provincial alternate during Dr. des Groseilliers' term as President): Dr. Barry Winter; Quebec: Dr. Paul Lambert; New Brunswick: Dr. Robert Bell, who was replaced in November, 1983 by Dr. Les Clements; Prince Edward Island: Dr. Rainer Zenner and Newfoundland (serving as provincial alternate during Dr. MacDuff's term as past-President): Dr. James Patriquin.

## C.A.O. Political Action Program

Towards the end of the year, the C.A.O. Political Action program began to mobilize as at no previous time in the Association's history, save for perhaps the campaign undertaken in 1965 and 1966 to secure optometry's place in the Medicare Act.

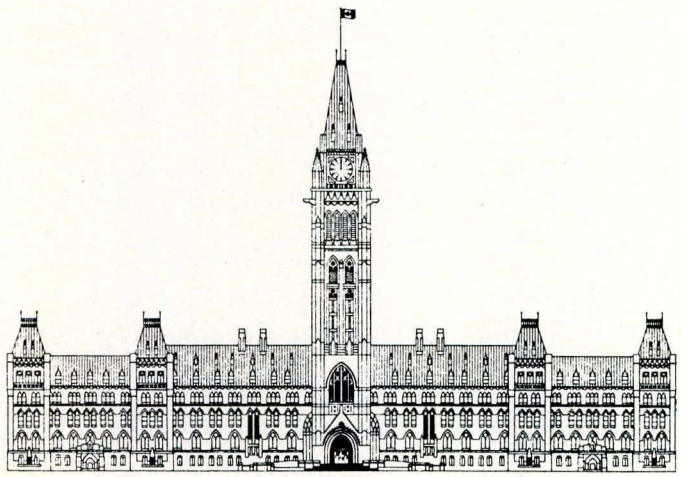
In 1983 - 1984 the battle is to be just as crucial — to secure optometry's place in the new Canada Health Act. The full story is one that will have to remain untold until the 1984 Annual Report is prepared, but the wheels were really put into motion towards the end of 1983.

The *Optometric Forum* continued to play a key role in keeping members informed on several key political issues throughout 1983 — the development of C.A.O.'s detailed (but, as it turned out, fruitless) response to the CMA's *Perspectives on Health Occupations* document; the development and growth of an extensive program of support towards the creation and maintenance of a new Executive position for the International Optometric and Optical League and the re-awakening of the Political Action Program in anticipation of the heavy lobbying that would come as a part of the Canada Health Act response.

administratif, le Dr des Groseilliers a pu prendre une part extrêmement active dans presque toutes les sphères de l'activité administrative entreprise pendant son mandat. Le Comité administratif du Conseil de l'Association comprenait les optométristes suivants: Dr Reid MacDuff, Gander (Terre-Neuve), président sortant; Dr Ralph Rosere, Dartmouth (Nouvelle-Écosse), président élu; et Dr Bruce Rosner, Winnipeg (Manitoba), secrétaire-trésorier. Le Conseil même était formé des représentants suivants des provinces: Colombie-Britannique: Dr G. Rix Graham; Alberta: Dr Scott Brisbin; Saskatchewan: Dr James Krueger; Ontario (siégeant à titre de suppléant provincial pendant le mandat du Dr des Groseilliers à la présidence): Dr Barry Winter, Québec: Dr Paul Lambert; Nouveau-Brunswick: Dr Robert Bell, qui a été remplacé en novembre 1983 par le Dr Les Clements; Île-du-Prince-Édouard: Dr Rainer Zenner; et Terre-Neuve (siégeant en tant que suppléant provincial pendant le mandat du Dr MacDuff en tant que président sortant): Dr James Patriquin.

## Le Programme d'Action Politique de L'A.C.O.

Vers la fin de l'année, le programme d'action politique de l'A.C.O. a commencé à mobiliser les énergies comme jamais auparavant dans l'histoire de l'Association, sauf peut-être lors de la campagne lancée en 1965 et 1966 pour assurer à l'optométrie la place qui lui revenait dans la Loi sur les soins médicaux.



En 1983-1984, la bataille s'annonce tout aussi cruciale . . . pour assurer à l'optométrie encore une fois la place qui lui revient dans la nouvelle Loi canadienne sur la santé. Il faudra patienter jusqu'au rapport annuel de 1984 pour en connaître le récit, mais les choses ont véritablement démarré vers la fin de 1983.

Le *Forum de l'optométrie* a continué de jouer un rôle essentiel pour l'information des membres sur plusieurs grandes questions politiques tout au long

## The International Optometric and Optical League

It is with no small measure of pride that C.A.O. is able to define its support of the I.O.O.L. in 1983. We undertook a program that developed a substantial boost in the number of Canadian optometrists actively supporting the League's activities on behalf of world optometry. But even more significantly, C.A.O. graduated its Executive Director, Mr. Don Schaefer, to the position of first Executive Director of the I.O.O.L., based in London, England. After leaving the Canadian Association in September, 1983, Don began duties with the League in January 1984. Canadian practitioners, and optometrists from all around the world, will undoubtedly continue to feel the promotional impact of Don's activities in the years ahead. C.A.O. wishes him well in this new and challenging capacity, and extends him every thanks for his tireless energies expended on our behalf during his nine year tenure as Executive Director of C.A.O.

## The National Council of Optometric Education

The process of creating a National Syllabus of Examination was the hub of the N.C.O.E.'s activities in 1983. Dr. Clair Bobier, who retired in September, 1982 from the active faculty of the School of Optometry, University of Waterloo, was brought on stream as technical consultant to assist in developing a model which would serve as the foundation for a proposed national syllabus.

The goal of the N.C.O.E., presented in its President's report to the Association's 18th Biennial Congress, is to approve Dr. Bobier's model and the resulting proposed national syllabus, and to have a national examination operational before the 1985 Congress.

## The National Advisory Committee on Vision Care Plans

Central to the successful promotion of any proposed national vision care plan is the development of an effective mechanism for presenting the message that such a plan is beneficial to an industrial employer. With that end in mind, the Committee has been working towards the completion of a new film project which is planned to carry this message to Canadian industry.

Drawing on the expertise of an Ottawa company, most of 1983 was spent in the pre-production phase of the film project. Shooting was completed towards the end of the year, with the in-studio work being undertaken and nearly completed as the new year began.

## The C.A.O. Biennial Congress

The simple repetition of the phrase "Vancouver in July" is enough for most Canadians to understand

de 1983: l'élaboration de la réaction détaillée (qui devait se révéler vaine) de l'A.C.O. au document de l'AMC intitulé *Perspectives on Health Occupations*; l'élaboration et la croissance d'un programme poussé de soutien pour la création et le maintien d'un nouveau poste de direction pour l'International Optometric and Optical League; et la réactivation du programme d'action politique en prévision des nombreuses activités de représentation qui devraient s'inscrire dans le cadre de la réaction à la Loi canadienne sur la santé.

## L'International Optometric and Optical League

Ce n'est pas sans fierté aucune que l'A.C.O. peut définir l'appui qu'elle a donné à l'I.O.O.L. en 1983. Nous avons lancé un programme qui a amené une augmentation considérable du nombre d'optométristes canadiens qui appuient activement les activités de l'I.O.O.L. en faveur de l'optométrie mondiale. Qui plus est, cependant, l'A.C.O. a vu son directeur général, M. Don Schaefer, devenir le premier directeur général de l'I.O.O.L., à Londres. Après avoir quitté l'Association canadienne en septembre 1983, Don est entré en fonction auprès de l'I.O.O.L. en janvier 1984. Les praticiens canadiens, et les optométristes du monde entier, continueront sans doute à profiter du travail de promotion de Don pour les années à venir. L'A.C.O. lui souhaite tous les succès possibles dans cette nouvelle tâche remplie de défis, et le remercie vivement des efforts infatigables qu'il a déployés pour nous pendant les neuf années qu'il a passées à la direction de l'A.C.O.

## Le Conseil National d'Education en Optométrie

Le processus de création d'un syllabus national d'examen a été au centre même des activités du C.N.E.O. en 1983. Le Dr Clair Bobier, qui s'est retiré en septembre 1982 du corps professoral de l'École d'optométrie de l'Université de Waterloo a été commé conseiller technique pour l'élaboration d'un modèle qui pourra servir de base pour un projet de syllabus national.

Le but du C.N.E.O., présenté dans le rapport de son président au 18e Congrès biennal de l'Association, est d'approuver le modèle du Dr Bobier et le syllabus national proposé qui en découlera, et d'instituer un examen national avant le Congrès de 1985.

## Le Comité Consultatif National sur les Regimes de Soins de la Vue

Dans la promotion de tout régime national de soins de la vue, il est de toute première importance d'élaborer un mécanisme efficace pour sensibiliser les employeurs industriels aux avantages du régime. Animé par cet objectif, le Comité a travaillé

the experience enjoyed by the record-breaking number of attendees at the 18th Biennial Congress of the Association. Under Local Arrangements Chairman Dr. Sherman Olson, the British Columbia optometrists provided both a setting and a program that was memorable in all respects.

A total of 281 optometrists, 156 spouses and 69 junior delegates registered for the '83 Congress. Added to the personnel manning the 53 booths in the exhibit hall, this year's Congress proved beyond a doubt the natural appeal of Canada's Pacific coast.

## Interaction '83

As is more and more the case with this annual Association forum, Interaction proved to be more beneficial as a venue for productive discussion and interchange of ideas than as a meeting which generated specific and unanimous action oriented decisions.

In one of the two keynote presentations, C.A.O. Public Information Coordinator, Alex Saunders and Dr. Scott Brisbin outlined a multifaceted program designed to improve and enlarge the scope of the Association's public relations activities. The presentation served to illustrate the complexity of audiences faced by optometry, and the resulting inadequacy of attempting to use any one message to reach across the full spectrum of "publics" who must be served by an effective public relations program.

In the second presentation, Dr. Hervé Landry explored in detail the triple threat which continually challenges optometry's position as the provider of primary vision and eye care services in Canada: the role and scope of dispensing opticianry, the attempts by medicine to restrict optometric vision care to a medical model and the provision of vision services by the Department of National Defence — via the use of the ophthalmic technician.

*Dr. Ralph Rosere*

Under Chairman Dr. Ralph Rosere, the meeting provided an excellent opportunity for the provincial

à la mise en oeuvre d'un nouveau projet de film qui vise à transmettre ce message à l'industrie canadienne. Le plus clair de 1983 a été consacré à la préproduction du projet de film, à partir des connaissances spécialisées d'une entreprise d'Ottawa. Le tournage a pris fin vers la fin de l'année; il a été suivi du travail en studio, qui était presque achevé au début de la nouvelle année.

## Le Congrès Biennal de L'A.C.O.

Les simples mots "Vancouver en juillet" suiffisent pour évoquer dans l'esprit de la plupart des Canadiens l'expérience qu'ont vécue le nombre sans précédent de participants au 18e Congrès biennal de l'Association. Sous la direction du président de l'Organisation locale, le Dr Sherman Olson, les optométristes de la C.-B. ont su trouver un cadre et prévoir un programme tout aussi mémorable l'un que l'autre, à tous égards.

En tout, 281 optométristes, 156 conjoints et 69 jeunes délégués se sont inscrits au Congrès de 1983. Avec le personnel affecté aux 53 stands de la salle des expositions, le Congrès de cette année a établi, au-delà de tout soupçon, l'attrait naturel du littoral du Pacifique.

## Interaction 83

Comme c'est de plus en plus le cas avec cette tribune annuelle de l'Association, Interaction s'est révélée un moyen plus propice de débat productif et d'échange d'idées que comme réunion d'où peuvent naître des décisions particulières et unanimes appelant des mesures concrètes.

Dans l'une des deux grandes présentations, le coordonnateur de l'information publique de l'A.C.O., Alex Saunders, et le Dr Scott Brisbin ont exposé les multiples points d'un programme visant à améliorer les relations publiques de l'Association et à en élargir la portée. La présentation a servi à illustrer la complexité des clientèles de l'optométrie, ce qui fait qu'il serait vain d'espérer atteindre par un message unique toute la gamme des "publics" que vise un programme efficace de relations publiques.

Dans la seconde présentation, le Dr Hervé Landry a examiné en détail la triple menace qui guette constamment la position des optométristes en tant que fournisseur de services primaires de soins de la vue et des yeux au Canada: le rôle et le champ d'action des opticiens d'ordonnances, les efforts que font les médecins pour confiner les soins de la vue à un modèle médical et la prestation de services de soins de la vue par le ministère de la Défense nationale par le recours à des techniciens ophtalmiques.

Sous la présidence du Dr Ralph Rosere, la réunion a été pour les représentants des associations provinciales, et leurs collègues des écoles et

association representatives, with colleagues from the Schools and Colleges of optometry, to discuss their respective approaches to each of these issues.

## C.A.O. General Business Meeting

A New Optometric Will — N.O.W. — marked the theme of each of the reports delivered to the delegates in attendance at the 1983 General Business Meeting. Permeating them all was the feeling that the necessary foundation, political action, was the base upon which a new attitude of action and response would be built. Even in July, the risks to optometry's status as an independent health care profession, risks which would be confirmed by the first version of the proposed Canada Health Act later in the year, were being anticipated by the

*Dr. Roland des Groseilliers (l.) and Dr. Tim Kime, President - A.O.A. (Vancouver, July '83)*

speakers. Dr. des Groseilliers, in the President's Report, described a need for a new political strategy, calling for a "total commitment of each optometrist across Canada."

In his past-President's Report, Dr. MacDuff stated that: "The need for unity is obvious and the support of Canadian optometrists is essential if we are to succeed in the future." Outgoing Executive Director, Don Schaefer, echoed the theme in terms of staff commitment to the goal. The continued ability of the national office to fulfill these responsibilities, he said, depends upon facing squarely up to each issue — clearly identified and clearly priorized. Any doubt about either of these aspects, he concluded, and administration becomes simply a series of crisis management exercises, workable in the short run perhaps, but useless and damaging to morale if allowed to become the standard of administrative support.

Even the Treasurer, Dr. Bruce Rosner, highlighted his financial report with a reference to the meeting's theme.

The kind of program necessary, he said, doesn't come just from dedicated volunteers and personnel. "We must have funds to coordinate and disseminate

collèges d'optométrie, une excellente occasion de discuter de leurs approches respectives face à chacune de ces questions.

## Assemblée Générale de L'A.C.O.

Le nouvel état d'esprit combatif de l'optométrie a marqué le thème de chacun des rapports présentés aux délégués présents à l'Assemblée générale de 1983. Dans tous les cas, on avait le sentiment que le fondement nécessaire — l'action politique — était la base même sur laquelle il fallait asseoir une nouvelle attitude d'action et de réaction. Même en juillet, les différents orateurs prévoyaient déjà les dangers qui menaçaient le statut de l'optométrie en tant que profession indépendante des soins de santé, dangers qui allaient être confirmés par la première version du projet de Loi canadienne sur la santé plus tard au cours de l'année. Dans son rapport du président, le Dr des Groseilliers décrivait la nécessité d'un nouvel esprit combatif, et réclamait un "engagement total de chaque optométriste du Canada".

Dans son rapport du président sortant, le Dr MacDuff déclarait: "Il est évident qu'il faut faire l'unité et que l'appui des optométristes canadiens est essentiel à nos succès pour l'avenir." Le directeur général sortant, Don Schaefer, a fait écho au thème en engageant le personnel à travailler à cet objectif. Pour que le bureau national puisse continuer à s'acquitter de ses responsabilités, a-t-il déclaré, il faut que nous fassions carrément face à chaque problème — clairement défini selon des priorités clairement établies. Si l'on met en doute l'un de ces aspects, a-t-il conclu, l'administration ne devient autre chose qu'une série d'exercices de gestion de crise, qui peuvent donner des résultats à court terme peut-être, mais qui sont inutiles et nuisent au moral s'ils deviennent la norme du soutien administratif.

Même le trésorier, le Dr Bruce Rosner, a présenté son rapport financier sous l'éclairage du thème de l'assemblée. Le genre de programme nécessaire, a-t-il dit, ne vient pas tout simplement de bénévoles et d'employés dévoués. "Il nous faut des fonds pour coordonner et diffuser l'information . . . il faut mettre davantage l'accent sur la planification et le développement pour l'avenir. Notre personnel de talent et le personnel de réserve suffisants auront besoin d'un meilleur appui des membres pour mieux nous inspirer un nouvel esprit combatif."

## Le Fonds de Fiducie des Optométristes Canadiens pour l'Education

Le F.F.O.C.E. a continué en 1983 de répondre à son objectif, qui est de faire avancer la cause de l'enseignement de l'optométrie au Canada. Plus de 60 000 $ ont été adjugés dans le cadre du programme de prix de 1983 aux projets les plus divers, comme une subvention de 5 000 $ au Programme d'évaluation de la vue du Nouveau-

information . . . more emphasis must be laid on future planning and development. Talented personnel and sufficient backup staff are going to require more support from the members to better prepare us for N.O.W."

## The Canadian Optometric Education Trust Fund

The C.O.E.T.F. in 1983 continued to fulfill its stated goal of furthering the course of Canadian optometric education. Over $60,000.00 was awarded in the 1983 Awards Program to a wide range of projects. Representative among these was a grant of $5,000.00 to the New Brunswick Vision Assessment Program for a vision care screening program of nursing home residents; $3,300.00 to Dr. Ralph Chou of the School of Optometry, University of Waterloo, towards the first year of a Ph.D. program; $4,000.00 to Dr. Bill Larson, School of Optometry, University of Montreal, to construct an instrument for the clinical measurement of accommodative convergence and $5,000.00 to Dr. John Jantzi of Surrey, B.C., to conduct initial research into making low vision services available on a national level.

Under Chairman, Dr. Scott Brisbin of Edmonton, the C.O.E.T.F. in 1983 pushed its pledged total to within $60,000.00 of $1 million. The Trustees had decided some time ago that the commitment of $1 million from Canadian optometry was a requirement before the Fund could begin its next major developmental phase — the approach to industry. By year end, plans were well underway for designing and implementing the Industrial Fund Raising Strategy.

## The Canadian Journal of Optometry

The C.J.O. received a much-praised facelift in 1983 that saw substantial changes imposed on its external design, and, less obviously, on the nature of its content. Readers last year were shown a brand new cover design which includes the first major change in the Journal's title presentation in over thirty years. Also for the first time in the publication's history, a good deal of experimentation was tried with the aid of a number of professional design and layout specialists. After three issues, a number of the best features of each were retained as permanent features of the CJO and the 1984 issues will reflect much of the success of 1983's design modifications.

Dr. Maurice Bélanger continued his tireless devotion to the Journal, virtually as its full-time Editor, in addition to maintaining an active practice in Ottawa.

## C.A.O. Staff

As noted in the opening sentence of this report, 1983 was a year of considerable administrative change within the Association. It was particularly reflected in the transition which occurred at the national staff level.

Brunswick pour un programme d'examen de la vue pour les résidents d'une maison de soins; 3 300 $ au Dr Ralph Chou, de l'École d'optométrie de l'Université de Waterloo, pour la première année d'un programme de doctorat; 4 000 $ au Dr Bill Larson, de l'École d'optométrie, de l'Université de Montréal, pour la construction d'un instrument pour la mesure clinique de la convergence accommodative; et 5 000 $ au Dr John Jantzi, de Surrey (C.-B.), pour la recherche initiale en vue de rendre accessibles au niveau national des services de basse vision.

Sous la présidence du Dr Scott Brisbin, d'Edmonton, le F.F.O.C.E. a porté son total souscrit en 1983 à seulement 60 000 $ du million de dollars. Les fiduciaires ont décidé il y a quelque temps que l'engagement d'un million de dollars de la part des optométristes canadiens était indispensable pour que le fonds puisse entamer sa prochaine grande étape du développement, soit la conquête de l'industrie. À la fin de l'année, la planification de la conception et de la mise en oeuvre de la stratégie de souscription dans l'industrie était déjà bien engagée.

## La Revue Canadienne d'Optométrie

En 1983, la RCO s'est refait une toilette qui a exigé des changements considérables à sa couverture et d'autres, moins évidents, à la nature de son contenu. Les lecteurs de l'an dernier ont pu voir une couverture entièrement refaite, soit le premier changement important de présentation de la Revue en plus de trente ans. Pour la première fois également dans l'histoire de la publication, on s'est livré à un grand nombre d'expériences avec la participation d'un certain nombre de spécialistes de la conception et de la mise en page. Après trois numéros, on a retenu un certain nombre des meilleures caractéristiques de chacun et les numéros de 1984 refléteront une bonne part du succès des modifications de conception de 1983.

Le Dr Maurice Bélanger a continué à se dévouer sans compter à la Revue, en tant que rédacteur en chef à plein temps ou presque, tout en maintenant une pratique active à Ottawa.

## Le Personnel de L'A.C.O.

Comme on l'a vu au début du présent rapport, l'Association a procédé à des changements administratifs considérables en 1983. Ce changement s'est reflété particulièrement dans la transition qui s'est faite au niveau du personnel national.

Avant le départ pour Londres de Don Schaefer, un comité de recrutement de cadres de l'A.C.O. a procédé à une recherche poussée en vue de trouver un nouveau titulaire du poste de directeur général. Le comité a eu la bonne fortune de retenir les services de M. Gérard Lambert. Gérard, qui n'est pas étranger à l'administration d'associations, ou à la politique de l'optométrie, était auparavant

Prior to the departure of Don Schaefer for London, a C.A.O. Executive search committee conducted an extensive quest for a replacement for the Executive Director position. They were very fortunate in acquiring the services of Mr. Gerard Lambert. No stranger to association administration, or optometric politics, Gerard had previously been employed as the Administrative Director of the Quebec Association of Optometrists and C.A.O., as a result, was able to derive instantaneous benefit, with no lapse in administration, through the acquisition of his services as national Executive Director.

Meanwhile, at the same time, Alex Saunders resigned as C.A.O. Public Information Coordinator in order to pursue a new challenge as the Manager of Occupational Vision Plans for the Ontario Association of Optometrists, based in Toronto. Alex's service with C.A.O. was likewise of lasting benefit to the Association and had manifested itself most recently in the form of the extensive news coverage which was accorded several of the presentations at the 1983 Biennial Congress, a program which was coordinated by Alex and Tom Little, the B.C.O.A.'s Executive Director.

Rounding out the changes at the Executive level, Michael DiCola's position was redefined as an administrative support one and, incorporating some of the duties vacated by Alex, Mike was named Director of Communications at the November, 1983 meeting of C.A.O. Council.

Ruth Wilcox, Annette LeFort and Deanna Verhey have all continued more than capably to provide the necessary services of, respectively, C.A.O. Office Manager, Receptionist/Word Processing and Canadian Optometric Education Trust Fund Secretary.

Physically, the office itself underwent the trauma, albeit a successful one, of a relocation in 1983. Removed from its address of 10 years, the administrative office was transferred to a much-needed larger space a scant three blocks from Parliament Hill in the nation's capital. As part of the transition process, plans were also made to acquire a new business computer to assist in the updating and modernizing of many of the routine administrative processes.

## Finances

Appended to this report is a summary of the 1983 audited statement. Questions and comments are welcomed and should be directed to the Executive Director, Mr. Gerard Lambert.

## Summary

1984 "looms" in many people's minds as the Orwellian year of Big Brother, with all the negative and de-humanizing connotations associated with that particular work of literature.

C.A.O., on the other hand, looks to the year 1984

directeur administratif de l'Association des optométristes du Québec. Par conséquent, l'A.C.O. a pu tirer un avantage instantané, sans interruption d'administration, en retenant ses services en tant que directeur général national.

Entre-temps, au même niveau, Alex Saunders a démissionné de son poste de coordonnateur de l'information publique de l'A.C.O. afin de relever un nouveau défi au poste de directeur des Régimes professionnels de soins de la vue pour l'Association des optométristes de l'Ontario, qui est basée à Toronto. Le séjour d'Alex à l'A.C.O. aura lui aussi valu des avantages durables à l'Association. Ainsi, tout récemment, on doit à Alex la couverture approfondie qui a été faite à plusieurs des présentations au Congrès biennal de 1983, soit un programme coordonné par Alex et par Tom Little, directeur exécutif de la B.C.O.A.

Pour compléter les changements à la direction, on a transformé le poste de Michael DiCola en poste de soutien administratif et, par suite de la prise en charge de certaines des fonctions libérées par Alex, Mike a été nommé directeur des Communications à la réunion de novembre 1983 du Conseil de l'A.C.O.

Ruth Wilcox, Annette LeFort et Deanna Verhey ont toutes continué à assumer de façon très compétente les fonctions de chef de bureau de l'A.C.O., de réceptionniste/opératrice de machine de traitement de textes et de secrétaire du Fonds de fiducie des optométristes canadiens pour l'éducation, respectivement.

Physiquement, le bureau lui-même a subi le traumatisme, tout de même réussi, d'un déménagement en 1983. Parti des bureaux qu'il occupait depuis 10 ans, le bureau administratif a emménagé dans des locaux plus vastes indispensables situés à peine trois rues de la Colline parlementaire dans la capitale nationale. Dans le cadre du processus de transition, on a également élaboré des plans pour l'acquisition d'un nouvel ordinateur de bureau qui facilitera la mise à jour et la modernisation d'un grand nombre des processus administratifs de routine.

## Les Finances

On trouvera en annexe un sommaire des états financiers vérifiés de 1983. On est prié d'adresser toute question et tout commentaire au directeur général, M. Gérard Lambert.

## Sommaire

Dans l'esprit de bien des gens, 1984 s'annonce comme l'année du Grand frère, avec toutes les connotations négatives et déshumanisantes qu'évoque l'oeuvre littéraire d'Orwell.

L'A.C.O., elle, entrevoit 1984 comme l'année de la culmination de nombreux efforts amorcés l'année précédente. De façon optimiste, les occasions que présentent les nouveaux défis comme la Loi canadienne sur la santé et le Fonds de fiducie d'un

as the culmination of many efforts begun the year previous. Optimistically, we see the opportunities presented by fresh challenges like the Canada Health Act and a $1 million Canadian Optometric Education Trust Fund as invitations to this profession to make its presence felt more strongly than ever before. We believe that Canadians are beginning to perceive health care in general as more and more a right in which each individual has a choice, and a wide range of options upon which to base that choice. We continue to believe that the profession of optometry offers just that — a readily accessible choice, in the area of vision and eye care.

1983 was a transition year for the Association — we believe a positive one. To that end, therefore, i.e. the clear enunciation and presentation of optometry's position as an independent provider of primary vision and eye care service, the Council and staff of the Canadian Association of Optometrists will continue to dedicate its efforts.

million de dollars des optométristes canadiens pour l'éducation sont pour nous des défis que la profession doit relever pour marquer sa présence plus nettement que jamais. Nous croyons que les Canadiens voient les soins de santé en général de plus en plus comme un droit où chacun a le choix, et dispose d'une vaste gamme d'options sur lesquelles fonder ce choix. Nous continuons à croire que l'optométrie, comme profession, offre justement ce choix, un choix facilement accessible, dans le domaine des soins de la vue et des yeux.

1983 a été une année de transition pour l'Association, une année que nous croyons positive. À cette fin, donc, le Conseil et le personnel de l'Association canadienne des optométristes continueront de faire converger leurs efforts vers ce but, soit la formulation et la présentation claires de la position de l'optométrie en tant que fournisseur indépendant de services primaires de soins de la vue et des yeux.

## Appendix — Financial Statements for the year ended December 31, 1983 and Auditors' Report to the Members

## Annexe — Etats Financiers de l'exercice terminé le 31 décembre 1983 et Rapport Des Verificateurs aux membres

**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, 1983 and the statements of income and surplus and of changes in financial position for the year then ended. Except as explained in the following paragraph, 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 common with many non-profit organizations, the Association derives part of its income in the form of donations which are not susceptible to complete audit verification. Accordingly, our verification of revenue from this source was limited to accounting for the amounts recorded in the records of the Association.

In our opinion, except for the effect of adjustments, if any, which we might have determined to be necessary had donations been susceptible to complete audit verification, these financial statements present fairly the financial position of the Association as at December 31, 1983 and the results of its operations for the year then ended in accordance with accounting principles as set out in the notes to the financial statements applied on a basis consistent with that of the preceding year.

**Deloitte, Haskins & Sells**
**Auditors**

**February 7, 1984**

**Aux membres de**
**L'Association Canadienne des Optométristes:**

Nous avons vérifié le bilan de l'Association Canadienne des Optométristes au 31 décembre 1983 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, sauf pour ce qui est indiqué dans le prochain paragraphe.

Comme plusieurs organismes sans buts lucratifs, l'association obtient une partie de son revenu sous forme de contributions volontaires, lesquelles ne sont pas susceptibles d'être vérifiées d'une façon complète. Par conséquent notre vérification de ces revenus n'a porté que sur la comptabilisation des montants inscrits aux registres de l'Association.

A notre avis, à l'exception des effets des régularisations que nous aurions pu juger nécessaires si les contributions volontaires avaient pu faire l'objet d'une vérification complète, ces états financiers présentent fidèlement la situation financière de l'association au 31 décembre 1983 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 & Sells**
**Vérificateurs**
**le 7 février 1984**

## Canadian Association of Optometrists Balance Sheet December 31, 1983

| Assets | 1983 | 1982 |
|---|---|---|
| Current Assets | | |
| Cash | $20,823 | $ 5,382 |
| Accounts receivable | 17,353 | 22,358 |
| Due from related organizations | 1,717 | 11,514 |
| | 39,893 | 39,254 |
| Federal Government Relations Fund | 53,168 | 18,375 |
| Furniture and Fixtures | 3,651 | 3,890 |
| Equipment Under Capital Lease | 7,412 | 9,304 |
| | 104,124 | $70,823 |
| **Liabilities** | | |
| Current Liabilities | | |
| Bank indebtedness | — | $19,367 |
| Accounts payable and accrued charges | 10,898 | 24,793 |
| Deferred revenue | 3,825 | 20,000 |
| Obligation under capital lease — current portion | 3,281 | 2,863 |
| | 18,004 | 67,023 |
| Obligation Under Capital Lease | 2,829 | 5,983 |
| Loan from Federal Government Relations Fund | 30,000 | — |
| | 50,833 | 73,006 |
| **Members' Equity** | | |
| Federal Government Relations Fund | 53,168 | 18,375 |
| Surplus (Deficit) | 123 | (20,558) |
| | 53,291 | (2,183) |
| | 104,124 | $70,823 |

| | | | | |
|---|---|---|---|---|
| Expenses | | | | |
| Bad debts | — | — | 196 | — |
| Bank charges and interest | 2,096 | 75 | 421 | 75 |
| Committee travel and administration | 11,693 | 19,149 | 20,583 | 17,263 |
| Depreciation | 2,381 | 2,000 | 622 | 1,800 |
| Equipment rental | 3,610 | 4,621 | 4,427 | 4,196 |
| Employee benefits | 7,560 | 6,925 | 7,632 | 6,046 |
| Executive Director and Assistants | | | | |
| General | 1,295 | 1,359 | 884 | 1,350 |
| Travel | 10,520 | 3,535 | 3,357 | 1,000 |
| Insurance | 57 | 330 | 459 | 300 |
| Legal and audit | 3,000 | 2,400 | 2,950 | 4,400 |
| Maintenance and repairs | 1,401 | 3,250 | 3,421 | 1,000 |
| Meetings | 31,355 | 40,000 | 37,596 | 32,200 |
| Miscellaneous | 2,231 | 300 | — | 300 |
| Postage | 3,354 | 3,450 | 5,014 | 2,400 |
| President | | | | |
| Office | 5,000 | 5,000 | 5,000 | 5,000 |
| Travel | 11,244 | 7,250 | 11,830 | 12,470 |
| Printing and office supplies | 8,738 | 4,950 | 4,287 | 5,000 |
| Public Information | 36,791 | 17,113 | 20,101 | 31,050 |
| Rent, Light and cleaning | 9,238 | 9,891 | 6,929 | 9,600 |
| Salary | 103,144 | 101,842 | 97,737 | 95,774 |
| Telephone and telegraph | 4,889 | 5,409 | 8,817 | 4,770 |
| Recruiting | 6,616 | — | — | — |
| | 266,213 | 238,849 | 242,263 | 235,994 |
| Net Income (Loss) | 20,681 | $ (5,031) | (44,091) | $(35,963) |
| (Deficit) Surplus, Beginning of Year | (20,558) | | 23,533 | |
| Surplus (Deficit), End of Year | $ 123 | | $(20,558) | |

## L'Association Canadienne des Optométristes État des Résultats et de l'Excédent Cumulatif de l'Exercice Terminé le 31 Décember 1983

| | 1983 | | 1982 | |
|---|---|---|---|---|
| | **Actuel** | **Budgeté** | **Actuel** | **Budgeté** |
| Revenus | | | | |
| Contributions des membres | $227,723 | $220,418 | $180,935 | $183,286 |
| Ventes littéraires | 23,042 | 3,400 | 8,712 | 3,250 |
| Revenu d'investissement | 3,636 | 2,000 | 1,841 | 3,500 |
| Congrès de 1983 (net) | 23,352 | — | — | — |
| La Revue Canadienne d'optométrie — Bénéfice net | 9,141 | 8,000 | 6,684 | 9,995 |
| | 286,894 | 233,818 | 198,172 | 200,031 |
| Frais | | | | |
| Mauvaises créances | — | — | 196 | — |
| Frais bancaires et intérêt | 2,096 | 75 | 421 | 75 |
| Déplacements du comité et administration | 11,693 | 19,149 | 20,583 | 17,263 |
| Amortissement | 2,381 | 2,000 | 622 | 1,800 |
| Location de matériel | 3,610 | 4,621 | 4,427 | 4,196 |
| Charges sociales | 7,560 | 6,925 | 7,632 | 6,046 |

## L'Association Canadienne des Optométristes Bilan au 31 décember 1983

| Actif | 1983 | 1982 |
|---|---|---|
| Actif a Court Terme | | |
| Encaisse | $20,823 | $ 5,382 |
| Débiteurs | 17,353 | 22,358 |
| Avances à des organismes liés | 1,717 | 11,514 |
| | 39,893 | 39,254 |
| Fonds des Relations avec le Gouvernement Fédéral | 53,168 | 18,375 |
| Immobilisations | 3,651 | 3,890 |
| Materiel Loué en Vertu d'un Contrat de Location — Acquisition | 7,412 | 9,304 |
| | 104,124 | $70,823 |
| **Passif** | | |
| Passif a Court Terme | | |
| Dette bancaire | — | $19,367 |
| Créditeurs et frais courus | 10,898 | 24,793 |
| Revenus reportés | 3,825 | 20,000 |
| Obligation découlant d'un contrat de location — acquisition — tranche à court terme | 3,281 | 2,863 |
| | 18,004 | 67,023 |
| Obligation Découlant d'un Contrat de Location — Acquisition | 2,829 | 5,983 |
| Emprunt du Fonds des Relations avec le Gouvernement Fédéral — sans intérêt, payable sur demande | 30,000 | — |
| | 50,833 | 73,006 |
| **Avoir des Membres** | | |
| Fonds des Relations avec le Gouvernement Fédéral | 53,168 | 18,375 |
| Excédent Cumulatif (Déficit) | 123 | (20,558) |
| | 53,291 | (2,183) |
| | 104,124 | $70,823 |

## Canadian Association of Optometrists Statement of Income and Surplus Year Ended December 31, 1983

| | 1983 | | 1982 | |
|---|---|---|---|---|
| | Actual | Budget | Actual | Budget |
| Revenue | | | | |
| Membership contributions | $227,723 | $220,418 | $180,935 | $183,286 |
| Literature sales | 23,042 | 3,400 | 8,712 | 3,250 |
| Investment income | 3,636 | 2,000 | 1,841 | 3,500 |
| 1983 Congress (net of expenses) | 23,352 | — | — | — |
| Canadian Journal of Optometry — Net Income | 9,141 | 8,000 | 6,684 | 9,995 |
| | 286,894 | 233,818 | 198,172 | 200,031 |

| | | | | |
|---|---|---|---|---|
| Haute direction et assistants | | | | |
| Général | 1,295 | 1,359 | 884 | 1,350 |
| Déplacements | 10,520 | 3,535 | 3,357 | 1,000 |
| Assurances | 57 | 330 | 459 | 300 |
| Honoraires professionnels | 3,000 | 2,400 | 2,950 | 4,400 |
| Entretien et réparations | 1,401 | 3,250 | 3,421 | 1,000 |
| Réunions | 31,355 | 40,000 | 37,596 | 32,200 |
| Divers | 2,231 | 300 | — | 300 |
| Poste | 3,354 | 3,450 | 5,014 | 2,400 |
| Président | | | | |
| Bureau | 5,000 | 5,000 | 5,000 | 5,000 |
| Déplacements | 11,244 | 7,250 | 11,830 | 12,470 |
| Imprimerie et fournitures de bureau | 8,738 | 4,950 | 4,287 | 5,000 |
| Information publique | 36,791 | 17,113 | 20,101 | 31,050 |
| Loyer, éclairage et nettoyage | 9,238 | 9,891 | 6,929 | 9,600 |
| Salaires | 103,144 | 101,842 | 97,737 | 95,774 |
| Téléphone et télégraphe | 4,889 | 5,409 | 8,817 | 4,770 |
| Recrutement | 6,616 | — | — | — |
| | 266,213 | 238,849 | 242,263 | 235,994 |
| Bénéfice Net (Perte Nette) | 20,681 | $ (5,031) | (44,091) | $(35,963) |
| (Déficit) Excédent Cumulatif, Début de l'Exercice | (20,558) | | | 23,533 |
| Excédent Cumulatif (Déficit), Fin de l'Exercice | $ 123 | | $(20,558) | |

# A Step in Preventive Vision Care — the Screening of Young Children

G. Isabelle*

**Comment by G.M. Belanger, CJO Editor**

It has often been said that the hallmark of a true health care profession is the effort put forth to eliminate the need for its own services.

The objective can be reached in only one way —by becoming involved in prevention. For optometry, this implies the prevention of visual problems whether applicable to school performance, industrial production or general well-being in daily life.

The N.S.O.A. recipe is a good example of optometric involvement in preventive care and public health care and education of the public in vision care.

## Introduction

The CAT Battery originated in Bridgewater, N.S. It was a cooperative pilot project involving the Director of Special Services for the local School District and an optometrist. Working together, they gleaned from the research literature the most educationally relevant vision tests that seemed both practical and reliable for a Special Education and Remedial Reading Vision Screening Program. It is recognized that, although it is not a panacea for all reading deficiencies, it will prove useful as a more comprehensive inventory of visual skills than any presently being utilized by most school systems. It is not a diagnostic tool. No other functions should be inferred by anyone.

In order to publicize the CAT Battery, the following memo was sent from the N.S.O.A. offices (c/o Mr. Jim Lotz, Executive Director, Box 3393 (s) Halifax, N.S. B3J 3J1. Tel. (902) 423-3263) to all School District Superintendants, Directors of Special Services, Teachers' Colleges, Shelburne and Truro Schools, Schools for the Deaf, N.S. Educational Consultants, N.S. Psychologists, the Association for Chidlren with Learning Disabilities, ATEC:

**Re: Purchase of the C.A.T. Battery Vision Screening Kit and Program**

— C.A.T. means Coordination Acuity Tests

— The C.A.T. has 9 tests: 5 Acuity and 4 Coordination

— Total cost: $200.00 Canadian; (in addition $40.00 worth of 1.50 D glasses were donated by optical companies. The two pair that are required per kit are therefore included free. The initial pledges total $2,500.00 and will service 62 kits, should this be the demand.)

— In addition there will be a number of Home-made Items; patch, occluder, 3 apertures, 2 fixation targets and a 10 foot symbol chart will be produced and included for uniformity of content.

**Kit:** Economics require the following items to be purchased from Bernell Corp., 750 Lincoln Way East, Box 4637 South Bend Indiana 46634

| | | | |
|---|---|---|---|
| 1. | 20 foot eye charts, number and letter, $4.00 each | | $8.00 |
| 2. | 14 inch AMA eye chart; letter | | 4.00 |
| 3. | 14 inch AOCO Child's Recognition Near Point Test | | 2.00 |
| 4. | Stereo Reindeer; 14 inch stereoacuity measure | | 40.00 |
| 5. | Selected plates from the 38 plate Ishihara Color Blindness Test | | 20.00 |
| 6. | Bernell Maddox Rod Phoria Measure; 10 prism dioptres | | 40.00 |
| 7. | Penlite #BS (2 AAA Duracell Batteries not included) | | 2.50 |
| 8. | Bernell Screening Blackbird Goggles; 2/kit | | 0.50 |
| | Subtotal in American Dollars | | 117.00 |
| | Estimated shipping, handling and broker's fees (Customs) | | 10.00 |
| | Exchange rate quoted March 12/84 — 27.75% ($127 Am.$) | | 35.24 |
| | Total aquisition Cost in Canadian Dollar Equivalent | CAN$ | 162.24 |
| | 15 minute Introductory Videotape, Beta Format, Teachers Ctr. Tape produced in Bridgewater, N.S. | CAN$ | 20.00 |
| | Grand total | CAN$ | 182.24 |

Kit including tape is **$200.00** to allow for contingency ie;
Fluctuating Exchange Rate.
Other components include:

1. Manual; Forms, procedures — test by test, glossary, appendix, bibliography. FREE.

* Optometrist, Bridgewater, Nova Scotia

2. 60 watt reading lamp; **purchasers will acquire their own locally.**
3. 2 pair of +1.50 dioptre hyperopia screening glasses. FREE (Donated)
4. Home made items as mentioned above. FREE.
5. Provincial Inservice Training: Time will be donated by NSOA selected members (as has been done in Lunenburg and Kings Counties in 1982-1984).
6. Long term quality control, certifications and research methodologies will be arranged and administered by a future plan. Discussion and agreement will have to be determined when feasible.

The agreement between the N.S.O.A. and Bernell is such that advance payment of orders is required. A 45 to 90 day waiting period between order and delivery is the only drawback of this requirement.

The total price for a complete kit is $200.00, and each school district can order subsequent kits for $180.00 each (only one tape per district is required, not one per kit). Bernell also advises that a rebate, which varies with exchange rates and quantity ordered, may be possible.

For further information about the program, or to order the kit(s), members are invited to contact:

**The Nova Scotia Optometrical Association**
**Mr. Jim Lotz, Executive Director**
**Box 3393 (s)**
**Halifax, Nova Scotia**
**B3J 3J1**
**(902) 423-3263**

*cont'd from pg. 66*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# The more you see, the better your patients will see.

Nikon® microscopes can make eye examinations more precise and thorough, which is good for your patients.

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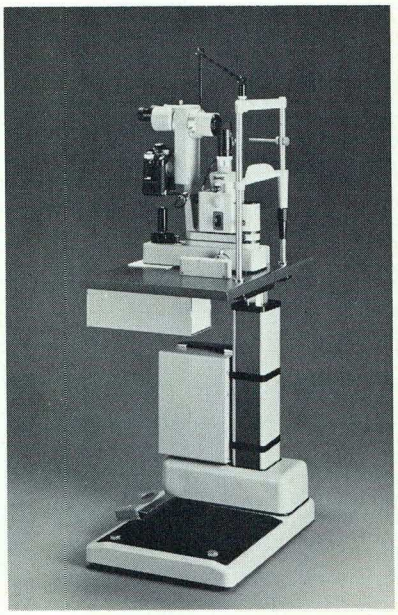

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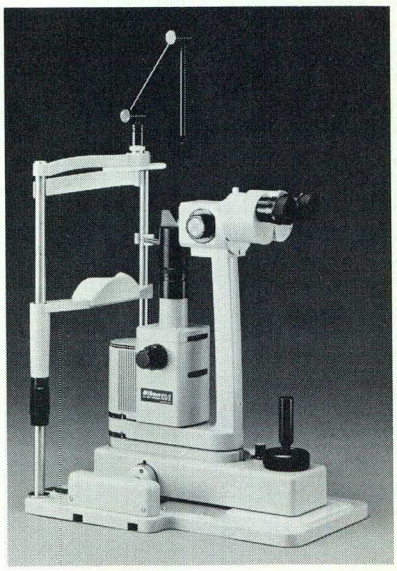

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# A Comparison of the Humphrey Autokeratometer and System 2000 with the Bausch and Lomb Keratometers

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**Abstract**

*A series of clinical evaluation tests were performed to compare the performance of the Humphrey Model 410 Autokeratometer and Wesley Jessen System 2000 with a conventional Bausch & Lomb keratometer considered as a reference standard. Both of these semi-automated instruments seemed to give consistent, reliable, and accurate results relative to the conventional keratometer; despite its much higher cost, the autokeratometer however appears to be the most practical instrument in a large practice because of the very high speed with which results are printed out.*

**Abrégé**

*Une série d'essais cliniques furent entrepris en vue de comparer les caractéristiques de l'Autokératomètre Humphrey modèle 410 et du système 2000 de Wesley Jessen avec celles d'un kératomètre conventionnel Bausch & Lomb considéré comme instrument de référence. Ces deux instruments semi-automatiques semblent donner des résultats qui sont consistents, fiables, et précis relativement à ceux obtenus avec un kératomètre conventionnel; malgré son coût plus élevé, l'autokératomètre semble être un instrument très pratique dans un bureau achalandé vu sa tres grande rapidité à imprimer les résultats.*

## Objective

The objective of this study was to perform a clinical comparison of the Humphrey Autokeratometer and System 2000 with the Bausch & Lomb keratometer, using a total of 12 human subjects. The primary instrumental parameters considered were their consistency and reliability, accuracy, speed, and ease of operation.

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Three instruments were used in this study:

1. A Bausch & Lomb keratometer.

This standard instrument[1] was modified by adding two small red fixation targets on the Jessop ring fitted in the front of the instrument to define nasal and temporal fixation points at 13.5° on each side of the central fixation point. These corresponded to the same central and peripheral fixation points used by the Humphrey autokeratometer.

2. A Humphrey Model 410 Autokeratometer.

This comparatively new computer-control-lid instrument[2] can rapidly obtain a print out of the following basic information for each (or either) eye, as illustrated in the sample output in Figure 1:

a. Central keratometry values: dioptric power, corneal radius, and axis along the two principal meridians; corneal astigmatism and axis of the cylinder.
b. Apical keratometry values: dioptric power, corneal radius, and axis along the two principal meridians; corneal astigmatism and axis of the cylinder.
c. Shape factor: the number that indicates the rate of corneal flattening from the apex along the horizontal meridian.
d. Apex position: this gives the position of the apex relative to the visual axis, superior or inferior, and temporal or nasal.
e. Vault height: this gives the height of the apex above the extended scleral surface.
f. Conformance factor: this is a number that indicates the degree of correlation between the actual corneal measurements taken and the Humphrey model of the cornea.

In addition to all the above information, keratometry values for the nasal and temporal peripheral corneas are also displayed on a video terminal but are not printed out. These readings are taken using special fixation lights to locate, in turn, the central, temporal, and nasal corneas along the horizontal meridian.

3. A Wesley-Jessen System 2000

This instrument is an advanced photokerato-

scope[3,4] capable of measuring the corneal topography through the use of photography in conjunction with computer technology. The basic optical principle is identical to that used in a conventional keratometer, that is observation of the relationship between a given size target and the size of that target virtual image formed by the cornea acting as a convex mirror.

The output information comes in the form of a computer print-out which includes the following data:

a. Central keratometry values: corneal radius along the two principal meridians, "read" angle; the "read" style is the angle at which the keratograph is oriented when measured.
b. Apex position: this gives the distance and orientation of the apex relative to the visual axis.
c. Shape factor: similar to the Humphrey autokeratometer output, this is a number that indicates the rate of corneal flattening along a meridian; with the System 2000, however, two shape factors are given for each eye, corresponding respectively to the two principal meridians.
d. Peripheral curves: the actual amounts (in millimeters) by which the measured cornea is anterior or posterior to the Wesley-Jessen model cornea, along the two principal meridians. In contrast to the Humphrey autokeratometer, however, the System 2000 does not provide the actual peripheral dioptic values (or peripheral corneal radii).
e. Contact lens design parameters: the measured corneal data is used in conjunction with the patient's spectacle prescription, to obtain all the parameter required to fabricate hard lenses.

A sample computer print-out is reproduced in Figure 2.

## Experiment design

All 12 subjects used in the experiment were in good ocular health and were either emmetropes or low ametropes. The following experiments were performed to determine:

1. Consistency of the Humphrey Autokeratometer.

A number of independent sets of readings were taken in quick succession on two different subjects to test the repeatability and reliability of the results and compute the standard deviations. A similar test of the System 2000 was not done due to cost limitations (a new polaroid photograph must be taken and processed in each case).

2. Comparison of the Humphrey Autokeratometer and System 2000 with the Bausch & Lomb keratometer.

Readings were taken on ten subjects using the Bausch & Lomb keratometer, the Humphrey Autokeratometer, and the System 2000. Since the Autokeratometer had been previously shown to give consistent results, only one set of observations was taken on each subject with that instrument. Three sets of readings were however taken on each subject with the Bausch & Lomb instrument and were averaged out. Some of the subjects also had previous clinical records (including keratometric values) at the clinic of the School of Optometry and this data was also utilized.

Next, the instruments were compared by computing, in each case, the differences "$\Delta$" between keratometric and axis values obtained by the B&L keratometer, the System 2000, and the Autokeratometer. Finally the means and standard deviations of these differences were computed.

## Results

1. Consistency of the Humphrey Autokeratometer.

These are presented in Table 1, from which the following summary conclusions may be drawn:

a. This instrument seems to be very good in giving consistent central or apical corneal curvatures: the average dioptric standard deviation was only about ±0.09D, which is less than ±0.12D. In only one case was the standard deviation greater than ±0.25D, or ±0.31D.
b. The computed corneal astigmatism was equally consistent with an average dioptric standard deviation of about ±0.09D.
c. The consistency of the axis determination of the corneal cylinder appears to be more variable, with the standard deviation ranging between a minimum of ±2° and a maximum of ±72° with an average of ±40°. These high values are however of no clinical significance, since they refer to cases where the corneal astigmatism is small (0.50D or less) and would typically be ignored in contact lens fitting. In the only case where the corneal astigmatism was approaching 1.00D, the standard deviation for axis determination was ±3° for the apical region and ±7° for the central region.
d. The consistency of the other parameters measured or computed (shape factor, apex location, tolerance, vault height, conformance factor) appeared to be equally good; for instance, the average standard deviation of the shape factor is about ±0.03, or about ±10% of the average value.

2. Comparison of the Humphrey Autokeratometer and System 2000 with the Bausch & Lomb keratometer.

These are presented in Tables 2 and 3, from which the following summary conclusions may be drawn:

a. Over the central cornea, the results obtained with the Humphrey Autokeratometer agree more closely with those of the B & L keratometer than those of the System 2000; relative to the B & L keratometer readings, the Autokeratometer readings are slightly higher (by less than

0.25D), while the System 2000 readings are higher still (by about 0.50D).

b. Over various regions of the horizontal meridian, the Humphrey Autokeratometer and the B & L keratometer results agree most closely over the central cornea (difference of less than 0.25D) and least closely over the nasal periphery (difference close to 1.00D), with the temporal periphery values difference being in between (slightly larger than 0.50D).

c. It is more difficult to compare the accuracy of the three instruments relative to axis determination for corneal astigmatism, since most subjects under study had comparatively little corneal astigmatism: of the 20 eyes examined, only 5 had one dioptre or more of central corneal astigmatism, and none had more than 1.5D. The other 15 all had less than 1.00D of astigmatism and the precise determination of the axis in these cases is not too important since such a small amount of corneal astigmatism would commonly be ignored in clinical contact lens fitting. If we however restrict ourselves to those cases with 1.0D or more of astigmatism, the following conclusions may be given:

(1) Central corneal measurements. The results of the Humphrey Autokeratometer and the B&L keratometer seem to agree closely, with an axis difference of less than 10° in all case, while those of the System 2000 seem to be much less accurate, with an axis difference of about 60° - 70° relative to the B&L keratometer.

(2) Peripheral corneal measurements. The average axis difference between the Autokeratometer and the B&L keratometer findings appears to be about 15° - 20°. Hence again, the System 2000 is much less accurate.

## Summary

A table summarizing the main features, advantages, and disadvantages of each instrument is given in Table 4.


## Acknowledgement

We wish to thank Carl Zeiss Canada for the use of the Humphrey Autokeratometer and Plastic Contact Lens Company (Canada) Ltd. for supporting this study.


## References


1. Keratometer Instructions, Cat. No. 71-21-35, Bausch & Lomb, Incorporated.
2. Owner's Manual, Model 410 Autokeratometer Manual, Humphrey Instruments Incorporated.
3. System 2000 Guide, Rx Input Data and Printout, Wesley-Jessen Inc.
4. Instructions, PEK Mark III Photo-Electric Keratoscope, Catalog #298-10, Wesley-Jessen Inc.

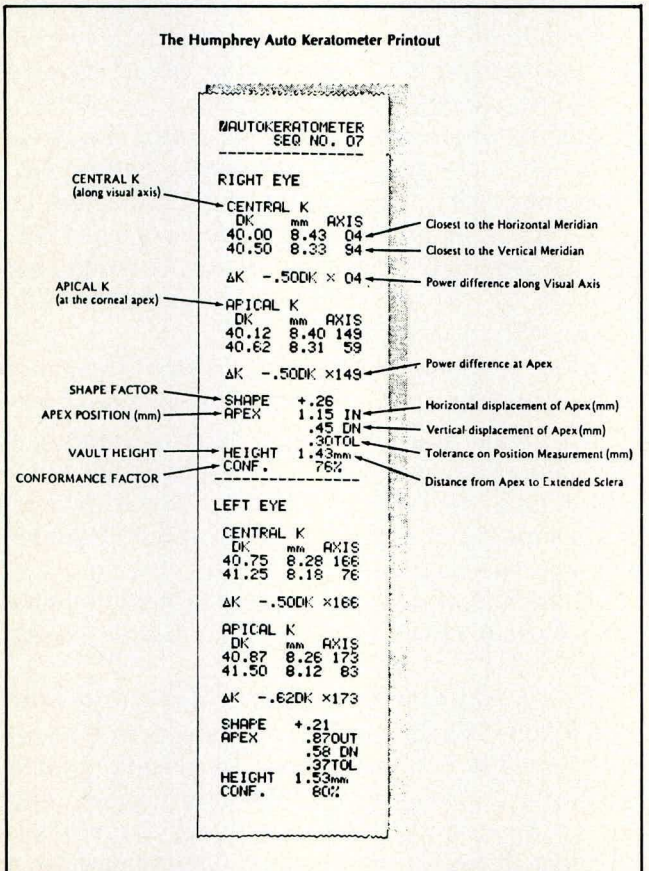




**Figure 1 — Sample output print-out of the Humphrey Auto keratometer**

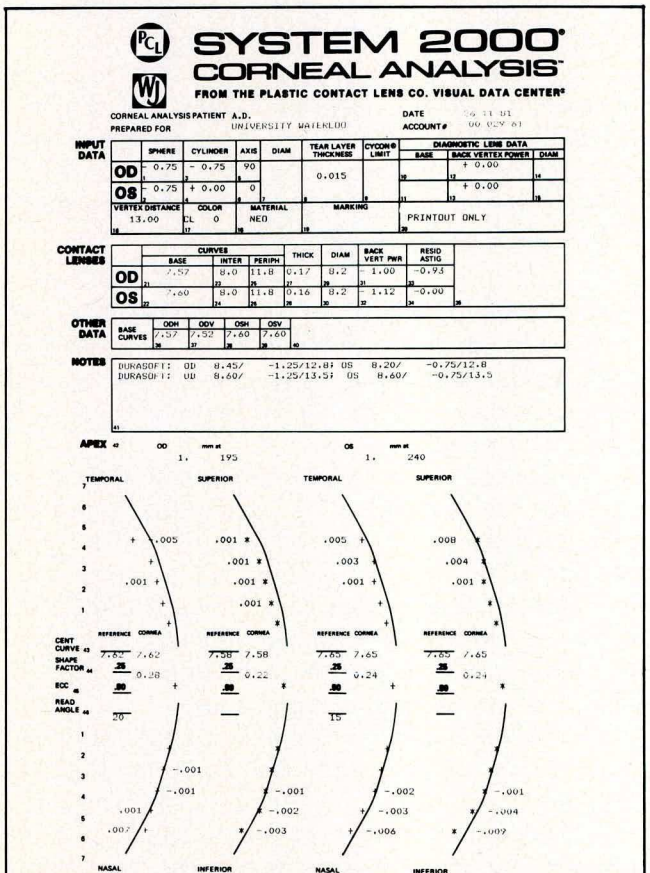



**Figure 2. Sample output print-out of the System 2000.**

| Subject | G.Y.M. | | D.D.S. | |
|---|---|---|---|---|
| | Averages of 4 measurements | Standard derivation | Average of 3 measurements | Standard derivations |
| OD Central K | 42.50 @ 148 | 0.00/017 | 42.17 @ 096 | 0.31/014 |
| | 42.25 @ 058 | 0.09/017 | 42.04 @ 006 | 0.06/014 |
| △K | -0.25 X 058 | 0.09/017 | -0.13 X 006 | 0.31/014 |
| Apical K | 42.81 @ 138 | 0.06/008 | 42.67 @ 102 | 0.12/002 |
| | 42.50 @ 048 | 0.06/008 | 42.17 @ 012 | 0.12/002 |
| △K | -0.31 X 048 | 0.06/008 | -0.50 X 012 | 0.00/002 |
| Shape factor | +0.37 | +0.03 | +0.24 | 0.03 |
| Apex location | 0.40 out | 0.05 out | 0.71 out | 0.11 out |
| | 0.72 down | 0.11 down | 0.73 down | 0.37 down |
| Tolerance | 0.20 | 0.02 | 0.32 | 0.05 |
| Vault height | 1.37 mm | 0.03 mm | 1.51 mm | 0.04 mm |
| Conf. factor | 89% | 4% | 77% | 7% |
| OS Central K | 42.06 @ 162 | 0.06/070 | 42.54 @ 084 | 0.16/007 |
| | 41.65 @ 072 | 0.06/024 | 41.62 @174 | 0.00/007 |
| △K | -0.41 X 072 | 0.06/024 | -0.92 X 174 | 0.15/007 |
| Apical K | 42.28 @ 150 | 0.10/072 | 42.75 @ 080 | 0.10/003 |
| | 42.06 @ 060 | 0.06/031 | 41.87 @ 170 | 0.10/003 |
| △K | -0.22 X 060 | 0.06/031 | -0.87 X 170 | 0.00/003 |
| Shape factor | +0.33 | 0.01 | +0.32 | 0.05 |
| Apex location | 0.4 out | 0.05 out | 0.77 out | 0.07 out |
| | 0.98 down | 0.25 down | 0.59 down | 0.09 down |
| Tolerance | 0.23 | 0.01 | 0.24 | 0.04 |
| Vault height | 140 mm | 0.01 mm | 1.41 mm | 0.18 |
| Conf. factor | 87% | 5% | 90% | 3% |

**Table 1 — Consistency of the Humphrey Autokeratometer when taking repeated measurement on the same subjects.**

| Subject | Eye | Location | (1) B&L Keratometer K values | Axis | (2) System 2000 K values | Axis | (3) Autokeratometer K values | Axis | (2) - (1) △ K values | △ Axis | (3) - (1) △ K values | △ Axis | (3) - (2) △ K values | △ Axis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Central | 40.43/41.06 | 090 | 40.81/41.72 | 020 | 40.25/41.00 | 124 | 0.38/0.66 | -070 | -0.18/-0.06 | 034 | -0.56/-0.72 | 104 |
| | OD | Temporal | 40.37/40.54 | 065 | | | 41.12/40.62 | 049 | | | 0.75/0.08 | -016 | | |
| D.L. | | Nasal | 38.21/40.21 | 087 | | | 38.62/40.75 | 106 | | | 0.41/0.54 | -019 | | |
| | | Central | 40.87/41.25 | 090 | 41.26/41.41 | 030 | 40.87/41.25 | 049 | 0.39/0.16 | -060 | 0.00/0.00 | -041 | 0.61/-0.16 | 019 |
| | OS | Temporal | 40.29/40.50 | 040 | | | 40.87/41.00 | 094 | | | 0.58/0.50 | 054 | | |
| | | Nasal | 39.04/40.25 | 060 | | | 39.50/41.12 | 072 | | | 0.46/0.87 | 012 | | |
| | | Central | 45.25/45.50 | 090 | 45.55/45.73 | 020 | 45.87/45.00 | 128 | 0.30/0.23 | -070 | 0.62/-0.50 | 038 | 0.32/-0.73 | 108 |
| | OD | Temporal | 44.46/44.46 | 030 | | | 45.00/45.50 | 049 | | | 0.54/1.04 | 019 | | |
| M.G. | | Nasal | 43.00/44.16 | 060 | | | 44.37/45.00 | 083 | | | 1.37/0.84 | 023 | | |
| | | Central | 45.25/45.50 | 090 | 45.79/45.92 | 020 | 45.00/45.37 | 097 | 0.54/0.42 | -070 | -0.25/-0.13 | 007 | -0.79/-0.55 | 077 |
| | OS | Temporal | 44.50/44.54 | 065 | | | 45.12/45.50 | 112 | | | 0.62/0.96 | 047 | | |
| | | Nasal | 43.67/44.29 | 066 | | | 44.62/45.00 | 094 | | | 0.95/0.71 | 028 | | |
| | | Central | 43.43/44.06 | 090 | | | 43.62/44.12 | 106 | | | 0.19/0.06 | 016 | | |
| | OD | Temporal | 42.62/43.62 | 063 | | | 43.25/44.25 | 075 | | | 0.63/0.63 | 012 | | |
| D.B. | | Nasal | 42.25/42.91 | 065 | Not | | 42.62/44.12 | 103 | Not | | 0.37/1.21 | 038 | Not | |
| | | Central | 43.37/43.94 | 090 | Available | | 43.50/44.12 | 099 | Available | | 0.13/0.18 | 009 | Available | |
| | OS | Temporal | 43.04/43.41 | 065 | | | 43.25/44.37 | 113 | | | 0.21/0.96 | 048 | | |
| | | Nasal | 41.75/43.17 | 065 | | | 42.62/44.00 | 082 | | | 0.87/0.83 | 017 | | |
| | | Central | 42.50/43.25 | 090 | 43.10/43.83 | 025 | 42.50/43.37 | 090 | 0.60/0.58 | -065 | 0.00/0.12 | 000 | -0.60/-0.46 | 065 |
| | OD | Temporal | Not Available | | | | 41.75/43.37 | 082 | | | Not Available | | | |
| G.B. | | Nasal | | | | | 41.62/43.37 | 098 | | | | | | |
| | | Central | 42.87/43.50 | 110 | 43.60/44.23 | 030 | 42.87/43.50 | 111 | 0.73/0.73 | -080 | 0.00/0.00 | 001 | -0.73/-0.73 | 081 |
| | OS | Temporal | Not Available | | | | 42.00/43.37 | 128 | | | Not Available | | | |
| | | Nasal | | | | | 42.37/44.25 | 090 | | | | | | |
| | | Central | 45.50/47.00 | 090 | 46.36/47.20 | 020 | 45.62/47.50 | 097 | 0.86/0.20 | -070 | 0.12/0.50 | 007 | -0.74/0.30 | 077 |
| | OD | Temporal | 44.50/46.00 | 090 | | | 44.62/46.37 | 081 | | | 0.12/0.37 | -009 | | |
| S.K. | | Nasal | 44.25/46.25 | 090 | | | 44.75/47.00 | 101 | | | 0.50/0.75 | 011 | | |
| | | Central | 44.87/46.00 | 096 | 45.30/46.49 | 020 | 45.37/46.37 | 088 | 0.43/0.49 | -076 | 0.50/0.37 | -008 | 0.07/-0.12 | 068 |
| | OS | Temporal | 44.25/46.00 | 092 | | | 44.37/46.50 | 096 | | | 0.12/0.50 | 004 | | |
| | | Nasal | 43.37/45.37 | 100 | | | 44.00/45.75 | 084 | | | 0.63/0.38 | -016 | | |

**Table 2 — Comparison of results obtained with the B&L Keratometer, the System 2000, and the Humphrey Autokeratometer on five subjects.**

| Subject | Eye | Location | (1) B&L Keratometer K values | Axis | (2) System 2000 K values | Axis | (3) Autokeratometer K values | Axis | (2) - (1) △ K values | △ Axis | (3) - (1) △ K values | △ Axis | (3) - (2) △ K values | △ Axis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Central | 43.75/44.25 | 090 | 44.29/44.53 | 020 | 43.75/44.87 | 093 | 0.54/0.28 | -070 | 0.00/0.62 | 003 | -0.54/0.34 | 073 |
| | OD | Temporal | 43.16/44.08 | 152 | | | 43.87/44.62 | 088 | | | 0.71/0.54 | -064 | | |
| A.D. | | Nasal | 42.42/42.58 | 149 | | | 43.87/44.62 | 090 | | | 1.45/2.04 | -059 | | |
| | | Central | 43.50/44.00 | 110 | 44.12/44.12 | 015 | 43.75/44.12 | 106 | 0.62/0.12 | -095 | 0.25/0.12 | -004 | -0.37/0.00 | 091 |
| | OS | Temporal | 43.21/43.37 | 075 | | | 43.37/44.50 | 116 | | | 0.16/1.13 | | | |
| | | Nasal | 41.00/42.91 | 080 | | | 42.50/43.75 | 110 | | | 1.50/0.84 | 030 | | |
| | | Central | 40.75/42.25 | 090 | 41.31/42.24 | 025 | 40.87/42.25 | 097 | 0.56/-0.01 | -065 | 0.12/0.00 | 007 | -0.44/0.01 | 072 |
| | OD | Temporal | 40.08/41.79 | 082 | | | 40.62/41.75 | 089 | | | 0.54-0.04 | 007 | | |
| B.P. | Nasal | 39.50/41.21 | 080 | | | | 39.87/42.00 | 100 | | | 0.37/0.79 | 020 | | |
| | | Central | 41.00/42.00 | 090 | 41.77/42.51 | 015 | 41.12/42.50 | 089 | 0.77/0.51 | -075 | 0.12/0.50 | -001 | -0.65/-0.01 | 074 |
| | OS | Temporal | 40.66/41.58 | 067 | | | 40.87/42.87 | 101 | | | 0.21/1.29 | 034 | | |
| | | Nasal | 38.58/41.41 | 078 | | | 40.25/42.50 | 082 | | | 1.67/1.09 | 004 | | |
| | | Central | 42.87/42.87 | — | 43.77/43.95 | 020 | 43.00/42.87 | 092 | 0.90/1.08 | — | 0.12/0.00 | — | -0.77/-1.8 | 072 |
| | OD | Temporal | 42.33/41.32 | 051 | | | 43.37/42.75 | 132 | | | 1.04/1.43 | 081 | | |
| | | Nasal | 41.83/41.92 | 047 | | | 42.25/43.00 | 119 | | | 0.42/1.08 | 072 | | |
| B.M. | | Central | 43.00/43.12 | 090 | 43.22/43.32 | 025 | 43.00/43.12 | 117 | 0.22/0.20 | -065 | 0.00/0.00 | 027 | -0.22/-0.20 | 092 |
| | OS | Temporal | 42.29/42.71 | 072 | | | 42.62/43.37 | 114 | | | 0.33/0.66 | 042 | | |
| | | Nasal | 41.41/42.29 | 065 | | | 42.00/42.87 | 065 | | | 0.59/0.58 | 000 | | |
| | | Central | 44.50/44.00 | 090 | 44.71/44.47 | 015 | 44.37/44.00 | 070 | 0.21/0.47 | 075 | -0.13/0.00 | -020 | -0.34/0.47 | 055 |
| | OD | Temporal | 43.75/43.08 | 040 | | | 44.25/43.50 | 131 | | | 0.50/0.42 | 091 | | |
| M.M. | | Nasal | 41.70/43.25 | 094 | | | 42.62/44.25 | 120 | | | 0.92/1.00 | 026 | | |
| | | Central | 44.50/44.25 | 090 | 45.49/44.35 | 010 | 44.75/43.87 | 048 | 0.99/0.10 | -080 | 0.25/-0.38 | -042 | -0.26/-0.48 | 038 |
| | OS | Temporal | 42.79/43.37 | 022 | | | 44.87/42.87 | 049 | | | 2.08/-0.50 | 027 | | |
| | | Nasal | 42.37/43.79 | 065 | | | 42.75/43.87 | 066 | | | 0.38/0.08 | 001 | | |
| | | Central | 42.00/41.96 | 046 | 42.72/42.56 | 035 | 42.62/42.25 | 102 | 0.72/0.60 | -011 | 0.62/0.29 | 056 | -0.10/-0.31 | 067 |
| | OD | Temporal | 41.58/41.46 | 060 | | | 41.87/42.25 | 058 | | | 0.29/0.79 | -002 | | |
| M.P. | | Nasal | 41.41/41.62 | 085 | | | 42.12/42.50 | 094 | | | 0.71/0.88 | 009 | | |
| | | Central | 42.92/41.79 | 087 | 42.72/42.94 | 045 | 43.37/41.87 | 073 | -0.20/-1.15 | -042 | 0.45/0.08 | -014 | 0.65/-1.07 | 028 |
| | OS | Temporal | 42.45/41.54 | 090 | | | 43.00/41.75 | 064 | | | 0.55/0.21 | -026 | | |
| | | Nasal | 42.50/41.79 | 090 | | | 43.12/42.12 | 079 | | | 0.62/0.33 | -011 | | |

**Table 3 — Comparison of results obtained with the B&L Keratometer, the System 2000, and the Humphrey Autokeratometer on five subjects.**

| Characteristic | Humphrey Autokeratometer | Wesley-Jessen System 2000 | Bausch & Lomb Keratometer |
|---|---|---|---|
| Cost | $13,500. | $2,995. | $1,300. |
| Size, etc. | Slightly larger than keratometer; requires a table or stand | Slightly larger than keratometer; requires a table or stand | Compact; mounted on standard instrument stand |
| Versatility | Limited; output information obtained is for the horizontal meridian only. | Limited; output information is given on a standard computer printout. Peripheral dioptric values are not given. | Wide; central and any peripheral area of the cornea may be measured at will. |
| Accuracy: | | | |
| 1. Dioptric Power | High (about 0.25D) | Fair (about 0.50D) | High (about 0.25D) |
| 2. Cylinder Axis | High (about 10°) | Poor (about 60°) | High (about 10°) |
| Output Format | Mostly automatic (computer printout), except that peripheral corneal data must be transcribed by hand | completely automatic (computer printout) | Completely manual (all data must be transcribed by hand) |
| Speed of Operation | Very fast (complete survey of a patient takes less than 5 minutes) | Very slow (although the keratographs are obtained quickly, they must be mailed to Wesley-Jessen for computer processing) | Variable, depending on clinical experience of operator |
| Objectivity/Subjectivity | Totally objective (except for gross alignment) | Totally objective (except for focussing) | Totally subjective |
| Other output information provided or other applications | Provides information on apical cornea and shape of cornea; may be used to measure base curve of hard contact lenses. | Provides information on apical cornea and shape of cornea; provides design parameters for best fit contact lenses. | May be used to measure base curve of hard contact lenses; may be used to detect keratoconus. |

**Table 4 — Summary characteristics of the Humphrey Autokeratometer, Wesley-Jessen System 2000, and Bausch & Lomb Keratometer.**

# PROFILES IN HISTORY

## An Interview with Dr. Fred Nuttall

*Dr. and Mrs. (Isobel) Nuttall*

**CJO:** What circumstances or people influenced your decision to become an optometrist?

**FN:** I decided to become an optometrist because of the influence of a friend, E.J. Anderson, who was a science teacher in Calgary. He had taken over optometry as his career. He told about half a dozen of us that he felt when the Optometry Act, then under consideration, was passed, optometry would assume a very different status and would become a career with a great future. He then offered to give us each a six-month course, covering basic Optics, Anatomy of the Eye, Defects in Vision and their Correction, Subjective and Objective Refraction, etc. We took this course so that when the Act was passed by Parliament, we could take the first examination. I took that exam (I was 21 years old when I made this decision) and became a member of the Alberta Optometric Association in 1922. It was actually the first examination ever set by the government at the University of Alberta and, as a result of passing it, I was able to apply to the Registrar of the Alberta Optometric Association for a licence to practice in the Province.

However, I realized that I needed much more education in optometry before starting into practice and, for the next three years, obtained all the learning that I could from writings and lectures by such men as Dr. C. Sheard, Mr. Maybee of Toronto, Ivan Nott, etc. In addition, I received considerable information from the American Optical Company, which was prepared by the American Academy, from M. Augustine and, later, A.M. Peckham, Dr. Skeffington, as well as from courses at the University of Saskatchewan. I also received a good deal of help and advice from A.M. Anderson, the optometrist engaged at the jewelry store where I was a watchmaker.

The Alberta Optometry Act was passed in 1921, and some of its provisions included restriction of the licence to practice optometry to members of the Alberta Optometric Association, the licence to be issued by the Association; membership in the Association to be obtained by passing an examination set by a Board of Examiners appointed jointly by the A.O.A. and the University of Alberta. Members who had been in practice for one year prior to the passing of the Act were exempted from the examination.

**CJO:** Where did you set up your practice after you received your licence?

**FN:** Well, my first practice was in Calgary. At that time, costs were not high. I had my own practice until 1934, when I went into partnership with F.H. Wilkins in Lethbridge.

**CJO:** Do you recall anything of the circumstances which brought about a decision on your part to become involved in optometry at a political level?

**FN:** Right after I opened my practice in Calgary, I became Registrar of the Association, and I held a variety of offices for the next 15 years. Elections were held regularly at the optometric conventions/ annual meetings and, at various times, I served as Secretary-Treasurer, President, etc. In those days, optometry was very commercial by nature and, as a member of the Executive, I was very anxious to see it become a lot more professional.

**CJO:** Who would you identify as the leaders of the profession in Alberta at that time?

**FN:** The first President of the A.O.A., H.J. Snell; A.J. Harrison, Herbert Akitt, Julius Erlanger, F.H. Wilkins and A.R. Carter are a few that come to mind. They were all very professional men at a time when, for a large percentage of the practitioners, the emphasis was on the sale of eye glasses. Examinations and professional services were free. In fact, probably the most important activity that the

Association was involved in at this time was the elimination of commercialism in an effort to get optometry changed to the status of a profession. Before this could be accomplished, it was necessary to eliminate price and display advertising, and to change the emphasis from selling eye glasses to one of stressing the professional skills of the practitioner in testing and refraction. Over a period of years, this was achieved.

**CJO:** Can you tell us something about the evolution of the Association itself in the Province of Alberta?

**FN:** For many years, there was very little change. The Association did manage to have advertising written into the "penalty" by-laws, but no new legislation was passed in the Alberta legislature which directly affected the profession. In terms of continuing education, the only post-graduate courses to be offered in my time were offered by the University of Saskatchewan. None were held in Alberta.

**CJO:** Well, then, what about the state of the art —the practice of optometry itself?

**FN:** In the early days, most optometrists had their own laboratories for edging, drilling and mounting, but as supply houses opened up branches in more and more smaller centres, most optometrists gave up their individual labs. One reason was their inability to get trained technicians after this happened. There was also never any set fee structure when I was practicing. A suggested scale of fees had been offered by the provincial Association, but there was certainly no compulsion to follow it. There wasn't a lot of change, really, in the actual services being offered by optometrists in those years.

**CJO:** Are you aware of any change (i.e. acceptance or no) in the attitude of medicine, G.P.'s or specialists, towards optometry as an independent health care profession?

**FN:** I have seen a definite decrease in the hostility of medical practitioners towards the practice of optometry — G.P.'s and specialists alike. At one time, for example, ophthalmologists were barred by their own profession from speaking at optometric conventions. Now, it seems that we are working more and more together. I would say that, today, we are accepted by the medical profession. As another example, a few years ago, dentists, nurses, teachers, etc. always referred anyone with eye problems to a medical doctor. All that has changed and today, referrals to optometry are coming from many sources.

**CJO:** What do you recall of some of the specific areas in which you chose to concentrate your practice?

**FN:** In my early days, I did considerable work in visual training but discontinued it as my other work got to be too demanding. At one time as well, I was doing a lot of work in progressive myopia, which was very time-consuming. Although I didn't do a lot of low vision work, I did practise a considerable amount of pediatric optometry and enjoyed it greatly.

**CJO:** Do you feel that the present Association leadership is as active and dedicated as the founders and early leaders were?

**FN:** Yes, I do. I do not believe, as some do, that the financial rewards of the profession today have led to a decreased awareness of the need for ongoing political activity. This profession will act, quickly and effectively, when action is necessary. I think that the professional spirit, the esprit de corps, if you like, is as good now as it was in the past as well.

**CJO:** In your own sphere of political activity on behalf of the profession, what were the most important projects in which you were involved?

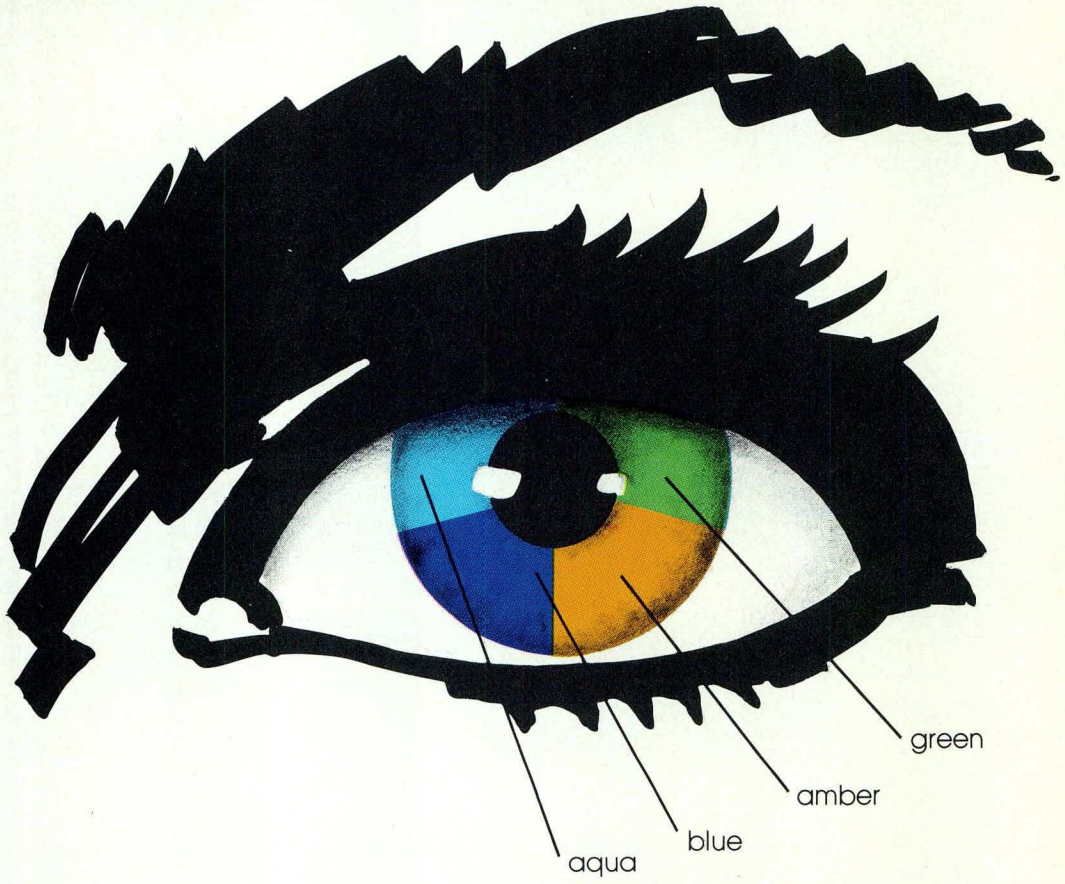
**FN:** When I was President, the federal charter of the Canadian Association of Optometrists was approved by an Act of Parliament, thus recognizing formally C.A.O. as a national entity. I have always considered myself privileged to have played a part in the formation of our national Association. I had been elected to represent Alberta and British Columbia, at the suggestion of H.J. McClung of Regina, Saskatchewan and to join him, D. McGuire of Manitoba, Ed Bind of Ontario, A. Mignot of Quebec and Eli Boyaner of New Brunswick at a meeting in Ottawa in 1941. It was at this meeting that we agreed to form a nationwide Association. We even decided on the name — The Canadian Association of Optometrists. We elected H. McClung as our first President and Ed Bind as Secretary-Treasurer. We discussed aims, objectives and, of course, finances. After setting the date for a future meeting, and reporting to our respective Associations, we again met in Ottawa and, this time, were joined by Willson Knowlton of British Columbia, John Mulroney of Nova Scotia and G. Hutcheson of Prince Edward Island, making the provincial representation (at that time) complete. The rest is largely a matter of record and my only regret is that I am now the only one of the original six left to see the successful fulfillment of Mr. McClung's dream.

**CJO:** Looking back, what do you consider to have been the most important changes in the professional practice as it is carried on now, compared to what it was when you started out?

**FN:** The transition from commercial to professional status is, I feel, the single most important change to have taken place. In addition, the better equipment available today has unquestionably improved the

*cont'd pg. 95*

# The focus is on colour...

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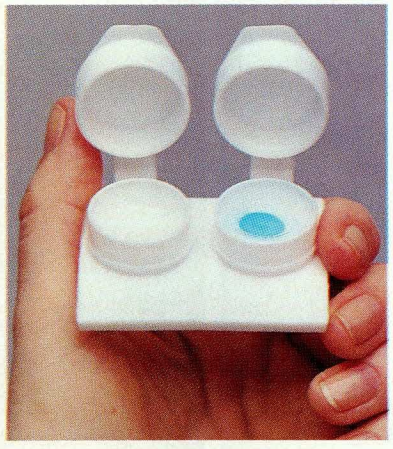

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# BOOK REVIEWS

**Dictionary of Eye Terminology, by Barbara Cassin Sheila Solomon; edited by M.L. Rubin. 1984, Triad Publishing Co., Gainesville, FL, 32601, USA. Soft cover, 240 pages, $14.95 U.S.**

As knowledge in a field expands, so does its vocabulary and, consequently, the need to provide tools to assist in understanding the ever-increasing division into specialty groups and sub-groups.

Compacting terminology for all branches of health care into a single dictionary is an expensive undertaking that would only produce a very unwieldy volume. Such a project would be unlikely to receive the widespread distribution that a smaller specialized dictionary, particularly a desk reference, can achieve.

The authors seem to have responded to a very real need. Non-professional ophthalmic personnel, students, office aides, general physicians and nurses will find in this compact volume the answers to their many questions on eye terminology.

The book contains 3,000 terms in alphabetical order. Definitions are presented in simple language, readily understandable by non-professionals. A further bonus is that most terms are catalogued under specific classes by an underlined notation, such as *Anatomy, Pathologic Condition, Drug, Optical Instrument, Optics, Optical Device, Surgical Instrument, Functional Defect, Congenital Anomaly* and many others. Where necessary, there are cross references which are printed in capital letters. There are few illustrations — pen and ink sketches — and most relate to eye movements and positions.

Practitioners who already possess a good dictionary may not be interested in acquiring this new publication for themselves, but they should consider it for their office staff. The money conscious student will find this book a bargain and a lifelong friend.

**G.M. Belanger**
**Ottawa, Ontario**

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**The Visual Fields Manual, a Practical Guide to Testing and Interpretation, by J.D. Trobe and J.S. Glaser, 219 pages + index, 1983, Triad Publishing Co., Gainesville, Florida, 32601, USA. $17.95 (paperback).**

This is an ideal book for anyone interested in visual fields, with the additional benefit of its being inexpensive. It is organized in a very straightforward and practical manner, and assists the reader in developing strategies of field testing which will greatly enhance the examiner's ability to find field defects. (As the authors suggest, it is very boring to test fields unless you are looking for something.)

There are some 200 illustrations in this book (the illustrators are Frances Goldstein and Louis Clark), and they are uniformly clear and relevant. One series of illustrations is particularly helpful and innovative: this is a set of nine triptychs showing nerve fiber bundle defects from an ophthalmoscopic, schematic retinal, and visual field standpoint.

In addition to chapters on basic visual pathways and related anatomy (which are refreshingly problem-oriented), stimulus presentation, instrumentation and exploration strategies, there are chapters on common pitfalls of field testing and on interpretation. The latter chapter includes a schematic outline of the steps leading to localization of the cause of field defects which should be 'on the wall' in any field testing area.

The preceding chapters take you up to page 154 in this book; the authors could have stopped here, satisfied that they had produced an excellent text. Fortunately, they decided to continue with two more chapters. Chapter 9 includes 13 problem cases which have been improperly tested and/or recorded. The reader is invited to decide what the errors are, and then to turn the page where the authors' answers (and reasoning) may be found. (This friendly, challenging approach is found throughout the book, and there are short problem sets following the other chapters with detailed answers provided at the back of the book.) The final chapter presents another 20 correctly-tested sets of fields, and the reader may again match wits with the authors (with answers provided).

The authors have a long-standing and broadly-based interest in the visual fields (some of their journal articles in this area stretch back over the past 20 years), and they succeed in communicating this enthusiasm to the reader.

**T.D. Williams**
**School of Optometry**
**University of Waterloo**

# VISION CARE NEWS

**Prominent Swedish Ophthalmologist Addresses Canadian Optometrists**

Bjorn Tengroth, M.D., Ph.D., Professor and Chairman of the Department of Ophthalmology at the Karolinska Institute in Stockholm was a featured speaker at the New Brunswick Association of Optometrists' Third Annual Continuing Education Symposium.

The symposium's theme was Occupational Vision Care and Video Display Terminals, a subject which Dr. Tengroth, as President of the International Society of Ergophthalmology and a member of the World Health Organization's committee on guidelines for laser work and exposure limits for non-ionizing radiation, is admirably qualified to address.

Following his presentation to the New Brunswick optometrists, Dr. Tengroth made an informal visit to the University of Waterloo's School of Optometry where he toured the facilities and provided valuable input to researchers in the School's Optical Radiation Laboratory. He presented a seminar to faculty, staff and students which included recent epidemiological data on chronic infrared cataracts in Swedish steel and glass workers, a subject he also presented in subsequent seminars at the Optometric Institute of Toronto and the University of Western Ontario.

**UW Optometrists Receive Awards**

Dr. T. David Williams has been named as one of Waterloo's outstanding teachers for 1983 - 84. The award, one of three this year, is in recognition of continued teaching excellence. Selection is made by a specially appointed committee after careful examination of "intellectual vigour, communications skills and a concern for the needs of the students." The award carries with it a cheque for $1,000.00, which Dr. Williams says he'll use to develop a teaching aid he's invented.

Melanie Campbell, a former University of Waterloo graduate student, has been awarded a grant of $46,325.00 to carry out optometric research at the University's School of Optometry.

The fellowship was awarded by the Natural Sciences and Engineering Research Council (NSERC), a federal organization, with extra money provided by the sponsoring university. NSERC fellows are appointed as faculty members for an initial term of three years with a two-year option for renewal by the university.

**American Foundation for the Blind Consumer Products Catalogue**

The AFB's 1983 - 84 catalogue *Products for People with Vision Problems* includes hundreds of items which might be useful to the low vision patient. While designed largely for blind patients, a number of products, particularly those of a recreational nature like playing cards and board games, or communications aids like a pushbutton telephone dial adaptor whose large printface can be fitted over a standard pushbutton phone panel, will be of particular benefit to the low vision patient.

The catalogue can be ordered from:

Consumer Products
American Foundation for the Blind
15 West 16th Street, New York, NY
10011, USA

**PCL Product Aids in Soft CL Identification**

Plastic Contact Lens Company (Canada) Ltd. now offers a product called Softmark, a permanent marking system for identifying soft contact lenses, thereby ensuring that lenses aren't interchanged or inverted.

The complete system consists of an identification unit, film cartridges for both R and L marks and a developer. Further information is available from any local PCL sales representative.

**Syntex Ophthalmics Offers New Professional Education Department**

Syntex Ophthalmics, an Arizona-based corporation with offices in Toronto, has announced the creation of a new Professional Education Department.

Designed "to create and maintain positive, professional relationships with eye care practitioners, teaching institutions and students," the department is planned to serve as a non-promotional, professional resource for the eye care field. Through this program, Syntex will offer opportunities and programs for students, lectures by prominent eye care professionals and other continuing education events.

Further information is available from:

Jennifer Taylor Armstrong,
Director — Public Relations (Syntex Ophthalmics, Inc.)
c/o Patchen Brownfeld Inc.
3300 N. Central Ave.
Phoenix, AZ
85102, USA
Tel. (602) 274-7707

**Anti-reflection Coatings on CR39 Lenses**

Optocoating has recently announced that it is now processing anti-reflection coatings on CR39 lenses. The coatings allow up to 5% more light through the lens, boosting light transmission from

# 6th International Symposium on contact lenses

Quebec Optometric Association

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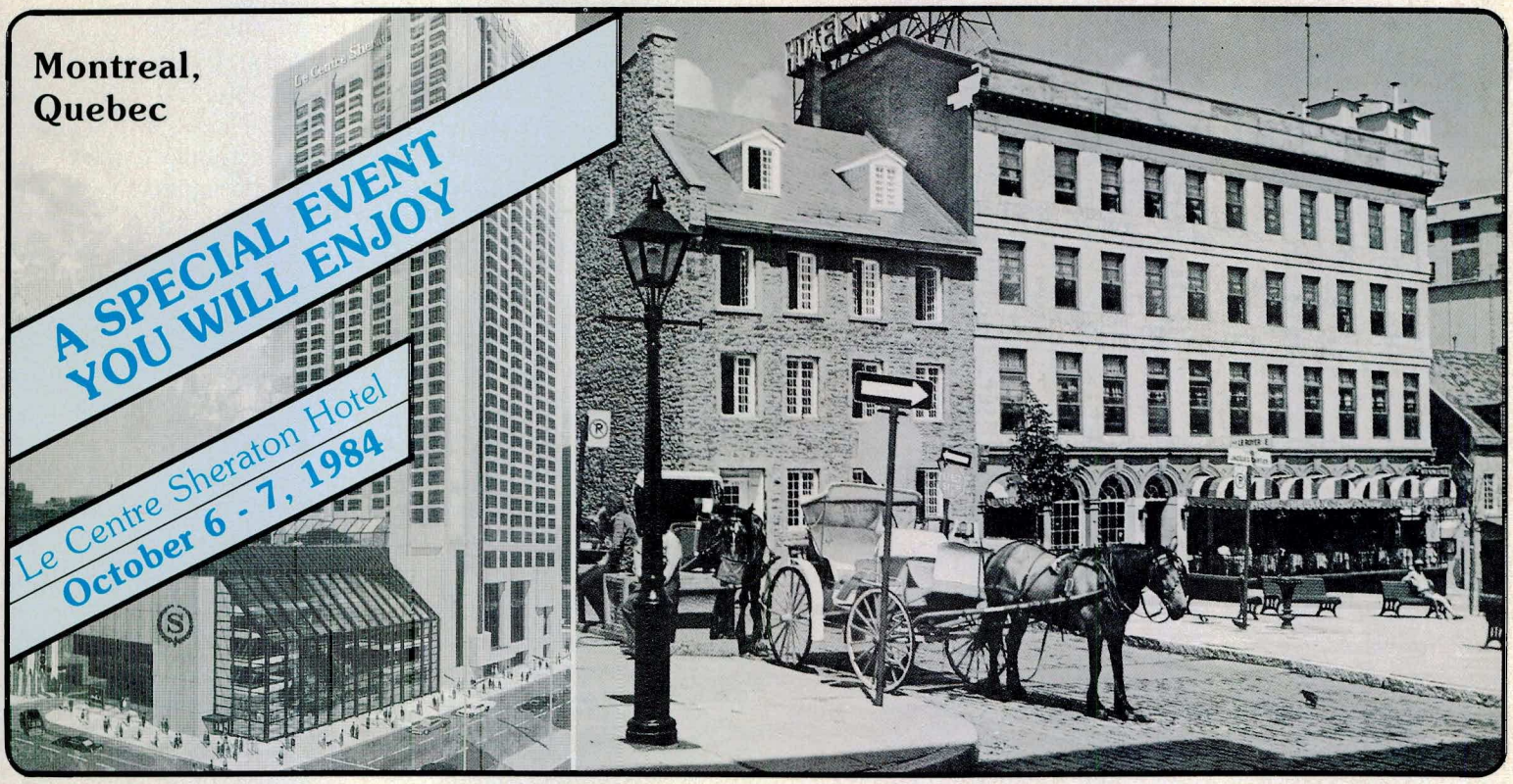
Montreal, Quebec H2Y 2R6
1 (514) 849-8051




**TOPICS:**

- **Vascularisation**
- **Infiltrations**
- **Endothelium**
- **New development in gas permeable lens**
- **Keratocone**
- **Gas permeable lens for extended wear**
- **Toric soft contact lenses**
- **Keratoplasty**
- **Contact lenses and environment**

**SPEAKERS:**

**Dr. Rex Ghormley, O.D.**
(Missouri)
**Dr. John P. Herman, O.D.**
(Massachusetts)
**Dr. Gary J. Andrasko, O.D.**
(Ohio)
**Dr. Murchison Callender, O.D.**
(Ontario)
**Dr. Brian Holden, O.D.**
(Australia)
**Dr. Jacques Gresset, O.D.**
(Quebec)
**Dr. Gabriel Elie, M.D.**
(France)
and more...

**PANEL MODERATOR:**

**Daniel Brazeau, O.D.**
(Quebec)

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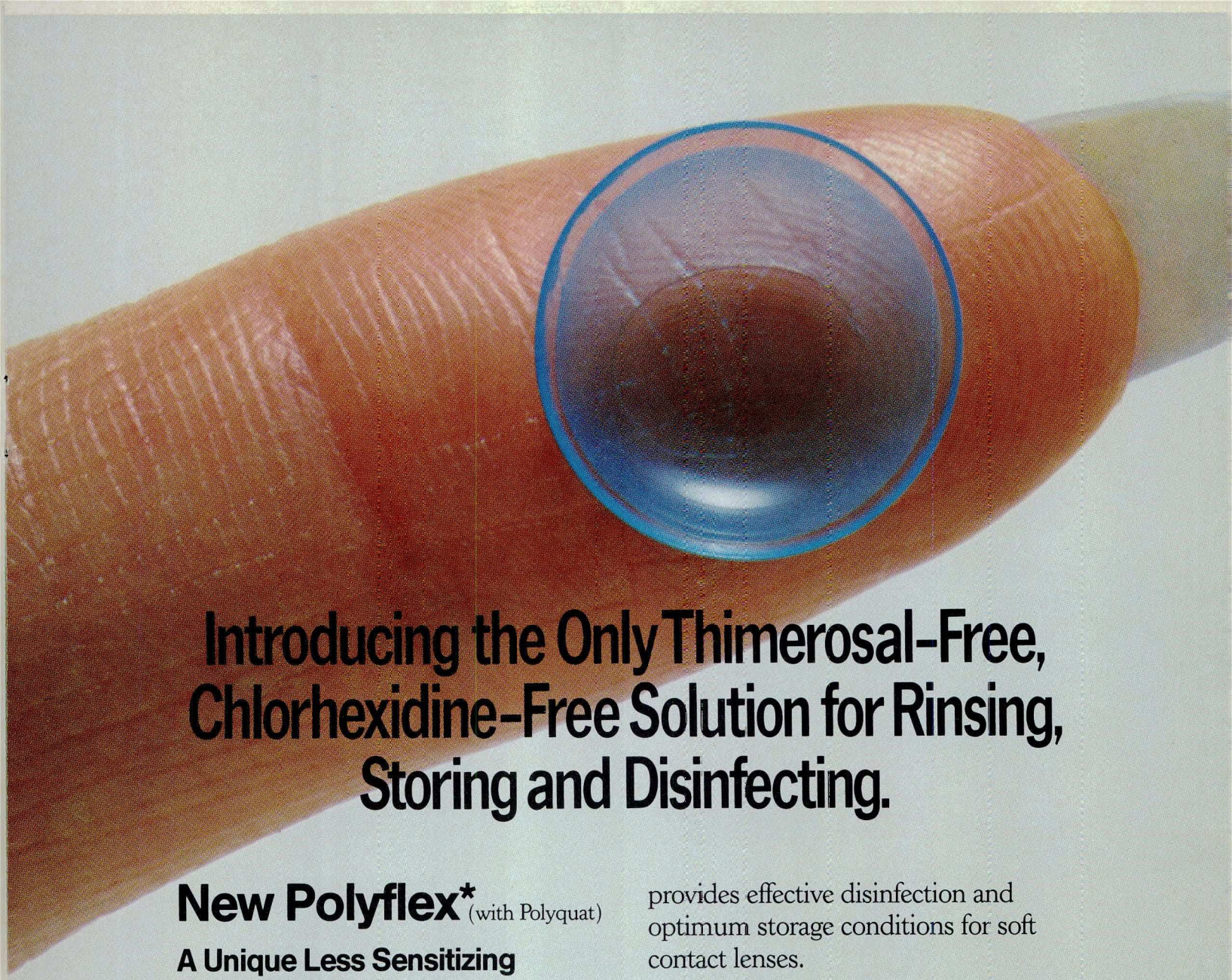

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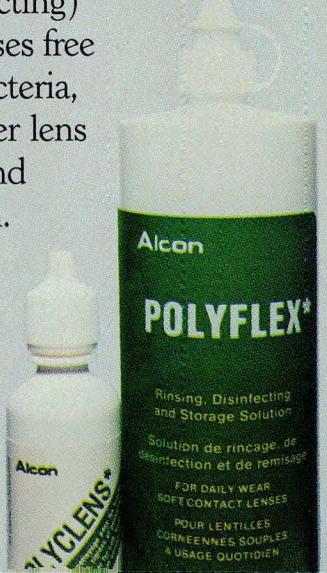


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L5L 1T1
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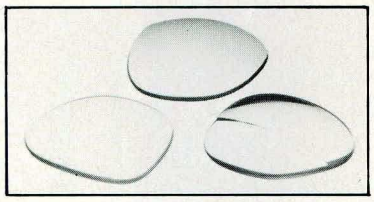


**"Harvey"'s Eye Problems Aid Vision Students**

Over ten years ago, ITT Corporation developed a medical training mannequin called Harvey to simulate the sights and sounds of more than 50 heart diseases, including abnormal pulsations in his neck.

Now, Dr. Michael Gordon and a team of ITT engineers have created over 100 eye problems to inflict on Harvey, all to aid eye specialists in training to observe a greater variety of eye diseases than might ever be experienced in private practice.

*Harvey (l.) & creator Dr. Michael Gordon*

Harvey II who, because of his eye problem emphasis has been given longer hair and named Iris, is equipped with sophisticated computer circuitry that enables an operator to call up and study at will colour films of the various diseases that affect the eye. The desired disease is presented on a 35mm film image which is then examined through the eye by using an ophthalmoscope.

Iris has been built as a prototype, but the ITT engineers are presently fine-tuning it before offering it as a training device sometime in the next few months. Among the proposed developments is a means of simulating pupil contraction or dilation in response to light or drug application.

ITT Canada's address is: PO Box 138, Toronto Dominion Centre, Toronto, Ontario, M5K 1H1. Tel. (416) 863-9666.

**Zeiss Expands in Canada**

Carl Zeiss Canada Ltd/Ltee has announced plans for expanded facilities in Canada to manufacture and assemble eyeglass lenses, microscope accessories and locking devices.

Zeiss' parent organization dates from 1846 and has supplied the Canadian market with optical products, microscopes and scientific instrumentation since the late 1800's.

The new facilities, announced by Zeiss Canada President Mr. Peter Nuffer, will include a complete optical laboratory for the grinding, surfacing, edging and mounting of glass and plastic eyeglass lenses.

Further information:
Mrs. Ute Gundermann
Carl Zeiss Canada Ltd/Ltee
45 Valleybrook Drive
Don Mills, Ontario
M3B 2S6
Tel. (416) 449-4660

**F.A.A.O. Criteria**

In our last issue, we published the names of several Canadian optometrists who had just been accepted as Fellows of the American Academy of Optometry. A number of our members have since written or telephoned, asking what the requirements for the Fellowship are. We passed the request on to Dr. Howard Backman, and following is the information he provided:

1) The candidate must be proposed by a Fellow, and have two Fellows recommend him.
2) An application form must be completed. One can be requested from The American Academy of Optometry, Ste. 950 - 5530 Wisconsin Avenue N.W., Washington, D.C. 20815, U.S.A.
3) The candidate must then proceed to prepare ten case reports.
4) The candidate must present him/herself at the Annual Meeting of the Academy for an oral interview. If successful, (s)he will be awarded the F.A.A.O. designation.
5) Once a Fellowship has been attained, a member may seek a Diplomate certification in a specialty area, e.g. contact lenses, low vision, binocular vision.

Also on the subject of the Academy, Dr. David Williams of the School of Optometry, University of Waterloo, has been proposed by the Academy as a Trustee on its Executive, the second Canadian to be so honoured (Dr. E.J. Fisher is the first). All Canadian F.A.A.O.'s have been asked to support Dr. Williams' election to the Council in St. Louis.

# Calendar

**1984**
**August 19-24**
5th International Contact Lens Congress
Contact Lens Society of Australia/New Zealand Contact Lens Society
Chevron Paradise Hotel — Surfers Paradise — Queensland
Information: Kenneth W. Bell, Secretary,
The Contact Lens Society of Australia
818 Australia Square
264 George Street
Sydney, 2000
Australia

**October, 1984**
Alberta Optometric Association — Continuing Education
Annual Interdisciplinary Symposium
— Sports Vision —
Information: Gordon Hensel, O.D.
Chairman, Professional Services Enhancement Committee
c/o A.O.A.
The Professional Centre
#2 - 9333 - 50th Street
Edmonton, Alberta
(403) 468-1203

**October 6-7**
6th International Symposium on Contact Lenses
(l'Association des Optométristes du Québec)
Le Centre Sheraton Hotel, Montréal
Information: l'Association des Optométristes du Québec
465 St-Jean
Bureau 1003
Montréal, Québec
H2Y 2R6
(514) 849-8051

****See also the advertisement in this issue of the CJO****

**October 17-20**
Insight in Sight
Canadian Conference on the Visually Impaired Child
(Program includes Dr. A.P. Cullen, School of Optometry, University of Waterloo)
Information: CNIB
350 East 36th Avenue
Vancouver, B.C.
V5W 1C6

**October 19-21**
7th Latin American Congress of Optometry and Optics
Lima, Peru
(Program includes a visit to the historic Macchu-Picchu ruins)
Information: Dr. E.J. Fisher
c/o School of Optometry
University of Waterloo
Waterloo, Ontario
N2L 3G1

**November 8-11**
European Society of Optometry
18th Scientific Congress
Jerusalem Hilton, Israel
Information: Dr. Harvey Rosenwasser, O.D., F.A.A.O.
1518 Walnut Street
Merlin Tower, Suite 1401
Philadelphia, PA
19102, U.S.A.

**1985**
**March 31 - April 8**
5th Asian Pacific Optometric Congress
Rasa Sayang Hotel/Batu Ferringi Beach
Penang, Malaysia
Information: Dr. Damien P. Smith
Secretary-General
International Federation of Asian and Pacific Associations of Optometrists
7 Cookson Street
Camberwell 3124
Australia

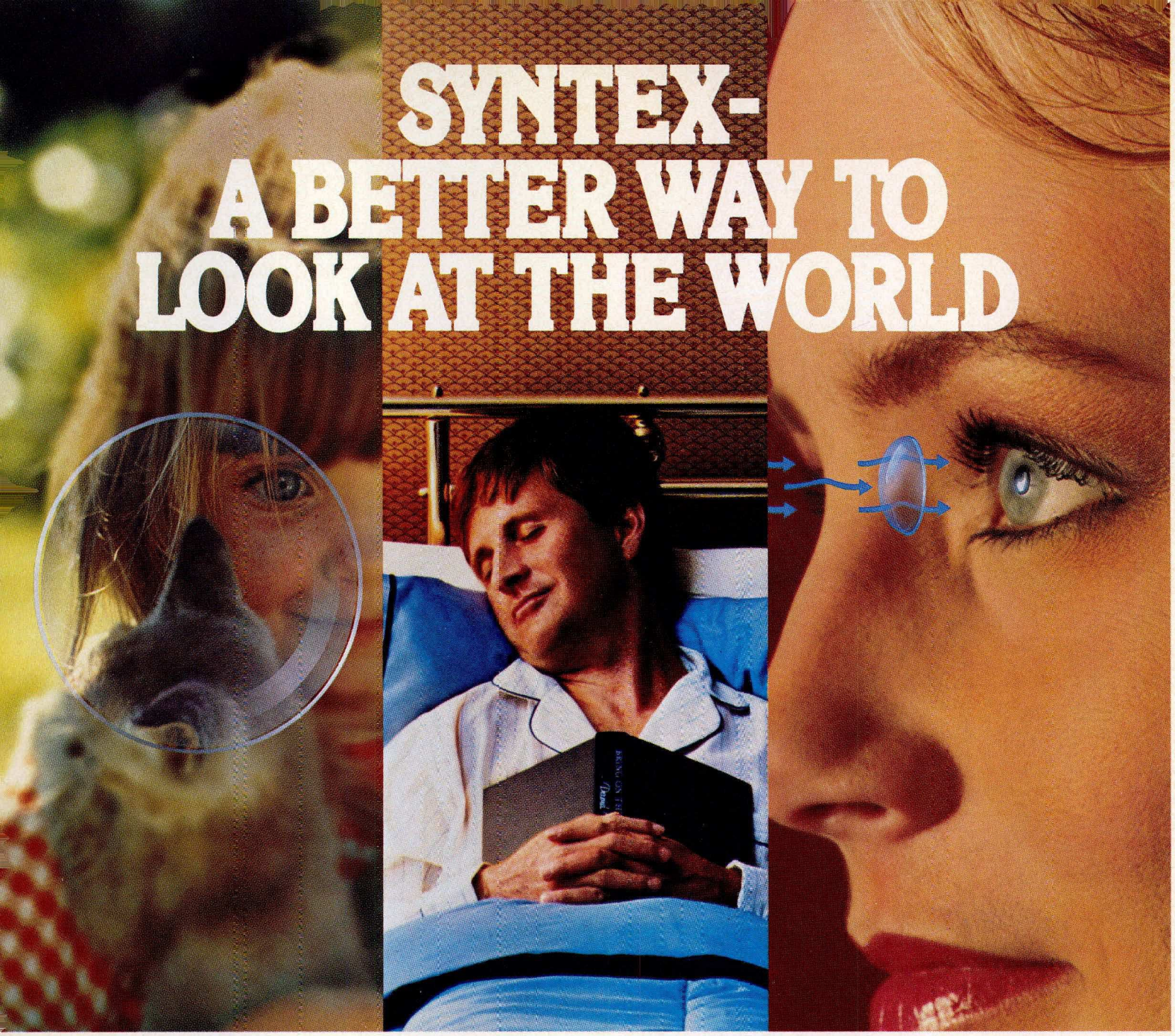
*cont'd from pg. 88*

level of service provided by the profession. Contact lens work has added another skill to optometry and I think you will agree that the profession has come to mean much more than just selling glasses.

**CJO:** In recent years, there has been some consideration given to Lethbridge as a potential site for a third Canadian School of Optometry . . .

**FN:** I think Lethbridge is a good location for a School of Optometry. It has the population — over 58,000 — and has many social, artistic and industrial advantages that are enjoyed by other, much larger centres. It has been my experience that people actually prefer living and working in a smaller centre. In addition, we also have a university that is ranked very highly here in the West.

We are very fortunate in our profession. I would never presume to attempt to single out any one individual as contributing more than anyone else —the honour roll speaks for itself, and it is growing every year. Most recently, of course, there are the three educators which this Journal, and the profession, honoured with a special issue *(Editor's note: "Honouring 126 Years of Service and Dedication" — a tribute to Drs. Bobier, Fisher and Lyle. CJO Vol. 44, No. 3, September, 1982).* And I would say that each Provincial Association would have no trouble identifying its own leaders and distinguished contributors. Where we have been particularly fortunate is that such matters have never been handled by just one person, but rather by many; and it is this teamwork which has ensured our present position in the Canadian health care field, and will continue to ensure our success as a profession.

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- Finer pore size results in significant resistance to deposits
- Thinner overall design provides increased oxygen transmission and greater comfort

## CSI™ II (crofilcon A) SOFT CONTACT LENS FOR NON-APHAKIC EXTENDED WEAR

- Made from GMA Polymer (centre thickness – .035 mm)
- Deposit resistance results in longer lens life compared to other extended-wear lenses
- Improved handling compared to HEMA lenses
- More durable than HEMA lenses for intermittent extended wear
- Choice of heat or chemical disinfection

## POLYCON II® (silafocon A) GAS PERMEABLE LENS

- 60-day "Total Security Warranty"
- Inventory and custom lens availability
- Overall thin design with a thin edge
- Material and design result in greater flexibility and stability
- Provides superior oxygen transmission and wettability

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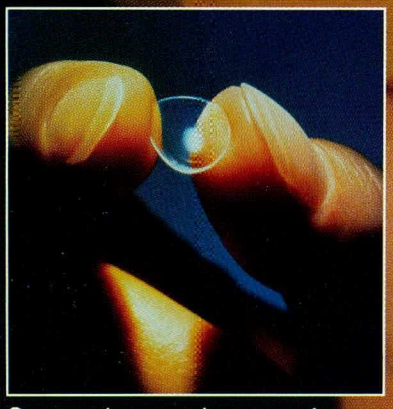
**Prescription Lenses** Zeiss lenses are finished to unsurpassed standards of excellence.



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**Frames** Elegantly styled frames to suit to-day's fashions and tastes.

**Prescription Sunglasses** World-famous Umbra Punktal lenses for maximum protection across the entire visible spectrum.

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# ALLERGAN RESPONDS TO A SENSITIVE ISSUE.

***WITH NEW, HYDROCARE® SORBISAL™, THE NON-THIMEROSAL SALINE SOLUTION YOU'VE ASKED FOR.***

***NON-THIMEROSAL SORBISAL REDUCES PATIENT COMPLAINTS.***

New, non-thimerosal Sorbisal is ideal in those cases where sensitivity to thimerosal has been evidenced. And because it's part of the popular Hydrocare line, your patients will appreciate its compatibility and convenience.

***NON-THIMEROSAL SORBISAL SIMPLIFIES LENS CARE.***

Sorbisal can also be used to dissolve new Hydrocare Protein Remover Tablets—the faster acting, fizzy enzyme cleaner. So there's no more need to have inconvenient distilled water on hand. A big plus for improved lens care compliance. In addition, Sorbisal contains a calcium preventer, an aid to longer lens life when heat disinfecting systems are used.

Where sensitivity to thimerosal is an issue, Sorbisal is the non-thimerosal alternative you'll recommend.

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