

CJO RCO

Canadian Journal of Optometry • Revue Canadienne d'Optométrie

VOL 51 No. 2

SUMMER/ÉTÉ 1989



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A Picture is Worth a Thousand Words...



The place: Vancouver, B.C.
The weather: mild spring
The setting: breathtaking
The event: BCAO's Continuing Education Seminar
The date: February 11-13, 1990
The venue: Westin Bayshore Inn

The program: Sunday, February 11

Dr. Greg Hay, ophthalmologist,
Vancouver, B.C.

*Anterior Segment Pathology

Dr. William Lyle, University of
Waterloo

*Astigmatism

Monday, February 12

Dr. Steven Leff, ophthalmologist,
Atlanta Georgia

*Macular Degeneration

*Flashes and Floaters

Dr. George Elmstrom, optometrist,
Carmel, California

*Practice Management

Tuesday, February 13

Dr. Marlee Spafford,
University of Waterloo

*Management of the
Functional Amblyope

*Vision Care for the
Non-Communicating Patient

Dr. Charles McMonnies, optometrist,
Australia

*Contact Lenses

Dr. Brian Ward, ophthalmologist,
California

*Degenerative Myopia

Plus: other topics of interest presented by local M.D.
speakers to be announced at a later date

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"Techniques on how to sell the Occupational
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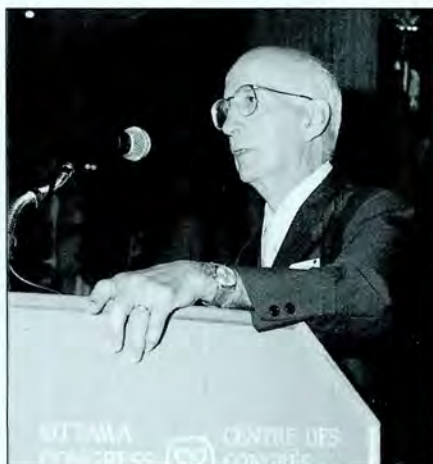
REGISTRATION FEE: \$195

Late registration fee (after January 20): add \$15

For further information please contact:

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Richmond, B.C. V6X 2W8 Tel. (604) 270-7535

**View of Vancouver from Salmon House on the Hill Restaurant. Photo courtesy of Simon Scott*



36 years as Senior Editor ... page 57



Log sawing contest ... page 59

**Chairman, National Publications Committee /
Présidente, Comité national des publications**
Dr Margaret Hansen des Groseilliers

Senior Editor / Rédacteur en chef
Dr Mitchell J Samek

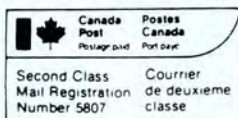
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Université de Montréal: Dr Pierre Simonet

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By/par Jill Smit, Truro NS/N-E

Prize Winner, CAO 1989 Biennial Congress Photo Contest
Gagnant du prix, Concours de photographie, Congrès biennal de l'ACO 1989

**The Canadian Journal of Optometry is the official publication of the Canadian Association of Optometrists /
La Revue canadienne d'optométrie est l'organe officiel de l'Association canadienne des optométristes**

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The Canadian Journal of Optometry * la Revue canadienne d'optométrie (CJO*RCO) welcomes new advertisers. In keeping with the CJO*RCO's goal of advancing the awareness, education and professionalism of the members of the Canadian Association of Optometrists (CAO), any and all advertising material may be submitted, prior to its publication, for review by the National Publications Committee of CAO. CAO reserves the right to accept or reject any advertisement submitted for placement in the CJO*RCO. / **The Canadian Journal of Optometry * la Revue canadienne d'optométrie (CJO*RCO)** est prête à accueillir de nouveaux annonceurs. Dans l'esprit de l'objectif de la CJO*RCO visant à favoriser la sensibilisation, la formation et le professionnalisme des membres de l'Association canadienne des optométristes (ACO), ou pourra soumettre tout matériel publicitaire avant publication pour examen par le Comité national des publications de l'ACO. L'ACO se réserve le droit d'accepter ou de refuser toute publicité dont on a demandé l'insertion dans la CJO*RCO.



GUEST EDITORIAL/RÉDACTEUR INVITÉ

In Change... a Challenge!

On behalf of the National Publications Committee, the Executive and Council of the Canadian Association of Optometrists, I take great pleasure in introducing with this issue the new Editorial and Management Board of the *Canadian Journal of Optometry** la *Revue canadienne d'optométrie* (CJO*RCO).

Since Dr Maurice Bélanger first let it be known that 1989 is the year in which he steps down as Senior Editor, the National Publications Committee has undertaken a lengthy and comprehensive search for his replacement.

After receiving and evaluating applications for the position, the NPC prepared a proposal for CAO Council that not only included a new Senior Editor, but also recommended a revamping of the CJO*RCO's overall structure in an effort to improve the flow of new and original Canadian research from our Schools of Optometry, as well as from the practitioners working in non-academic environments.

Council, I am pleased to report, approved not only the proposed structural changes for the CJO*RCO, but also the individuals recommended for each of the five new Editorial positions created under the new management structure. Effective August 1, 1989,

As Senior Editor:	Dr Mitchell J Samek
As Academic Editors: (Waterloo):	Dr B Ralph Chou
(Montréal):	Dr Pierre Simonet
As Clinical/Case Study Editors:	Dr Lorne Hart
	(Beaconsfield, Qué)
	Dr Mark Pogue
	(Ottawa, ON)

Dr Mitchell (Mitch) Samek brings a wealth of experience to his new position, including faculty experience with the School of Optometry, University of Waterloo and Clinical/Management experience as Director of the Vision Institute in Toronto.

No less extensive is the body of knowledge and experience represented by Drs Chou, Simonet, Hart and Pogue who, with Dr Samek, will undoubtedly see the CJO*RCO take on a powerful new maturity that reflects the best in academic research, combined with the CJO*RCO's mandate to act as the official publication of CAO. I am personally very excited by the ideas I have seen generated in our initial discussions regarding content, format and design.

Don't expect the CJO*RCO to change instantaneously, but do expect to see a consistent increase in quality and, as our new management team settles into their responsibilities, a renewed commitment to the CJO*RCO's priority in the overall communications strategy for CAO.

We urge you to consider the CJO*RCO as not only CAO Council's publication, or as exclusively a forum for presenting new academic research, but as *your* publication and as an opportunity for you to voice your comments about our programs, or to share interesting cases from your own files.

Finally, you will have noted that the National Publications Committee identified no fewer than five individuals to form the core of the CJO*RCO's revised management structure. As mentioned, CAO Council approved the recommendations but greeted the proposal with some humorous asides about our needing five people to replace Dr Bélanger.

Humorous asides aside, replacing Dr Bélanger was accepted by this Committee from the start as an extremely difficult assignment. How does one advertise a position whose job requirements to date have been for "thirty-six years of volunteer dedication and commitment with a financial return that probably covers expenses, if that. Expect to be asked to second your family and personal life, for several weeks at a time, four times a year. Expect to be sent virtually every piece of correspondence that comes to CAO about the CJO*RCO and to deal with that on top of the publication responsibilities."?

Dr Bélanger did all of these things because he chose to, not because we or anyone else asked him to. It was not, however, an expectation we could reasonably ask of any replacement.

The revision of the management structure is, therefore, a reflection of our long-term desire to make the CJO*RCO less dependent on the love of one dedicated man, and more reflective of the business of Association publishing as we draw ourselves towards the year 2000.

This publishing industry, for industry it is, is undergoing almost daily revision in the face of the electronic revolution. With the advent of desktop publishing, the space required to become an efficient publisher has been reduced to, quite literally, a desktop. Our own printing plant in Ottawa is swinging more and more of its office space over to the disks, keyboards and monitors of electronic typesetting and image scanning.

In the very near future, paper in fact will become exclusively the final step in the publishing process as typesetting, design, layout and proofreading all take place on a CRT screen before even a single character is put on a printed page.

The CJO*RCO intends to stay with the times. With editorial bases now located in Waterloo, Montréal, Toronto and our administrative centre in Ottawa, we can expect an ever more diversified input, but always with the emphasis on quality.

The NPC and CAO would like to thank our members, our non-member subscribers and, particularly, our advertisers for their continued support and patience during our transition.

And as the wallboards have said, "Watch This Space!"

Dr Margaret Hansen des Groseilliers
Chairman, NPC
Secretary Treasurer, CAO

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Rendez-vous Ottawa '89

A Roving Report from the 21st CAO Biennial Congress

... for Auld Lang Syne ...

On Friday evening, August 4, I was privileged to be part of a very special gathering.

During the hours leading up to, and during, the CAO President's Banquet (the final event of Rendez-vous Ottawa '89, our 21st Biennial Congress), as though some clandestine gathering of the Free French Resistance were being arranged, the passwords, "In the Prince Edward Island Room, as soon as the band takes its first break"; had been quietly circulated among a select group of people.

Virtually the moment the band's first set notes had faded, I made my way from the Westin Hotel's Provinces Ballroom across a wide foyer to the Prince Edward Island Room, and quickly discovered the reason for the call.

On Friday evening, August 4, I was privileged to be part of a very special gathering.

In the centre of the room, with a massive bottle of Champagne in his hand, stood Dr Pierre LeVasseur and his wife, Kathy. Completely surrounding them, like a single, huge chain link, were the forty-plus members of the Local Arrangements Committee, the CAO staff and several of the volunteers for whom this evening was, in some cases, the culmination of over two years' work. The chain image was especially fitting, I realized, for these people had forged a very strong bond together over the many, many long pre-Congress meetings that had been held, beginning even before Dr LeVasseur's initial presentation to those Congress delegates who gathered in Saint John, New Brunswick in 1987 for the CAO's 20th Biennial Congress. Even more appropriate was the image of the chain link's completely surrounding Pierre and Kathy as they co-ordinated yet another function, that of ensuring no one's glass remained empty until the magnum itself was dry.

Among many toasts, jokes and well-earned congratulations, there was also perhaps a sense of wistfulness (tinged with relief!) that the Congress was finally over and that the seemingly endless planning sessions had, in fact, ended at last. Wistful, though, because this night also would mean there was no longer the need for this energetically dedicated group to remain the unit it had become. All good things, regretfully, must end.

DAY 1

The Opening Ceremonies

As delegates prepared to come to Ottawa for CAO's 21st Biennial Congress, most of their promotional mail had come under a logo that showed a uniformed member of the Governor General's Footguards Regiment. At the Congress' Opening Ceremonies, this logo came stirring to life with a thunderous introduction of the "Bearskin and Scarlet" as some thirty members of the Regiment's band marched into the Ottawa Congress Centre.



In just a few seconds, a heraldic fanfare will trumpet the arrival of the rest of the band of the Governor General's Footguards.

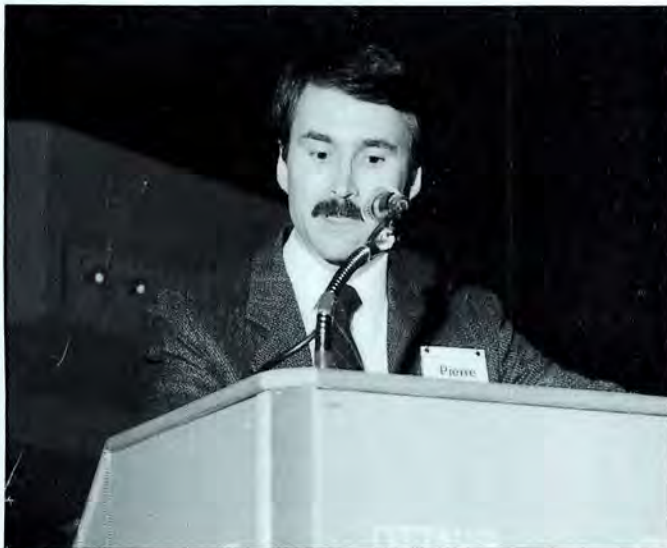
For over half an hour, they regaled delegates with a display that incorporated precision marching with the surprising instrumental versatility of a military band. With the addition of two pipers, our musical welcome to Ottawa ran the gamut from the traditional

At the Congress' Opening Ceremonies, this logo came stirring to life.

Amazing Grace to the out-of-this-world (literally, in a medley that included the theme from television's *Star Trek* and the big screen's *Superman* and *Star Wars*).

This was followed by a rousing version of *This Land is Your Land* as, one by one, CAO's Councillors were paraded into the hall beside a marching majorette carrying each Councillor's respective provincial flag.

Welcome to the nation's capital, and the 1989 Biennial Congress was well and truly open!



Dr LeVasseur kicks off Rendez-vous Ottawa '89 at the Opening Ceremonies.

DAY 2

A Reinforced Welcome

A Long Loud Thank You to a Departing Dr Bélanger and an "Ale" of a Good Time at the Bytown Bash

The Congress was actually several hours old by the time another official welcome event — a "Welcome Lunch" — was held.

During the morning hours, in fact, those delegates* still unregistered began by making their way smoothly through the registration process, an operation made considerably easier as a result of the hours of registration package assembly already done in advance by CAO staff and Registration Committee volunteers.

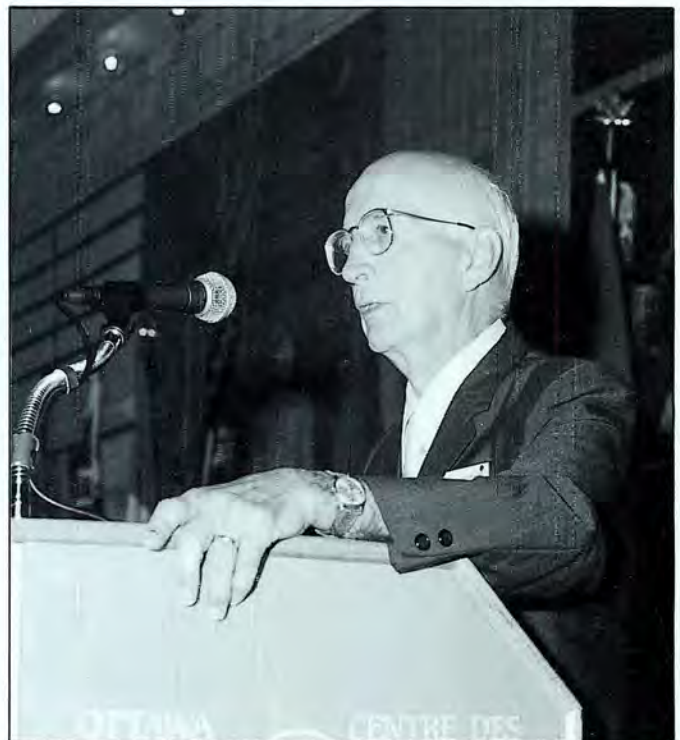
The Desk area itself also featured a showcase of CAO publications, photo albums and memorabilia from past Congresses, as well as a poster-sized reproduction of the official Congress logo for the 1939 Congress of the Ontario Association of Optometrists, a meeting held in Ottawa a half century earlier. Designed by Oshawa optometrist Dr AE Johnson, the poster was displayed with his kind permission.

Reveille with a flair...

Their registration complete, optometric delegates found themselves thrust immediately into a busy and comprehensive program. By way of a wake-up call, Allergan Inc had joined forces with the newly-opened National Museum of Civilization for breakfast and presented (besides the food and coffee) a souvenir T-shirt from the Museum and several staged presentations highlighting a number of current exhibits. Allergan, meanwhile, had also arranged for complimentary Museum admission passes for every optometrist registered at the Congress, anticipating nicely the search for an interesting activity during their free-time afternoon later in the week.

For the time being, however, the ODs' attention was turned to Continuing Education, with this first morning's classes split between Dr John Griffin, a US Diplomat in Binocular Vision and Perception, speaking on Accommodation and Convergence and Dr David Jordan, an ophthalmologist with the University of Ottawa's

*A capsule summary of the number of delegates registered — optometrists, spouses, juniors and exhibitors — follows this report.



Dr Bélanger tried hard to convince the huge audience at Wednesday's lunch that the CJO • RCO has been a team effort all through his 36 years as Senior Editor — the audience, however, still paid unabashed tribute to his "quarterbacking" the team.

Department of Ophthalmology. Dr Jordan spoke on Cosmetic Surgery and reconstructive techniques.

Spouses, meanwhile, had a somewhat more leisurely introduction to the Congress' first full day with a lengthy welcome breakfast in the Westin Hotel, accompanied by an information session and displays arranged by a number of Ottawa Valley craftspeople.

Everyone, optometrists and spouses, came together over the lunch hour and the first of several most special moments from the 1989 Biennial Congress.

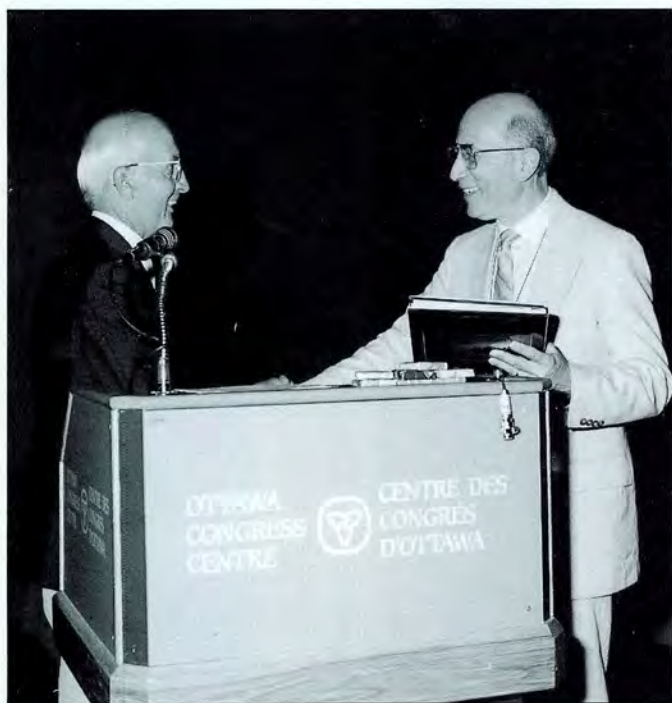
Trying to craft the words for a words craftsman...

This year marks the stepping down of Dr Maurice Bélanger as Senior Editor of the Association's official publication, *The Canadian Journal of Optometry* * *la Revue canadienne d'optométrie* and this opening day's luncheon had been marked as the occasion at which CAO would attempt to express its appreciation.

"Attempt", because how does a person, or in this case an entire national organization, even begin to acknowledge and honour appropriately thirty-six years of devoted, volunteer service to a single institution?

For a very great measure of assistance, CAO called upon Dr Bill Lyle who, although retired as Professor at the School of Optometry, University of Waterloo, is still active as the Editor of *Optometry and Vision Science*, the Journal of the American Academy of Optometry. Dr Lyle spent several minutes reviewing Dr Bélanger's history of commitment and dedication, a peer's citation that could only come from someone equally familiar with the effort required to produce an optometric publication.

Concluding his remarks, Dr Lyle presented a scroll to Dr Bélanger commemorating the establishment of the first-ever CAO position of Editor Emeritus, CJO*RCO, and the awarding of that title to Dr Bélanger.



A thank you to Dr Alfred Rosenbloom from Dr Bélanger, this time wearing his "Chairman CE Program Committee" hat.

With the title of Editor Emeritus, CAO is saying to Dr Bélanger and, for that matter, to Optometry across Canada that we know he will never really retire and, with CAO's offices a scant five minute drive from his home and practice, Dr Bélanger's continued input to the Journal will never be unwelcomed so long as he may desire to contribute.

In a particularly touching response, Dr Bélanger paid tribute to a lengthy list of individuals who, he said, must share in Optometry's thanks to him, not the least of whom is his devoted wife, Françoise, who all too often yielded space in her home, and her husband's time away from home, to the CJO*RCO's production.

The luncheon, only a half day into Congress '89, concluded with a look ahead — way ahead, to the summer of 1991 in fact — when Magique Manitoba Magic takes the stage as the theme for our 22nd Biennial Congress in Winnipeg, August 6-9. Delegates, courtesy of 1991 Local Arrangements Chairman Dr Scott Mundle and the Manitoba Visitors and Convention Bureau, were treated to a scenic preview of the host province and city, as well as to a video display of the "magic" in the Congress' theme.

The afternoon's classroom sessions were devoted first to the geriatric patient, with session leader Dr Alfred Rosenbloom, Director of Low Vision Services for the Chicago Lighthouse for the Blind and, secondly, to the Retina, with another Ottawa ophthalmologist, Chairman of the University of Ottawa School of Medicine's Department of Ophthalmology, Dr Brian Leonard.

Ottawa bashing was never like this...

Following six hours of education, an optometrist likes to unwind and Wow!, had the Congress Local Arrangements committee ever anticipated that need in excellent fashion.

All day long, the skies over the capital had been far from welcoming. They had even gone so far as to issue forth a small funnel cloud that swept over the city's west end in the early afternoon, adding to the problems created by the day's steady downpour of rain. At about 4:00 pm, however, the clouds finally



Dr Hugh MacKenzie recalls some of the many joys of a long and distinguished career after accepting the 1989 CAO President's Award. (In spite of the sculpted Ling Cod beside him, fish was NOT on the menu.)



OYEZ! OYEZ! OYEZ! Welcome to the National Capital Region! Oh Yes!



You tell us. We were sure everyone had a GOOD time at the Bytown Bash!



Since when is Woodcutting 101 on the curriculum at Waterloo or the Vision Institute? Dr Tony Cullen (Right) need not feel embarrassed at losing to Dr Mitch Samek (Left) in the log sawing contest. Dr Samek went on to post the fastest time overall.

broke apart. Two hours later, the late day sun was working mightily at drying outdoor Ottawa. And you never saw such a happy group of campers as the Local Arrangements Committee because this day, of all the days of the Congress, depended on a clear sky for the one outdoor event that brought together almost everyone at the Congress — the ODs with their spouses and kids.

Under a smiling sky, several smiling bus drivers took several hundred smiling family members to Victoria Island, smack in the middle of the river that separates Ottawa from Hull, for the capital's legendary Bytown Bash.

**One of the city's better parties, it turns out,
is the Bytown Bash.**

Ottawa, for those who are unfamiliar with its history, began life as Bytown (or, more accurately, as Bellows Landing, then Place des Rideaux, then Chaudière Falls, then Richmond Landing, then Nepean). Finally, in 1827, perhaps in a desperate attempt to make local maps somewhat more permanent, the resident population agreed to call their home Bytown after Colonel John By, builder of the Rideau Canal. Alas for the Colonel, even that name was changed 28 years later to Ottawa as a "commemoration" of a (then) 200 year-old treaty allowing the Ottawa Indians to use the Ottawa River which still flows by the city.

But the builder lives on in several different ways: Colonel By Drive, for example, follows his canal from the Hog's Back Falls downtown to the "corner" of Colonel By Drive, Rideau Street, Sussex Drive and Wellington Street. (Don't ask. Ottawa Streets have gained a certain notoriety for changing names at seemingly random points along their lengths and the foregoing four-street junction would be a standard two-street intersection in most other cities.)

The By Ward Market is another of the Colonel's nominal legacies and one of the city's better parties, it turns out, is the Bytown Bash.

From the moment we arrived on Victoria Island, delegates were treated to a non-stop performance offered by a truly representative group of all that means "entertainment" in the Ottawa Valley — fiddlers and step-dancers, comedians (some of whom were CAO people attempting to saw logs with a Swede saw), two different bands and, tying them all together, an energetic emcee.

Another featured attraction proved to be at the bar where the capital's own draught Bytown Lager, a product of the Ottawa Valley Brewing Company, was available as an excellent accompaniment to a generously spread steak and salmon barbecue.

As the evening wore on, delegates occasionally left the huge, protective canvasses for a stroll under the stars along the shores of the island. Ideally positioned just upriver from the Parliament Buildings, Victoria Island offers a wonderful view of both the Québec and Ontario shores of the Ottawa River where photographers have found particular delight capturing, in the same frame, the Hill's Gothic Parliamentary Library and its echoes in Moshie Safdie's majestic dome crowning the National Gallery.

Like an Atlantic lobster supper, a western rodeo or Québec's winter carnival, Ottawa's Bytown Bash is one of the best single statements offered by the city of its musical and cultural past and present. But more than this, it is just a heck of a good time.

Day 2 down, two to go.

DAY 3

Deck the Halls and Hit the Decks

...the Halls in this case being Salons C,D,G and H of the Congress Centre and the Decks being the footboards of either a Thousand Islands Cruiser or of several of the Rideau Canal's tourboats.

The Halls were indeed "decked" at Rendez-vous Ottawa '89 with the wares of an all-time record number of Exhibitors. Day 3 of the Congress brought a generous measure of scheduled activity into this forum.

Once again, optometrists began the day with the demands of Continuing Education and, this time, with a choice. Session one offered either Dr André Lachance of l'Ecole d'optométrie, Université de Montréal, speaking on Progressive and High Index lenses, or Fred Kahn of Carl Zeiss Optical, who offered a session entitled "Meeting Today's Challenges While Preserving the Perception of Optometry as a Vital Health Care Profession".

Following a break, ODs were again able to choose between a clinical topic, "Fields", offered by Dr Michael Cohen, an optometrist who is Director of Professional Services for Allergan Humphrey, or a practice management option, "Tax and the Health Care Professional" with Charles Rotenberg, a partner and consultant with an Ottawa law firm.



...they say the plural of spouse is spice. A highlight of the Spouses' Program was the 1000 Islands Boat Cruise.



Past (and present) CAO Presidents at the Past President's luncheon. Seated (L-R) Dr Tom Adamack; Dr Roland des Groseilliers, Dr Ron Macpherson, Dr Ralph Rosere. Standing (L-R) Dr Scott Brisbin, Dr Garson Lecker, Dr Reid MacDuff, Dr Bruce Rosner.

With the luncheon, the formal Continuing Education program for this year's Congress drew to a close. But no rest for the weary! The Exhibit Hall was immediately opened with a ribbon-cutting ceremony and a buffet luncheon as delegates flooded into the huge array of hardware, software, appliances and examples of nearly everything needed to start, maintain or upgrade a modern optometric practice.

Some delegates are picture perfect...

Meanwhile, outside the Hall, and certainly worth a special mention, was a sizeable panel featuring every entry in the 1989 CAO Biennial Congress Photo Contest. This year featured a record number of entries in this event and, even given a total of nine prizes to offer,



Dr Adamack responds to a question at the 1989 General Business Meeting.

judges were faced with extremely difficult choices to make in each of the contest's three categories. We offer our special appreciation to everyone who entered and congratulations to the winners:

NDP (Novel, Dramatic Pictures)

- 1st Dr RL Sommerville, Fort Erie, ON
- 2nd and 3rd Dr Mario Pozza, Kamloops, BC

PC (People of Canada)

- 1st Jill Smit, Truro, NS
- 2nd Dr Ralph Rosere, Dartmouth, NS
- 3rd Dr Pat Marcantonio, Riverview, NB

LIB (Life in Bloom)

- 1st Calli Brisbin, Edmonton, AL
- 2nd Dr Ralph Rosere, Dartmouth, NS
- 3rd Dr Joe Hickey, Sherwood, PEI

Our thanks, too, to the contest judges, John Perrins and Marcos Castrillos, both professional photographers and Sandra Markus, a representative of Acart Graphic Design Services Ltd. all of whom gave up a significant portion of an afternoon during the Congress to carry out the judging.

Revival meetings...

As time goes on, Canadian ODs may well begin to see results from the Day 3 afternoon's activity scheduled for registered optometrists, the meetings of each of the seven sections of CAO. Establishing any success with Sections generally in CAO has been a sporadic process at best but, as it turned out, this was in fact recognized by many of the Section organizers for whom the 1989 Congress provided a jump-start opportunity to reinstall life into their Sections.

I can only envy the ongoing closeness that optometric classes share through the years.

Low Vision, Sports Vision, Aviation Vision, Contact Lenses, Children's Vision, Voluntary Optometric Services and Friends of Canadian Optometry all took advantage of the national optometric



Either somewhat frightened at being surrounded by 144 COETF punch balls moments before they became airborne or rubbing her eyes in disbelief at being surrounded by so much potential FUN!



Let's see, if I double down on the lemon, hit it two or three times, maybe I can pay off lucky Louie, the schoolyard bully. Nope. Just let it ride!

gathering and, even at this writing, results are beginning to appear from several Section fronts. Keep looking to the *CJO*RCO*, the CAO President's *Communiqué* and provincial Association Bulletins for updates and reports.

Meanwhile, on the high seas (or as high as the St Lawrence River's breeze-whipped curls can get), registered spouses were enjoying another popular tourist attraction, a Thousands Islands Cruise. (Not just spouses, it seems. We have photographic evidence which places a number of ODs, clearly identifiable in spite of their attempts to remain concealed behind sunglasses, dotted among the shipboard spouses. The *CJO*RCO* may keep these pictures out of print, assuming the timely arrival of lavish amounts of "in-house advertising revenue"...)

From all indications, the day's rain hit the buses en route but appears to have stayed well away from the sightseers while afloat.

Optometrists got class!...

The touring spouses and quasi-spouses returned that evening for another Congress tradition — biennial class reunions. As a graduated member of Carleton University's School of Journalism Class of '75, I can only envy the ongoing closeness that optometric classes share through the years.

It must be a combination of your relatively small class size (Carleton U's Journalism School Year 1 Introduction to Human Communications course registered some 475 students when I enrolled in 1971), the gruelling curriculum you have to go through to get the OD degree and the efforts of the Schools' faculties to get every single student completely through the program. Whatever it is, the evident bond among optometrists of the same class is deeply impressive to this non-optometrist every two years when graduating classes get together at the Congress.

A huge number of city restaurants, some of which were reached via Ottawa's water "taxis", the canal tourboats, were host to class-

grouped members of CAO's large optometric family. Ottawa Society member ODs' homes, in many cases, also served as jumping off points, winding up points or party-all-night points. The list of venues posted at the Registration Desk read as a "What's What" Guide to Ottawa and Hull dining and entertainment and, as a result of how thoroughly CAO covered the region on this evening, we are giving serious consideration to soliciting first-hand experience to publish the *The Optometric Guide to the National Capital Region*, sure to be at least as thorough as the current "What's On".

Past Presidents lunch in style...

In a footnote to Thursday's activities, mention has to be made of a very special luncheon held in the Westin Hotel's premier dining room, les Saisons. As a thank you to CAO, the Westin's chef offered to prepare and host a luncheon for our special VIPs and, on reflection, CAO's Executive could think of no better group to accept the Hotel's generous offer than our past national Presidents at the Congress.

Current President Dr Tom Adamack also extended an invitation to visiting AOA President Dr David Sullins, IOOL President Dr Burt Holmes, CAO's hardly-worked Executive Director Gérard Lambert (that is, he who is worked hard, not he who hardly works), OD and MP Dr John Cole and, in recognition of his own occasion at this Congress, retiring *CJO*RCO* Senior Editor Dr Maurice Bélanger. And earlier, in a moment of inspiration, Dr Reid MacDuff had placed a call to another past CAO President, Dr Ron Macpherson (1971-73) who, although not able to attend the Congress, had been able to make the drive up from Kingston just for the Thursday gathering.

Not being a past President, I can't relay any first-hand evidence of the success of this event either. But again there are several photos...no one looks unhappy.

On to Day 4.



Dr. Dave McKenna practices shouting "FORE!" with his COETF draw prize, a new set of golf clubs.



CAO Director of Communications Mike DiCola (L) was about to stop Dr. Hans Schuster from absconding with one of the COETF's prizes — a mountain bike, when Dr. Schuster produced the winning ticket moments before he and a hearty "Hiyo Silver!" disappeared in a cloud of carpet lint.

DAY 4

Another Meeting, Bouncing Through Lunch and Some After Dinner Fizz

Generally speaking, this is why we meet...

No fewer than 12 of CAO's current 53 By-laws (nos. 33 through 44) are devoted to an event which presently takes up just three hours of time every two years — the CAO General Business Meeting.

It is virtually the only element of our Biennial Congress actually mandated in our By-laws and, arguably, is *the* reason for holding the Congress in the first place.

As a result, although shaped to "only" a three-hour Agenda, the General Business Meeting is also the single most demanding Congress event in terms of Executive, Council and staff preparation, because it is the one occasion that puts CAO's Board of Directors — our Council — directly in front of the Ordinary Members of CAO (i.e. the optometrists of Canada who are members in good standing in one or more provincial Associations of optometrists, as defined in CAO's Constitution under Paragraph 7 with reference to Paragraph 4/c and in By-law 2/b).

Corporate cynics may call the general meeting process an exercise in self-justification but, whether annual or biennial, whether in front of ordinary members or stockholders, whether under a Chairman of the Board or a national President, it is an essential cog in the wheel that is democratic accountability.



Junior Delegates had their own opening day party, obviously cause for a smile.

In the next issue we will report details of this year's General Business Meeting, along with reports from the 1989 Optometric Leaders' Meeting. Read them. They're signposts of direction being determined by and for a Council and an Association that operates on a budget built up of your annual dues payments.

Until the 1991 GBM, your CAO Councillor is your channel of communication with the Council and Executive of CAO. Tell him or her if something about what you read seems to demand your input. And if you want to be a part of the process you see reported here — plan now to be seen, and heard, in Winnipeg two years hence.

Don't cry over dropped China — we can still "Thai" one on!...

Approximately two months or so before the Congress, the Chinese Red Army's tanks made Tienanmen Square in Beijing a tragic memorial and China a dangerous tour destination. Up to that time, it had been one of several exotic Chinese venues promoted as part of a mid-winter Far East Continuing Education tour being arranged by the Vision Institute in Toronto.

Even without China, however, Hong Kong, Thailand and Singapore retained more than enough appeal to sell several hundred tickets to the Canadian Optometric Education Trust Fund's 1989 fundraising and promotional draw, "Have a Ball in Bangkok and Beyond", organized in conjunction with the Congress.

Recognizing the attraction offered by the Far East, the COETF's Trustees had agreed to purchase two places on the tour from the Vision Institute to be offered as the Grand Prize in this year's draw (assuming the winner was able to make the trip on the Vision Institute's schedule). In addition to the Grand Prize, ticket buyers were offered the chance to have a (golf) ball, a (base) ball, a (beach) ball, from among a total of ten bouncy prizes. "Having a ball", if fact, becomes the theme of a whole new two-year campaign, beginning with Congress '89. Emblematic (or perhaps symptomatic) of the disease which swept campaign organizers were no fewer than twelve dozen COETF punch balls which made a brief but spectacular appearance flying through the air from table to table at lunch on Day 4 — the COETF-sponsored "Light Lunch" on the schedule.

Strangely enough, considering the presence of 144 missiles in the air over the diners, we received no damage or spill reports whatsoever.

Allergan comes through again...

Before the draw was made, the COETF was greatly pleased to receive a large donation from Allergan Inc to its Industrial Fund-raising Program. In making the presentation, Allergan's President referred to a number of other ongoing Allergan funded programs of direct benefit particularly to students in both of Canada's Schools of Optometry. The COETF, he said, offers the added benefit of ongoing research opportunities when the practitioner graduates and, as such, is wholly appropriate to Allergan's stated goal of supporting vision and eye care research in Canada.

Allergan's generous support of the COETF, it seems, is mutually satisfying and very much appreciated.

Donation received, draw emcee and National COETF Fundraising Chairman Dr Reid MacDuff, with the assistance of Chairman Dr Margaret Hansen des Groseilliers, proceeded with that part of the program that proved capable of stopping even the bouncing punch balls in mid-flight — announcing the always suspenseful "...and the winner is..."

The Grand Prize winner is Dr Greg Moloney, Kanata, ON (who is in the midst of building a new home and has a child due to



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appear at just about the same time as the Vision Institute's travelers reach Hong Kong next February and so has opted for the cash alternative prize of \$7,500.00).

In addition, on behalf of the Trustees and, indeed, on behalf of optometric research in Canada, thank you most sincerely to absolutely everyone who participated and, for the record, congratulations to the following who, so far as we know, are having a real ball with their prizes:

Dr Dave McKenna (\$500 set of golf clubs and bag); Dr Jim Patriquin (\$300 gas barbecue); Dr Hans Schuster (\$200 18-Speed CCM Targa Mountain Bike); Dr Lauren Hirano (\$100 Yonex tennis racquet and balls); Dr Doug Côté (\$50 softball glove, bat and ball); Dr Grenville Goodwin (\$30 worth of BBQ utensils); Dr Don Morrow (\$25 badminton set); Dr Michel Cormier (\$25 worth of gardening tools); Dr Wayne Wheeler (\$20 worth of beach gear and sunscreen).

Watch your own provincial Association advertising in the months ahead for possible local appearances by the COETF's "Rolling Ball" Revue. The Fund is yours and, being optometric, it enables you to contribute greatly to your profession's benefit by funding continued optometric vision and eye care education and research in Canada.

Friday's traditional quiet afternoon was anything but for those optometrists who had been prevented from seeing the national capital and region by the Congress' demanding education and meeting schedule. Ottawa has added no fewer than three new showcase

CAO Council in black tie (and pearls!) before the President's Banquet. Seated (L-R) Dr Margaret Hansen des Groseilliers; Dr Jean-Marie Rodrigue; Dr Tom Adamack, Dr Scott Brisbin. Standing (L-R) Dr Doug Côté, Dr Dave McKenna, Dr Grant Campbell, Dr Mike Duffey, Dr Steve Mintz, Dr Calvin Smith, Dr Claude Hutton, Mr Gérard Lambert.

attractions in the past year and, for many, the four tiny hours between 2:00 and 6:00 forced an agonizing decision-making process: Do I go to the new National Gallery? Do I hike across the river and take in the new Museum of Civilization? Or do I hop in a cab for the fifteen-minute ride out to the brand new National Aviation Museum.

Throw in a few Ottawa traditions — a cooling summer drink at the National Arts Centre's canalside "le Café", bargain hunting in the By Ward Market, complimented by a pause for a Killaloe Sunrise Hooker's Beaver Tail (the only Ottawa snack to make the New York Times Travel Section), quaffing a pint at the Elephant and Castle, Earl of Sussex or the Brigadier's Pump, strolling the Sparks Street Mall or launching an expedition into the Rideau Centre and four lousy hours of free time isn't even close to what I need!

Before we knew it, the pre-banquet reception was ending and everyone was settling into their seats for the 1989 CAO President's Banquet at the Westin Hotel.

One pre-banquet function I was privileged to attend, along with the rest of the CAO staff and our spouses, was the President's

Reception for the Banquet Head Table Guests in Dr Adamack's Suite at the top of the Westin Hotel.

Being an Ottawa native, I rarely have the opportunity to view my city from one of its hotels, especially from such a high vantage point. Standing on Dr Adamack's balcony, with its wraparound view to the north and west, it was a pleasure to conduct finger-pointed guided tours of many of the city and region's attractions, complimented by a gorgeous sunset over Québec's Gatineau Hills. I know our special guests, particularly AOA President Dr David Sullins and IOOL President Dr Burt Holmes, envied us locals the scenic wonders of the capital, but I didn't have the heart to tell them I was just as much in awe of this view as they were.

Back down to earth, the President's Banquet got underway with the traditional piping in of the Head Table. The parade of honour this year featured the following: Mrs Kathy LeVasseur, Chairman of the Spouses Program; Dr Pierre LeVasseur, Local Arrangements Committee Chairman; Mrs Calli Brisbin; Dr Scott Brisbin, CAO Past President and presenter of the 1989 CAO President's Award; Mrs Lois MacKenzie; Dr Hugh MacKenzie, 1989 CAO President's Award recipient; Mrs Judy Sullins; Dr W David Sullins Jr, President of the AOA; CAO President Dr Tom Adamack, Mrs Bev Adamack, Dr G Burt Holmes, President of the International Optometric and Optical League (IOOL); Mrs Ruth Holmes; Dr John Cole, optometrist and Member of Parliament for the Ontario riding of York-Simcoe; Mrs Margaret Cole, Mr Gérard Lambert, CAO Executive Director and Mrs Monique Lambert.

(In our next issue will be a fuller tribute to Dr Hugh MacKenzie as well as a report on the presentation to him of the 1989 CAO President's Award.)

Hail and well me!

"Rendez-vous" has, as many realize, a number of connotations in the English language. One of its literal translations from the French, however, is "to arrange to meet" and in this respect, the Chairman and Committees for Rendez-vous Ottawa '89 took the meaning directly to heart. Boy, did these people arrange to meet!

At the final banquet, Dr Pierre LeVasseur read the roll of Local Arrangements Committee members, asking each to stand as his or her name was read. By the time he had finished, nearly every table in the room had one or more people standing. It was a vivid, graphic testimonial to the sheer weight of human resources required to make a Congress success like Rendez-vous Ottawa '89 happen.

That image, of a room full of people with dozens standing dotted all among them, will stay with me long after the last few notes of Fizz's final song fade away.

And there were still others who couldn't be in attendance at the banquet! Of special mention, by unanimous request of the CAO staff and almost every parent at the Congress, is the work done by one incredible young lady, Danielle des Groseilliers, on the Junior Delegates Program. Danielle arrived at the Congress hot on the tail of an offer to assist and basically wound up shepherding the entire Junior Delegates Program through its schedule. Danielle is a teen-ager who flies in the face of the television sitcom stereotypical teenager. An energetic young person who doesn't wait to be asked for help, Danielle was there at almost every turn when help was needed — before being asked.

Why do I dwell on Danielle's role in this Congress? Well, I began with an allusion to a chain link and the bond forged by the volunteer committee members as they assembled this massive undertaking. Somewhere around the middle, I referred to the optometric bond between class members as evidence of the unity in the profession. But a factor I haven't yet mentioned is that of the real families in Optometry — not the metaphorical ones created among class



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Photo contest photos photographed photographically by photographer.



The face of someone on Day 4 of co-ordinating the Junior Delegates' Program. Note the evidence of heavy drinking...four count 'em four empty milk containers!

members, but the biological ones between parents and offspring, or the union of spouses.

Danielle's parents are Drs Roland and Margaret Hansen des Groseilliers, two Ottawa practitioners whose own contribution to the profession grows from local roots to a worldwide role via the IOOL. This type of energy obviously rubbed off on Danielle somewhere along the line.

I hasten to add she's not the only one who got involved through this real family link. For example: Mrs Kathy LeVasseur and Dr Pierre LeVasseur; Mrs Charna Mittelman and Dr Joe Mittelman, Dr Mark Pogue and Dr Carol Trenholm ("Mrs Mark Pogue") and all the unspoken, unacknowledged family members who had their fathers/mothers, husbands/wives head off to meetings when something else might have called — a drive to the hockey arena, perhaps, or a family birthday, or anniversary.

Because the 1989 Congress was held in Ottawa, CAO's administrative support role went far beyond what we normally provide and included the use of our national office boardroom space for many of the meetings. It allowed me to see, like never before, the full range of commitment required of the volunteers and their families to make it work. So when I see Ottawa optometrists at some future function — I'll thank them. And tell them to thank their families.

For planners and participants alike, Rendez-vous Ottawa '89 was a family affair from the word go.

And so to Winnipeg's **Magique Manitoba Magic**, August 6-9, 1991.

You'll be hearing about it real soon but keep your eyes open. The thing about magic, you see, is that it dazzles but doesn't stick around to explain itself.

Be prepared to be dazzled.

Michael J DiCola
Director of Communications

Rendez-vous Ottawa '89 Some Attendance Statistics

Optometrists Registered	
TOTAL (263 Full and 30 Partial Program)	293
Of the 263 Full Registrations, 5 were registered on-site	
Of the 30 Partial Registrations, 6 were registered on-site	
Spouses / Guests Registered	
TOTAL (Full Program Registration)	111
Of the 111, 2 registered on-site.	
Junior Delegates Registered	
TOTAL (Full Program Registration)	60
Of the 60, 2 registered on-site.	
Pre-School (Day Care) Children Registered:	23
Others Registered (Full Program / National and/or Provincial Staff / VIP Complimentary Registrations)	11
Single / Multiple Event Guests	39
Tickets Purchased by these 39 Guests	103
Exhibit Personnel Registered	243
Exhibiting Companies:	53
Exhibit Booths Sold:	76
TOTAL Attendance:	
(Includes Full and Part Time Delegates, Exhibitors)	780

Neural Indices of Short-Term Visual Deprivation in Humans: Effects upon the Patterned VEP

MM Spafford*
AJ Trotter**

Abstract

The effects of seven hours of unilateral deprivation on the monocular and binocular patterned Visually Evoked Potential (pVEP) were investigated in thirty healthy, non-amblyopic subjects. Diverse results from the limited work published in this area prompted the study. The type of deprivation (form versus form and light deprivation), ocular dominance of the deprived eye and subject age were considered. For this group, the type of deprivation appeared to have no significant effect except when ocular dominance was considered. A decrease in the transient VEP (tVEP) amplitude with a corresponding decrease in tVEP implicit time (IT) was found when the dominant eye was deprived of form and light. For the age range studied (11-24 year olds), subject age was not found to be an important factor. The temporary post-deprivation changes noted in the tVEP were attributed to a disruption in the mutual inhibition that normally occurs between ocular channels.

Résumé

Les chercheurs ont étudié, chez trente sujets sains sans amblyopie, les effets de sept heures de privation unilatérale sur le potentiel évoqué structuré (PEVS) monoculaire et binoculaire. La disparité des résultats ressortis des études limitées dans ce domaine ont incité les chercheurs à approfondir la question. Le type de privation (forme ou forme et lumière), la dominance oculaire de l'oeil étudié et l'âge du sujet sont autant d'aspects dont les chercheurs ont tenu compte. Dans ce groupe, le type de privation n'a pas semblé avoir d'effet appréciable, sauf en tenant compte de la dominance oculaire. Une diminution de l'amplitude du potentiel évoqué visuel transitoire (PEVT) et une baisse correspondante du temps implicite de PEVT ont été constatées lorsque l'oeil dominant était privé de la forme et de la lumière. Dans l'éventail d'âge des sujets (les 11 à 24 ans), l'âge s'avère être un facteur non important. Les changements temporaires post-privation observés dans le PEVT ont été attribués à un dérangement de l'inhibition mutuelle qui se produit normalement entre les canaux oculaires.

Introduction

The patterned Visually Evoked Potential (pVEP) is a massed cortical response reflecting macular stimulation. From a clinical standpoint, the pVEP represents a method to objectively study aspects of form vision, such as visual acuity, as well as assess binocularity and

macular-cortical integrity.^{1,2} Since it is widely accepted that early detection and therapy of amblyopia greatly enhances the prognosis, the pVEP has become useful in the diagnosis, prognosis and treatment of amblyopia.³⁻⁶ Electrophysiologic studies of amblyopic eyes have been shown to exhibit pVEPs with reduced amplitudes and often prolonged latencies.⁵⁻⁷

The consequences of visual deprivation and their relationship to amblyopia have been studied in various ways. Recordings from the striate cortex of kittens and

young monkeys have suggested that unilateral eyelid suture is detrimental to cortical cell response, lateral geniculate cell size and visual behavior of the animal.⁸⁻¹² Because of this, the analogy has been made that patching therapy in amblyopia may have similar effects to those derived by unilateral eyelid suture.¹¹ Unlike animal studies of unilateral eyelid closure, the objective of occlusion therapy rests on the premise that patching will not cause any permanent harmful effects on the patched, normal eye but instead will have long-term beneficial effects on the amblyopic eye.^{3,4,6} Yet, temporary attenuation of pVEPs has been recorded from intermittently patched normal eyes of unilateral amblyopes.⁶

The likelihood of causing or remedying amblyopia has been closely linked with the plastic period of visual development. Identifying this critical period in which visual experience can alter visual ability has been determined in several animal models.⁸⁻¹² It is generally accepted that the younger the patient, the better the prognosis for amblyopia therapy. As of yet, however studies have failed to obtain an accurate determination of the critical period in humans.¹³⁻¹⁵ Of course, there are other factors that affect the prognosis, such as the motivation of the patient as well as the type and extent of the amblyopia.^{16,17}

In the clinical management of the amblyopic patient, care must be taken to avoid occlusion amblyopia whereby the previously non-amblyopic eye develops intractable amblyopia as a result of excessive patching.⁴ Therefore, the age of the child as well as the frequency and duration of occlusion therapy are factors that must be considered when deciding upon an appropriate regimen of patching.

Short-term effects of occlusion have not been extensively studied. Studies by Lui and Afanador¹⁸ and Tyler and

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Kaitz¹⁹ investigated short-term deprivation with the pVEP and found conflicting results. Lui and Afanador reported that 6 hours of unilateral form deprivation with a translucent patch caused an enhancement of pVEP amplitude in the deprived eye. They interpreted their results of five non-amblyopic subjects to be a transient hypersensitive response to form stimuli occurring as a result of adaptation to the deprivation. No change in the pVEP amplitude was noted for the non-deprived eye relative to the baseline.

Tyler and Kaitz¹⁹, in their study of two non-amblyopic subjects, who underwent 9 hours of form and light deprivation, found that the pVEPs subsequent to deprivation were reduced in the deprived eye while the non-deprived eye sustained an increase relative to baseline recordings. A third subject underwent monocular form deprivation by removal of one -4.50D contact lens for 9 hours on three separate days. Again, the non-deprived eye showed an increase in the pVEP however, there was no significant change in the deprived eye. They attributed their findings to reciprocal inhibition between the two monocular pathways at the level of the visual cortex or the lateral geniculate body. Neither of these studies^{18,19} considered subject age or eye dominance in their discussion. In addition, no control of intersubject accommodative response or pupil size was indicated. Furthermore, neither study considered binocular pVEPs subsequent to unilateral deprivation.

The mode of deprivation may be an important variable in the investigation of deprivation effects. Consequences of form deprivation obtained by a translucent patch have been shown to produce greater neural disruption than form and light deprivation obtained by an opaque patch.⁴ However other studies^{18,19} have found contradictory and inconclusive results on the distinction between form deprivation and form and light deprivation effects.

Another variable in understanding the effects of deprivation may be eye dominance.^{16,20} Amphlett and Smithson¹⁶ found that in 95% of amblyopic subjects, the non-amblyopic eye was the dominant eye. Because the majority of patching involves the dominant non-amblyopic eye, that is "direct patching",^{17,20} investigation is warranted as to the importance of depriving the dominant versus non-dominant eye. In general, the majority of non-amblyopic individuals are right eye dominant,²⁰

and therefore deprivation studies of non-amblyopic subjects should avoid biasing the study by not considering the dominance of the deprived eye.

Although the applicability of short-term deprivation of non-amblyopic eyes to amblyopic eyes is unknown, understanding of the short-term effects of visual deprivation may be important to the processes involved in the treatment of amblyopia. This investigation of pVEPs was undertaken to systematically study the monocular and binocular effects of short-term visual deprivation in young adults with respect to the type of deprivation employed, the dominance of the eye deprived and the age of the subject.

Methods

Thirty paid subjects between the ages of 11 and 24 years participated in the study. Subjects were advised that the study had been approved by the University of Waterloo Human Research Committee and that they could withdraw from the study at any time. All subjects were screened prior to the study and found to have at least 6/6 aided acuity in each eye, normal binocularity, unremarkable ocular health, brisk light pupillary responses and normal age-related accommodative amplitudes. Subjects were fully corrected during the study. A gross evaluation of ocular dominance was performed at the preliminary examination by having the subject binocularly sight a target at 6m through an aperture. The dominant eye was identified as the one in which the target, seen binocularly, remained visible monocularly without repositioning the aperture.

Approximately 30 minutes prior to commencement of pVEP recording, 2 drops of 1% Cyclogyl (cyclopentolate HCl) were instilled in each eye to minimize accommodative fluctuations and dilate the pupils.

Baseline patterned steady state and transient pVEPs were recorded using a 10-20 bipolar electrode configuration. For each subject, the distance along the midline from the inion to the nasion was measured. The active electrode was placed 10% of the inion-nasion measurement above the inion along the midsagittal plane. The reference electrode was positioned along the same plane 20% of the inion-nasion distance above the active electrode. The right earlobe served as the electrical ground. Skin electrode resistance was kept below 3 Kohms for

all measurements. The electrodes remained in place throughout the duration of the study. Electrical signals from the electrodes were detected, amplified and processed by an averaging computer (Nicolet CA - 1000). The low and high bandpass input filters were set to 1 and 30 Hz, respectively. The sensitivity setting was 50 μ V.

The stimulus used to elicit the pVEP was a black and white checkerboard pattern reversed at a frequency of 7.5 Hz or 1.9 Hz for steady state and transient pVEPs, respectively. The luminance of the black and white checks as measured by a Pritchard photometer was 9.2 and 114 cd/m^2 , respectively. Check contrast was calculated to be 85%. The overall checkerboard luminance was 80 cd/m^2 . Ambient room lighting was approximately 320 lux (1m/m^2). The checkerboard stimulus pattern was located 2m from the subject. At this distance the circular stimulus field subtended 6 degrees at the corneal plane, while individual checks subtended 14 min of arc. Fixation was facilitated by a small red dot in the centre of the field. The stimulus was viewed through 3.5mm artificial pupils positioned on the back of the phoropter which held the subject's correction. The artificial pupils were employed to minimize intersubject differences in retinal illuminance.

For both ssVEPs and tVEPs, four trials were recorded while the right eye, left eye and then both eyes viewed the stimulus. A single trial consisted of an average of fifty 500ms epochs for the ssVEP or fifty 200ms epochs for the tVEP.

Following baseline pVEP acquisition, either an opaque patch (form and light deprivation) or a translucent patch (form deprivation) was placed over the dominant or non-dominant eye by random assignment. The deprivation period lasted for 7 hours during which time the subjects were allowed to resume normal daily activities.

One half hour before the end of the deprivation period, 2 drops of 1% Cyclogyl were again instilled in each eye. Care was taken to avoid exposing the patched eye to visual input during drop instillation. Measures of accommodative amplitude for each eye were taken hourly prior to each pVEP recording to ensure that accommodative function was not significantly returning. After the deprivation period, pVEPs were measured immediately upon removing the patch and then hourly for a 3 hour recovery period.

The recorded pVEPs were digitally

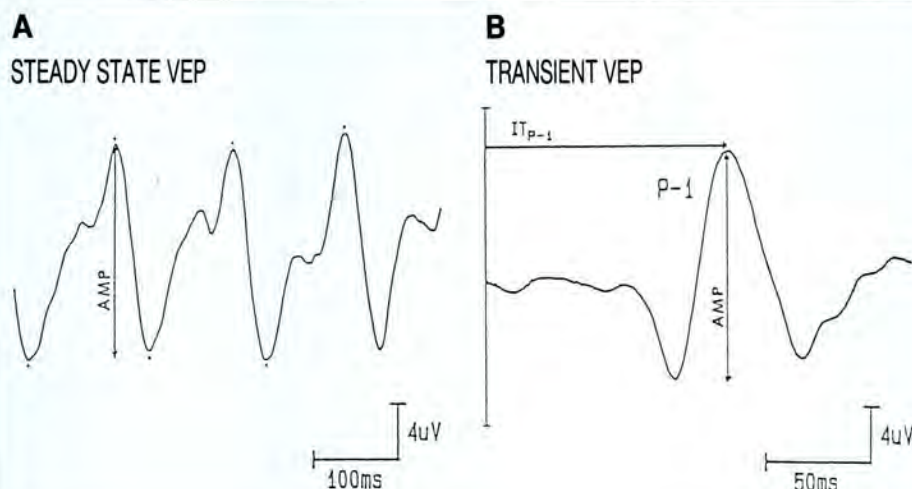


Figure 1

Sample patterned ssVEP and tVEP waveforms indicate the measurements taken. For a single ssVEP epoch (A), amplitudes (AMP) were measured from the peak to the preceding trough on the three complete waveforms. For a single tVEP epoch (B), the amplitude (AMP) was assessed from the peak of the P-1 wave to the preceding trough. The implicit time (IT_{P-1}) was measured from the beginning of the waveform to the peak of the P-1 wave.

transferred to a personal computer for analysis. The waveforms were plotted on a computer-driven Hewlett Packard Plotter 7475A. Analysis of the ssVEP consisted of determining an average of the four trials in which the peak to trough amplitudes of each trial were measured (Figure 1A). For the tVEP, the peak to trough amplitude and implicit time measures of the first major positive component (P-1) were averaged across the four trials (Figure 1B).

Results

Overall Analysis

All data was normalized to baseline pre-deprivation data at time 0. Subsequent hourly data was plotted as a percentage change from the baseline response. Overall analysis across time, considering the type of deprivation, dominance and viewing condition (i.e. deprived eye, non-deprived eye, binocular), showed no significant differences for ssVEP amplitude or tVEP IT. A significant variation was exhibited among subjects for tVEP amplitude over time (ANOVA, $F_{4,96}=3.20$, $p=0.02$).

Examination of the data revealed significant hourly variation, consequently further data analysis was limited to hours 0, 7 and 10. These values represented the data collected prior to deprivation, immediately following deprivation, and at the end of the post-deprivation period, respectively.

Deprivation Type Analysis

One group of subjects underwent form and light deprivation ($n=10$), while a second group underwent form deprivation ($n=20$). No significant group differences were found at hour 7 or 10 for ssVEPs or tVEPs (T-test, $|T| \leq -1.59$, $p \geq 0.12$).

Deprived Eye Dominance Analysis

To examine the role of eye dominance, the form and light deprivation group was subdivided into those for whom the dominant eye was deprived ($n=5$) and those for whom the non-dominant eye was deprived ($n=5$). Likewise, the form deprived group was subdivided into dominant eye deprived ($n=12$) and non-dominant eye deprived ($n=8$) subgroups. An analysis of the ssVEP data in Figure 2A-D showed that no significant changes were found at hour 7 or 10 relative to the baseline responses regardless of the type of deprivation or the dominance of the deprived eye (T-test, $|T| \leq -2.31$, $p \geq 0.08$).

Analysis of the tVEP amplitudes for the two groups (Figure 3A-D) revealed significant differences only when the dominant eye was deprived. Table 1 shows the statistical comparisons to baseline when the dominant eye was deprived. For form and light deprivation, only the deprived dominant eye (Fig. 3A) was significantly attenuated subsequent to deprivation at hour 7. After 3 hours

of recovery, the amplitude of the deprived dominant eye no longer differed significantly from the baseline condition. When the non-dominant eye was deprived, there was a measurable but not significant increase from baseline subsequent to deprivation (Fig. 3C). The dominant and non-dominant deprived eyes, subsequent to deprivation, differed only at the 10% confidence level (T-test, $|T| = -2.12$, $p=0.10$). No significant differences at the 5% level were found after dominant or non-dominant eyes were deprived of form (Fig. 3B,D), although a decrease in the response for the former group was significant at the 10% level.

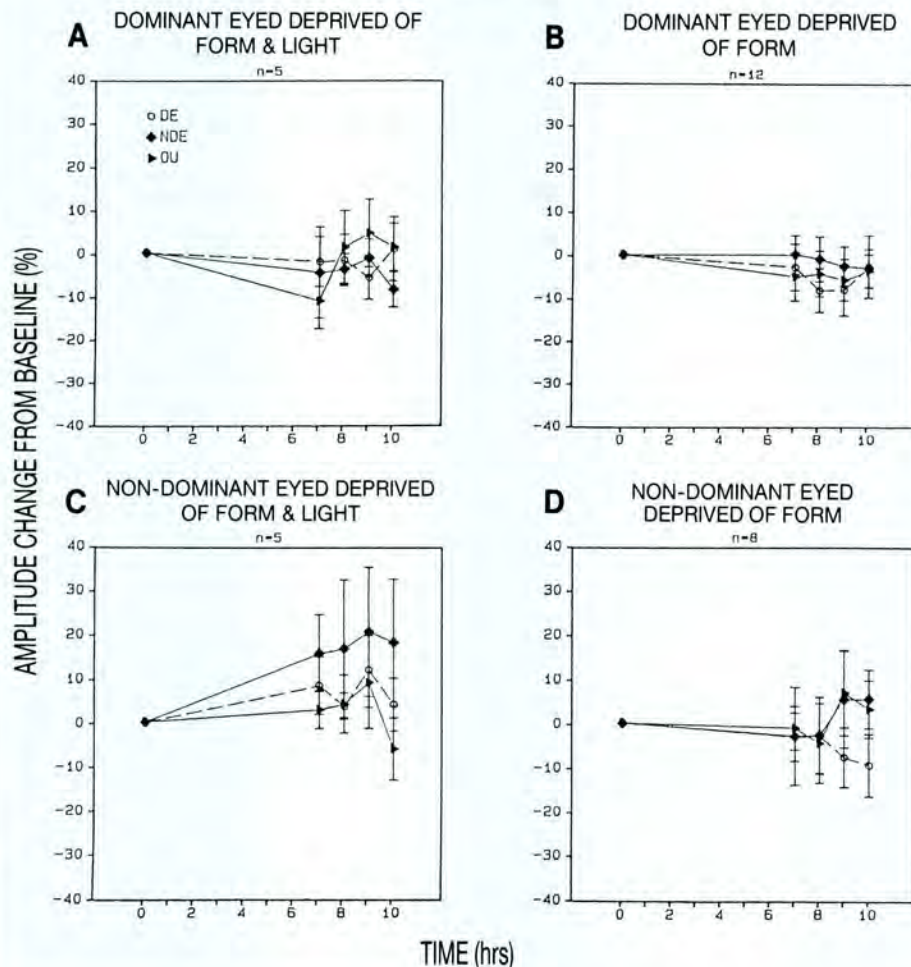
Similar analysis of tVEP IT data for the two groups (Figure 4A-D) revealed significant differences only when the dominant eye was deprived. Table 2 shows the statistical comparisons to baseline when the dominant eye was deprived. Figure 4A shows measurably but not significantly shorter ITs subsequent to form and light deprivation of the dominant eyes. After 3 hours of recovery, the ITs were significantly shorter than baseline. The non-dominant eyes deprived of form and light (Fig. 4C) did not differ from baseline responses at hour 7 or 10 (T-test, $|T| \leq -1.30$, $p \geq 0.26$). With form and light deprivation, the dominant deprived eyes exhibited significantly shorter ITs than the non-dominant deprived eyes (T-test, $|T| = -2.49$, $p=0.04$). No significant differences in the tVEP IT were found when dominant or non-dominant eyes (Fig. 4B,D) were deprived of form.

Analysis revealed that when the type of deprivation was considered with respect to eye dominance, the only significant differences found between the groups were for tVEPs. As has been noted previously, dominant deprived eyes subsequent to form and light deprivation exhibited significantly smaller tVEP amplitudes (Fig. 3A). In Figure 3B, a measurable but statistically insignificant attenuation was apparent subsequent to form deprivation. Likewise, for tVEP IT analysis, only dominant deprived eyes subjected to form and light deprivation were significantly changed from baseline (Fig. 4A). The tVEP ITs of dominant eyes deprived of form (Fig. 4B) were not significantly affected.

Age Analysis

Subjects in the form and light deprivation group ranged in age from 11 to 15 years, while the age range of the form

ssVEP AMPLITUDE CHANGES OVER TIME

**Figure 2**

ssVEP amplitude changes over time for the deprived eye (DE), non-deprived eye (NDE), and binocular viewing (OU) conditions, prior to and subsequent to the deprivation period. All data points were normalized to baseline pre-deprivation data at time 0. Subsequent points represent the percentage change from 0. Vertical bars through the data points indicate ± 1 SEM values. The legend in 2A also applies to 2B-D.

A. Group-averaged data ($n=5$) following form and light deprivation (opaque patch) of the dominant eye.

B. Group-averaged data ($n=12$) following form deprivation (translucent patch) of the dominant eye.

C. Group-averaged data ($n=5$) following form and light deprivation of the non-dominant eye.

D. Group-averaged data ($n=8$) following form deprivation of the non-dominant eye.

Figure 2A-D

showed no statistically significant changes for the ssVEP data.

deprivation group was 11 to 24 years. To investigate the importance of age, the group receiving form deprivation was subdivided into two subgroups: 15 years and under ($n=12$) and over 15 years ($n=8$). Unlike the form and light deprivation group, analysis of the age-matched form deprivation group

(≤ 15 yrs) failed to show a significant change in pVEP subsequent to deprivation (T-test, $|T| \leq 1.66$, $p \geq 0.11$).

For the form deprivation group, comparison of the older age group to the younger age group failed to show any significant differences in the pVEP (T-test, $|T| \leq -1.80$, $p \geq 0.09$).

Discussion**Overall Analysis**

The susceptibility of the pVEP to 7 hours of deprivation, considering the type of deprivation, the dominance of the eye deprived and subject age was investigated in the present study. In general, the tVEP amplitude showed the greatest susceptibility to short-term deprivation in an overall analysis. No significant overall differences were found for ssVEP or tVEP IT responses. Interpretation of the results however, was tempered by the known variability of pVEP responses.²¹ The pVEP response is influenced by fluctuations in electrophysiological background activity, observer attention to a fixed stimulus (an important consideration in younger age groups), electrode placement and electrode-skin impedance.²¹⁻²² The use of a topical cycloplegic agent and artificial pupil before each eye was incorporated to minimize inter-subject variability.

In a controlled study by Lu and Spafford²² no significant fatigue or diurnal effects were found in pVEP responses over the course of 9 hours. This study was performed on ten visually normal subjects between 20 and 30 years of age. Unlike diurnal variations, susceptibility to fatigue may be age dependent. Therefore applicability of the control study to the present study may be somewhat limited.

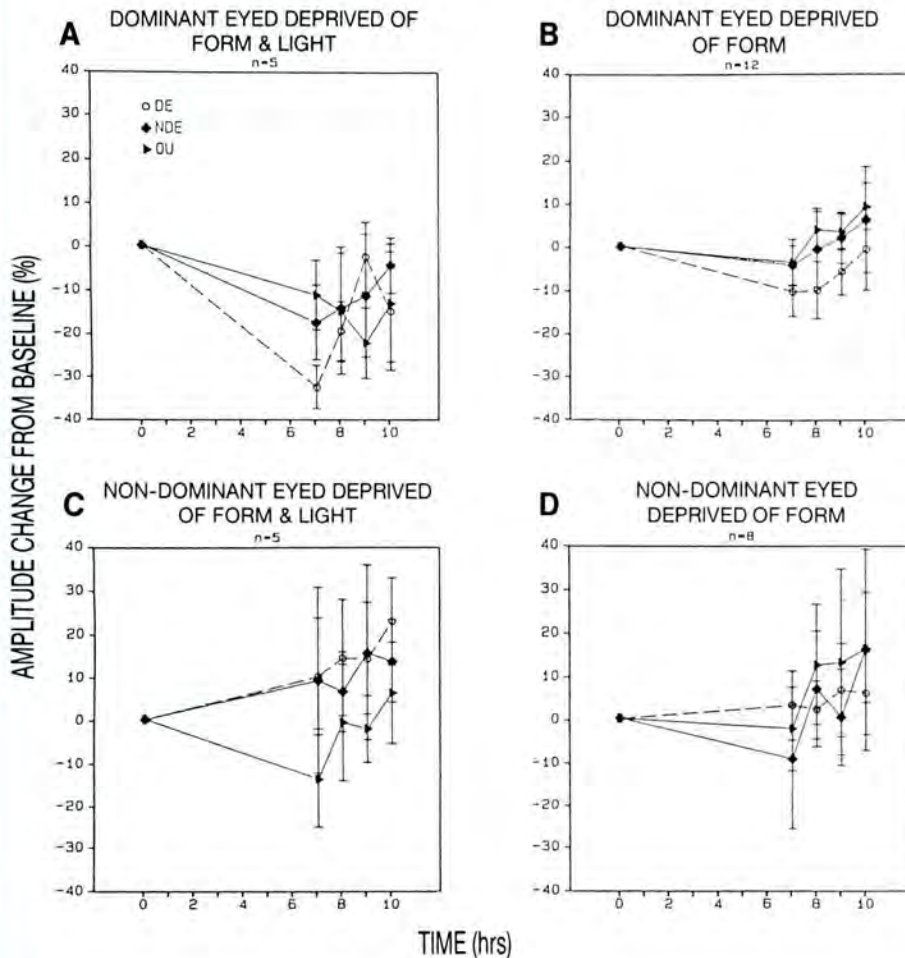
Deprivation Type Analysis

The consequences of form versus form and light deprivation on the pVEP have been debated.^{4,18,19} One study suggested that form deprivation causes more severe neural disruption than form and light deprivation.⁴ In the present study, no differences were found between the group receiving form deprivation and the group receiving form and light deprivation unless the ocular dominance of the deprived eye was considered.

Deprived Eye Dominance Analysis

The most important factor influencing the susceptibility of the pVEP to deprivation was ocular dominance. A significant temporary decrease in tVEP amplitude was found only when the dominant eye was deprived of form and light. This depressed tVEP response, however, recovered to baseline levels within three hours following the deprivation period. The tVEP IT response under the same conditions became

tVEP AMPLITUDE CHANGES OVER TIME

**Figure 3**

tVEP amplitude changes were plotted over time, otherwise data analysis was as indicated in Figure 2. The legend in 3A also applied to 3B-D.

Figure 3A-D

shows the same conditions as in Figure 2A-D. The only significant change was the tVEP response in Figure 3A. The amplitude of the DE decreased significantly subsequent to form and light deprivation (hour 7) but recovered to baseline values within three hours.

significantly shorter subsequent to deprivation. The IT response remained significantly shorter three hours after terminating deprivation. The shortening of the IT subsequent to deprivation was a surprising finding in the presence of a reduced tVEP amplitude. This discrepancy however, supports the theory that separate neural mechanisms determine the timing and amplitude of the tVEP response.²⁴

ssVEPs showed no statistically significant changes subsequent to any of the deprivation conditions studied. This suggested that the observed deprivation effects were temporal frequency dependent such that tVEPs were more vulnerable

to deprivation than ssVEPs. The visual system has been shown to be temporal frequency specific, thereby suggesting that the tVEP and ssVEP reflect different neural mechanisms.²⁵ Consequently, only the pathways responsive to the slower temporal frequency of the tVEP (1.9Hz) may have been affected and not the pathways stimulated by the higher temporal frequency of the ssVEP (7.5Hz). It has been suggested that the decrease in the pVEP amplitude of an amblyopic eye is a result of a general depression of activity or selective inhibition of one class of cells.²⁶ The changes in this study, evident only in the tVEP, may reflect this selectivity. For

the two other studies noted earlier which examined short-term effects of deprivation on the pVEP,^{18,19} a single temporal frequency was examined: 6.1Hz and 4Hz, respectively. Only the study using the slower stimulus reversal rate¹⁹ showed a decrease in the deprived eye pVEP. The decrement was noted to be small, however this could have been attributed to their small sample size ($n=2$) or their lack of consideration of other factors such as ocular dominance of the deprived eye.

The tVEPs of dominant deprived eyes substantially decreased following both types of deprivation (Fig. 3A,B), whereas the opposite effect, albeit insignificant, was observed for non-dominant deprived eyes (Fig. 3C,D). The tVEP attenuation in deprived dominant eyes was more apparent for form and light deprivation, where the decrease was significant at the 5% level. The attenuation subsequent to form deprivation was significant only at the 10% level. These different effects suggest that the likelihood of the pVEP amplitude increasing or decreasing subsequent to deprivation is influenced most by the dominance of the deprived eye and to a lesser extent by the type of deprivation. This may partially account for inter-study differences. Using a gross indicator of ocular dominance in this study suggested that the ocular dominance of the deprived eye played an important role in the outcome of the deprivation. Therefore, future studies should be conducted which quantify ocular dominance more completely.

Since significant changes in the pVEP were obtained only in subjects deprived of form and light, the possibility existed that the effects were due to retinal adaptation rather than deprivation. Spafford and Lu²⁷ compared the light and dark adapted pVEPs in 10 visually normal subjects. They found that retinal adaptation had no effect on the pVEPs elicited with a 6 degree field similar to that used in the present study. However, with a 12 degree field, a larger pVEP was elicited in a dark-adapted state due to presumed rod involvement of the paramacular area. Consequently, the observed temporary decrease in tVEP amplitudes subsequent to form and light deprivation of dominant eyes was not the result of dark adaptation but rather deprivation itself.

Lui and Afanador¹⁸ submitted that the enhanced pVEPs which they observed were evidence of a transient hypersensitive response to form stimuli occurring

TABLE 1:
tVEP AMPs of Dominant Deprived Eyes: T-Test
Comparison of Hrs 7 & 10 with Baseline

Deprivation Type	Hour 7		Hour 10	
	T	p > T	T	p > T
Form & Light	-7.19	0.002**	-1.23	0.29
Form	-1.90	0.08*	-0.07	0.94

**significant at the 5% confidence level

*significant at the 10% confidence level

as a result of adaptation to unilateral form deprivation. The only enhancement subsequent to deprivation which was noted in our study occurred when the non-dominant eye was deprived of form or form and light. This enhancement however, was insignificant. The ocular dominance of the deprived eye was not specified in Lui and Afanador's study.

Our results agree in part with those of Tyler and Kaitz,¹⁹ who proposed that the observed significant pVEP increase in the non-deprived eye, in conjunction with a degradation in the deprived eye, was evidence of rebound disinhibition subsequent to deprivation. In the present study, the pVEP of the non-deprived eye measurably increased subsequent to deprivation only when the non-dominant eye was deprived of form and light. This enhancement however, was not significant. Perhaps the longer deprivation period used by Tyler and Kaitz partially accounts for the less dramatic disruption of reciprocal inhibition evident in this study. Our findings suggest that reciprocal inhibition and subsequent disinhibition to deprivation are asymmetrical between eyes and dependent upon the dominance of the deprived eye.

Binocular integration and inhibition has been implicated at the level of both the LGN and the cortex in animal models such as the cat.²⁸ In primates however, the site of such changes has been localized more to the geniculo-cortical synapses at the level of the cortex.²⁹ The binocularly recorded pVEP is the sum of both monocularly and binocularly driven cortical cell populations. No significant changes in the binocular pVEP were found subsequent to deprivation in this study. In general, measurable though insignificant attenuation of the binocular pVEP was most apparent with the tVEP subsequent to form and light deprivation. This subtle attenuation supports the notion of a temporary disruption of binocular integration. It should be noted, however, that binocular competition is not likely the only mechanism in the development of amblyopia as studies of binocular deprivation have indicated.¹⁵ The pVEP does not allow specific locali-

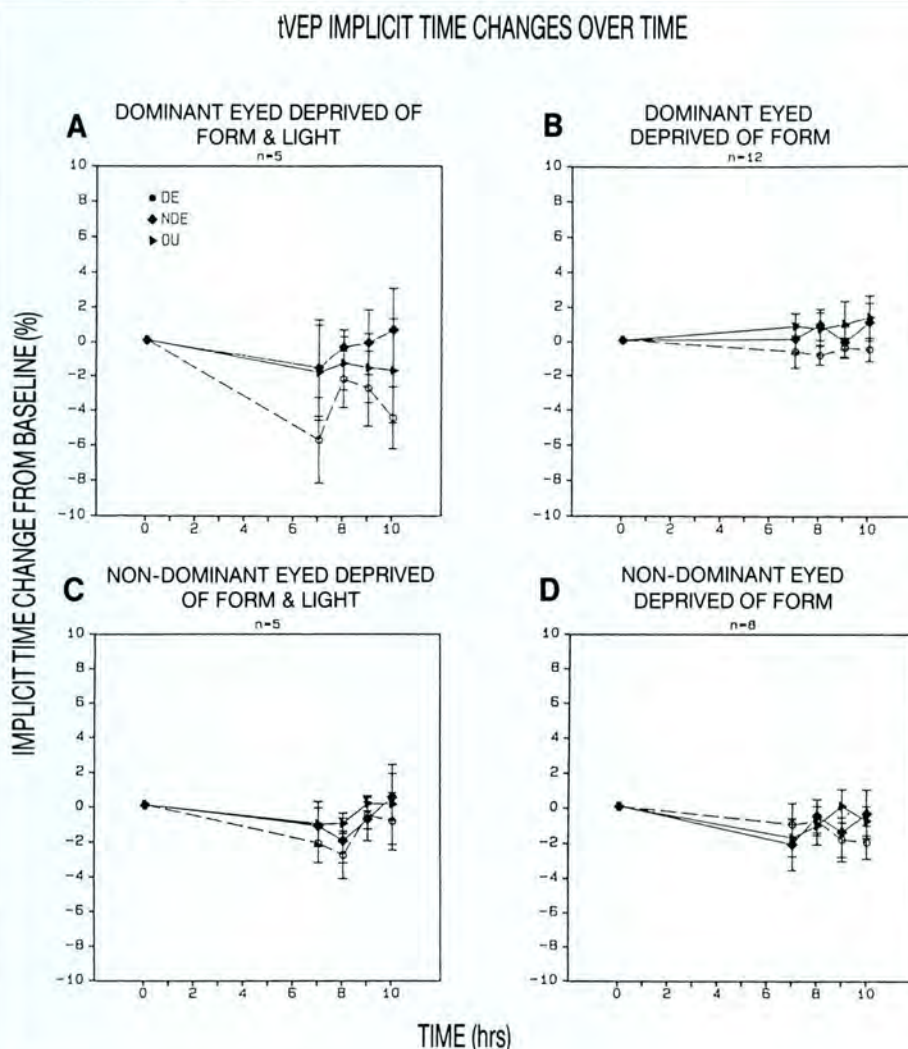


Figure 4
tVEP implicit time (IT) changes were plotted over time, otherwise data analysis was as indicated in Figure 2. The legend in 4A also applies to 4B-D.

Figure 4A-D
includes the same conditions as Figure 2A-D. The only significant change was the tVEP response in Figure 4A. The DE showed a significantly shorter IT subsequent to form and light deprivation at hours 7 and 10.

zation of the site of visual impairment.²⁶ However, the changes subsequent to unilateral form and light deprivation found in this study do indicate that there were temporary effects as a result of disrupting normal reciprocal inhibition within the geniculo-cortical pathways.

The application of these results obtained from visually normal subjects to amblyopes receiving patching therapy may be limited. One problem is that the functional architecture of both monocular and binocular cortical activity in amblyopes differs from that of non-amblyopes.^{6,20,27} Consequently, further work with respect to ocular dominance is required in visually normal individuals

before the applicability of the results can be examined.

Age Analysis

Since the groups receiving the two types of deprivation spanned different age ranges, an analysis of subject age was performed. The analysis showed that the lack of significant changes affected by the relatively older subjects. Consequently, for the conditions of this study, no age effect was found.

Although the critical period in humans has not yet been accurately determined, it has been suggested that the plasticity of the visual system is retained up to ages

TABLE 2:
tVEP ITs of Dominant Deprived Eyes: T-Test Comparison
of Hrs 7 & 10 with Baseline

Deprivation Type	Hour 7		Hour 10	
	T	p> T	T	p> T
Form & Light	-2.65	0.06*	-2.86	0.05**
Form	-0.72	0.49	-0.80	0.44

*significant at the 5% confidence level

**significant at the 10% confidence level

5 to 11 years.^{6,14} The possibility exists that lack of widespread changes found in this study were partially due to a majority of the subjects being older than this identified plastic period of the visual system. It is also possible that the seven hour deprivation period was insufficient to demonstrate significant changes in the age group studied.

Conclusions

The present study was undertaken to investigate the effects on the pVEP of unilateral short-term visual deprivation in young adults. With this intent, the importance of three parameters was examined: the type of deprivation, the ocular dominance of the deprived eye and the age of the subject.

As expected, seven hours of unilateral form or form and light deprivation caused no dramatic or permanent changes in the pVEP. tVEPs were more susceptible to short-term deprivation than ssVEPs. This finding suggested that temporal frequency was selectively affected by the deprivation.

The ocular dominance of the deprived eye appeared to play a role in the susceptibility to deprivation. Only the deprivation of dominant eyes significantly affected the pVEP. This observation suggested that the consequences of disrupting normal reciprocal inhibition between ocular channels may be dependent on ocular dominance.

A temporary but significant decrement in tVEP amplitude was found subsequent only to form and light deprivation of the dominant eye. This attenuation was not explainable by effects of dark adaptation, fatigue or diurnal variations. Form deprivation failed to affect the pVEPs to the degree of form and light deprivation. No significant changes were observed in the pVEPs recorded with the non-deprived or binocular viewing conditions. To our knowledge, this is the first study which has examined the binocular pVEP subsequent to short-term deprivation in humans.

The subjects who participated in this

study ranged in age from 11 to 24 years. A comparison of subjects 15 years and under to subjects over 15 years revealed no significant age effect upon deprivation.

Further investigation into the relationship of ocular dominance to short-term visual deprivation is indicated in younger, visually normal and amblyopic subjects.

Acknowledgements

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Topical Ophthalmic Antiviral Pharmaceuticals

HA Kader *

Abstract

Viral infections of the eye encompass many diverse types of viruses and can result in extensive tissue destruction. The currently available ophthalmic antiviral drugs are nucleoside analogues. A detailed review of these antiviral agents is presented. The clinical indications for use, dosage regimen, side effects, and mechanism of action of the drugs are described.

Viruses are one of the smallest microorganisms, and yet are one of the most difficult to eradicate. The viruses which infect man can be classified according to the viral genetic material — 1) DNA viruses, and 2) RNA viruses. In general, the RNA viruses are greater in diversity and number than that of DNA viruses.¹ The genetic material of either viral type may be single-stranded or double-stranded.¹ The RNA viruses are unique in that replication occurs through an intermediate DNA sequence which is mediated by a reverse transcriptase enzyme (RNA-dependent DNA polymerase).^{1,2}

Viral infections of the eye can be focal and specific to this organ, or can be an ocular manifestation of a much larger systemic involvement. The eye is subject to many types of viral infections (Table 1).

Pharmacological agents which have been demonstrated to be most effective (both systemically and topically) against certain viruses, and which hold the most promise for the future, are nucleoside analogues. Nucleoside analogues are very similar in structure to the natural nucleosides, which are the basic building blocks of DNA [2'-deoxyadenosine (Fig. 1a), 2'-deoxycytidine (Fig. 2), 2'-deoxyguanosine (Fig. 3), and thymidine (Fig. 4a) and RNA [adenosine (Fig. 5), cytidine (Fig. 6), guanosine (Fig. 7), and uridine (Fig. 8)] but are chemically modified in often novel ways.

The potency of nucleoside analogues is due to their close similarity to natural nucleosides which allows the analogues to be incorporated into the DNA or RNA of viruses and foul replication, transcription and/or translation in this fashion. Nucleoside analogues can also act as competitive inhibitors and antimetabolites, and inhibit key enzymes involved in DNA and RNA synthesis. Unfortunately, these mechanisms of action also contribute to the potential toxicity of nucleoside analogues because they can act against normal mammalian cells. Nucleoside analogues can be teratogenic, and caution should be exercised during pregnancy.

Nucleoside analogues have the potential to act as antiviral, anticancer, antibiotic, and antiparasitic agents.³² Between the years 1956 and 1974, the National Cancer Institute (U.S.A.) screened 2,020 nucleoside analogues from which 400 were demonstrated to be active.³⁴ The characteristics of the ideal antiviral agent have been summarized.³⁵ The nucleoside analogues which display antiviral activity has been reviewed.³⁶

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Résumé

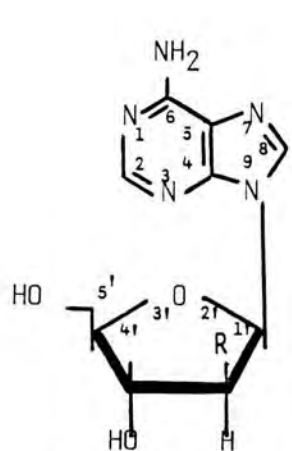
Les infections virales oculaires englobent de nombreux types de virus et peuvent aboutir à une destruction importante de tissus. Les médicaments ophtalmiques antiviraux actuels sont des analogues de nucléosides. Les auteurs présentent une analyse détaillée des agents antiviraux et précisent les indications cliniques d'utilisation, le régime de dosage, les effets secondaires et les mécanismes d'intervention des médicaments.

TABLE 1
Ocular DNA and RNA viruses.*

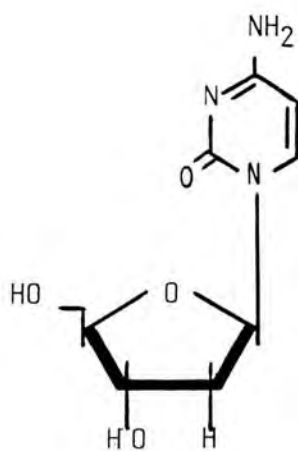
Clinical Disease	Virus	Nucleic Acid Core
Herpes simplex ³⁻⁵	Herpesvirus 1 Herpesvirus 2	DNA DNA
Varicella (chicken pox) ^{6,7}	Herpesvirus 3	DNA
Herpes zoster (shingles) ^{8,9}	Herpesvirus 3	DNA
Infectious mononucleosis ^{10,11}	Epstein-Barr (Herpesvirus 4)	DNA
Cytomegalovirus disease ¹²	Cytomegalovirus (Herpesvirus 5)	DNA
Pharyngoconjunctival fever (acute follicular conjunctivitis) ¹³	Adenovirus types 3 and 7	DNA
Epidemic keratoconjunctivitis (EKC) ¹⁴⁻¹⁶	Adenovirus types 8, 19, and 37	DNA
Ocular vaccinia ¹⁷	Vaccinia (a orthopoxvirus)	DNA
Molluscum contagiosum ¹⁸	Molluscum contagiosum (a poxvirus)	DNA
Rubella (German measles) ^{19,20}	Rubella	RNA
Measles (rubeola) ²¹	Measles (a paramyxovirus)	RNA
Mumps (epidemic parotitis) ^{22,23}	Mumps (a paramyxovirus)	RNA
Newcastle disease ²⁴	Newcastle (a paramyxovirus)	RNA
Influenza ²⁵	Influenza A, B, and C (orthomyxoviruses)	RNA
Poliomyelitis ^{26,27}	Poliovirus type 1, 2, and 3 (enteroviruses)	RNA
Arbovirus encephalitis ¹⁶	Arboviruses	RNA
Acute hemorrhagic conjunctivitis (AHC) ²⁸	Enterovirus type 70	RNA
Rabies (hydrophobia) ²⁹	Rabies (a rhabdovirus)	RNA
Acquired immune deficiency syndrome (AIDS) ^{30,31}	Human immunodeficiency virus (HIV) [a retrovirus]	RNA

* Smallpox (variola) is not included in this list because of the apparent eradication of this disease as of 1979.³²

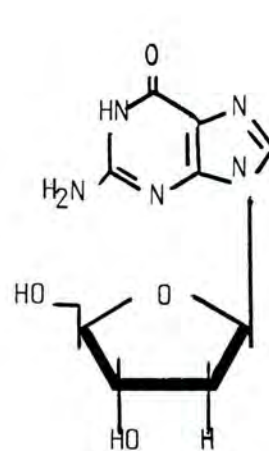
Figures 1-9
Nucleosides and their analogues



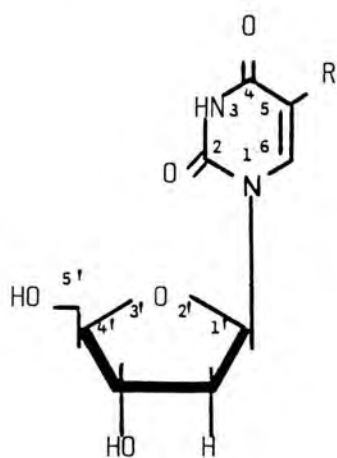
1a, R = H
b, R = OH



2



3

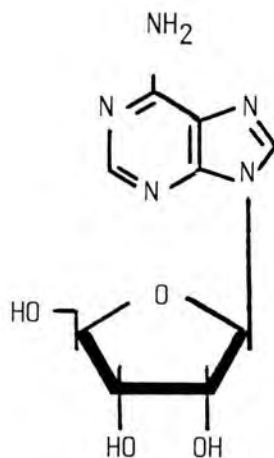


4a, R = CH₃

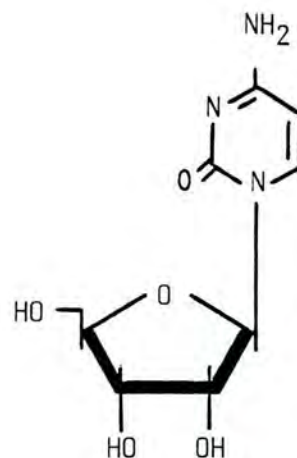
b, R = I

c, R = CF₃

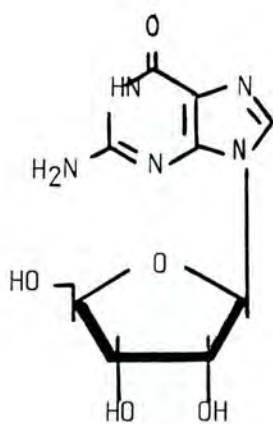
d, R = $\text{H}-\text{C}=\text{C}-\text{Br}$
 H



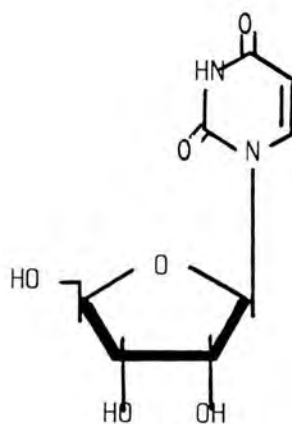
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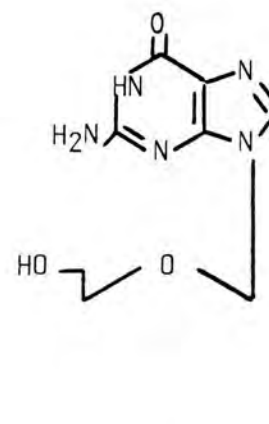
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7



8



9

The mechanism of action of nucleoside analogues is inherently dependent on structure. The design of nucleoside analogues is the focus of very much attention, especially with respect to herpes simplex (acyclovir) and AIDS (azidothymidine).

A great number of structural modifications is possible in the design of nucleoside analogues.³⁷ Novel and elegant routes to nucleoside analogues is the key to synthetic design.^{38,39}

The ocular and periocular manifestations (signs and symptoms) of viral infections which affect the eye have been very well reviewed.^{40,41}

The review presented within provides an in-depth look at the antiviral pharmaceuticals currently available for ophthalmic use.

Idoxuridine

The very first clinically effective ophthalmic nucleoside analogue was 5-iodo-2'-deoxyuridine (idoxuridine or IDU) (Fig. 4b).^{33,42} IDU is a chemical nucleoside analogue of thymidine (Fig. 4a) — one of the nucleosides found in DNA. The methyl group at the 5 position of the pyrimidine ring is replaced by a single iodide substituent. It is this simple, but elegant, substitution which gives IDU its bold pharmacological characteristics. IDU was first synthesized by Prusoff.⁴³

IDU is used clinically for the treatment of primary epithelial herpes simplex,^{5,44-46} recurrent epithelial herpes simplex,^{5,44,45} and vaccinia ocular infections.⁴⁶ In the case of primary herpes simplex involving only the eyelids without affecting the cornea, IDU is used prophylactically.⁵

Topical IDU is available as a 0.1% ophthalmic solution and as a 0.5% ophthalmic ointment (Table 2). For primary epithelial herpes simplex, therapy consists of first mechanical debridement of the ulcerated cornea.^{5,44,45} Mechanical debridement results in removal of the tissue infected with the herpes simplex virus. A sterile cotton applicator is utilized for this procedure following instillation of topical anesthetic (4% cocaine or 0.5% proparacaine).^{44,45} The advantage of cocaine is that it loosens the corneal epithelium.⁴⁵

Following debridement, IDU is administered in the form of eyedrops or ointment. The dosage regimen is 0.1% IDU solution 1 drop every hour (q.1h) while awake, and 1 drop every 2 hours (q.2h) while asleep.⁴⁵⁻⁴⁷ The 0.5% IDU ointment is administered every 4 hours (q.4h) during the day and once at bedtime.⁴⁵⁻⁴⁷ Alternatively, the solution may be used during the day and the ointment used at bedtime.⁴⁶ Topical ocular antibiotics are indicated in the presence of corneal ulcers.⁵ A cycloplegic may be instilled to relieve photophobia or ciliary spasm,⁴⁵ or if iritis is present.⁵

The epithelial herpetic keratitis should normally regress within 7-8 days following initiation of pharmacological therapy.⁴⁵ If the therapy appears ineffective, then an alternative antiviral drug (i.e. vidarabine or trifluridine) should be considered.⁴⁵

Recurrent ulceration within 21 days of the start of regression can be avoided by continuation of the antiviral therapy for 3 days, 3 times per day (t.i.d.), after resolution appears complete.⁴⁵

Recurrent epithelial herpes simplex involves reactivation of the herpes simplex virus from the trigeminal ganglion.⁵ Treatment of

TABLE 2
Ophthalmic Antiviral Pharmaceuticals

Generic Name	Proprietary Name	Preparation	Dosage	Clinical Use ^{5,46}	Precaution	Adverse Effects ⁴⁶
Idoxuridine (IDU)	HERPLEX TM (Allergan)	0.1% solution	q.1h-day q.2h-night	Primary epithelial herpes simplex	Pregnancy	Irritation
	STOXIL TM (Smith, Kline & French)	0.1% solution	q.1h-day q.2h-night	Recurrent epithelial herpes simplex		Corneal anesthesia
		0.5% ointment	q.4h-day once @ bedtime	Vaccinia		Corneal edema Superficial punctate keratitis Lacrimal puncta stenosis Hypersensitivity
Vidarabine (Ara-A)	VIRA-A TM (Parke-Davis)	3% ointment	4-5 i.d.	Primary epithelial herpes simplex Recurrent epithelial herpes simplex Vaccinia Intolerance of IDU IDU resistant viral strains	Pregnancy	Irritation Foreign body sensation Conjunctival injection Lacrimation Superficial punctate keratitis Lacrimal puncta stenosis Hypersensitivity
Trifluridine (F ₃ T)	VIROPTIC TM (Burroughs Wellcome)	1% solution	q.2h; maximum 9 i.d.	Primary epithelial herpes simplex Recurrent epithelial herpes simplex Vaccinia Intolerance or no response to IDU or ara-A	Pregnancy	Irritation Burning sensation Hyperemia Superficial punctate keratitis Hypersensitivity

this infection is similar to that utilized for primary epithelial herpes simplex.⁵

Topical corticosteroids can effectively mitigate the inflammatory response in epithelial and stromal herpetic keratitis.⁴⁵ Corticosteroids, however, can reactivate the keratitis⁴⁸ and may prolong the course of the disease.^{49,50} In addition, topical corticosteroids may induce cataract development,⁵¹ and intraocular pressure increase and glaucoma.⁵²⁻⁵⁴ Consequently, although *simultaneous* treatment with topical corticosteroids and IDU has been found to protect the cornea against corticosteroid reactivation in rabbits,⁵⁵ such simultaneous treatment is *not* recommended for cases of epithelial herpetic keratitis.⁴⁸ Use of corticosteroids is contraindicated for active epithelial herpetic keratitis.⁵⁶

The instillation of topical IDU results in very poor intraocular penetration.⁵⁷ Consequently, IDU by itself is clinically indicated only for epithelial herpes simplex infections, but not for stromal herpes keratitis or herpetic iritis.^{46,48} When IDU was instilled into full-thickness incisions on the corneas of rabbits, IDU was found to slow down stromal regeneration.⁵⁸ IDU does not retard healing of the corneal epithelium.⁵⁹

Herpes simplex stromal infection consists of two distinct types — 1) viral interstitial keratitis, and 2) disciform keratitis.⁶⁰ In both types of herpes stromal disease the use of corticosteroids should be avoided, especially if the patient has never had corticosteroids and the infection is mild.⁵ However, if the inflammatory response is significant then corticosteroids may have to be used. The risks entailed from utilizing topical corticosteroids should not prevent their use when they are required to *preserve* sight. The recommended dosage regimen of corticosteroids is 0.1% dexamethasone acetate q.3h for severe inflammation in either type of stromal herpes keratitis.⁵ For less severe inflammation, 0.12% prednisolone acetate is instilled as needed.⁵ IDU may be used in combination with corticosteroid therapy for stromal herpes keratitis as prophylaxis against reactivation of epithelial herpes infection.⁵

IDU has the potential to incorporate into mammalian cell DNA which can result in side effects and possible ocular toxicity. However, IDU ophthalmic solution or ointment, in the concentrations available, have no severe side effects or contraindications,⁴⁶ but caution should be used for pregnant patients. IDU is nontoxic to the corneal epithelium.⁴⁸ Ophthalmic IDU may produce mild irritation of the conjunctiva and eyelids, corneal anesthesia, superficial punctate keratitis, and mild corneal edema.^{46,61} On rare occasions, stenosis or occlusion of the lacrimal puncta may occur.⁶²

IDU solution is unstable upon exposure to heat or light, and should be refrigerated in dark bottles during storage.^{46,48}

The mechanism of action of IDU is incorporation into the viral DNA in the infected host cell.⁶³ IDU is easily substituted for thymidine during DNA replication. The pyrimidine nucleoside analogue is phosphorylated to a triphosphate nucleotide, and once incorporated into the replicating viral DNA, the abnormal DNA strand yields defective viral polypeptides following transcription and translation.⁶⁴ This results in deficient viral progeny.^{61,64} IDU is active against herpesvirus 1 and herpesvirus 2.⁶⁴ IDU is metabolized to uracil.⁴⁸

Vidarabine

9- β -D-Arabinofuranosyladenine (vidarabine or ara-A) (Fig. 1b) is a nucleoside analogue of adenosine (Fig. 5). Ara-A was first synthesized by Lee et al.^{65,66} The compound was later isolated from the culture filtrates of *S. antibioticus*.⁶⁷

Ara-A is utilized clinically for treatment of primary epithelial herpes simplex and recurrent epithelial herpes simplex in the same

fashion as IDU,^{5,46} and for treatment of vaccinia keratitis.⁴⁶ Ara-A was demonstrated to be as effective clinically as IDU against epithelial herpes keratitis but had the advantage of relatively low toxicity.^{35,42} Ara-A has been found to display antiviral activity against DNA viruses.⁶⁸⁻⁷⁰ Ara-A has a narrow range of activity against RNA viruses.⁶⁸

Ara-A has a lower toxicity than IDU and can be effective in patients that are allergic to IDU or who possess IDU resistant strains of herpes simplex virus.⁴⁸

Topical ara-A is available as a 3% ophthalmic ointment (Table 2). The dosage regimen is instillation 4-5 i.d.⁴⁶

3% Ara-A ointment does not interfere with corneal epithelial healing.⁴⁸ The purine nucleoside analogue does interfere with stromal regeneration to the same degree as IDU.⁴⁸

Side effects of ophthalmic ara-A include irritation, conjunctival injection, foreign body sensation, lacrimation, and occlusion of the lacrimal puncta.⁴⁶ However, the lower toxicity of ara-A compared to IDU results in a smaller incidence of side effects.⁴⁷

The intraocular penetration of ara-A is much greater than that of IDU.⁷¹ IDU petrolatum does not reach the aqueous at all.⁷¹

Ara-A is metabolized in the eye to hypoxanthine arabinoside.⁷¹ Hypoxanthine arabinoside is 20% as active as ara-A and is 10 times more soluble.⁷¹ Hence, administration of ara-A results in both drug and its metabolite acting as antiviral agents. In sharp contrast, uracil — the metabolite of IDU — has some intraocular penetration, but no antiviral activity.⁴⁸

The mode of action of ara-A is inhibition of DNA replication.⁶⁴ Ara-A is phosphorylated to a 5' triphosphate nucleotide in the host cell.⁶⁴ Ara-ATP inhibits DNA synthesis catalyzed by DNA polymerase.⁷² Both cellular and viral DNA polymerase enzymes are inhibited by ara-ATP, but the inhibition of cellular enzyme is less.⁶⁴ The mode of action of ara-A is different than that of IDU and this difference allows ara-A to act against IDU resistant viral strains.

Trifluridine

5-Trifluoromethyl-2'-deoxyuridine (trifluridine, fluorodeoxyuridine, trifluorothymidine, or F₃T) (Fig. 4c) is a fluorinated nucleoside analogue of thymidine (Fig. 4a). Like IDU (Fig. 4b), the methyl group at the 5 position of the pyrimidine ring is changed. Instead of outright replacement of the methyl group, as in IDU, each hydrogen of the methyl group is replaced by a fluoride substituent. F₃T was first chemically synthesized by Heidelberger et al.⁷³

F₃T is used topically against ocular herpes simplex infections and vaccinia keratitis.^{5,46} F₃T is currently available as a 1% ophthalmic solution (Table 2). The dosage is instillation of 1 drop every 2 hours (q.2h) up to a maximum of 9 drops per day while the patient is awake.^{5,46} The dosage regimen is tapered to 1 drop every 4 hours (q.4h) for 7 days once evidence of reepithelialization is present.⁴⁶ Use of F₃T should be discontinued if there is no evidence of improvement within 7 days or if completion of reepithelialization has not occurred within 14 days.⁴⁶

F₃T has antiviral activity against herpesvirus 1, herpesvirus 2, and vaccinia virus.⁶⁴ There is no statistically significant difference in herpes simplex ulcer mean healing time when comparing 1% F₃T to 0.1% IDU.⁷⁴ A much greater percentage of successful herpes simplex ulcer healing is evident with 1% F₃ when compared to 0.1% IDU.⁷⁴ F₃T is useful in patients who are intolerant of or who do not respond to IDU or ara-A treatment.^{74,75}

F₃T possesses the ability to cross the cornea into the aqueous, more so if the epithelium is disrupted by disease or abrasion.⁷⁶ Topical F₃T has been found to be effective against rabbit herpetic iritis because of this intraocular penetration.⁷⁷

F₃T has been reported to be metabolized to some extent to 5-carboxy-2'-deoxyuridine as the F₃T crosses the cornea, resulting in both F₃T and 5-carboxy-2'-deoxyuridine in the aqueous.⁷⁶ This metabolic sequence has been the subject of controversy as another report found no 5-carboxy-2'-deoxyuridine in the aqueous, at the time of corneal transplant surgery, of patients who were receiving F₃T preoperatively.⁷⁸ Only F₃T was found in the aqueous — no metabolic products of F₃T were present.⁷⁸ This finding is in contrast to the known metabolic fate of IDU⁴⁸ and ara-A.⁷¹ The passage of F₃T through the cornea without metabolic degradation is definitely advantageous therapeutically compared to IDU or ara-A.

Side effects of ophthalmic F₃T are burning and stinging sensations, hyperemia, superficial punctate keratitis, and possible hypersensitivity reactions.^{46,61} F₃T is rather nontoxic.⁴⁸

F₃T is considered by some practitioners to be preferable to IDU or ara-A for treatment of herpes simplex keratitis because 1) the dosage frequency is less which results in greater patient compliance, 2) the drug is very effective against cases which failed to respond to treatment with other antiviral pharmaceuticals, and 3) the drug has a low toxicity.^{48,74,79} F₃ is more active against vaccinia keratitis than IDU or ara-A.⁸⁰

The mechanism of action of F₃T is inhibition of thymidylate synthetase by the monophosphate form.⁶⁴ In addition, the triphosphate of F₃T is incorporated into the viral DNA.⁶⁴ This results in abnormal DNA and ultimately yields deficient viral proteins.⁶⁴

Discussion

The currently approved topical ophthalmic antiviral pharmaceuticals (IDU, ara-A, and F₃T) are clinically utilized by physicians and ophthalmologists against ocular herpes simplex and vaccinia viruses (Table 2). However, there is a diverse range of viral diseases which can infect the eye (Table 1). As pointed out by Chandler, ophthalmic antiviral drugs have been utilized clinically for 20 years, and yet little is known about their usefulness.⁶⁴ Hopefully, in the near future, optometrists in Canada will have access to these pharmaceuticals, for the benefit of our patients, through appropriate legislation on use of ocular therapeutic drugs.

Antimicrobial pharmaceuticals have the potential to be harmful to the embryo and/or fetus.⁸¹ Routes of administration (ocular, epidermal, parenteral, or oral) and dosage regimen can influence the teratogenic effect of the drugs.

Topical ophthalmic 0.1% IDU was demonstrated to be teratogenic in rabbits.⁸² Instillation of 0.1% IDU to rabbit eyes in a dosage regimen similar to that used clinically in man, resulted in a 5 times greater incidence of dead fetuses compared to a control group.⁸² Administration of topical 0.1% ¹²⁵I-IDU to rabbit eyes yielded a very similar serum concentration of ¹²⁵I-IDU compared to subcutaneous injection.⁸² Instillation of IDU into eyes results in easy absorption into the blood.⁸² The embryopathic dose (0.05 mg/Kg) of IDU is very low in rabbits.⁸²

Ara-A is teratogenic in rabbits when applied topically to the body surface.⁸³

1.0% F₃T was reported to be not teratogenic when instilled into rabbit eyes.⁸² However, F₃T was shown to be teratogenic when injected into the yolk sacs of fertilized chicken eggs.⁸⁴

Further research has to be conducted to determine the embryopathic dose of the topical ophthalmic antiviral pharmaceuticals, and whether there is even a minimum embryopathic dose.

Nucleoside analogues are usually developed as systemic anticancer or antiviral drugs before evaluation as ophthalmic pharmaceuticals.

The efficacy of ophthalmic antiviral drugs is often limited by toxicity, vehicle solubility problems, poor intraocular penetration, and metabolic degradation.⁶⁴ Promising nucleoside analogues which may soon be used as ophthalmic antiviral agents are acyclovir and BVDU — these antiviral agents are currently undergoing clinical trials.⁷⁹

9-(2-Hydroxyethoxymethyl) guanine (acycloguanosine or acyclovir) (Fig. 9) is an acyclic analogue of 2'-deoxyguanosine (Fig. 3) and guanosine (Fig. 7). Acyclovir displays strong, but equal, antiviral activity against herpesvirus 1 and herpesvirus 2 *in vitro* and *in vivo*.^{85,86} The nucleoside analogue is 10 times more potent than IDU against herpesvirus 1 *in vitro*.⁸⁶ The toxicity of acyclovir is very low.⁸⁶ Treatment of rabbit eyes, infected with herpes simplex virus, using 3% acyclovir ointment was shown to result in only 39% of the eyes possessing culturable virus by the sixth day of treatment.⁸⁷ In contrast 100% of the control eyes, 100% of the eyes treated with 3% ara-A ointment, and 93% of the eyes treated with 0.5% IDU ointment possessed culturable virus at this time.⁸⁷

Acyclovir (ZOVIRAXTM — Burroughs Wellcome) is currently available as a 5% ointment for topical treatment of herpes genitalis (herpesvirus 2) and as a powder for I.V. infusion in the treatment of herpes simplex infections.⁸⁸ The unique advantage of acyclovir, compared to IDU, ara-A or F₃T, is that this nucleoside analogue is phosphorylated *specifically* by the viral thymidine kinase to form the monophosphate.^{85,89} The triphosphate of acyclovir inhibits the viral DNA polymerase to a greater extent than the action against cellular DNA polymerase.⁸⁵ The very low toxicity of acyclovir is due to its ability to act as a substrate for viral thymidine kinase, but not for cellular thymidine kinase, and its preferential inhibition of viral DNA polymerase.⁹⁰⁻⁹²

E-5-(2-Bromovinyl)-2'-deoxyuridine (BVDU) (Fig. 4d) is a nucleoside analogue of thymidine (Fig. 4a). BVDU is 20 times more active than IDU against herpesvirus 1 *in vitro*.⁹³ BVDU is also more potent than ara-A, F₃T, and acyclovir against herpesvirus 1.^{93,94} However, unlike acyclovir which is equally active against herpesvirus 1 and herpesvirus 2,^{85,86} BVDU is much less potent against herpesvirus 2 compared to herpesvirus 1.⁹⁴

This review illustrates the bold biological activity and great utility that nucleoside analogues possess as ophthalmic antiviral pharmaceuticals. Many pyrimidine and purine nucleoside analogues have been synthesized over the past several decades. Some will make it to clinical trials. Years ago, development of effective nucleoside analogues was largely a hit-and-miss procedure. Today the science is more refined, although there is still an element of trial and error involved.

Much more research has to be directed towards nucleoside analogues in general, and specifically towards treatment of ocular viral infections. New compounds have to be synthesized to give clinicians an arsenal of agents to be used against viral infections. Nucleoside analogues are the key to treatment of certain viral diseases because these compounds operate at the very heart of virus replication — DNA and RNA synthesis.

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A Real Lightweight

You wouldn't have thought so back in 1982, but today, Melissa MacNeil is a mere shadow of her former self. And she couldn't be happier.

It's been an up and down story that began with a quick, daily stroll down the halls of her residence at university. But there's something compelling about fitness. You feel so good, you want to do more.



And so some 150 pounds and five years later, it's not surprising that Melissa MacNeil even teaches fitness as part of her professional life.

A simple decision that started with a walk. Meet Melissa MacNeil... fit for a lifetime of living.



Ophthalmic Photography J M Coppinger, M Malo, K Miller. In the "Ophthalmic Technical Skills Series". Slack Inc. June, 1988. (US)\$35.00.

Ophthalmic Photography is an instructional text in the Ophthalmic Technical skills series, for Ophthalmic Medical Assistants. It is written by three Ophthalmic Medical Photographers, all of whom are "faculty" members of JMC Photo, a "business expressly devoted to ophthalmic photographic training".

The text's eight chapters are: Photographic Principles, External Photography, Slit lamp Photography, Specular Microscope Photography, Retinal Fundus Photography, Stereo Fundus Photography, Fluorescein Angiography and Black and White Film Processing.

Certainly this sounds like a most complete and exciting contents list; however, it is not without some major problems, not the least of which is the topic itself. Ophthalmic photography is a nebulous, esoteric task, while at the same time highly technical and equipment specific. As such, no textbook could ever be considered definitive and exhaustive.

The authors certainly have problems with this as the text ranges from simplistic and vague (ie Camera Stability: "Buy a tripod and mount the camera on it.") to extremely specific line diagrams and ray tracings through a Zeiss type Fundus camera and a contact specular microscope. The attempts to describe equipment in generic terms are disappointing, especially to someone considering an equipment purchase, (no more so than in Chapter 2 where there is only limited discussion of the various macro lenses and camera bodies available).

There is no reference to external fluorescein photography, (either

hand held camera or slit lamp) and the necessary excitation and barrier filters.

Again, with slit lamp photography, the discussion of currently available equipment is neglected (certainly avoiding obsolescence). A discussion of video slit lamp equipment and available camera backs (other than 35mm) would be useful. The close up photos of the Zeiss lamp components would be meaningless to a novice without a composite photo, or actual lamp available for reference.

Certainly instruction in fluorescein angiography is not clinically applicable but serves as a useful refresher, as do the contact and non-contact specular photography techniques.

Retinal Fundus photography offers some useful forms and protocols but much of the chapter does not apply to the types of cameras likely to be found in optometric offices.

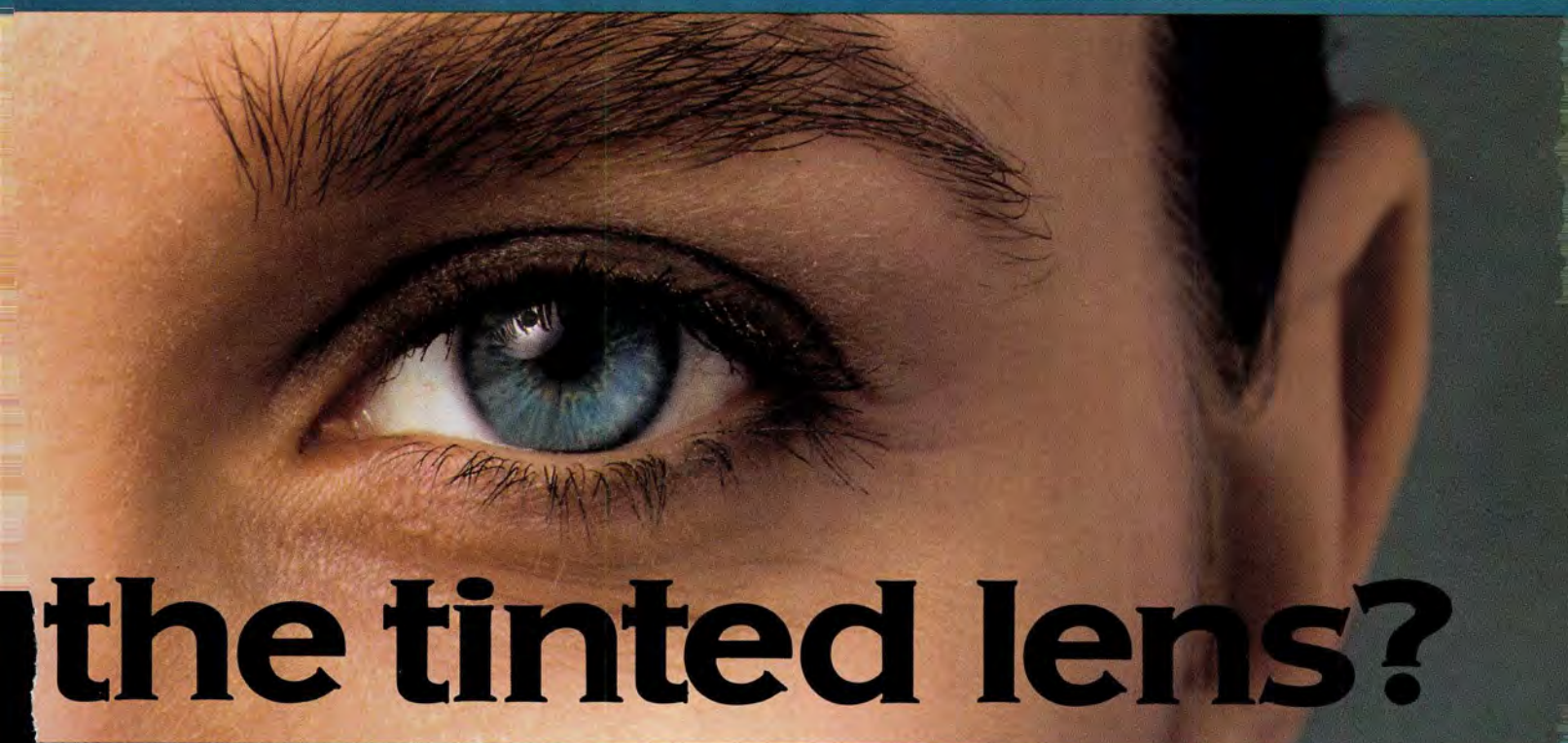
The film processing chapter is overly simplified and would be better left to a more complete text, especially in light of the wide use of colour and polaroid film.

Ophthalmic Photography serves as a useful review but is far from complete. One needs to keep in mind its intended readership.

For optometric application, the text could use greater emphasis on external and slit lamp procedures, ie Hruby lens, Volk 90, gonio and contact lens applications. It is in general very basic but it does emphasize that much of the skill involved in producing good ocular photographs only comes from an "ordeal by fire".

Hopefully, future printings will eliminate the many typographical errors.

RJ Tripp
Ottawa, ON



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their looks, prescribe SOFTCOLORS. Among tinted lenses, they're a natural.

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POLYMEGETHISM:

HOW YOU CAN PROTECT YOUR PATIENTS

We have all heard of polymegethism, the alteration in size of corneal endothelial cells. We know these cells are responsible for maintaining normal hydration.

But what does it imply for the health of your patients' eyes in the long term? The truth is, no one really knows.

We know that polymegethism reduces the cornea's ability to maintain hydration during periods of stress — an important concern for surgical patients in particular. One study¹ shows that following routine cataract surgery, corneas with polymegethism swelled more than three times as much as those without — and the difference was still present 90 days after surgery.

What causes polymegethism?

We know of at least two causes:

- 1) chronic corneal swelling, and
- 2) long-term exposure to high levels of UV radiation.

In just three months, corneal swelling — caused by wearing extended wear rigid gas permeable contact lenses of medium to low permeability — induces significant polymegethism. We know that the amount of polymegethism depends on the amount of swelling and its duration throughout the day.

Several reports² connect chronic exposure to UV radiation with corneal cellular injury, including polymegethism. For the



These cells exhibit polymegethism's variation in size. These irreversible changes impair hydration.



Normal endothelial cells maintain hydration. These cells show no signs of polymegethism.

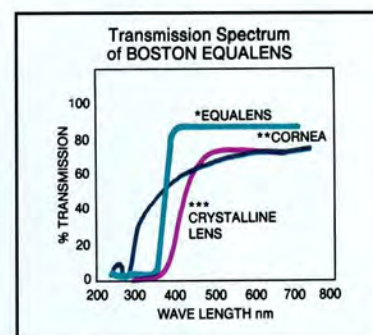
most part, polymegethism is not reversible.

The question is how can you protect your patients from these irreversible changes? A number of leading practitioners believe the answer is BOSTON® EQUALENS® contact lenses.

BOSTON EQUALENS protects the cornea from polymegethism in two ways. First, its high oxygen transmissibility (Dk/L), resulting from its excellent stability at low thicknesses, minimizes corneal swelling

— even during overnight wear. BOSTON EQUALENS, when worn daily, produces virtually no corneal swelling or polymegethism.

And secondly, BOSTON EQUALENS' UV-absorbing chromophore blocks 92 percent of all harmful UV rays. When BOSTON EQUALENS was launched in the USA and Canada, it became the first FDA-approved and avail-



able RGP lens containing a UV-absorbing chromophore.

BOSTON EQUALENS is specifically designed for maximum safety, and protection of your patients' corneal health. If you're concerned about polymegethism, prescribe BOSTON EQUALENS.

¹ "Pseudophakic Bullous Keratopathy: Relationship to Preoperative Corneal Endothelial Status". Rao, N.G. et al: Ophthalmology 91:1135, 1984

² "Chronic Solar Radiation Exposure and Endothelial Polymegethism". Good, G.W. and Schoessler, J.P.: Current Eye Research, Volume 7 No. w 1988. p. 157-162.

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You're looking at a lens that may soon put ordinary flat tops out to pasture. But you won't miss them for a minute.

Because ordinary flat tops can't correct mid-range vision, or control annoying image jump and adaptation misery.

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Near vision.

nary flat top — but offers many extra benefits.

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SmartSeg has another advantage over ordinary flat tops: comfortable vision.

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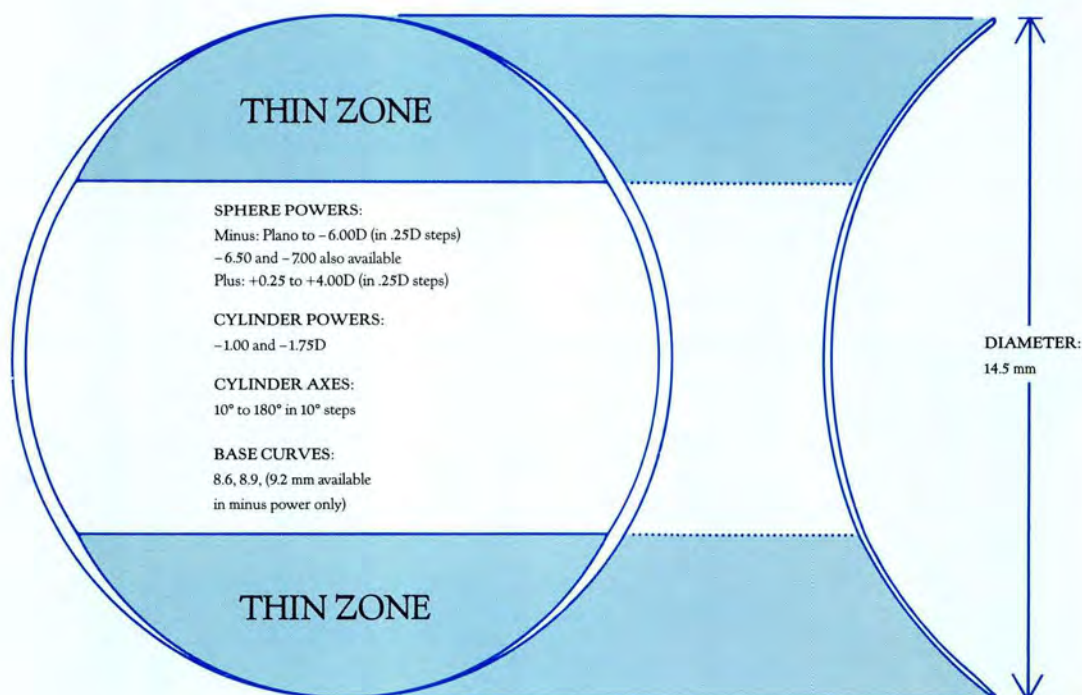
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BOOK REVIEWS/LU POUR VOUS

Clinical Ocular Pharmacology, 2nd ed. J.D. Bartlett, and S.D. Jaanus, editors. Butterworths, Boston, 1989, 889 pp, plus 39 pp index, price \$85.00 U.S.

The editors and their 22 contributing authors have taken on a challenging task. Preparing a suitable pharmacology book for optometry students and practitioners at this time is particularly difficult for three reasons:

- (a) wide variations and rapid changes in local laws governing use of drugs
- (b) existing differences in the level of pharmacology taught to optometry students at Universities and Colleges
- (c) substantial differences in background and experience with drugs among practitioners

Chapters 1, 2 and 3 outline the fundamental concepts of ocular pharmacology. The authors discuss in detail the traditional drugs: dyes in Chapter 12, topical anesthetics in Chapters 4 and 15, mydriatics in Chapters 16 and 18, and cycloplegics in Chapter 17.

Next the authors look at irrigating solutions in Chapter 9, lubricants and related pharmaceuticals in Chapter 10 and preparations for use with contact lenses in Chapters 13 and 14. Unfortunately, data on these contact lens-associated preparations become obsolete very rapidly. Supplementary material is provided concerning anti-inflammatory drugs in Chapter 5, anti-infective drugs in Chapter 6 and anti-histamines in Chapter 11.

Ocular diseases are looked at tissue by tissue as follows: eyelids Chapter 19, lacrimal system Chapter 20, conjunctiva Chapter 21, cornea Chapter 22, sclera Chapter 23, uvea Chapter 24, retina

Chapter 25, optic nerve Chapter 26, and glaucoma in Chapters 7, 8 and 29.

Chapter 27 deals with thyroid-related eye diseases and Chapter 28 discusses pharmacologic management of strabismus. Two Chapters 30 and 31 tabulate the reported ocular effects of systemically-administered drugs and the potential systemic effects of drugs instilled into the conjunctival sac.

The comprehensive nature of the book is emphasized by the final four Chapters 32 to 35 covering the legal aspects of drug use.

How well do the authors succeed? Most of the chapters are extensive but many are not profound. Among the over 400 illustrations, 18 are colour plates. Numerous tablets make the material easier to grasp. Most chapters contain useful how-to sections and helpful tables of differential diagnosis. On the average each chapter is supported by more than 100 current references.

The editors are successful in presenting pharmacological information of a breadth and depth which will satisfy many readers. All optometrists will recognize the dedication involved in producing this second and much improved edition of their book. A great deal of information can be gained by a study of this book. How the reader judges the success of the book depends in part on the reader's expectations.

For Canadian optometrists the book will seem to be a combination of a pharmacology text and a pathology text. This is not necessarily bad but some material already available in pathology textbooks is repeated.

WM Lyle

School of Optometry
University of Waterloo



Which eye has

They both do.
The eye on your left is wearing a common iris-enhancement lens.
Anyone can see that.

But the eye on your right has been fitted with a SOFTCOLORS® lens from CIBA Vision.
SOFTCOLORS come in eight natural shades, with three choices of intensity for every color.



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IOOL News

Canada was once again very well represented at the 1989 Annual Meeting of the International Optometric and Optical League (IOOL).

Held this year in Luxembourg, the meeting hosted some 57 delegates from 23 countries, the largest number of delegates to attend a League meeting since its founding in 1928.

As a part of this year's proceedings, the IOOL welcomed four new Associate members: the American Academy of Optometry (represented by Dr. Tony Cullen from the School of Optometry, University of Waterloo), the Association of Malaysian Optometrists, the Malaysian Optical Association and the Sveriges Optikerfaretags Riksorganisation, bringing to 64 the number of national optometric members of the League.

Mr. Svein Hommerstad, who has been General Secretary of the Norwegian Optometric Association since the early 1950's was named International Optometrist of the Year for 1989, reflecting a career that began 50 years earlier when he graduated the Jena School of Optics.

Canada, along with Germany, New Zealand, Sweden, Switzerland and the US was elected to the League's Executive Committee, where we continue to be exceedingly well represented by Ottawa optometrist and past CAO President Dr. Roland des Groseilliers.

Shown in the photo are (L-R) Dr. Roland des Groseilliers, CAO's delegate to the IOOL; League President Dr. G. Burt Holmes and Dr. Tony Cullen.

Next year, the IOOL will meet June 4-8 in Washington, DC when the American Optometric Association will be the host.

CIBA Awards to Canadian Grads

CIBA Vision Canada has augmented the professional libraries of two 1989 graduates

from Canada's Schools of Optometry.

Dr. Timothy Styles (Waterloo) and Dr. Helen Martindale (Montreal) each received a special commemorative plaque and an eleven volume library of CIBA's Clinical Symposia books, containing Netter illustrations of the human body and its systems, in recognition of their outstanding clinical achievements in contact lens work during their final year in the OD program.

In a recent news release, Lorraine Johnson, Manager of Professional and Clinical Services for CIBA Vision Canada, said that the awards reflect CIBA's desire to enrich the company's contribution to "the education and professional achievements of all optometrists in Canada".

Dr. Styles is now practising in Salmon Arm, BC; Dr. Martindale in Montreal.

Waterloo Sight Enhancement Centre Accredited

The School of Optometry, University of Waterloo's Centre for Sight Enhancement (CSE) has become the first Canadian visual rehabilitation service to be accredited by the National Accreditation Council for Agencies Serving the Blind and Visually Handicapped (NAC).

The NAC, based in New York City, is supported by a volunteer membership consisting of some 100 accredited service agencies across the United States, including the Lighthouse (the New York Association for the Blind) and Pennsylvania's Feinbloom Centre.

Waterloo's CSE is only the second NAC accredited service located in an optometry school. NAC accreditation was awarded for a five-year period and represents a "proclamation of approval" by renowned experts in the field.

Obtaining the accreditation was a process that required the Waterloo facility to undertake an extensive self-evaluation and service audit whose final report was over 500 pages in length and represented months of work. This document was reviewed by the NAC's membership, a group that includes ODs, ophthalmologists, rehabilitation specialists, occupational therapists, gerontologists and specialist teachers for the blind and visually impaired. The NAC then undertook a three-day verification visit to the Waterloo CSE by Dr. Alfred Rosenbloom (a featured speaker, incidentally, at CAO's 1989

Biennial Congress) and Dennis Hartenstine, the Council's Executive Director. Almost everyone connected with the CSE was interviewed, including faculty, staff, patients, volunteers and funding agencies.

Following the announcement of the NAC accreditation, CSE Director Dr. J. Graham Strong said, "We feel our Centre is a world class service. We are extremely proud to have received this accreditation. It means a great deal to all of us at the School and particularly to those of us who are involved in low vision rehabilitation."

Meanwhile, we at the CJO*RCO extend our sincere congratulations to Dr. Strong and the CSE, echoed, we know, by all of Canadian Optometry.



Optometry's Own "Doctor in the House"

As most members are already aware, for the past year, we have a colleague on the government's side of the House of Commons. Dr. John Cole had already ripped the waters even before he arrived in Ottawa as the result of his widely publicized campaign victory over Frank Stronach, Chairman of the Board of Magna International.

CAO members had their first collective chance to meet him personally at Rendezvous Ottawa '89, when Dr. Cole not only attended the entire Congress, but also delivered a special presentation to the General Business Meeting.

For those not in attendance, the CJO*RCO asked Dr. Cole, Member of Parliament for the Ontario riding of York-Simcoe, for a photo and CV to introduce him in more detail to the rest of the profession.

John Cole was born 4 August 1942 in

VISION CARE NEWS/ACTUALITÉ OCULO-VISUELLE

Toronto. Twenty-three years and three days later, he married Margaret Young, a union that has since produced four children, Scott, 22; Melanie, 20 (who is a member of Canada's National Figure Skating team); Jamie, 17 and Tara, 14.

Professionally, Dr Cole graduated the College of Optometry of Ontario in 1965 and has been in private practice in Newmarket since 1966. He is a member of the Ontario Association of Optometrists and a Fellow in the American Academy of Optometry.

Dr Cole is also past President of the Rotary Club and of the Newmarket Minor Hockey Association and is a founding member of the city's Chamber of Commerce.

CCOHS in Need of Help

The Canadian Centre for Occupational Health and Safety (CCOHS), based in Hamilton, in faced with a serious cutback in government funding, one that possibly threatens its continued existence.

CAO and the CCOHS have, for many years, inter-referred questions relating to a variety of issues regarding vision and eye care in the workplace.

The government of Canada has announced that, for 1989, its funding will be chopped 15%, a cut increased to 50% in 1990, eliminating it completely as of 1 April 1991. To put it in dollar figures, this means the Centre must come up with \$9.4 million in 1991-92 to offset the loss of government support.

In 1988/89 the CCOHS answered over 26,000 enquiries, distributed over 8,000 CCINFO discs (from a CD-ROM databank maintained by the Centre that contains over a million pages of information), provided over 40,000 direct accesses to its on-line database, distributed over 350,000 publications and hosted more than 400 participants from labour, management and government at its workshops on issues like drug testing.

CCOHS is a world renowned institution and one whose loss will be sorely felt by groups like the US National Institute for Occupational Safety and Health, the International Labour Office, The World Health Organization, the International Program for Chemical Safety and France's Institut National de Recherche et de Sécurité (not to mention CAO).

Like many small Associations, CAO cannot afford either the time, staff or

financial resources required to remain current on the full scope of occupational health and safety issues. CCOHS answers to a specific need and is, we feel, a valuable resource.

If you wish to add your voice to those concerned about the possible elimination of the CCOHS, a fact sheet can be requested from the Centre at 250 Main Street East, Hamilton, ON, L8N 1H6. (416) 572-2981.

Fight for Sight 1990 Awards

The American National Society to Prevent Blindness "Fight for Sight" Research Division has announced its 1990 research awards program "in vision and ophthalmology".

In a recent news release, the organization advises that three types of awards will be offered next year: (i) grants-in-aid for pilot projects or feasibility studies (maximum \$12,000.00); (ii) one-year post-doctoral fellowships (maximum \$14,000.00) and (iii) summer student research fellowships (\$500.00 monthly to a maximum of \$1,500.00).

Deadline for receipt of completed applications is 1 March 1990.

Information and application forms:
Fight for Sight Research Division
National Society to Prevent Blindness
500 East Remington Road
Schaumburg, IL
60173, USA
Tel (312) 843-2020

Having a Great "Imagine"-Nation

As time goes by, you will undoubtedly encounter the "Imagine" logo, hallmark of an ambitious "Participation" style campaign being mounted by the Canadian Centre for Philanthropy. Their goal is nothing less than the non-partisan consciousness raising of the entire country in an effort to encourage Canadians to donate either money or volunteer time to the charities of their choice.

Further information about the program is available from The Canadian Centre for Philanthropy, Suite 920, 74 Victoria Street, Toronto, ON, M5C 2A5. (416) 368-1138.

I Have Seen the Light!

Readers of the Sports pages of *The Ottawa Citizen*, one of two daily newspapers in the capital, are all too familiar with a

Sports columnist named Earl McRae, whose writings frequently attract the sort of public response usually reserved for federal Ministers of Finance.

In a recent column, McRae tagged on a throwaway comment about "non-jock... twerps" who "drive on dry, bright days with their headlights on".

Ten days later, the *Citizen's* Sports pages carried a full page of responses, unanimous in condemning McRae's comment, some in rather pointed terminology.

Nice to know that some of the public, at least, has seen the "Be Safe / Be Seen / Lights On!" campaign materials that Optometry, along with such "twerps" as Transport Canada, has been distributing over the years.

Allergan / CNIB / COS Join Forces to Educate Public on Glaucoma

With an education grant from Allergan Pharmaceuticals the Canadian Ophthalmological Society (COS) and the Canadian National Institute for the Blind (CNIB) last summer launched a wide-ranging public education program on Glaucoma.

The program includes packaged information on the disease itself, as well as "back-grounder" items on the missions of both the COS and CNIB. For a copy of the program's public education package, write or call: Ellen Woodger, Pegasus Healthcare, Suite 456, 111 Queen Street East, Toronto, ON, M5C 1S2. (416-) 364-9121.

Coming Events

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

1989

DECEMBER / DECEMBRE

1 - 2 International Cornea and External Ocular Disease Update
Four Seasons Hotel
Toronto, ON
(AMA Category 1 Study Credits)

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Information:

Continuing Education
Faculty of Medicine
University of Toronto
Medical Sciences Building
Toronto, ON
M5S 1A8
Tel. (416) 978-2718

8 - 12 Academy '89

Meetings
Ellerbock Continuing Education
Program

American Academy of Optometry
Hyatt Regency / Superdome
New Orleans, LA

Information:

American Academy of Optometry
Suite 1149
5530 Wisconsin Avenue NW
Washington, DC
20815, USA
Tel. (301) 652-0905

1990

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Tel. (416) 461-2268

MARCH / MARS
15 - 17 7th International Medical Contact Lens Symposium

Hyatt Regency
Singapore

Information:

Dr Khoo Chong Yew, Chairman
c/o The Symposium Secretariat
Times Conferences Pte Ltd
19 Tanglin Road, No.12-02
Tanglin Shopping Centre
Singapore, 1024
Tel. 2355222

APRIL / AVRIL
21 - 24 Optica Cologne '90

Ophthalmic Trade Fair
Cologne, West Germany

Information:

KolnMesse
Messe- und Ausstellungs-GesmbH
Koln
Messeplatz 1
Postfach 21 07 60
D-5000 Koln 21
West Germany

23 - 25 The British College of Optometrists

"Frontiers of Vision"
10th Anniversary Conference
Royal College of Physicians
Regents Park
London, England

Information:

Bell Howe Conferences (OPT)
Gothic House
Barker Gate
Nottingham NG1 1JU
England
Tel. 0602 410679

JUNE / JUIN
8 - 10 Vision Expo and Conference MidWest

Conrad Hilton Hotel
Chicago

Information:

Amy Riemer
Cahners Exposition Group
PO Box 3833
999 Summer Street
Stamford, CT
06905-0833, USA.
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Interested applicants submit curriculum vitae with names of references to:

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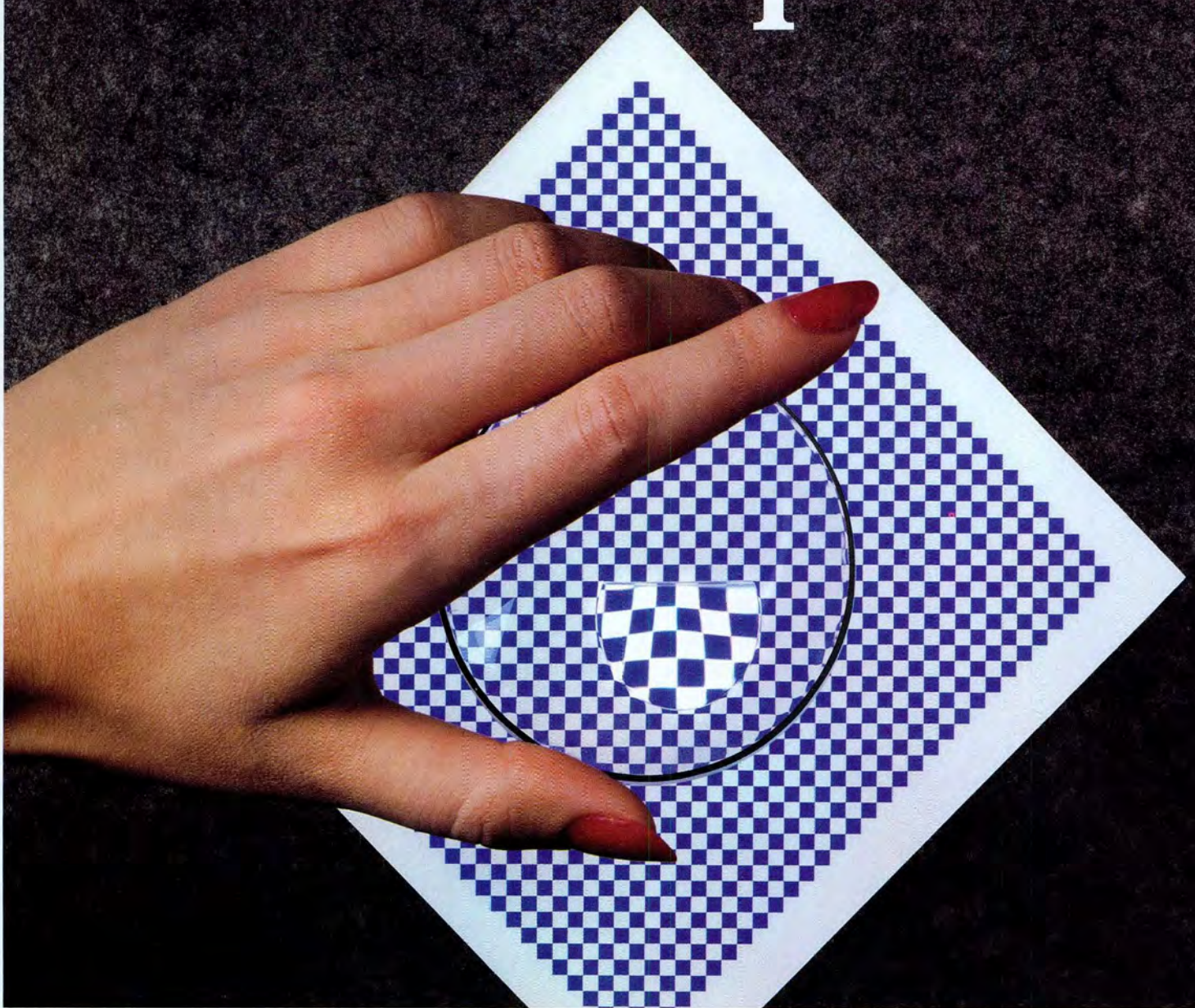
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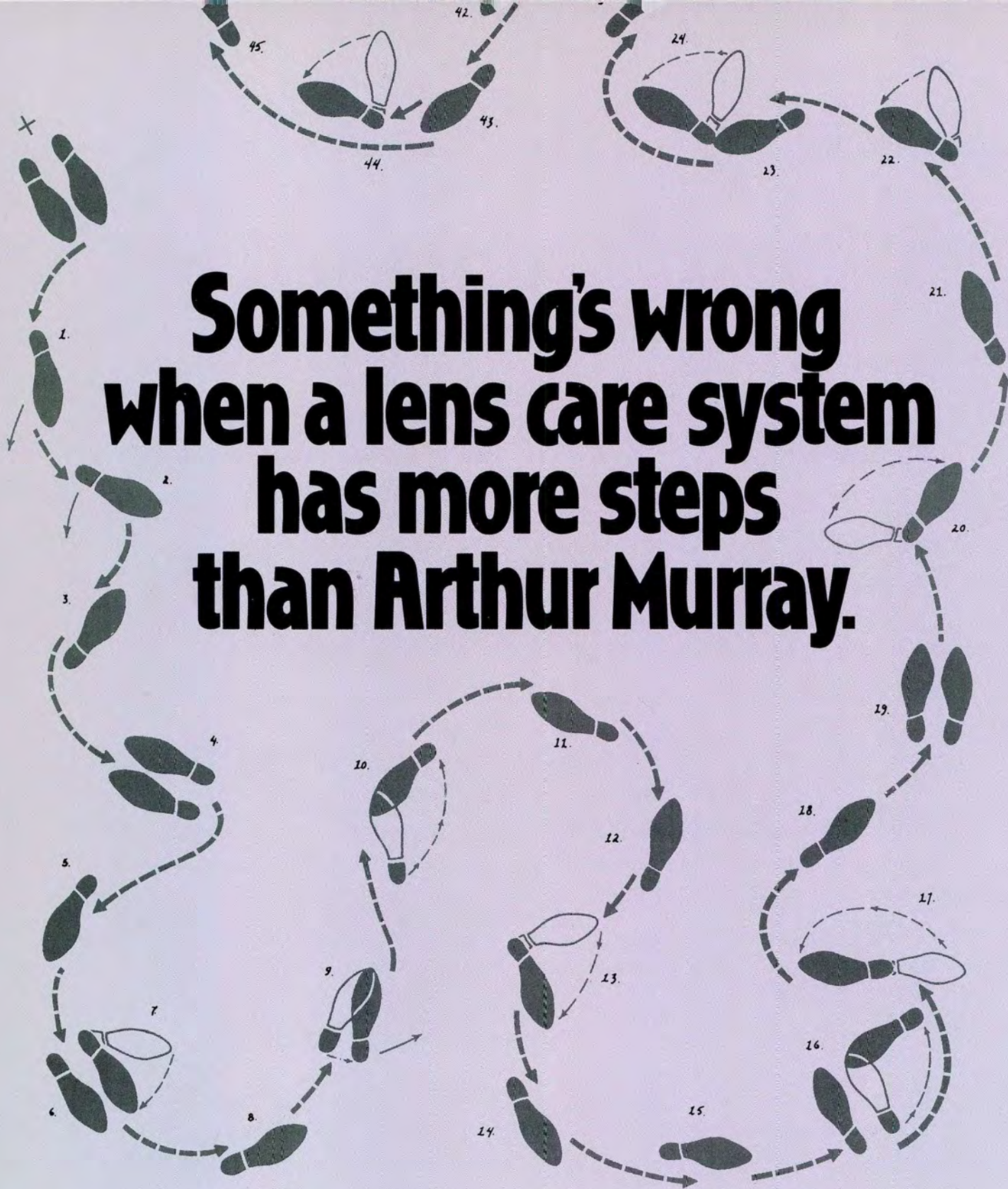
References 1. Multi-Center Study, Comfort Evaluation of Hypotears vs. Tears Naturale II. Abelson, M.B., Eye Research Institute, Boston, Massachusetts, 1987. 2. Application of Lacrimal Scintigraphy to the Development of Ophthalmic Formulations, Olejnik, O., et al. Monograph, Queens Medical Centre, Nottingham, England, 1987.

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