



# IEEE NEWSLETTER

## KITCHENER - WATERLOO SECTION



JANUARY 1990

### THE KITCHENER-WATERLOO SECTION BEGINS A NEW DECADE WITH THE FOLLOWING INTERESTING EVENTS

- Wed., Feb. 7: Dr. Tony Eastham - Director of IEEE Canada, will discuss **HIGH SPEED RAIL IN CANADA**; more details on page 2.
- Mon., Mar. 12: Dr. Leonard M. Johnson of MIT's Lincoln Laboratory will lecture on **INTEGRATED OPTICS**; see page 2 for more information.
- Mon., Mar. 19: **IEEE STUDENT PAPERS NIGHT** at the **WATERLOO INN**; for more about this very exciting annual event see page 6.

We also call your attention to:

- two ICR (Institute of Computer Research) **EVENING LECTURES** as described on page 4.
- the continuing **WEDNESDAY AFTERNOON TUTORIALS ON NEURAL NETWORKS**; see page 3.

**NON-MEMBERS ARE MOST WELCOME AT OUR MEETINGS**

### ALSO IN THIS ISSUE

- "Here's looking at you" by Tom East, on page 5.

#### SECTION OFFICERS

Chairman: Bob MacPhie, (519)885-1211,ext.2842  
 Vice Chairman: Oleg Feldgajer, (519)884-1710,ext.360  
 Secretary: John Lit, (519)884-1970,ext.2273  
 Treasurer: Gary Oulton, (519)884-1710,ext.336

#### CHAPTER CHAIRMEN

Acoustics, Speech and Signal Processing:  
 George Freeman, (519)885-1211,ext.2876  
 Computers: Wayne Loucks,  
 (519)885-1211,ext.3337  
 Circuits and Systems, Electron Devices, Microwave Th.  
 and  
 Techniques, Antennas and Propagation:  
 Len Chow, (519)885-1211,ext.2822

**ADDRESS:** K-W Section IEEE  
 c/o Elect. Eng. Dept., E-2. 3343  
 University of Waterloo  
 Waterloo, Ont. N2L 3G1

#### COMMITTEE CHAIRMAN

Education: Ed Spike, (519)885-1211,ext.3716  
 Program Chairman: Oleg Feldgajer, (519)884-1710,ext.360  
 Program Committee: Bob Dietz, (519)656-2720  
 Bert Knox, (519)886-6374  
 Publicity: Vacant  
 Membership and Transfers: Keith Campbell, (519)884-1710,ext.281  
 Publications (Newsletter): Tom East, (519)746-7809

#### STUDENT ACTIVITIES CHAIRMEN

Conestoga College:  
 -Peter Forshaw, (519)748-5220,ext.287  
 University of Waterloo:  
 -Stream A: Gord Agnew, (519)885-1211,ext.3041  
 -Stream B: George Freeman, (519)885-1211,ext.2876

The Kitchener-Waterloo Section of the Institute of Electrical and Electronics Engineers serves all members whose mailing address is in Bruce, Grey, Perth, Waterloo or Wellington Counties.

Wednesday, February 7th, 1990

Dr. Tony Eastham

KW Section Presents

**HIGH SPEED RAIL IN CANADA**

Time: 7:30 p.m.  
Place: Room 1304, Davis Centre, Univ. of Waterloo  
Contact: Oleg Feldgajer 884-1710, ext. 360.  
Dine with the speaker if you wish - 5:30 p.m.  
at McGinnis Landing: please contact Oleg for your reservation.

Subject: Japan and France have high speed electric passenger trains. Other industrialised countries are planning them. Yet Canada is phasing out its passenger trains. Does high speed rail transportation make financial and economic sense in Canada? Dr. Eastham will describe this fascinating application of electric and electronic technology and the benefits to the environment it would bring.

The Speaker: Dr. Tony R. Eastham is at the Department of Electrical Engineering at Queen's University in Kingston, Ontario. He is the new **Director of IEEE Canada.**

**MONDAY MARCH 12, 1990.**

MITT-AP-CS-ED Chapter Meeting

TIME: 3:30 p.m.

**INTEGRATED  
OPTICS  
by**

PLACE: University of Waterloo  
Room 1304, Davis Centre

**LEONARD M. JOHNSON  
MIT LINCOLN LABORATORY**

CONTACT: Len Chow  
885-1211 ext. 2822  
or  
886-7577 (home)

AFTER LECTURE DINNER: Reuben and Wong Restaurant  
170 University Ave., W. Waterloo

**INTEGRATED OPTICS:**

Integrated optics currently represents a fascinating, rapidly evolving and most promising technology and is expected to provide a wide range of systems with miniaturized, high speed, broad band and reliable components in the near and far future. Research activities of integrated optics in MIT Lincoln Lab will be reviewed and optical waveguides, components and system applications will be illustrated. The current trends in this area will also be discussed.

THE SPEAKER: Dr. Leonard M. Johnson received his Ph.D. degree from MIT in 1979 and since then has been a researcher with MIT Lincoln Laboratory. His area of interest is in integrated optics components and systems and he has been a frontier researcher in this field.



Institute of Electrical and Electronics Engineers  
Kitchener-Waterloo Section  
Acoustics, Speech, and Signal Processing Chapter  
and  
University of Waterloo  
Department of Electrical and Computer Engineering  
present



## Wednesday Afternoon Tutorials on Neural Networks

(Formerly the Thursday Afternoon Tutorials on Neural Networks.) Each tutorial is a 2-hour videotape from the tutorial sessions of the 1988 International Conference on Neural Networks. They are to be shown (in the order listed below, continuing with number 6) each Wednesday afternoon from 3:30 to 5:30 p.m. starting on January 31, 1990. The tutorials are self-contained and need no prerequisites. Everyone is welcome to attend.

1. (1989-Nov-16) **NEUROBIOLOGICAL REVIEW** —  
Michael A. Arbib, University of Southern California, Center for Neural Engineering.
2. (1989-Nov-23) **ADAPTIVE RESONANCE** —  
Gail A. Carpenter, Northeastern University, Department of Mathematics; and Boston University, Center for Adaptive Systems.
3. (1989-Nov-30) **PATTERN RECOGNITION REVIEW** —  
David Casasent, Carnegie-Mellon University, Department of Electrical and Computer Engineering, Center for Excellence in Optical Data Processing.
4. (1989-Dec-07) **OPTICAL NEUROCOMPUTERS** —  
H.J. Caulfield, University of Alabama, Center for Applied Optics.
5. (1989-Dec-14) **VISION** —  
John Daugman, Harvard University, Division of Applied Science.
6. January 31, 1990 at 3:30 to 5:30 p.m. in DC-1304.  
**COMPETITIVE AND COOPERATIVE LEARNING SYSTEMS** —  
Stephen Grossberg, Boston University, Center for Adaptive Systems.
7. (1990-Feb-07) **NEUROCOMPUTING APPLICATIONS** —  
Robert Hecht-Nielsen, University of California at San Diego, Department of Electrical and Computer Engineering.
8. (1990-Feb-14) **DYNAMICAL SYSTEMS REVIEW** —  
Morris W. Hirsch, University of California at Berkeley, Department of Mathematics.
9. (1990-Feb-21) **SELF-ORGANIZING FEATURE MAPS** —  
Teuvo Kohonen, Helsinki University of Technology, Department of Technical Physics.
10. (1990-Feb-28) **ASSOCIATIVE MEMORY** —  
Bart Kosko, University of Southern California, Department of Electrical Engineering.
11. (1990-Mar-07) **PARALLEL DISTRIBUTED PROCESSING** —  
David Rumelhart, Stanford University, Department of Psychology.
12. (1990-Mar-14) **SPEECH** —  
Terrence J. Sejnowski, John Hopkins University, Biophysics Department.
13. (1990-Mar-21) **ADAPTIVE NEURAL NETWORKS** —  
Bernard Widrow, Stanford University, Department of Electrical Engineering.

Monday February 19, 1990

Prof. Scott Vanstone

**CRYPTOGRAPHY: PAST AND PRESENT**

Time: 8:00 p.m.  
Place: Room 1302 Davis Centre, Univ. of Waterloo  
Contact: ICR University of Waterloo 888-4530  
Subject: Making and breaking codes has been, historically, of interest to the military. Now, however, our society at large needs techniques that will secure the integrity of electronic data. Automatic teller machines, checkout terminals, cellular telephones and electronic mail need protection. Prof. Vanstone will discuss recent breakthroughs which will make possible the widespread use of cryptographic techniques.

The Speaker: Scott A. Vanstone is professor of mathematics at St. Jerome's College and holds cross appointments to the Department of Combinatorics and Optimisation and Computer Science. He is co-director of the Data Encryption Group at UW, has held strategic grants and has consulted for government, financial and business organizations. He is co-developer of the first public key cryptographic system on a single chip, and is investigating a "smart card" system.

Monday March 19, 1990

Prof. Philip Bryden

**SPATIAL AND PATTERN VISION  
IN THE TWO CEREBRAL HEMISPHERES**

Time: 8:00 p.m.  
Place: Room 1302 Davis Centre, Univ. Of Waterloo  
Contact: ICR University of Waterloo 888-4530  
Subject: We have been taught that the left brain deals more effectively with language while the right side processes spatial images. Computer graphics systems can now be used to separate different components of pattern recognition and space perception. Experiments with recognition of rotated images, human faces, emotional expression and line orientation indicate that spatial orientation and pattern recognition can function independently.

The Speaker: Prof. Bryden graduated from MIT and earned his Ph.D. at McGill. He has been at UW since 1963 and has been Professor of Psychology since 1967. He has received the Distinguished Scientific Contribution Award of the Canadian Psychological Association, and holds a Killam Research Fellowship from the Canada Council. He is author of a book Laterality and of some 100 papers.

## Here's Looking At You

Tom East

Edmund K. Miller writes a column called PCs for AP in the Antennas and Propagation Society Newsletter, and last February he complained about having to adjust his head unnaturally to stare at his screen through his bifocals. For the benefit of our readers who also wear bifocals, here is the letter that I sent him, which he reproduced in part in a later column.

Mr. Edmund K. Miller  
General Research Corporation  
5383 Hollister Avenue  
Santa Barbara, CA  
931111 USA

March 31st, 1989

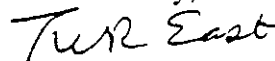
Dear Mr. Miller,

As you suggested in your column in the February 1989 issue of the IEEE A and P Society Newsletter, I spend a good portion of my day sitting in front of, and staring at, my computer terminal (an IBM System 2 Model 30). I solved the problems you mentioned, in the following manner:

1. Choose a comfortable posture in which your fingers work the keyboard and your back is upright. Have someone measure the distance from your eyeball to the screen in inches or centimeters.
2. Run, don't walk to your optometrist and order a pair of spectacles with single lenses. Tell him or her what you want them for, and give the measurement. If you have not had new glasses in several years, your eyes will probably be tested again.
3. When the glasses arrive, keep them by the computer and change into them while the machine is booting up, and change back into your bifocals while it is shutting off. You should find that not only the screen, but also the keyboard, the manual and your notes will be in focus in your field of view.
4. When the bill arrives, charge it (including the tests) to whoever or whatever pays you to work at the computer.

If after a couple of hours work, you find yourself staring at the screen, print the output (or PrintScreen the error messages) and the program listing, switch off, change spectacles, get a cup of coffee, settle in comfortable chair in a good light and do some editing with a pencil before going back to the keyboard.

Yours sincerely,



T.W.R. East, Ph.D., P. Eng.

I have also found my "computer glasses" ideal for exhibitions, art galleries (to read the signs below the pictures) and poster sessions at conferences.

## STATE OF THE ART SYMPOSIUM 89: UPDATE

According to IEEE Canada, the committee is still working on the proceedings of the Symposium held in Toronto last October. We will let you know if and when these will be available.

Monday March 19, 1990

IEEE STUDENT PAPERS NIGHT

K-W Section IEEE, Student Branch B, Univ. of Waterloo and Student Branch, Conestoga College.

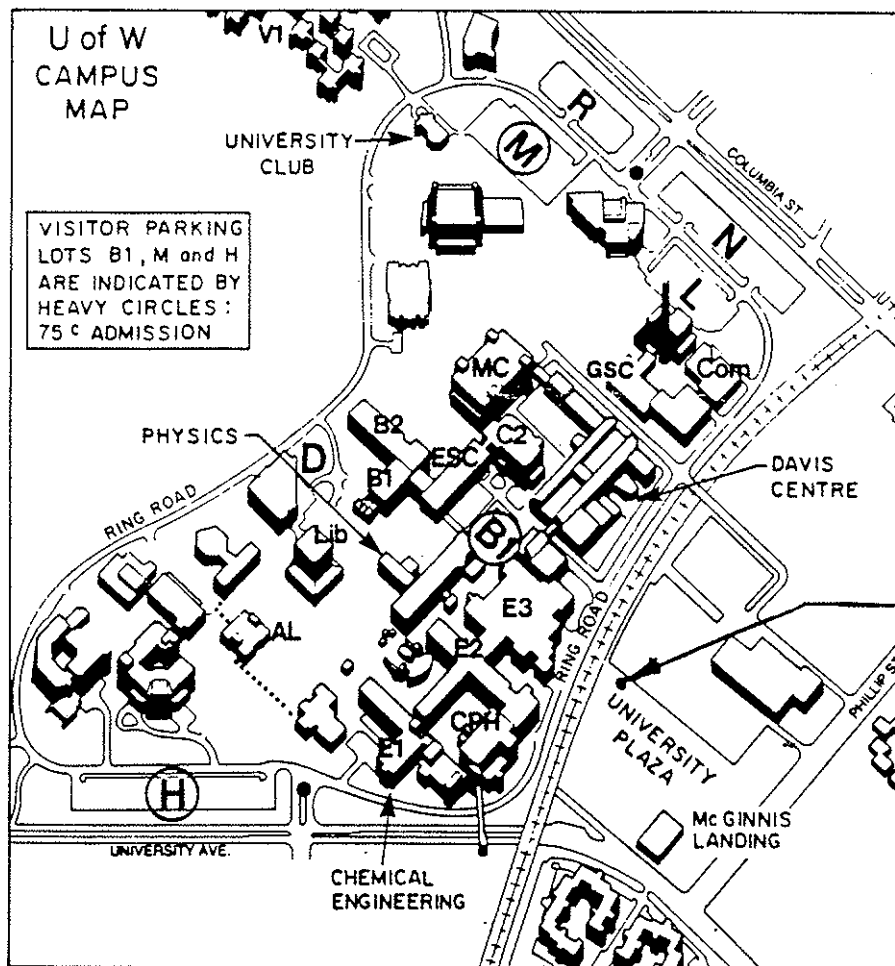
TIME: 5:30 p.m.

PLACE: Waterloo Inn. Cash Bar at 5:30 p.m.,  
Dinner at 6:00 p.m. Followed by Student Papers  
Competitions

COST: IEEE members and others \$16.00  
Students and their guests \$8.00

CONTACT FOR TICKETS: Ed Spike, 885-1211, ext. 3716/3826  
Peter Forshaw, 885-0300, ext. 287

You are cordially invited to the **ANNUAL STUDENT PAPERS NIGHT**. Following a cash bar and a delicious dinner, students from Conestoga College and from the University of Waterloo will deliver oral presentations of their technical papers. The best papers receive the Ken MacKenzie Award for Conestoga College Students and the George Dufault Award for UW students. Papers presentation starts at 7:15 p.m. for persons wishing to only attend for the presentations. Don't miss this interesting event.



Reuben and Wong  
Restaurant