



IEEE NEWSLETTER KITCHENER - WATERLOO SECTION



February 1991

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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.

February 26: Videoconference

The Kitchener-Waterloo section of the IEEE will make a delayed presentation of the following videoconference:

Subject	Total Quality: The Malcolm Baldrige Approach
Meeting Chair	Keith Campbell
Time	7.00-10.00 pm Tuesday, February 26, 1991
Place	University of Waterloo DC 1302

The Malcolm Baldrige Award has become the equivalent of the Nobel Prize for Quality in the U.S. This program will give you a thorough understanding of its criteria, terminology, scoring system, and key factors found in winning companies. It will feature case studies from Award recipients Xerox and Motorola. Featuring Edward Fuchs (ATT Bell Labs), Edward Finein (Xerox) and William Smith Jr. (Motorola). Attendance is free to IEEE members; a small charge will be made for the accompanying set of notes. Non-members can join IEEE at the session: the dues will cover the whole of 1991.

To order a set of notes, make contact **one week** in advance with Mr. Edward Spike as follows:
Bus: 885-1211 ext 3716, or ask for page at ext. 3324, or call Ethel Spike at ext. 6740.
Res: 884-2129
E-mail: spike@watserv1.UWaterloo.ca

February 28: Kudsia on Satellites

Subject	A decade of Communications Satellite Payload Innovations
Speaker	Chandra M. Kudsia
Time	7.00 pm Thursday, February 28, 1991
Place	University of Waterloo, Davis Centre, DC 1302

Enjoy Wine and Cheese at UW Davis Centre DC 1301

There are four critical areas of satellite payload design that are the major drivers for innovations; maximizing spectral efficiency; maximizing effective isotropic radiated power (EIRP); minimizing mass and

volume of payload hardware; and improving reliability of all components and subsystems. The talk addresses each of these areas including an historical perspective, and the current status of payload hardware design. Emphasis is placed on the incremental advances in the enabling technologies that have led to many of the payload innovations. The lecture concludes with a discussion on a range of microwave components and subsystems presently being developed for the upcoming communications satellites.

Dr. Chandra Kudsia is the Chief Scientist at COM DEV, Cambridge, Ontario. He has been involved in the field of satellite communications since the late 1960s. His experience spans the majority of commercial communications satellites worldwide. During that period, he has contributed to technology advances in the areas of satellite filters and multiplexers as well as overall communications systems design.

March 18: Student Paper Night

Presented by: K-W Section; Student Branch B, Univ. of Waterloo; and Student Branch, Conestoga College.

Time	5.30 p.m. Monday March 18, 1991.
Place	Golf's Steak House, 598 Lancaster St., Cash Bar at 5.30 p.m., Dinner at 6.15 p.m. Student Papers Competitions at 7.15 p.m.
Cost	IEEE members and others \$18.00 Students and their guests \$9.00

CONTACT FOR TICKETS:

Ed Spike 885-1211 ext 3716
Peter Forshaw 748-5220 ext 287
George Freeman 885-1211 ext 2876
Deborah Stacey 824-4120 ext 2634

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 paper from Conestoga College is awarded the **Ken MacKenzie Award** and the best paper from the University receives the **George Dufault Award**: the awards include cash prizes. Don't miss this interesting event.

To reach Golf's Steak House, take the Conestoga Parkway, exit at Bridgeport Road (East), turn left at traffic lights and look for a steep rising driveway on the right.

New Chair for IEEE K-W

Oleg Feldgajer submitted his resignation as Chair of the KW Section, a position he has held since June 1989. In a letter to the executive, he explained that he had become president of a small but very ambitious high-tech company - International Neural Machines Inc., which meant that he had to trim temporarily his activities on behalf of this section. He has also left his position at NCR Ltd. We wish him great success.

Our new Chair, Dr. Deborah Stacey, moves up from her position as Vice-Chair. She is Assistant Professor of Computer and Information Science in the College of Physics and Engineering Science at the University of Guelph. She also has her pilot's licence. We wish her well in her new duties as Chair.

New IEEE Fellows

by C. R. Selvakumar

Three senior IEEE members from our K-W Section have been elected as IEEE Fellows this year. All three are from University of Waterloo. IEEE Guide for Fellow Grade Nominations states,

"The grade of Fellow recognizes unusual distinction in the profession and shall be conferred upon a person of outstanding and extraordinary qualifications and experience in IEEE designated fields (including electrical engineering, electronics, computer engineering and computer sciences, and the allied branches of engineering and related arts and sciences), who have made important individual contributions to one or more of these fields, that have been reflected in an improved quality of life for society."

The three new Fellows elected from our section are **Prof. Ian F. Blake** for contributions to theory of error-correcting codes, **Prof. Savvas G. Chamberlain** for CCD Imagers and MISFETs, **Prof. Robert H. MacPhie** for theory of signal processing antenna systems, dipole antennas, and electromagnetic scattering of prolate spheroids. **Congratulations !.**

This year 237 senior members were conferred the Fellow grade worldwide. Canada secured 13 Fellows with third position behind Japan with 15 Fellows. The other 10 Fellows from Canada are **W.K.Dawson** (*Univ. of Alberta*), **W.Z.Fam** (*Tech. Univ. of Nova Scotia*), **W.J.R.Hoefer** (*Univ. of Ottawa*), **L.V. McCall** (*Ontario Hydro*), **S.Pasupathy** (*Univ. of Toronto*), **K.Raney** (*Canada Centre for Remote Sensing, Ottawa*), **W.S.Read** (*Canadian Electric Association, Montreal*), **M.A.Stuchly** (*Health and Welfare Canada, Ottawa*), **S.S.Stuchly** (*Univ. of Ottawa*), **C.M.Van Vliet** (*Univ. Montreal*).

Thus this year our K-W Section seems to have secured a greater number of Fellows than Toronto Section but fewer than Ottawa Section.

Section Congress 1990

by Len Chow

As it somehow happened, I was the only K-W representative finally available to attend the IEEE Sections Congress Oct 5-7, 1990 at the Royal York Hotel in Toronto, though Bob MacPhie helped by attending the IEEE Central Canada Council meeting the day before. The theme of the Congress was "Optimizing connections in the IEEE family". That is, to improve the communications between Headquarters, TAB (Technical Activities Board), RAB (Regional Activities Board), Societies, Regions, Sections and Chapters, so that the IEEE family will be able to face the challenges of the 1990's. The president of the Congress, Wally Read, pointed out the possible conflicts of the Chapters in their obligations and privileges to their respective Societies and their respective Sections and Regions. A consensus was sought from the Congress to address these goals. The format to reach this consensus was to separate into small tutorials to introduce the various questions related to these goals. Then the whole Congress came together in plenary sessions for an intermediate summary of the discussions of the tutorials. The Congress was then grouped into small breakout sessions for further discussions and to recommend actions. On the final day, 26 issues and recommended actions were put to a vote. The are listed below in order of priority as determined by the voting.

1. Employers support: Develop plans for enhancing corporate support of employee involvement in IEEE. Emphasize the benefits to corporations.
2. Retention of graduating students: Develop programs and activities specifically aimed at recent graduates.
3. Applied/Tutorial papers: Increase publication of applied and tutorial type papers in all Institute publications.
4. Communication cost/accessibility: Develop funding programs to enhance and expand electronic communication facilities.
5. Officer training: Improve materials and programs for Section/Officer training.
6. Leadership positions - participation from Regions 7-10: Develop methodologies to increase participation by members from Regions 7-10.
7. Internationalization of technical standards: Optimize IEEE expertise to assist in development of international standards.

8. Speaker availability: Produce annual updates of Speakers Bureau Listing with an electronically accessible data base.
- 9a. Student Branch Counselor effectiveness: Develop programs which address Student Branch counselor recruitment and training.
- 9b. Dissatisfaction with Section Rebate structure and distribution of funds between Sections, Societies and Chapters: Re-examine rebate allocation structure and formula.
10. Sections without Chapters: Make available Society outstanding speaker lists, videotapes and other technical programs to Sections without Chapters.
11. Small Sections - accessibility of resources and informational procedures for small sections: Establish an international 800 number.
12. Improve interest and excitement in science and technology in students aged 5-14: Develop a flexible media program to be administered transnationally by Sections, which incorporates a recognition system for volunteer participation.
13. Section responsibility for student activities: Initiate and improve interaction between Student Branch and Section.
14. Collaboration between IEEE, National Societies and other organizations: Develop means to promote more effective collaboration.
15. Sharing Society conference surpluses with Chapters: Establish guidelines.
16. Extent of IEEE activities outside the US: Hold more conferences and administrative meetings outside the United States.
17. Improving Section meeting attendance: Provide Technical Interest Profile (TIP) to identify members who may be interested in attending local meetings.
18. Member influence on volunteer structure organization: Major changes in the volunteer structure must be submitted to members for consideration.
19. Sensitivity and effectiveness of promotional materials: Develop IEEE membership promotional material targeted to specific languages and cultures.
20. How to solicit Society conferences: Develop guidelines and information regarding the bid and proposal process for Society conferences.
21. Lack of support for persons in responsible ethical actions: Provide specific measures of support to members who have been placed in jeopardy as a result of ethical actions.
22. Conflicting conference schedules for similar technical subjects: Establish a clearing house for conferences with electronic access to information.
- 23a. Concerns re potential dues from older and Life Members: Maintain current benefits to older and Life Members.
- 23b. Underutilization of experienced past officers: Develop a new officer mentor program utilizing experienced past officers.
24. Inadequate EE understanding (of) influence on ecosystems: Publish special editions of SPEC-TRUM and appropriate journals addressing this topic.

IEEE Membership Directory 1990

This section has purchased a copy of the IEEE Membership Directory 1990. Since we do not have a real office nor paid staff, the Executive decided to place it in the University of Waterloo EMS Library (ground floor Davies Centre) where members and non-members alike can refer to it. You will find it in the Reference section behind the Information desk, in a bookcase called Range 8 Side A. The call no. is TK1-A1I47 1990.

By the way, knowing the Call Number of a book is a necessary but not sufficient condition for finding it. You also need the prefix which can be
Per - look in Periodical library downstairs
Ref - look in Reference section
[blank]- look in the book stacks.

Recycling by Tom East

In "Recycling your IEEE mail" (August 1990 edition of this newsletter), I gave the rules for recycling paper at Tri-Tech. The only thing that has changed is that they no longer distinguish between white bond paper and coloured paper. To summarize the new rules:

Computer printouts: Tri-Tech pay you 10 c/lb.
Good paper (white or coloured) - letters, memos, Xerox copies (no window envelopes, nothing with labels stuck on): they pay you 3 c/lb.
Bad paper - glossy, window envelopes, anything with labels stuck on, manila folders, brown envelopes: you pay them 10 c/lb.

To get to Tri-Tech, go north on King Street and west on Northfield Drive, or go north on Highway 86 and east on Northfield Drive. Turn south on Conestoga Road for 0.8 km., turn right on Dotzert Court, take first entrance on right, turn left and look for red sign. Phone number is 747-2226.

Ed Spike, SAC Chairman

IEEE Canada has appointed Ed Spike of the University of Waterloo to be Chairman of the region's Student Activities Council. He will be assisted by Vice-Chairs from the Western, Central and Eastern Canada Councils. Congratulations Ed! Ed and his colleagues also put on a good show at the North American Micro Mouse competition held in October at the Ontario Science Centre.

Tom East Wins Award

by Rosalind Hood-Morris,
Chairman, Awards Committee

I am pleased to announce that Dr. Tom East has been selected as the winner of the 1990 Central Canada Council Merit Award. The award has been given to Tom in recognition of his efforts and commitment to IEEE activities in our Central Council, in particular for spearheading the re-activation of the K-W section in 1986 and contributing to its continued success by writing for and editing the section's lively and informative newsletter.

Tom has belonged to the IEEE since 1957, rising through the ranks until achieving his present status of senior life member. He graduated from Cambridge and McGill; at McGill he taught Physics and did Cloud Physics research. His career at Raytheon spanned 28 years until his retirement three years ago: he held a number of positions such as Circuit Design Head, Director of Advanced Development and Manager of a variety of projects including portions of the RAMP program to replace the air traffic control radar network for the Department of Transport in Canada.

He will be presented with the award at the Spring meeting of the Central Canada Council. Good luck, Tom!

Mowbray on EMC

by Tom East

As engineer responsible for EMC at NCR Ltd, John Mowbray brought many years of experience to his talk on this important subject at a Section meeting on October 23. He pointed out that because the formidable mathematics used in the theory of EM waves frightens people, they usually adopt an experimental and practical approach. There are two sides to the occurrence of interference: emission by one device,

and susceptibility by the other. There are also two common ways for the disturbance to travel from one to the other: radiation, and conduction through wires, supply or other.

Now that everything is going digital, radiation is caused by current transients in printed wiring. Unfortunately, CAD software doesn't seem to know or care about this. On the receiving end, microprocessors are sensitive to EM fields from various licensed transmitters. After some experiences with police radios in take-out line-ups causing orders for 1000 Big Macs, the Macdonald chain now specifies that any equipment they purchase must operate in fields of 10 volts per meter. Mowbray gave us a number of tips for reducing these problems, and then went on to outline the uniform set of regulations being adopted in Europe. Companies exporting to Europe have the option of signing a declaration that their equipment meets EMC, safety and ergonomics standards, rather than submitting test results, but the person signing could go to jail if the equipment goes over the limit! An American VP spent three weeks in prison because he had vouched for equipment which failed safety regulations and injured a worker: this has not happened over EMC so far.

In Canada, DOC has the power to mediate in disputes over EMC.

ICR - Institute of Computer Research

by John Hanson

The Institute was formed in 1982 to foster collaborative research between the University and Industry in the area of computers and computing. Originally it was composed of 13 federated research groups and about 80 individual faculty members within the University, together with 10 Corporate Partners and 12 Affiliate Members from Industry. With the founding of ITRC, the Information Technology Research Centre (a provincial Centre of Excellence) the Corporate Partners and the Affiliate Members became affiliates of the ITRC. The number of ITRC affiliates is now more than 40. In 1989, ITRC expanded the Affiliates Program to include very small and new "incubator" companies as affiliates at a reduced fee. There are now 16 of these incubator companies. Meanwhile, ICR has become an "in-house" federation of research groups and individuals at UW. The 13 groups include:

The Computer Communications Network Group	Dr. G. Agnew
The Computer Graphics Laboratory	Dr. W. Cowan
The Computer Systems Group	E. MacKie)
The Computer Systems Design Group	Dr. W. Wilson
Data Encryption Group	Dr. S. Vanstone
Data Structuring Group	Dr. D. Wood
Logic Programming and Artificial Intelligence	Dr. R. Cohen
Pattern Analysis and Machine Intelligence	Dr. A. Wong
Programming Language Group	Dr. G. Cormack
Scientific Computation Group	Dr. R. Simpson
The Silicon Devices and Integrated Circuits Group	Dr. D. Roulston
Symbolic Computation Group	Dr. K. Geddes
Very Large Scale Integrated Circuits Group	Dr. M. Elmasry

For further information, contact

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Tel: 519/888-4530
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e-mail: icr@cgl.uwaterloo.ca

Letters

In the October 1990 issue of the IEEE Newsletter you give an explanation for the sign seen on a T-shirt, viz., 2B+2B. You conclude that this means "To be or not to be". I regret to inform you that your conclusion is entirely wrong. I am the class professor of the Computer Engineering class of '92 (Rampage). It was on one of my students that you saw the shirt in question. The logo simply states (the obvious fact) that you will either pass or you will not pass the 2B term.

Sincerely, (with tongue firmly planted in cheek),
Signed, Bruno R. Preiss, Ph.D., P.Eng.,
Assistant Professor
University of Waterloo

Has anybody seen McNaughton ?

IEEE Canada presents the McNaughton Medal each year to a deserving person, and with it, a copy of the biography of General McNaughton by John Swettenham, published in three volumes in 1968 by Ryerson Press. Unfortunately this book is out of print, and IEEE Canada has few copies left. If you happen to have a copy, new or used, of the book or even of one volume, or know where it can be obtained, please contact Pamela Woodrow at IEEE Canada, 7061 Yonge Street, Thornhill, Ont., L3T 2A6, phone 416/881-1930, fax 416/881-2057.

Dr. Harry M. Ellis

The 1990 McNaughton Medallist is Dr. Harry M. Ellis of Vancouver. The medal was presented to him at Sections Congress 90 in Toronto in the presence of Mrs. Leslie McNaughton Sykes, daughter of General McNaughton, for contributions to development of a 500-kilovolt transmission grid for British Columbia including special features to improve system stability. "He was also honored for spearheading the conception, construction and operation of the Surrey Research Centre, one of the most efficient utility research organizations in North America" according to IEEE's The Institute.

Standards

Just a reminder that all IEEE Standards are kept in stock at IEEE Canada in Thornhill, Ontario. IEEE members can buy them for a 30% discount. IEEE Canada will send you a free catalog of all the IEEE Standards and an order form if you phone, FAX or write them at:

IEEE Canada
7061 Yonge Street
Thornhill Ont L3T 2A6
Tel. (416)881-1930
Fax. (416)881-2057

If you are using an old order form (such as the one in this newsletter in 1988) check these items and correct them if necessary:

Member discount 30%
US dollar conversion rate 1.25
Add GST 7%