

# KITCHENER-WATERLOO SECTION

## November 1992

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### EQUIPMENT DONATIONS

Electronic parts, small cassette motors, and solar cells needed for robotics workshops.  
 Call Ed Spike (519)885-1211

**E-MAIL:** to IEEE Headquarters for membership services:  
 membership-services@ieee.org

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.

## NOVEMBER 10, 1992 MICROWAVE CHAPTER MEETING: Bob MacPhie on Antenna Impedance

Date: Tuesday, November 10, 1992

Time: 7:30 p.m.

Place: University of Waterloo  
Davis Center, Room 1302

Speaker: Prof. Bob MacPhie

Subject: The Impedance of a Dipole Antenna Terminating an Open Two Wire Transmission Line

The solution uses the Poynting Vector method and assumes sinusoidal standing waves on the dipole, and incident and reflected travelling waves on the line. Numerical results are given for a variety of dipole sizes and for line impedances of 300 and 600 ohms.

Bob MacPhie is a Full Professor at the University of Waterloo, specialising in antennas. He has just returned from a sabbatical year at the Universite de Provence in France. He is a Fellow of IEEE, and former Chairman of the Kitchener-Waterloo section.

Dinner with Speaker: You may dine with the speaker and members of the executive at Reuben and Wongs if you wish: please phone Professor Len Chow (885-1211 X 2822) two days ahead.

### CONFERENCES IN CANADA

1992 Nov 7	IICIT Meeting - Ottawa
1993 Feb 22-25	Inter Comm 93 - Vancouver
Apr 22-25	BEAM Robotics - Toronto
Apr 26-28	IFIP Hardware Description Languages - Ottawa
May 17-18	IEEE WESCANEX 93 - Saskatoon
May 19-21	IEEE Pacific Rim Conference on Communications, Computers and Signal Processing - Victoria, B.C., Deadline 92, Nov 12

### TOUR OF DETWEILER CENTRE AT CONESTOGA COLLEGE

Date: Wednesday, November 25, 1992

Time: 7:30 p.m.

Place: Meet at the front entrance of the Detweiler Centre. This is the first building on entering the Doon Campus of Conestoga College from Homer Watson Boulevard.

At the Detweiler Centre, Electrical students obtain theoretical and practical instruction in electrical equipment and installation. It contains photos and records of the electrical industry, and several machines of historical interest. It was named after one of the founders of Ontario Hydro. You will enjoy this extremely interesting guided tour.

### MCNAUGHTON GOLD MEDAL TO VAL O'DONOVAN OF COM DEV

The 1992 IEEE McNaughton Gold Medal has been awarded to Michael Valentine O'Donovan, Chairman of the Board and Chief Executive Officer of ComDev Ltd. of Cambridge, Ontario.

The medal bears the citation: "for sustained leadership in the development of space technology and for transforming a fledgling company into a significant international player in the field of satellite communications".

Val O'Donovan came to Canada from England in 1963 and worked at RCA on development of microwave components for microwave relay networks and satellite earth stations.

In 1974 he became President of ComDev, which grew to more than 500 people by 1992. The company has supplied flight systems for 130 spacecraft including many ANIK and INTELSAT satellites. ComDev has established branches in the U.K. and in Moncton, New Brunswick.

Val O'Donovan has been a member of IEEE since the early 1960's and is a member of APEO and AIAA.

Congratulations Val!

### PARLIAMENTARY DILEMA

In Keeping TAB, the IEEE technical activities newsletter for Spring 1992, Irving Engelson describes how, as a reputed expert on Robert's Rules of Order, he was caught out. In an election for office, a secret ballot ended in a tie. Surprisingly, Robert's Rules do not say what to do. However, it has become the custom to cast lots to break a tie. (I suppose tossing a coin would be equally acceptable - Ed.).

### MARK GERECKE ON THE IRIDIUM PROJECT - by Tom East

Mark Gerecke is the Project Manager of the Iridium Project at ComDev Limited, Cambridge, Ontario. On October 7th he gave our Section a fascinating presentation of this proposed satellite-based world wide communication system.

The concept, being spearheaded by Motorola, is to have 11 low earth orbit (LEO) satellites in each of 7 polar orbital planes at about 765 km altitude. From any place on earth you will be within view of at least one of these satellites, and will be able to talk using a hand held unit similar to a cell phone at a cost of around \$3.00 per minute, independent of distance. Your voice (or 2400 baud data) will be passed from one satellite to another, then down to a gateway station on the ground which connects with the local public telephone network.

The Iridium system is not intended to compete with cell phones in areas such as Europe, but to provide service in all parts of the world out of reach of cellular systems.

Satellites will be will be lofted by multiple launch on a suitable vehicle. There will be extra satellites in "storage orbits" to be moved in to replace any that fail.

The contribution of ComDev to the present development effort lies in horn, flat plate and omni antennas, rotary joints, gimbals and other microwave and thermal/mechanical components to be carried on the satellites, operating in the 20 - 30 GHz bands.

ComDev are working under the Motorola Total Quality Management regime (see this newsletter February 1991): other constraints, Mark told us, are to minimize weight and cost.

The all important electromagnetic spectrum allocations were made at the February 1992 WARC conference. First launch of operational satellites is scheduled for 1995, with full operational capability of the system in late 1997.

Financial backing is being secured, and will result in production at a peak of one satellite per week - an unheard - of rate in the Space industry.

The name Iridium, like Ada, is not an acronym. It turned out that the optimum member of satellites was 77, and because the element Iridium has 77 electrons in orbit around its nucleus, it gave its name to the new concept.

### COMAR Takes Positions on Radiation From Four Specific Sources

The Committee on Man and Radiation (COMAR) was established in 1972, and made part of the Technical Policy Council of IEEE-USA. It is comprised of a group of experts with a wide range of interests. Today, COMAR members come from the power and transmitting-equipment manufacturing industries, and from biomedical engineering - with two very different viewpoints on emission hazards. They have produced four entity position statements.

One statement supports the radiation limits established by the American Standards Institute and IEEE, for cellular-radio base-station antennas, as being a safe level for human safety.

Another entity position statement, on electromagnetic-pulse simulators (EPS) reviews long-held views and reveals that, although new data suggest that they are no longer considered as innocuous as they once were, EPS are safe when the proper protection is provided for workers.

In the third of these four position statements on radiation hazards, COMAR and IEEE-USA have provided detailed recommendations to limit human exposure to radiation from RF sealers and dielectric heaters, used in a variety of industrial-heating applications.

In the fourth of these position statements, COMAR concludes that there is no evidence to support recent reports alleging cancer caused by police radar.

The above material is extracted from an article in the IEEE Antennas and Propagation Magazine for August 1992. For the full text of the position statements, contact the IEEE-USA Washington office (1828 L street NW, Suite 1202, Washington, DC 20036-5105) and ask for the IEEE-USA Committee on Man and Radiation IEEE-USA Entity Position Statement on:

1. Human Exposure to RF Emissions from Cellular Radio Base Station Antennas.
  2. Safety of Electromagnetic Pulse Simulators.
  3. Health Aspects of Exposure to Electric and Magnetic Fields from RF Sealers and Dielectric Heaters.
- or 4. Human Exposure to Radio-Frequency fields from Police Radars.

### VIRTUAL REALITY DEMONSTRATION

By Dave Stampe

NOVEMBER 05, 1992, Universtiy of Waterloo, Davis Centre Rm:1351

12 noon.

Dave worked during his fourth year at the University of Waterloo on his hand- glove interfaced to a PC equivalent computer. The colour displays rotate on the computer screen similar to a three dimensional computer aided design package display. The stereo head gear and glove will be demonstrated. The large screen projection will show the three dimensional rotating display.

Dave is now studying for a Masters Degree at the University of Toronto. As MicroMouse committee co-chair in 1990 Dave has been instrumental in building the excitement at the University of Waterloo. Bring your lunch and enjoy a noon hour.

April 23, 24, and 25.

Ontario Science Centre in Toronto.

### BEAM Robotic Olympics and MicroMouse Competition.

All enthusiast should register their robots for competition as soon as possible. There are multiple competition categories listed with rules in the dossier available from the organizing committee co-chaired by Mr. Mark Tilden and Mr. Edward Spike.

Special guest speaker forms are planned to aid all to better understand the different aspects of robot building and of robot control.

Robotic art is a wide open category which many younger persons may wish to consider.

Solar engines and solar rollers have been built by high school students. The silver metal for the 1991 competition was received by the team of Melissa and Alison Spike (8yrs & 10 yrs). Humber College took the gold metal in the solar roller competition.

SAIT, (the Southern Alberta Institute of Technology), the University of Calgary, and De-Vry in Calgary are gearing up to take the gold in the sumo wrestling competition.

For more information contact either of the co-chairmen:

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### STUDENT MEMBERSHIP

Start your membership before Nov. 15 and pay the 1992 dues base amount of \$23.00 US funds per year. The 1993 dues base amount is \$28.00 US funds.

Free subscrtptions for your first dues period to:

- \* the Power Engineering Society.
- \* Communications Society
- \* Oceanic Society

Membership forms available at U. of Waterloo from room E2-3359 or your branch counselor (see front page). More information available via e-mail at:

"membership-services@ieee.org"

or from Edward Spike, Canadian Student Activities Co-ordinator at "spike@eestaff.watstar.uwaterloo.ca" .

