



Institute of Electrical and Electronics Engineers  
Kitchener-Waterloo Section

3 December 1973  
Vol. 4 Issue 4

# IEEE Newsletter

## Fourth Meeting

*will be a*

### JOINT MEETING

with the

AUDIO and ELECTROACOUSTICS Group

on MONDAY 10 DECEMBER 1973

AT 8:30 (repeat, 8:30) p.m. in ROOM AL116  
in the ARTS LECTURE building (near the Library)

University of Waterloo FURTHER DETAILS on page 2



The NEWSLETTER is published by the Kitchener-Waterloo Section of the Institute once a month from September through May (nine issues). It is published in the interest of the members of the Institute in this Section of Region 7. Articles, stories, news items, and special features by these members of interest to them, or suggestions for such items, are very welcome. Write to

The Editor  
K-W Section NEWSLETTER  
P.O. Box 789  
Waterloo, Ontario, Canada  
N2J 4C2

The NEWSLETTER is sent free to all Institute members of any grade (including student), who live within the K-W Section area (the counties of Bruce, Grey, Perth, Waterloo, and Wellington). It is also sent free to some Headquarters, Region 7, and Central Canada Council personnel.

We would be glad to mail the NEWSLETTER to any individual or group in the world - BUT **CANCELLED** 70 (Canadian) per year from **CANCELLED** to help defray the printing and **CANCELLED** costs. We regret this step very much but it is unavoidable.



### Your FRIENDLY EDITOR says —

Welcome to the fourth issue of the K-W Section NEWSLETTER. We are glad to welcome a new contributor to the Letters to the Editor column; to advise you of the first meeting this year sponsored by the Audio and Electroacoustics Group (both of their meetings last year were very popular, as you probably remember); to congratulate a former Chairman of this Section on his being elected to the Chairmanship of the local section of another organization, and much (well, a little) more!

### Dave Hogg new master Toastmaster

David Hogg, of 138 Blueridge Avenue, has been elected 1974 president of the K-W Toastmasters Club, the K-W Record reports on Tuesday 27 November 1973.

David is an electrical engineer on the electronics faculty of the Doon Centre of Conestoga College. He has also represented this section on the Central Canada Council and has been the Treasurer of the Region 7 organization. He has also a wife and child, whom he probably gets to see far too seldom.

David is an ardent booster for the Toastmasters Club and will tell you all about it at the slightest sign of interest on your part. The picture in the Record did not do David justice. His red beard can be easily seen at any gathering, so that you have no excuse for saying that you don't recognize him.

Congratulations, David!

### That dollar bit again

A couple of issues ago, the front page of the NEWSLETTER contained, in the lower right-

## PROGRAM DETAILS for

MONDAY 10 DEC 73

6:00 p.m. Dinner at the TIEN HOA INN, at the corner of Weber and Bridgeport, in Waterloo. Come out and meet the speakers, say hello to the rest of the group (there were 15 or so at the dinner last month), and enjoy the food.

8:30 p.m. (NOT 8, as usual)

The extra half-hour is required to make sure that everybody can find the room where the meeting is to be held.

If you enter the University of Waterloo by the entrance on University Avenue, you will find convenient parking (cash fee, 25¢) in the lot just to the left of the information kiosk. There is also a parking lot on the other side of University Avenue (cash fee, 10¢) from which you do walk a little but you do save a lot (our apologies to a local furniture firm).

THE SPEAKER WILL BE MR. ART SIN-CLAIR, of Panasonic, Limited, Rexdale. He will be talking about

#### FOUR CHANNEL DISC SYSTEMS

and the reason why the meeting is being held in

#### ARTS LECTURE room 116

is that the acoustics are better there than in any other room available to us on the meeting night.

You are invited to come out (bring a friend if you like) and see for yourself why the acoustics of the room are important.

Room AL116 is found in the Arts Lecture building which is near the Library on the U of W campus. Walk up the path to the right of the Humanities Theatre and you will soon see the Arts Lecture building on your left. Give yourself an extra few minutes for exploration and, if in any doubt, ask. Any passer-by will show you the way.

hand corner, there was a statement that the \$1 (Canadian) charge to non-members of the Institute for the NEWSLETTER "is unavoidable."

In the last issue of the NEWSLETTER, we said that was avoidable, on orders from IEEE Headquarters.

Elsewhere in this issue there is an explanation. Here we just want first to thank very sincerely you lovely people that sent in the \$1 and second to assure you that you will get it back as soon as we can send it. Thanks again.

## LETTERS to the EDITOR

As a background for this letter, we first quote an article from the ELECTRONICS COMMUNICATOR for October 15, 1973 (Vol. 4, no. 20).

### The Shame of the IEEE Show

With the passing of another IEEE Show, the Canadian electronics industry has sunk to a new level of obscurity. For three days this month, the Automotive Building at Toronto's Exhibition Park had the appearance of a giant import warehouse, stacked with goods from Britain, France, Japan, and the United States.

Only a handful of Canadian manufacturers were sufficiently interested in the future of their industry to put in an appearance. By their failure to exhibit, the rest belittled the achievements of their employees - the thousands of Canadians on whom they depend for their survival. They insulted over 12,000 visitors, many of them students, who came to see the showcase of the Canadian electrical and electronics industries - and went away wondering if such industries really existed. Even those companies into which federal and provincial governments have poured millions of dollars failed to give taxpayers the satisfaction of seeing what their money had produced. As a showcase for Canadian products, the IEEE was a national disgrace.

This absence of Canadian exhibitors contrasted sharply with the technical programme, in which Canadian authors presented a majority of the papers and were able to dispel the illusion, created downstairs, that Canada is entirely dependent on foreign electronics technology. The technical sessions also took note of the word "Electrical" in the Conference title which, as far as the exhibits were concerned could be considered false advertising.

Perhaps the Toronto Conference is not the best in the world, but it's the only one we have. It is quite evident that the sponsors of the Conference - the Canadian Region of the IEEE, and the exhibit organizers, are more concerned with showing a profit than with promoting Canadian industry. In spite of its 'transnational' aspirations, one has to wonder whether the IEEE would take the same attitude if 90% of the space at the annual show in the New York Coliseum were to be pre-empted by non-American products.

Canadian manufacturers advance numerous arguments as to why they did not exhibit. None of these arguments hold water. No exhibitor at any show anywhere has ever been able to determine precisely what benefits he received from exhibiting. By not turning out in force for such an event, Canadian companies demonstrated a lack of national pride which is totally unrelated to dollars and cents and is wholly inexcusable.

If the Toronto IEEE Conference is to be so studiously ignored by Canadian manufacturers in the future, perhaps we should consider whether we would not be better off without it. Over the next two years the organizers had better come up with a formula more likely to encourage the participation of these companies. Anything less than full participation by domestic industry in this Canadian exhibition must be considered a fraudulent betrayal of the industry. The organizers must also decide whether they are again going to mislead visitors into believing it is really an "Electrical" as well as an "Electronic" Exhibition.

The following Letter to the Editor was sent in by Mr. John Dure, who is a member of the IEEE and the Manager of Research and Engineering at Marsland Engineering Limited. Mr. Dure's paper "Printout for Computer Graphics and CRT Hard Copy" was awarded first prize at CCCS in 1972.

The Editor  
IEEE Newsletter

Dear Sir:

The October 15th, 1973, issue of the weekly publication called "The Electronics Communicator" contains a provocative article called "The Shame of the IEEE Show." The article states that the Canadian Electronics Industry has sunk to a new level of obscurity and that the show had the appearance of a giant import warehouse. The article goes on to point out that only a handful of Canadian manufacturers put in an appearance, the rest belittled the achievements of their employees, insulted the over 12,000 visitors, failed to exhibit goods developed under Federal and Provincial incentives. "As a show-case for Canadian products, the IEEE was a national disgrace."

The article says that the exhibitors contrasted sharply with the technical program, in which Canadian authors presented a majority of the papers.

The writer also attended the Canadian Computer Conference and Show (CCCS), also held in Toronto in October. Similar observations can be made.

The Electronics Communicator neglects to mention that the IEEE show bore the title "International Electrical Electronics Conference & Exhibition." As such, one might well expect the apportionment of exhibitors that did turn up. The Canadian manufacturers may well put more effort into their export-oriented exhibits, since we well know that we cannot survive on the Canadian market alone. There is less excuse for what happened at the CCCS.

(See LETTERS, page 4.)

Show. The show is a commercial undertaking and is required to carry itself financially and, as such, should be aggressively marketed. For example, I believe that the organizers should approach the industry associations, such as the Canadian Manufacturers Association, the Electronics Industries Association, etc. The organizers should also utilize the Canadian governmental departments for assistance. Through industry and government contacts, the organizers could discover what is new in Canadian industry over the past year and arrange that these products be highlighted in advance publicity. There are several Canadian products, new in the last year, which were not at IEEE or CCCS. One which was at CCCS was not highlighted and missed by the writer. The organizers could, in other words, attempt to show that the IEEE Show is a marketable commodity and not just a "showcase for visitors, many of them students." This latter wording, used by the Electronics Communicator, is just the kind of vision of the Show which will keep Canadian manufacturers away.

John D. Dure

Ed. comment. Have any of the rest of you any comments to make on the last IEEE show? This NEWSLETTER is sent to the Region 7 manager and this is one way in which you can make your feelings known to him and, through him, to the organizers of the next conference and exposition. Your Letters to the Editor will be welcome on any reasonable subject but especially on a topic such as this, which is of keen interest to the Institute and to the local members. No "show" by the IEEE or any other organization ever will be perfect. Can you help improve the next one? And, will you?

#### PHOTO CREDITS - WE APOLOGIZE!

Last month the NEWSLETTER used two photographs and was rude enough to omit the names of those who were good enough to provide them.

The photograph of the presentation of the plaques to Telesat personnel was provided by Ed Spike, the Vice-chairman in charge of Memberships and Transfers. Ed works in the Department of Electrical Engineering at the University of Waterloo and the processing of his colour photo was done by the Graphic Arts Print Shop at the University.

The photograph of the drawing of the lucky number for the calculator was provided by Conestoga College through the efforts of Dave Hogg. We regret that we do not know the name of the actual photographer but we thank him for his work.



Several Hammond transformers are operating in three earth-orbiting Canadian satellites.

Canada's first, Alouette-I, launched Sept. '62, has travelled more than a billion miles, sending back half an hour of telemetry transmissions every day. Operating temperatures range between  $-10^{\circ}$  and  $+40^{\circ}$  Celsius.

Alouette-II (Nov. '65) and Isis-I (Jan. '68) are observing man-made and natural VLF emissions such as whistlers, noise bands, ion cyclotron resonance effects, and signals from ground based VLF transmitters (50 Hz to 30 kHz range).

Alouette-I has four Hammond standard transformers in its circuitry while the Mark II Receivers, installed in Alouette-II and Isis-I, each employ five Hammond transformers.

This quality is built into all special or standard off-the-shelf items, available through the factory or from any stocking Distributor. If you need something special Hammond has the experience of more than 100,000 different transformer designs to draw upon.

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#### IN LIGHTER VEIN

"People were happier back in the horse-and-buggy days," reminisces our local barber. "They had a 'stable' economy."

PART-TIME AND EXTERNAL MASTER'S DEGREE PROGRAMME

The Department of Electrical Engineering of the University of Waterloo is offering a programme of evening courses leading to a Master's degree. For the part-time program a selection of regular graduate courses will be held in the evening, on the University of Waterloo campus, each course being held one evening per week. The external program is offered at the Sheridan Park Community College and courses are offered in the evening there according to demand.

There are no residency requirements for either programme, although an individual may elect to spend a term working full time on campus. Eight one-term courses and a project are required for the completion of the degree. The project is carried out under the supervision of a faculty member and may be chosen in co-operation with the candidate's employer. Individuals interested in attending a particular course but not in pursuing a degree program can be enrolled as Non-Degree Students.

The courses to be offered in the evening on the Waterloo campus during the Winter term, 1974 are:

EE622 Computer Organization and Structure  
EE626 Engineering Principles of Data Communication  
EE657 Microelectronics: Theory and Design of Integrated Circuits

and at Sheridan Park the course offered is

EE665 Generalized Machine Theory - Steady State and Dynamic Analysis.

For further information regarding these programmes or the courses offered, please contact either

Professor Ian F. Blake  
Department of Electrical Engineering  
University of Waterloo  
Waterloo, Ontario N2L 3G1

at (519)-885-1211, extension 3995 or call Pam at extension 3331.

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PLEASE READ THE FOREGOING ANNOUNCEMENT.

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By the time this NEWSLETTER reaches your hands, the latest short course given by the K-W Section will be over. While it is fresh in your memory, will you please call or write to tell us whether you prefer the two-day format rather than the eight-evening one followed in past years? Based on your needs, what would you like to see as the topic for the next one? Would you prefer that the course content and duration be extended to four Saturdays, for example, at a cost which would be higher than the present course cost but probably not as much as twice as expensive (this is not a promise, just a request for your opinion)? Only the ignorant believe that you can survive on what you picked up at school. Textbooks will be a part of all the rest of your life. How can we help you in this continuing education process? If you can tell us, please do. If you cannot, think about it until you can, and then tell us.

## BOOK REVIEW

(Do you think book reviews would be of any use to you? As an experiment, we are running the following review, taken from the November 1973 issue of the CONTROL SYSTEM SOCIETY newsletter. The review was contributed to that publication by Professor E.J. Davison, of the Department of Electrical Engineering of the University of Toronto.)

Title: LINEAR OPTIMIZATION  
 Authors: W. Allen Spivey, Robert M. Thrall  
 Publishers: Holt, Reinhart, and Winston,  
 New York, 1970. 530 pages.

"This book is about the Simplex algorithm of linear programming and is written at an introductory level. It does not deal with more general problems such as least-square theory or the linear regulator problem, as might have been suspected from the title.

"The book can be divided into four sections: (1) motivation and examples of linear programming (chapters 1, 2), (2) the Simplex algorithm (chapters 3, 4, 5, 8), (3) algorithms for specialized problems (chapters 6, 7, 9, 10), and (4) the appendix (140 pages). The material of section (1) is excellent - there are many interesting examples of quite diverse problems given; the Simplex algorithm section contains standard material with a large amount of redundancy which has been effectively used for pedagogical purposes; section (3) contains the Assignment Problem, the Capacitated Transportation Problem, Game Theory, Decomposition and Upper-bound Constraint Problems; and the Appendix contains well-known material on set theory, linear algebra, and a flow-chart of the Graves-Thrall algorithm.

"Its main contribution is that it offers, at an introductory level, a fairly complete treatment of linear programming via the Simplex method with numerous examples. One feels that linear programming can actually be used to solve interesting "real-world" problems, after reading just a few pages of chapters 1 and 2! The book is ideal for a course, say, in Business Management or Operations Research, i.e., to a group where the development of the theory is not so important as the application of the results to real problems. It is especially good for self-study purposes.

"Some general comments on the book: A multi-layer approach is taken to deal with the subject; examples are given first, then a constructive development of the Simplex method followed by a general theory of linear programming is made. There are few typographical errors and the numerous excellent examples motivate the reader to probe deeper into the text. It, perhaps, would have been useful to the reader if the authors had discussed (even briefly) something about nonlinear programming and had given

some examples where linear programming is not suitable - the naive reader might suspect that he can conquer the world using linear programming!

"Some specific topics on the book: The title of chapter 2 "Model Building with Linear Programming" is a little strange and the example of constructing a 2nd-order differential equation to describe a falling body in this chapter may confuse a reader (i.e., what has the construction of a 2nd-order differential equation to do with linear programming?) On page 136 a lengthy problem exercise is given for the reader. The problem is challenging and useful because it corresponds to a fairly realistic business-management problem. It is unfortunate that the authors do not also provide a solution. There is a good discussion of duality in linear programming and its physical interpretation in chapter 5. The chapter on game theory is somewhat sketch - for example, the idea of dominance in a game is not mentioned. The section of chapter 10 dealing with decomposition methods is weak - compare 200 pages spent on developing the Simplex algorithm versus 11 pages spent on decomposition methods! In the appendix, the section on set theory does not really fit in with the contents of the book and could probably be omitted.

"In summary, the goal of the book "Our major purpose in writing this book has been to combine a constructive development of the Simplex algorithm with a presentation which is both sound and intended for a reader who is not primarily a mathematician" has been successfully achieved.

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## MINICOMPUTER COURSE

(Also as an experiment, we are quoting the following advertisement for a course to be given at Case Western Reserve University in Cleveland, Ohio, during the week of January 21 to 25, 1974. The question is: "Would you be interested in such a course, at about the same price, if it were given locally or, for example, in Toronto?"

"The Systems Research Center of Case Western University is again sponsoring a one-week short course on "Real-time Minicomputer Systems for Data Acquisition, Information Processing, and Control" on January 21-25, 1974. The course is devoted to the detailed understanding of minicomputer hardware, software, and applications. It is designed for engineers concerned with the use of modern minicomputers, particularly in industrial applications. Only a limited familiarity with computers is assumed. Lectures include the following topics: Organization of minicomputer hardware; word-size and memory-addressing in minis; input/output devices for data acquisition and control; interrupt structures and control of I/O devices; real-time executive programs for minicomputers; dedicated data acquisition I/O software; fundamentals of real-time systems; background theory for

(See MINICOMPUTERS on page 7.)

supervisory control; data acquisition and control packages.

"In addition, there are a number of laboratory experiments supplementing the lectures, designed to provide familiarity and experience with the methods and techniques presented.

"Course fee is \$325.00 and includes complete course notes, laboratory, and computer charges. The instructors are Professors J.D. Schoeffler, I. Lefkowitz, and D.H. Rotherberg, all of the Systems Research Centre. For further information, write to:

Professor I. Kefkowitz  
Systems Research Center  
Case Western Reserve University  
Cleveland  
Ohio 44106, U.S.A.

**IEEE ORGANIZATION STATUS**

(The IEEE NEWS RELEASE is a letter sent out by Headquarters from time to time in which is given advance notice of information to be given in the SPECTRUM. This release, given in full below, seems timely in that it reminds us of the state of affairs in our own organization.)

**FOR IMMEDIATE RELEASE**

**IEEE REFERENDUM VOTE AFFIRMS EXISTING CORPORATE STRUCTURE**

(New York, N.Y., November 13, 1973)

A referendum among the membership of the Institute of Electrical and Electronics Engineers has reaffirmed the confidence of the members in the existing structure of the organization in regard to both technical and professional activities.

This is the conclusion drawn from the results of the referendum, just reported by the Tellers Committee, according to Dr. Harold Chestnut, President of IEEE.

Dr. Chestnut reported that the membership has voted by a margin of five to one against a proposal to set up a separate corporation to administer the Institute's technical activities.

Such a proposal had been instituted by the Governing Board of the IEEE Computer Society and had been opposed by the IEEE Board of Directors. Ballots which were mailed out contained statements for and against the proposal.

The Tellers Committee on November 8th reported that a total of more than 45,000 votes had been cast as valid ballots. Of this number more than 37,000 - or over 83 percent - were cast against the proposal.

The ballot contained space for members to indicate whether they belonged to any of the IEEE Groups and Societies which might have been affected had the proposed new corporation been

established. Among this class of voters, the vote was over 81 percent against the proposal. Those with no Group or Society membership voted over 87 percent against it.

"I interpret this vote as a clear and substantial majority opinion in favor of our existing organization which continues to stress the IEEE commitment to technical activities while assuming an additional commitment to professional affairs," said Dr. Chestnut.

"We also look upon it as a positive reaffirmation of the 1972 vote which approved the Constitutional Amendments making possible the Institute's active entry into professional activities."

He emphasized the determination of the Board of Directors, as expressed to the members in 1972 and since implemented by action programs to enlarge and extend technical programs while furthering the new professional activities in IEEE Headquarters and the nation's capital. "Our IEEE corporate structure is fully adequate to meet the needs of members in technical and professional areas," he emphasized.

Dr. Chestnut pointed out that IEEE, as the largest U.S. professional society, has the resources of people, ideas, and money to deal effectively with the challenges of furthering technical progress and improving professional stature of the members.

**DUES OVERLOOKED ?**

This little article is addressed to those of you who have not yet paid your IEEE dues for the current year.

There are about 17 members (I suppose I will have to say 'former members' unless you do something about your status soon) who have been sent reminders in the past month that there is an outstanding irregularity on their records at IEEE headquarters.

Especially at this time of the year, I suppose it is difficult to find the \$35 or more that your assessment calls for, and it could have happened that you put the bill aside (in a safe place) so that you could take care of it at the first available opportunity. And then the bill got itself lost!

If you really do not have the money, both you and we have a problem. It is more probable in most of your cases, however, that your financial resources are adequate to pay all your bills, even though a little judicious assignment of priorities may (I say only 'may.') be required from time to time.

So please send your cheque now. The rest of us have.

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