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CHICAGO SECTION · IEEE · INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS

JANUARY 1974

Thyristors

Bryan Bixby, International Rectifier Co., will talk on "Thyristors—Today and Tomorrow" at the January 16 meeting of the Chicago Section IEEE.

Bryan J. Bixby was educated in England and successfully completed the requirements of a Higher National Certificate in Electronic Engineering at Enfield College of Technology in 1962.

Until 1967 he worked for Hawker Siddeley Dynamics, designing a variety of power conditioning



equipments for aircraft, space and railroad applications. He joined Westinghouse Electric Corporation at their R and D Center in Pittsburgh in 1967, where he was assigned to the communications control and power electronics directorate, working on thyristor and power transistor circuit design and development.

He joined International Rectifier in January of 1971, and is now director of engineering, responsible for the company's engineering activity in device application, rating and testing.

The meeting will be held at Nielsen's Village, 7330 W. North Avenue, Elmwood Park. Social hour, 5:30 p.m.; dinner, 6:30 p.m.; meeting, 7:30 p.m. All-you-can-eat buffet, \$6.00. Make reservations by calling the IEEE office, 263-5954.

IEEE Fellows Elected

Three senior members of the Chicago Section have been elected Fellows of the IEEE, as of January 1, 1974. They are: Robert W. Beckwith—"For contributions in application of electronic technology to the development of frequency shift keying techniques for data transmission and remote circuit breaker tripping"; Jack E. Bridges—"For development of techniques and standards to control radio frequency interference, and for contributions to receiver design to suppress common-channel interference and noise"; and Normal W. Parker—"For contributions in the design of color television receivers."

CALENDAR OF EVENTS

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| Jan. 8 | IEEE Executive Committee Meeting; Menard's Black Steer Restaurant, 6446 W. North Ave., Chicago, Ill. |
| Jan. 9 | "Factors in the Selection of Automatic Transfer Switches"; IAS/IECI; Nielsen's Village, 7330 W. North Ave., Elmwood Park (Page 2) |
| Jan. 15 | "Some Recent Advances in Antennas"; G-A&P/MT&T; Black Steer Restaurant, 6446 W. North Ave., Chicago, Ill. (Page 3) |
| Jan. 16 | "Thyristors—Today and Tomorrow"; Chicago Section meeting; Nielsen's Village, 7330 W. North Ave., Elmwood Park (Page 1) |
| Jan. 16 | "E—Energy, Engineering, and Ecology"; Northwest Subsection/Power Engineering Society; Maitre d' Restaurant; Elk Grove Village (Page 3) |
| Jan. 16 | "CTA Vehicle Monitoring System"; G-VT; Room 734, Merchandise Mart, Chicago (Page 3) |
| Jan. 21 | "Computing at National Accelerator Laboratory"; Computer Society; Room 104, Stewart Hall, IIT, 31st and State Streets, Chicago (Page 3) |
| Jan. 23 | "Computerized Transaxial Tomography"; G-EMB; Rush-Presbyterian St. Luke's Medical Center, 1748 W. Harrison St., Chicago (Page 2) |
| Feb. 6 | "E—Energy, Engineering, and Ecology"; Power Engineering Society/Fox Valley Subsection; Toll Gate Inn, Aurora |
| Feb. 7 | "Use and Misuse of Reliability Data Bases"; G-Reliability; Nielsen's Restaurant, 6475 N. Mannheim Road, Rosemont. (Page 2) |
| Feb. 13 | "1974 NEC Changes"; Chicago Section IEEE/IAS-IECI; Nielsen's Village; 7330 W. North Ave., Elmwood Park |
| Feb. 19 | Washington Award Dinner; Pick-Congress Hotel, Chicago (Page 2) |
| Feb. 20 | "Technology Utilization" Fox Valley; Gaslite Manor, Aurora |

Deadline for copy: First week of month preceding publication.

IEEE OFFICE: 263-5954

Automatic Transfer Switches

The Chicago joint chapter of the IEEE Industrial Applications Society/Industrial Electronics and Control Instrumentation Group will meet on Wednesday, January 9, 1974 at Nielsen's Village, 7330 W. North Avenue. Rene Castenschiold, Automatic Switch Company, will discuss "Factors to Consider in the Selection of Automatic Transfer Switches."

Factors to be considered in the selection of automatic transfer switches for emergency power systems include: code requirements; various forms of automatic transfer switches and how they are rated; coordination with over-current protective devices; and selection of accessories to satisfy load and engine-generator requirements. Proper selection assures long life for the equipment and power continuity for essential loads.

Rene Castenschiold, received a BS in electrical engineering from Pratt Institute in 1944, after which he joined the General Electric Company as a design engineer in the control engineering division. In 1951, he joined the Automatic Switch Company, where he is now

chief customer engineer. Since 1967, he has also been a guest lecturer at the Newark College of Engineering.

Castenschiold is a licensed Professional Engineer in New York and New Jersey. He is currently chairman of the ISA Bus Transfer Switch Subcommittee and NEMA Task Force on Automatic Transfer Switches, member of IEEE Emergency & Standby Power System Subcommittee, Commercial Buildings Power Systems Subcommittee and "Gray Book: Commercial Buildings Working Group, representative to ANSI Company Member Council, member of the Engine Generator Set Manufacturers Association, NSPE, and International Association of Electrical Inspectors.

Social hour at Nielsen's Village will be at 5:30 p.m.; dinner, 6:15 p.m.; meeting, 7:15 p.m. Dinner cost is \$7.00 for members; \$8.00 for nonmembers. All those who come for dinner will receive complimentary liquid refreshments. For reservations call the IEEE office, 263-5954, or Robert Loewe, 782-5520.

Engineering in Medicine and Biology

The Group on Engineering in Medicine and Biology will meet at Rush-Presbyterian-St. Luke's Medical Center 1748 West Harrison on Wednesday, January 23, 1974 at 7:30 P.M. The speaker will be Dr. Laurens Ackerman, of the Department of Biomedical Engineering. Dr. Ackerman has had substantial experience in computer analysis of medical imaging and is a biomedical engineer as well as a physician.

Dr. Ackerman will discuss "Computerized Transaxial Tomography," a computerized X-Ray scanning system for the diagnosis of brain tumors. Presbyterian-St. Luke's has recently installed one of three X-Ray scanners of this type which are operating in the United States. Prior to the development of this technique, radioisotope uptake scanning, pneumoencephalography, and cerebral angiography were the principal methods for confirming the presence and location of brain lesions. The high risk associated with these techniques is avoided through the use of an X-ray scanning system coupled to a mini-computer which solves simultaneous equations to determine the gray-level radiopacity at points within the

skull, thus permitting visualization of both the density and position of brain structures.

The meeting will be held in the Radiology Department of the hospital, and group members and others wishing to attend this interesting program should meet in the lobby of the hospital at 1748 West Harrison. Parking is available in the medical center garage at the corner of Harrison and Paulina.

Reliability Group

The next meeting of the Reliability Group will be on February 7, 1974 at Nielsen's Restaurant, 6475 N. Mannheim Road, Rosemont. Dinner at 6:00 p.m.; meeting at 7:00 p.m. Even if you cannot make the dinner, you are welcome to attend the meeting.

Lee Mirth, Rome Air Development Center, Rome, N.Y., will speak on "The Use and Misuse of Reliability Data Bases." For reservations, call the IEEE office, 263-5954.

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Meeting Reservations

Remember that the IEEE office, (312) 263-5954, will take your meeting reservations. The best time to call is between 9:30 a.m. and 12:30 p.m. or between 2:30 p.m. and 5:00 p.m.

The meeting coordinator for any group should call and leave his number with Judy at the office, so she can refer questions on matters other than reservations.

Change of Address

If you have moved — or are about to move — please notify the IEEE office in NEW YORK. Our SCANFAX mailing labels come from there, and we cannot update your mailing address locally in Chicago.

A change of address form is included in each issue of SPECTRUM. Your local post office will also supply you with cards; mail to Emily Sirjane, Membership Services, IEEE, 345 E. 47th Street, New York, NY 10017. Include your SPECTRUM mailing label if possible. We cannot forward this information for you, so please do not send it to the local office.

Computing at National Accelerator Laboratory

The IEEE Computer Society will meet on Monday, January 21, 1974, at 7:30 p.m. at Illinois Institute of Technology. Meeting will be held in the auditorium, room 104, of Stewart Hall, at the northwest corner of 31st and State. Plenty of free parking in the IIT visitors lot. Reservations not needed; for any additional information, contact Bill Lidinsky, Argonne National Laboratory, 739-7711, ext. 4302.

Two talks discussing some of the applications of computers at NAL will be given. R. Daniels, leader of the controls group, will discuss "Accelerator Control." NAL, located on 6500 acres approximately 35 miles west of Chicago, has recently completed the world's highest energy proton accelerator. The equipment for this machine is located along 10 miles of beam path and is completely computer controlled. Daniels will describe the control problems and the control system built to solve these problems.

A. E. Brenner, head, experimental support activities, will describe "Experiment Support." A wide variety of computing facilities are required for the direct support of high energy physics experiments at NAL. These facilities include dedicated realtime minicomputers with extremely fast response time; large processors with fast computational capability and very short turn-around time; and, finally, normal number-crunching batch processing computers.

Due to certain unique characteristics of NAL's problems, a rather unusual approach has been taken to satisfy these needs. These include a broadband star network of minicomputers feeding a CDC 6600. The minicomputers are typically quite large and are dedicated to individual experiments. Brenner will point out how some of the concepts invoked in solving the NAL problems have a broader range of applicability.

CTA Vehicle Monitoring

R. Tracy, Chicago Transit Authority, will discuss the "CTA Vehicle Monitoring System," at a meeting of the Vehicular Technology Group on Wednesday, January 16, 1974.

Meeting will be held in Room 734, the Merchandise Mart, Chicago, at 7:30 p.m.,

Recent Advances in Antennas

Professor C. H. Walter, Ohio State University, will speak to the joint Group on Antennas and Propagation/Microwave Theory and Techniques on Tuesday, January 15, 1974 on "Some Recent Advances in Antennas."

Antenna development now spans nearly a century, starting with the verification of Maxwell's Theory by Hertz. Activity was stimulated during World War II and increased rapidly and has remained relatively high since that time. Contrary to some opinion, antenna development is not dying; it is very much alive. Professor Walter will list the areas of activity and go into as much detail as time permits in describing the areas of small antennas and numerical methods in adaptive areas.

Small loops and dipoles have been

used since the time of Hertz. Walter will describe some recent versions, as well as ways of measuring the efficiency of a small antenna. Numerical methods have two main approaches: the method of moments and the geometrical theory of diffraction. Walter will discuss features of, and recent results from, these two techniques. He will also describe the basic concept of adaptive arrays, which are adding a new dimension to antenna performance and will summarize present activities in this area.

The meeting will be held at Menard's Black Steer Restaurant, 6446 W. North Avenue, Chicago, Ill. Social hour, 6:00 p.m.; dinner, 6:30 p.m.; meeting, 7:30 p.m. Call the IEEE office, 263-5954, for reservations.

Wire Michigan Fish

Will the warm water discharges from nuclear power stations on the shores of Lake Michigan harm the fish population of the lake? A novel approach to the problem is being employed by researchers at the Argonne National Laboratory near Chicago. They are asking the fish themselves what temperature water they prefer.

This fall, as the salmon and trout moved inshore, research teams equipped some of them with miniature radio transmitters that will monitor the temperature in which the fish are living. In this way, researchers hope to compile statistical data that will indicate the temperature of water preferred by various species of fish, and thus help determine the effects of warm water discharges.

A thin cable with a small temperature-sensitive thermistor at the end is attached to the fish. The cable is sufficiently long to permit the fish free movement. The other end of the cable leads to a small, styrofoam boat that contains the radio transmitter. The boats weigh only a few ounces and do not inhibit the movement of the fish.

On shore a directional antenna picks up the signals broadcast from the boats. The frequency of the signal changes in relation to the water in which the fish is swimming. By utilizing different wavelengths, it is possible to monitor the movements of several different fish at one time.

Argonne also is using other methods to study the effects of warm water discharges on Lake Michigan's aquatic life. A navigational and temperature-sensing system aboard research vessels compiles data that are used to plot the temperature contours of a water discharge plume as it flows into the lake. As the water moves away from the point of discharge, it is rapidly cooled by mixing with colder lake water and by evaporation. The decreasing temperature bands are plotted by computer on a chart as temperature zones. From these measurements, a computer calculates where the water has cooled to certain specified temperatures and plots the line for each temperature on a map. A fish-locating device, employed as part of the data-acquisition system, provides information on the location of fish. These data, when superimposed on the temperature contour chart, indicate at which temperature the majority of fish are to be found.

The Great Lakes Research Program is sponsored by the U.S. Atomic Energy Commission. It is aimed at gaining definitive information about the Great Lakes, and in particular about how they are affected by nuclear power stations located along the shoreline.

Midwest Acoustics Conference

Mark your 1974 calendar now. The eighth annual Midwest Acoustics Conference will be held on Saturday, May 18, 1974 at Norris Center, Northwestern University, Evanston, Ill.

The Midwest Acoustics Conference is jointly sponsored by the Chicago Section, IEEE; the Chicago Section, the Acoustical Society of America; the Midwest Section of the Audio Engineering Society; and the Chicago Acoustical and Audio Group. Subject of the 1974 conference will be tape and disk recording.

Washington Award to deButts

The 1974 Washington Award, administered by the Western Society of Engineers will be presented to John Dulany deButts, chairman of the board of American Telephone & Telegraph Corp., and former president of Illinois Bell Telephone Company. The presentation will take place at the Washington Award Dinner at the Pick-Congress Hotel, on February 19, 1974. The Award is given annually, with the presentation always made during Engineers' Week. Further information on the Washington Award Dinner will appear in the February issue of Scanfax or call Bill Gerler, WSE, 663-0220.

E-Energy, Engineering, and Ecology

On Wednesday, January 16, 1974, Richard A. Young, editor, *Pollution Engineering*, will talk to a joint meeting of the Northwest Subsection and the IEEE Power Engineering Society. Young will discuss the engineer's impact on the environment in areas such as pollution control, energy utilization, and natural resources conservation.

The meeting will be held at the Maitre d' Restaurant, Higgins (Ill. 72) and Arlington Heights Roads, Elk Grove Village. Social Hour, 6:00 p.m.; dinner, 7:00 p.m.; meeting, 8:00 p.m. For reservations, call the IEEE office, 263-5954. If you cannot attend the dinner, you are welcome to attend the meeting only.

Pension Bill

The US Senate, in September, passed a pension reform bill of major importance to engineers. The measure included all three of the amendments proposed by the Engineers Joint Pension Committee. These amendments are: 1. A tax provision to enable engineering societies to set up their own multi-employer engineers-only immediately vested pension plans; 2. A provision for amendment of government procurement regulations to protect the pension rights of highly mobile engineers; and 3. A provision for a special study of the pension problems of engineers and other highly mobile employees and recommendations to the Congress for further improvements.

The focus now shifts to the House, and after the House acts, to the Senate-House conference on the bill. According to IEEE Special Counsel Frank Cummings, the immediate objective is to urge the House to act on this bill as soon as possible.

You are urged to write to your Congressman to let him know that you are concerned with pension reform. Express your concern that any pension legislation include the three amendments proposed by the Engineers Joint Pension Committee. Get the message through to Congress that engineers are not apathetic, but will carefully watch how Members vote on matters affecting engineers.

Calls for Papers!

Information Display International Symposium

Original papers describing significant developments, not previously published or presented, in display hardware and software techniques; devices; systems; applications; and effectiveness; are invited for the Symposium to be held May 21-23, 1974, in San Diego, Calif.

A 35 word abstract and a 500 word draft-summary should be submitted no later than January 14, 1974 to Verne J. Fowler, GTE Labs, 40 Sylvan Road, Waltham, Mass. 02154; (617) 890-8460, ext. 770. The 35 word abstract, suitable for publication in an advance program, should be typed on a separate sheet, and should include title of talk, author's name, affiliation, complete address, and telephone number. Summaries must be submitted in single-side, black-on-white double-spaced typewritten form suitable for reproduction. The author's name, affiliation, complete address, and telephone number must appear on the first page, with the author's name and abbreviated paper title on each subsequent page.

1974 Microwave Power Symposium

Original and review papers are being solicited which describe new technical contributions in *non-communication areas* of microwave power. The 1974 Microwave Power Symposium will be held at Marquette University, Milwaukee, Wis, on May 28-31, 1974.

Submit five copies of a 40 word abstract and a 500 word summary of papers by January 31, 1974 to: Professor R. G. Bosisio, Department of Electrical Engineering, Ecole Polytechnique, 2500 Marie-Guyard, Montreal, Canada H3T

1P8; (514) 344-4872. Summaries should be typed double-spaced on 8½ x 11 inch paper, and must contain specific information. The authors' names, affiliation, complete return address, and telephone number must appear on the first page.

Systems Engineering Conference

Papers on the theme "Merging Manufacturing and Information Systems" are invited for the American Institute of Industrial Engineers Second Annual Systems Engineering Conference, to be held Nov. 6-8, 1974, in Minneapolis, Minn. Abstracts must relate to one of four areas: Minicomputer systems; integrated systems for materials management; computer-aided systems studies; or management systems. Identify the area to which your abstract is directed. Send three copies of a 300-400 word abstract no later than March 15, 1974, to 1974 Systems Engineering Program, c/o Technical Services, American Institute of Industrial Engineers, 25 Technology Park, Atlanta, Norcross, Georgia 30071.

Special Issue of MTT Transactions

A special issue on Integrated optics and optical waveguides is being planned for the January 1975 issue of the *MTT Transactions*. Papers are invited describing original theoretical and experimental work related to integrated optics, optical waveguides and fibers. The emphasis should be on analysis techniques, new ideas, and theoretical and experimental results.

Papers should be submitted in triplicate to the guest editor: D. Marcuse, Bell Laboratories, Crawford Hill Lab., Box 400, Holmdel, N. J. 07733. Deadline for submission is April 1, 1974.