

ORLANDO SECTION NOTES



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MARCH 1969



I.E.E.E. Engineer of the Year
Dr. Carl Dan Pierson, Jr.

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FROM THE CHAIRMAN'S CORNER



At the February 5, 1969, Section Executive Committee meeting, the Nominations Committee reported on their nominees for the Section officers. The slate is:

- Melvin J. Taylor—Chairman
- J. C. Pullara—Vice Chairman
- James L. Gay—Secretary
- Gene Dashiell—Treasurer

This is an exceptionally fine slate of officers and I'm certain the Section would benefit from their leadership. I would like to point out, however, that in addition to these nominees, any

Orlando Section member can be nominated for any Section office by submitting a petition (signed by 15 Section members) to me on or before April 15, 1969. Such petitions are sincerely welcomed because they can bring to our attention the names of willing workers that may have been overlooked or be unknown to the present Executive Committee. My personal thanks are extended to John E. Tracy, James M. Walter, Jr., Robert R. Rowell, and William M. Jamieson for serving on the Nominating Committee.

As in the past, the Kissimmee BBQ was a tremendous success again this year and, in fact, was slightly oversold. Vernon A. Newberry, and his helpers, all warrant our appreciation for a job well done. Additionally, thanks are due Larry Divine, Joe Pullara, and Henry Horne for the musical entertainment these talented gentlemen provided.

Engineer's Week activities are scheduled for February 16 - 22, 1969, and the theme is "Engineering . . . Partner in Rebuilding Urban America", with the annual banquet scheduled for February 22, 1969, at the Robert Meyer Inn. As in the past, the IEEE has nominated a candidate for the "Engineer-of-the-Year" award. This year our candidate is Dr. Carl Dan Pierson, Jr. of Martin Marietta Corporation and part-time professor at Rollins College. The successful candidate will be named at the February 22nd banquet so I hope to see you there. Win or lose, our candidate automatically becomes the Orlando IEEE Engineer-of-the-Year and will be so honored at our annual banquet and ladies night program in June 1969. So, congratulations, in advance, to Dr. Carl Dan Pierson, Jr.! I would like to take this opportunity to thank Lynn Manley of the Martin PR office for preparing the background material and writeup on Dr. Pierson which appears on the following pages.

J. W. Dees, Chairman
Orlando Section, IEEE

DR. CARL DAN PIERSON, JR.

I.E.E.E. ENGINEER OF THE YEAR



Dr. Pierson has been directly involved with ground support and electronics requirements for every major missile program at Martin Marietta, as well as other advanced technology programs. Specific areas of accomplishment include: he directed the development of the guidance link for the Bullpup missile and the navigation system for the P6M Navy seaplane; served as technical director of the advanced LACROSSE surface-to-surface missile, succeeding in getting the system into industrial production; he was instrumental in development

of Pershing and Sprint ground support equipment to the extent that the company has received high incentive awards based on his direct contributions; he helped develop the first computer-controlled ground support equipment for a major missile system (Pershing); he served as task leader and principal designer of the company's Electromagnetic Pulse facility, the most significant of its type in industry; he instigated the use of time-shared computer terminals for engineering design and analysis; he managed the design of the large-scale digital computer for the Army's advanced RADA communication system; and he stimulated company interest in AUTOMET (Automatic Manufacturing and Electrical Test), an advanced technique to improve large-scale manufacturing operations.

Dr. Pierson has contributed significantly to the Central Florida academic environment through his dedication to teaching at Rollins University for more than nine years. At Rollins he was successful in initiating and establishing the curriculum for a master's program in physics. He was also instrumental in establishing the curriculum for University of Florida's Off-Campus Engineering Graduate Program, FICUS (Florida Institute for Continuing University Studies) which gradually evolved into the present GENESYS program. As an amateur radio operator he has contributed significantly to the morale of U. S. servicemen by patching overseas phone calls to their families.

Perhaps the finest recommendation one can make for Dr. Pierson is that, he is recognized within the company as an outstanding consultant in his field. Additionally, he stays unusually current in modern technology in a field that typically experiences dynamic change. He had maintained this proficiency by attending such universities as UCLA and Michigan to continually up-date his knowledge in electrical engineering. And through his teaching experience, he also manages to keep other professionals current.

Dr. Pierson resides at 1145 Venetian Way, in Winter Park, Florida. His formal education was received at the following schools:

BSEE, Armour Institute of Technology—1940

MSEE, Illinois Institute of Technology—1947

Ph.D., Electrical Engineering, Illinois Institute of Technology—1953

Dr. Pierson is a member of the following Professional-Scientific Societies:

IEEE (Senior Member)

ASEE

American Assn. of Physics Teachers

Registered Prof. Engr.—Illinois (by exam)

Registered Prof.—Engr.—Maryland

Etta Kappa Nu

Tau Beta Pi

Sigma Xi

Aerospace & Electronic Systems - G-10

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Program Chrm: Robert Marshall R. 855-2543	Martin Marietta B. 855-6100 x 3766

At the February 8, 1969, AES Group Meeting, Mr. Sidney Salkin, Project Engineer and Charge Management Administrator for North American Rockwell Corporation, presented a program on the Apollo Flights consisting of a lecture and film-slide combination. The slides and films showed details of the space capsule interior that most have not seen. We were able to view the astronauts at work in their weightless environment and see the inspiring sight of the earth and moon with the resolution seen by astronauts themselves. The lecture described the Apollo program from conception in 1961 through the flight of Apollo 8. Mr. Salkin said that the first lunar landing would probably come with Apollo 11. The program was concluded with a short question and answer period.

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Microwave Theory & Techniques—G-17

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Secretary	T. R. Page R. 647-2598	Martin Marietta B. 855-6100 x 4560

MTT GROUP MEETING

WEDNESDAY, 12 MARCH 1969

GENESYS BLDG.

Orlando Industrial Park
8:00 P.M.

Speaker: DAVID WYAND

Avantek, Inc., Santa Barbara, Calif.

Subject: MICROWAVE TRANSISTOR AMPLIFIERS

The general characteristics of microwave transistor amplifiers will be reviewed and compared with other types of microwave amplifiers. Mr. Wyand will begin with today's amplifiers and their design considerations (for gain bandwidth, noise, dynamic range, etc.), proceeding to the area of thin film techniques and future trends for transistor amplifiers. Concrete examples of amplifier designs will be given with a detailed review of some performance data.

About the Speaker: Mr. Wyand is manager of Sales Liaison with Avantek, Inc., with most of his current efforts in the area of Application Engineering. His previous professional experience includes work with Eitel-McCullough in their Microwave Tube Facilities, with the ITT Electron Tube Division, and on ferrite components with metals. Mr. Wyand holds a BSEE degree from the University of California and a BSME degree from the California Maritime Academy.

MEET THE SPEAKER (Gold Key Inn; S. Orange Blossom Trail):

Social Hour — 5:45 P.M.

Dinner — 6:30 P.M. (order from menu)

MEETING: GENESYS BLDG., 8:00 P.M.

Orlando Industrial Park, Lake Ellenor Drive

NOTICE

Sam Ackerman, General Manager of Dynatronics, is attempting to assemble a complete set of IRE-IEEE **Proceedings** to bind and give to the Tuskegee Institute Library. He has all but five issues and these, being out of print, cannot be obtained from IEEE headquarters. The missing proceedings are dated July, 1958, February, 1966, March, 1966, May, 1966, and June, 1966. Anyone having copies of these issues, who is willing to donate them to a good cause, is asked to contact Mrs. Betty Zeuli or Mr. Ackerman at 838-6161, extension 213.

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EC GROUP MEETING

Wednesday, 19 March 1969

Scanda House — Winter Park

Dinner—7:00 p.m.

Meeting—8:00 p.m.

Speaker: Mr. Arnold Sullivan
Manager, Memory Products Group
Honeywell, Inc., St. Petersburg

Mr. Sullivan will present status of ART technique and memory design, application and production. Major emphasis is on future developments in areas of plated wire and large scale integration of active elements for memory.



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CT GROUP MEETING

Tuesday, 18 March 1969

House of Beef, Statler Hilton Inn — West Colonial

6:00 P.M.—Social

6:30 P.M.—Dinner—Roast Beef—\$3.75 ea.

7:45 P.M.—Program

Speaker: Mr. John Franks, Program Manager of Program
Development, Communications and Systems, Inc.
Paramus, New Jersey

Mr. Franks is also Chairman of the CT Group of the North Jersey Section.

Topic: Concept of the Chapter

Their needs for elements of successful operation - Leadership -
Membership - Program - Organization



CT Group Sponsors the Section Meeting on 19 May 1969.

Program on Holography

Holography Used to View Strain in Metals in Tests

Holographic interferometry is now being used in fracture mechanics, in determining the conditions under which a material will or will not fail by cracking. The technique, which is being employed by T. D. Dudderar of the Bell Telephone Laboratories, permits patterns of permanent strain to be seen as they spread over the surface of the metal.

Observing the formation of these patterns, as a metal sample is loaded beyond the point of permanent strain, allows investigation of the toughness of the metal in a particular design, before it is committed to manufacture. At present, methods of making such patterns visible, such as conventional interferometry, are more limited in scope, require more time, and are of questionable accuracy.

Using holographic interferometry in fracture mechanics involves making a hologram of the surface of a metal sample before placing the sample under strain. The developed hologram is then positioned and illuminated so that the reconstructed image is viewed as exactly superimposed on the surface of the metal sample. When the sample is loaded, deformations of the surface become readily visible as interference fringe patterns. These fringe patterns show deformation contours at successive elevations of half a wavelength of the illuminating laser light. Each fringe represents the position of points where the reflected light from the original surface of the sample, as pictured by the hologram, is a half wavelength out of step with light reflected from the now-deformed surface.

The area that can be studied by this method appears limited only by the area that can be bathed in coherent laser light. Small telephone switching parts or large microwave antenna components, for example, may be studied with the technique. It could be extended to include investigations of low-cycle fatigue and cyclic hardening or softening phenomena. If sufficient care is taken in positioning the hologram, a quantitative determination of surface deformation can be made.

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Program Chrm:	John H. Boynton R. 838-8077	Orlando Armature Works B. 423-0555
Secretary:	Tom Sanders R. 855-7108	Orlando Utility Com. B. 841-1230

IEEE Power Group Meeting

Tuesday, March 25, 1969

Seminar on Protective Relaying

Sheraton Cape Colony 8:30 a.m. to 4:00 p.m.

The Power Group has scheduled a full day seminar on Industrial and Commercial Applications of Protective Relaying to be held in the Convention Hall of the Sheraton Cape Colony, beginning from 8:30 a.m. to 4:00 p.m., on Tuesday, March 25, 1969.

The need for reliable, flexible, expandable, safe power systems has been well established and well proven by the many up-to-date installations in this space-oriented community. Sensitive detection and prompt isolation of abnormal system conditions is the purpose of adequate protective relaying, and the methods of accomplishing this will be discussed in depth by two outstanding authorities, our guest speakers.

Mr. John C. Cranos, Manager of Systems Development with General Electric's headquarters engineering in Schenectady, and Mr. Paul J. Reifschneider, Manager of Industrial Application & Fuse Engineering in General Electric's Switchgear facilities in Philadelphia who will present practical solutions for this much misunderstood subject.

To cover costs of lunch and coffee breaks, a fee of \$4.75 is charged for each participant, with advance reservations requested. Enrollment fee at the door is \$5.00.

To: TED URBAN
GENERAL ELECTRIC COMPANY/ASD
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() Yes I plan to attend the Protective Relaying Seminar, attached is my check for \$4.75.

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MARCH ACTIVITIES CALENDAR

Wednesday, 5 March — Section Business Meeting.

Wednesday, 12 March — MTT Group Meeting — Genesys Bldg. 8 p.m.

Tuesday, 18 March — Communications Group Meeting — House of Beef, Statler Hilton — Dinner 6:30 p.m.

Wednesday, 19 March — Computer Group Meeting — Scanda House, Winter Park — Dinner 7:00 p.m.

Tuesday, 25 March — Power Group Meeting — Seminar on Protective Relaying — Sheraton Cape Colony Inn — Cocoa Beach — 8:30 a.m. to 4:00 p.m.

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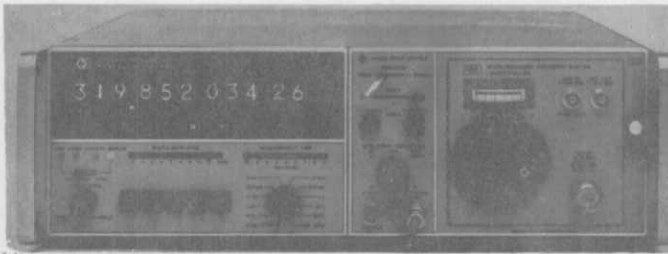
Microwave Spectrometer Utilizes A Radar Echo Box

A smooth-scanning, highly sensitive microwave spectrometer, which uses a radar echo box as an absorption cell, has been developed at the National Bureau of Standards Institute for Basic Standards by H. E. Radford and C. V. Kurtz. Operating at wavelengths between 3 and 30 cm, it is particularly useful for research on unstable molecules; it has enabled the measurement of two previously unmeasured spectra of the OH molecule, which has led to their detection in space.

The main components of the NBS spectrometer are the echo box, a superheterodyne detector, and a servo-controlled automatic tuning circuit. The echo box is a piece of radar test equipment that meets the requirements of an absorption cell for microwave spectrometers—high Q, smooth tuning, and freedom from unwanted resonances. Its typical form is that of a silverplated cylindrical mode transmission cavity, one end plate of which is fixed and the other movable by a precision lead screwed drive.

To convert an echo box to a spectrometer absorption cavity requires only the change of existing dust seals to vacuum seals by installing rubber O rings, and replacing the fixed end plate by one designed for high-speed pumping and for Stark modulation. A voltage terminal in the end plate provides Stark modulation by subjecting the specimen gas to an alternating electric field.

Two prototype spectrometers, one operating at S-band and the other at C-band frequencies, have been constructed at NBS. Although usable for measurements on stable molecules, the NBS spectrometers were designed primarily to detect transient molecules generated by gaseous chemical reactions.



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