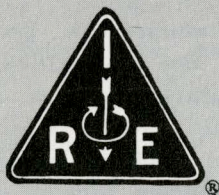


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DENVER DECIBEL

VOL. 2, No. 2

DENVER SECTION OF THE IRE

WINTER 1956-57

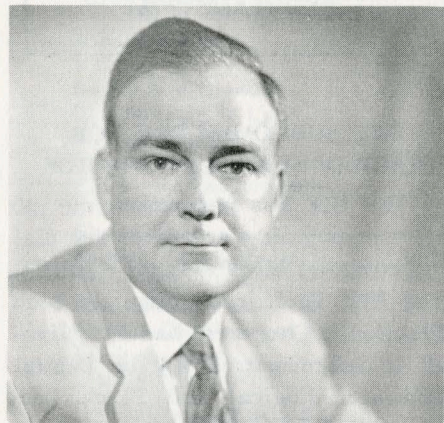
James Burridge Speaks at Dinner Meeting

ANNUAL AWARDS FOR 1957

The Institute of Radio Engineers, Inc. has announced the recipients of three of its annual awards for 1957. The actual presentation of these awards will be made during the IRE National Convention, which will be held March 18-21 in New York City.

The Morris Liebmann Memorial Prize Award will go to O. G. Villard, Jr., Professor at Stanford University Stanford, Calif. "for his contributions in the field of meteor astronomy and ionosphere physics which led to the solution of outstanding problems in radio propagation." The award is made annually to a member of the IRE for a recent important contribution to the radio art.

(Continued on page 3)



MR. BURRIDGE SPEAKS AT DINNER MEETING

Mr. James Burridge, Assistant Chief Engineer of Glenn L. Martin Co. Denver addressed the section's annual dinner meeting held at the Tiffin Inn on November 16, 1956.

One hundred engineers and wives attended the turkey and shrimp dinner. Several persons attended the meeting after the dinner to hear the talk.

Mr. Burridge discussed the history of the Martin contract for the ICBM (Intercontinental Ballistic Missile) and the background behind Martin's decision to come to Denver. The talk was very informal and well received. Following the talk the Martin film, "Horizons Unlimited", Mr. Burridge answered questions on both the talk and the film.

MEETING ANNOUNCEMENTS

January 25, 1957, Dr. K. G. Budden of the Cavendish Laboratory, Cambridge, England, speaking on "Survey of Investigations of V.L.F. Propagation at Cambridge." Meeting Place, NBS building, Boulder, Colorado.

February 25, 1957, Dr. Walter O. Roberts, Director, High Altitude Observatory, University of Colorado, speaking on "The Sun and the Upper Atmosphere." Place in Denver to be Announced.

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IRE SUBCOMMITTEE FOR DIAGRAM SYMBOL STANDARDS

The IRE has undertaken the job of recommending standards for digital computer block diagram symbols. The IRE Technical Committee 8 on Electronic Computers has established a Subcommittee 8.9 on Digital Computer Logical and Block Diagram Symbols. This group has been in operation since early this year.

At present a wide variety of computer block diagram symbols are in use by the several manufacturers and users. In many cases these symbols conflict with each other, or with symbols used for analog computers and other electrical equipment. These conflicts are impeding the progress of the whole computer field. They present a difficulty to customers and to training functions which must provide training on more than one type of equipment. The conflict is particularly noticeable in large computing systems built for the government by a number of different manufacturers.

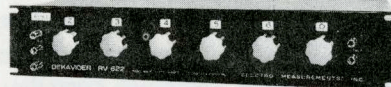
To extend the area of representation beyond its membership, the subcommittee is selecting a limited number of correspondents who re-

present manufacturers, government agencies, and universities. These correspondents, although they do not ordinarily attend meetings, receive copies of all subcommittee papers including minutes of meetings and copies of all proposals. In this way the subcommittee expects to ensure that its decisions receive adequate review throughout the industry.

The subcommittee will also be pleased to establish contact with other interested parties and to receive suggestions or copies of existing companies' standards. Communications may be addressed to the chairman at IRE Headquarters, 1 East 79 Street, New York City.

esi

ELECTRO MEASUREMENTS INC. DEKAVIDER POTENTIOMETER



Precision voltage dividers employing the Kelvin-Varley circuitry constructed with a double shield for maintaining high accuracy and reducing frequency error and phase shift. These instruments can be operated to 100 kilocycles. In addition to the conventional ground shield, an inner shield driven by a voltage divider ganged to the precision divider is used. The Model 531 is composed of four decade steps and an interpolating potentiometer and the Model 632 is made with six resistance decodes. Both models are available with a standard input resistance of 5 K ohm, $\pm 0.05\%$. Models RV-521 and RV-622 are similar to the RV-531 and RV-632 with the exception that only a ground shield is used in their construction and the standard input resistance is 10 K ohm, $\pm 0.05\%$. These models can be operated to 10 kilocycles.

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NEW ELECTRONICS HANDBOOK

An authoritative handbook of electronic measurements, designed to fill a critical need for concise and complete sources of information in the field of electrical engineering, has just been published by the Microwave Research Institute of the Polytechnic Institute of Brooklyn.

The two volume handbook was written by seventeen authorities in their respective fields and edited by Moe Wind, under the sponsorship of the Rome Air Development Center. It combines basic and practical information, and presents a compendium of measurement methods categorized according to frequency, from dc through the microwave region.

ANNUAL AWARDS FOR 1957

(Continued from page 1)

Donald Richman,^{*} Supervising Engineer at Hazeltine Corp., Little Neck, N. Y. will be the recipient of the Vladimir K. Zworykin Prize Award "for contributions to the theory of synchronization, particularly that of color subcarrier reference oscillator synchronization in color television." This award is made annually for outstanding contributions to electronic television.

The Harry Diamond Memorial Prize Award will be given to Georg Goubau, Physicist at the Signal Corps Engineering Labs., Ft. Monmouth, N. J. "for his many contributions in ionospheric research and circuit theory and for his discovery of the surface wave transmission principle." The Diamond award is given annually to a person in government service for outstanding contributions in the field of radio or electronics as evidenced by publications in professional journals.

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Internat'l Scientific Radio Union Meet

Five-hundred delegate-scientists are expected to attend the triennial meeting of the twelfth general assembly of the International Scientific Radio Union when it meets in Boulder Aug 22 - Sept 5, 1957.

Invited to the United States by the U.S.A. National Committee of the Union, URSI will have as local hosts the Boulder Laboratories of the National Bureau of Standards, the University of Colorado, the High Altitude Observatory, and the city of Boulder. In charge of local arrangements is Kenneth A. Norton, Chief of the NBS radio propagation engineering division.

Popularly referred to as URSI from the initials of the French structure of the title, Union Radio-Scientifique Internationale, the organization will bring scientists from at least 25 member countries including the United States to pool information on present radio studies and to map plans for future international research programs.

Scientist-attendants are being selected by the URSI national committees of their countries for competence in radio research.

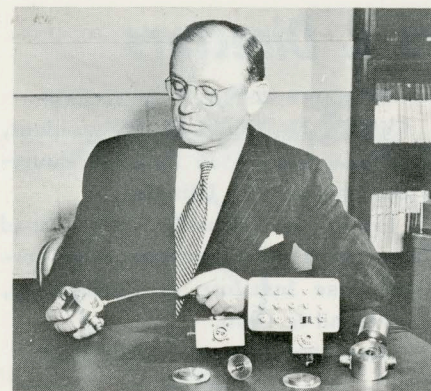
URSI with its vital role in fostering international collaboration, can

claim significant achievements derived not only from general assembly discussions but from the permanent URSI Commissions that conduct continuous studies in the major fields of radio research: Radio measurements and standards, radio waves and circuits, tropospheric radio propagation, ionospheric radio propagation, radio noise of terrestrial origin, radio astronomy, and radio electronics.

It was from URSI that came the first serious proposal for an earth-satellite "to monitor solar ultraviolet and x-radiation intensity and its effects in the ionosphere, particularly during solar flares, thereby enhancing our scientific knowledge of the outer atmosphere."

Also URSI sparked radio observations of the sun's corona and the upper atmosphere during solar eclipses which have resulted in information important to radio research.

From an interchange of ideas among URSI scientists have come numerous other developments in radio circuits and theory of electronics that have lead directly to improved devices and methods in radio communication and electronic techniques.



MYRON C. SELBY

Myron C. Selby of the Boulder Laboratories of the National Bureau of Standards is shown with recently patented micropotentiometers which he invented to measure voltages so small that previously they could only be roughly estimated. More specifically, the device measures voltages

down to a minovolt at 1000 megacycles. The small rack at the right holds adapters used for various voltage requirements.

The devices, called Radio-Frequency Micropotentiometers, were invented nearly six years ago by Myron C. Selby, Chief of the NBSBL High Frequency Electronic Standards Section, to measure voltages so small that previously they could only be roughly estimated.

During this time industry and defense have profited greatly from use of the devices. Radio manufacturers, for instance, can now determine quite simply and accurately how sensitive a receiver is. Formerly they could not tell the difference between receivers that had as much as 500 per cent sensitivity difference.



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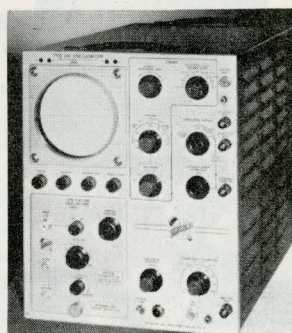
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1957 IRE Officers & Directors

The following Officers and Directors have been elected for 1957:

President 1957

Dr. J. T. Henderson, Senior Research Physicist, National Research Council, Sussex Street, Ottawa, Ontario, Canada.

Vice-President, 1957

Dr. Yasujiro Niwa, President Tokyo Electrical Engineering College Kanda-Nishikicho, Chiyodaku Tokyo, Japan.

Directors-at-Large, 1957-1959

Mr. D. E. Noble, Vice President, Motorola, Inc., 4545 Augusta Boulevard, Chicago 51, Illinois.

Professor Samuel Seely, Head Department of Electrical Engineering, Case Institute of Technology, Cleveland 6, Ohio.

Regional Director, 1957-1958

Region #6

Mr. Kenneth Newton, Supervisor, Components Engineering, Bendix Aviation Corporation, Kansas City Division, P. O. Box 1159, Kansas City 41, Missouri.

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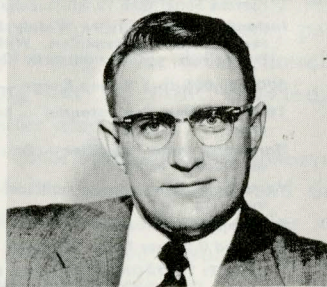
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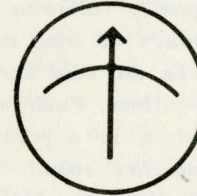
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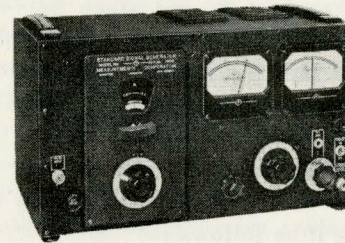
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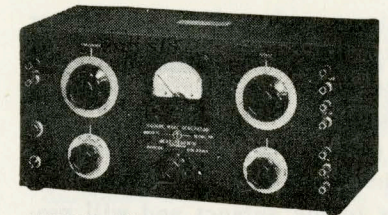
Laboratory Standards



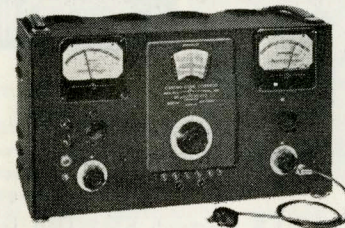
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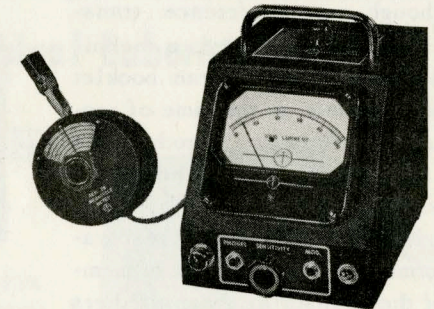
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TRANSISTOR CONFERENCE

The 1957 Transistor and Solid-State Circuits Conference is sponsored jointly by the Philadelphia Section of the IRE, the Science and Electronics Technical Division of the AIEE, the IRE Professional Group on Circuit Theory, and the University of Pennsylvania. Patterned after the previous Conferences held at the same location for the past several years, this Conference will include information on both linear and nonlinear transistor circuits. Also, one session will be devoted to other solid-state circuits, including ferro-electrics and magnetic cores. Two tutorial sessions are aimed at surveying recent advances in the subject and will provide the practicing engineer in solid-state circuitry a broader picture of the state of the art.

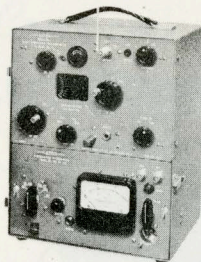
Although no conference transactions will be published, a technical addendum to the program booklet will be available at the time of registration, containing reproductions of all slides, including mathematical expressions.

Registration and hotel reservation forms are being mailed to members of the sponsoring groups. Others may obtain them from F. W. Anderson, General Electric Company, Missile and Ordnance Systems Department, 3198 Chestnut Street, Philadelphia 4, Pennsylvania. Fees for the Conference are as follows: advance registrations made before February 7, \$3.00; Thursday luncheon, \$2.50; cocktail buffet, \$6.00; and Friday luncheon, \$2.50; registration at conference, \$4.00; Thursday luncheon, \$3.00; cocktail buffet, \$6.50; Friday luncheon, \$3.00. Advanced registration is urged.

A QUERY

Three men are going to fight a duel with pistols (they are angry with each other because they have been arguing the relative merits of time division, frequency division, and time-frequency division systems). Each plays to win; to win, the man must be the sole survivor. Each has two bullets. Each will be allowed one shot, in a prescribed order; then another round in the same order. Man A has a kill probability of $1/2$, and since he is the poorest shot he is allowed to shoot first. Man B has a kill probability of $2/3$ and shoots second. Man C has a kill probability of $3/4$.

What is A's best strategy and what is the probability of his winning if he follows it?
(from *Echoes of the Rome-Utica IRE Section*, February 1956)



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PGAP NEWS

Microwave Phase Stability

The Radio Propagation Engineering Division of the National Bureau of Standards in Boulder recently conducted a week-long series of experiments on the island of Maui, Territory of Hawaii, investigating the effects of large changes in the refractive index of the atmosphere on the phase stability of microwave transmissions. These experiments consisted of transmitting a microwave signal from the top of Haleakala Crater (10,000 ft.) to several receiving locations near sea level and recording the effective variation in electrical path length. These variations are primarily produced by

visible and non-visible clouds which vary in water vapor content; the principal factor in the refractive index equation. Considerable meteorological research went into selecting the Maui site for proper cloud formation and levels as well as such logistical requirements as accessibility and power.

Very Low Frequency Symposium, National Bureau of Standards Laboratories, Boulder, Colorado. Sponsored by NBS Boulder Laboratories and the IRE Professional Group on Antennas and Propagation. Contact U. S. Department of Commerce, NBS Laboratories, Boulder, Colorado.

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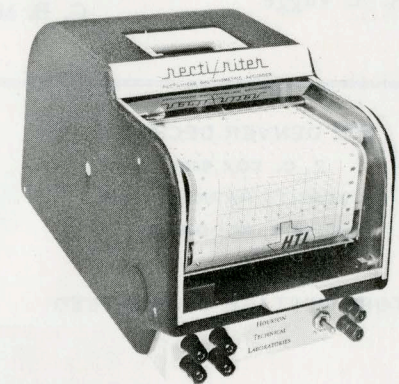
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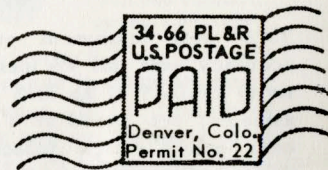
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