The DENVER DECIBEL

VOL. 1, NO. 4 DENVER SECTION OF THE IRE SUMMER 1956

STUDENT AWARD & PAPERS MEETING

Left to right: Richard C. Webb, I. F. Davis, Harold Sparks, Glen E. Stone, Edward C. Orris, William N. Mills, Gilbert S. Johnson, Jack W. Herbstreit.

On March 30, 1956, the Denver Section held its Student Award and Papers Meeting at the Student Union Lounge, University of Denver, Denver, Colorado. The meeting was preceeded by a dinner at the Pioneer Room of the Union and a total of 200 IRE members and their guests attended. The National IRE Awards were presented to Mr. Gilbert S. Johnson, Colorado A and M College, Fort Collins, Colorado; Mr. Frederick J. Zobel, Jr., University of Colorado, Boulder, Colorado; and Mr. Harold Sparks, University of Denver, Denver, Colorado. This award is given by the National IRE headquarters to the outstanding senior student from each student section and consists of one year's paid-up membership in the IRE and an engraved certificate.

Four student papers were entered in the papers contest, and short versions of all four papers were presented at the meeting. The papers were as follows: "Electrophysiology of the Eye," by I. F. Davis of the University of Denver; "The Travelling Wave Tube," by Edward C. Orris, University of Denver; "The Hall Effect," by Glen E. Stone, Colorado A and M College; and "Present-Day Feasibility of Dielectric Amplifiers," by William N. Mills, Colorado A and M College. The papers were judged on the basis of originality, technical soundness, neatness, and oral presentation. First prize of $25 was awarded to Mr. I. F. Davis, second prize of $15 was awarded to Mr. Edward C. Orris and there was a tie for third prize of $10 between Mr. Glen E. Stone and Mr. William N. Mills. Congratulations to all the students and we wish them success in all their future endeavors.

After the student papers the Section was treated to a fine illustrated lecture by an expert in the field of artificial satellites. Mr. L.

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THE DENVER DECIBEL

Editor James F. Hurlbut

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Published quarterly by the
Denver Section of IRE

CHANGES IN MEMBERSHIP

New Members

Fred P. Venditti	M
Frank R. Bean	S

Change in Status

Richard C. Webb	SM
Carl L. Sturgill	M
Gilbert L. Johnson	M

Transfer to Section

Albert J. Bradt	M
Harold E. Beaver	A
Wm. J. Utterback	M

BIOGRAPHICAL SKETCH ON ALAN H. SHAPLEY

Mr. Alan H. Shapley is chief of a recently established sun-earth relationships section of the Boulder Laboratories of the National Bureau of Standards. This section is a part of the radio propagation physics division of the Central Radio Propagation Laboratory.

Mr. Shapley's work is concerned with studying sun-earth relationships that necessarily effect radio transmission since the sun is the chief source of radiations that produce the ionosphere–the upper portion of the earth's atmosphere which makes possible long-distance reception of radio waves.

Before joining NBS in 1947, he was consecutively assistant astronomer at the Harvard Observatory; engineer with Sylvania Electrical Products Corporation in Massachusetts; and physicist with the terrestrial magnetism department at the Carnegie Institution.

JOINT IRE-ISA MAY 4th MEETING

Servomechanisms were the topic of a talk by Stanley Schneider at the May 4 joint meeting of the Denver sections of the IRE and ISA. A brief history of Servomechanisms and a definition thereof were given, and such control systems were traced back to steam engine governors and kindred devices. It was pointed out that, although individual Servo problems had been solved as early as the 1800's, no overall approach existed until the 1930's.

The concept of Block Diagrams was introduced next, and, by way of illustration, a typical fire-control system involving a Position Servo was set up on Block-Diagram form and its equations derived. The advantage of Servo over open loop control was then illustrated with a numerical example. It was shown how, by means of transform theory and the Root Locus method, the transient response of the system could be deduced. From the Root Locus Diagram, necessary circuitry could be introduced into the system to improve its transient response. It was pointed out how this essentially graphic method could vastly reduce the Servo engineers labors and isolate system performance as a function of any variable involved.

Mr. Schneider has a degree in physics from Columbia University in New York. He has five years experience in systems and control circuitry design and is presently employed by Helipot Corporation as Chief Research Engineer.

SS.IR

PGAP NEWS

FIRST ANNUAL MEETING OF THE DENVER-BOULDER CHAPTER OF PGAP

On May 23 the Denver-Boulder Chapter of the Professional Group on Antennas and Propagation (PGAP), celebrated the completion of its first operating year. Organized in the fall of 1955 with the initial membership of twenty it is the sixth chapter of this group which is one of the largest of the IRE professional groups with a national membership of over 1800.

The activities marking the anniversary began with a technical meeting held in the afternoon at the Radio Building of the National Bureau of Standards, Boulder Laboratories, open to the public, and concluded with an annual meeting and a banquet for the members held in the evening at the Memorial Building of the University of Colorado. Between the two events a reception was held for members of the PGAP and their friends at the home of Dr. and Mrs. E. K. Smith. Hosts and hostesses for the reception were Dr. and Mrs. Smith and Dr. and Mrs. J. R. Wait. Dr. Smith has been the Chairman of the Chapter for the past year. Dr. Wait is the newly-elected Chairman for the forthcoming year.

The technical session featured Dr. A. D. Wheelon of the Ramo-Wooldridge Corporation of Los Angeles. Dr. Wheelon spoke on the subject of certain theoretical aspects of scatter propagation.

The annual meeting served to mark the termination of the first year's activities of the PGAP chapter and to begin the new year with the installation of new officers. The retiring officers, besides Dr. E. K. Smith, the chairman, were Dr. K. T. Johnk, vice-chairman, and K. Hornberg, secretary. The incoming officers are: Dr. J. R. Wait, chairman, H. V. Cottony, vice-chairman and R. Silberstein, secretary. The meeting concluded with the showing of slides taken during visits to England and other European countries by Dr. Wait and Cottony.

DENVER-BOULDER CHAPTER

The Denver-Boulder Chapter of PGAP was organized at CRPL in Boulder, Colorado and was approved by the IRE Executive Committee on September 9, 1955.

Five lecture meetings were held during the first ten months of the Chapter's existence; in the first three of these the meetings were jointly sponsored by the local chapter and the CRPL Radio Propagation Colloquium. On October 28, 1955 Dr. James R. Wait of CRPL spoke on "Theoretical and Experimental Investigation of Slot Antennas." He was followed on November 26, 1955 by Dr. Kenneth L. Bowles of CRPL whose topic was "VHF Radio Echoes from Aurora." On January 25, 1956 Dr. Carl T. Johnk of the University of Colorado (and vice-chairman of the Chapter) delivered a lecture entitled "A Method for Synthesizing Plane Circular Aperture Antennas." The most ambitious technical meeting which the Chapter has sponsored was one which took place on February 16, 1955. A "whistler" conference had been going on at the NBS Boulder Laboratories and the visiting participants were invited to summarize two major points of interest in an evening meeting of the Chapter, with Dr. R. A. Helliwell of Stanford coordinating. Their contributions consisted of talks by Dr. Helliwell, Dr. L. R. O. Storey of the Radio Physics Laboratory (Ottawa), Dr. M. G. Morgan of Dartmouth University and Harold Dinger of NRL. The fifth talk was given by Dr. A. D. Wheelon of the Ramo-Wooldridge Corporation. The title of his lecture was "Back Scatter of Radio Waves" (from the ionosphere).

FUTURE MEETING OF DENVER-BOULDER PGAP CHAPTER

The next meeting of the chapter will have as its speaker Dr. Glenn Keitel who is a Fulbright Fellow at the Cavendish Laboratory in Cambridge University, England. He is stopping at Boulder on the way to his home in Oregon. The date and time will probably be the 19th of July at 7:30 PM.

The title of Dr. Keitel's talk is "A Survey of Current Ionospheric Research at the Cavendish Laboratory." The talk will consist of a survey of several of the more important ionospheric investigations at the Cavendish Laboratory. Topics will include self-demodulation experiments at 200 kc, measurements of anisotropic irregularities in the ionosphere, and an investigation of the production of the F-region.

Glenn obtained his Ph. D. at Stanford in 1954 where he investigated the scattering of radio waves from meteor trails. He has published several papers on this subject.

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Engineering Notes & News

New Research Group Formed

The Colorado Research Corporation has been established in the Denver area as a research and development center to work in the field of electronics and applied physics.

Officers in the new organization are: Dr. Richard C. Webb, President; Dr. William R. Jewell, Vice President; and Mr. Stanley B. Peterson, Secretary-Treasurer. All were formerly associated with the Denver Research Institute of the University of Denver.

Laboratory and model shop facilities will be offered to Government and industrial clients. The permanent Denver location of the new research laboratory has not yet been announced. Mailing address is: P. O. Box 8439, University Park Station, Denver 10, Colorado.

National Electronics Conference

"Fifty Years of Progress Through Electronics" will be the theme of the 12th annual National Electronics Conference in Chicago on Oct. 1-3.

This year marks the golden anniversary of the electronics industry—founded in 1906 when Lee De Forest developed the first three-electrode vacuum tube, known as the audion.

Approximately 100 technical papers and a record 240 commercial exhibits will be featured at the three-day conference at the Hotel Sherman in Chicago's Loop.

More than 10,000 persons are expected to attend the meeting—the nation's leading forum on electronic research, development, and application.

The conference is sponsored annually by the American Institute of Radio Engineers, Illinois Institute of Technology, University of Illinois, and Northwestern University.

Also participating in the conference are Michigan State, Purdue, Michigan, and Wisconsin universities, as well as the Radio-Electronics-Television Manufacturers Association, and Society of Motion Picture and Television Engineers.

Proceedings of the 1955 National Electronics Conference now can be obtained at $5 per copy from the NEC headquarters, 84 E. Randolph St., Chicago.

STUDENT AWARD *(Continued from page 1)*

G. DeBey, Assistant Chief of the Ballistics Measurement Laboratory of Aberdeen Proving Ground, Aberdeen, Maryland, gave a talk on "A Minimum Earth Satellite—The Scientific Objectives and Observing Methods." Mr. DeBey described the basic idea of satellites as an outgrowth of guided missiles. He discussed the determination of choice of scientific objectives with a five-pound weight limit. There are many uncertainties which may affect the success of the program, one of these is the temperature estimates. The satellite will carry a small transmitter which will give information on radio propagation as well as provide a means for tracking and positioning by means of doppler frequency shifts. He stated that optical viewing will be very limited. Visibility will last from 30 seconds to 4 minutes near sunrise and sunset for only a limited area of viewing.

SIGMA'S DONE IT AGAIN!

We're sorry to report that the new "Vast-New-Era" has hit a roadblock. Systems engineering, in at least one aspect, is stalled, delayed and obfuscated (patented).

A while back, Sigma Instruments, Inc., squinted into its corporate tea cup and described the need for a freshly minted name, something to described "...the automatic production of electronic equipment... the wedding of Electronics and Automation."

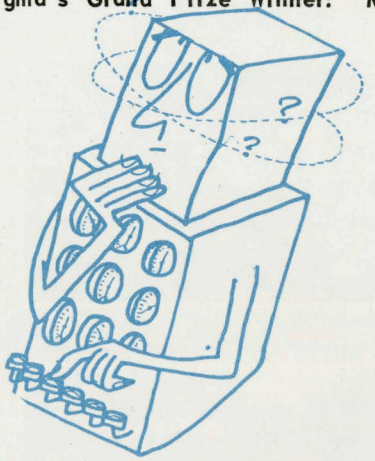
The name would denote the floriation of this new Vast-New-Era, and would submit tamely to usage by engineers, eagle scouts and advertising men. It would fit easily into a sentence. Viz and to wit: "There's no (new name) like an old (new name)." Or, "Sam, you made the (new name) too dignitaceous."

To settle on a distinctive syllabic arrangement, Sigma ran a contest... Did they rev up the encabulators? Uh-uh.

Sigma called on that faltering, fumbling, unprogrammed commodity—people. Offered them prizes. We had been panting along under the impression that any such matter could be decided by a strip of paper with a cunning arrangement of holes punched in it. Run it through a machine and out pops the answer, new, shiny, untouched by human logic... Be that as it may.

With Sigma's grudging permission we're printing excerpts from some of the entries in their contest. In doing so we want to disclaim any bias toward people, as opposed to (the new word). This whole business is presented in the interests of progress, and if you can fight that we'll just stand here on the sidelines and cheer impartially.

Sigma's Grand Prize Winner: "Mc-



Gee" Yes, "McGee." Submitted by Dr. Edgar S. Ball, of Lorain, Ohio. Dr. Ball's simple, forceful reasoning in support of his entry made the contest judges' decision no problem at all. We quote from his letter:

Gentlemen:

Here is a dandy for your contest: 'McGee.'

1. 'Mc'... Contraction for mechanical.
2. 'ee'... Contraction for electronic.
3. 'Gee'... Shows a proper awe for this new era.
4. Read backwards you can almost get the magic formula E=Mc2, which should work into this thing somehow.

Yours for a safe and sane International Geophysical Year... Signed, E. S. Ball."

"AMBERDUZIT," second-prize winning entry, was submitted by Sherad M. McCall of Pittsburgh. "An excellent name for the combination of electronics and automation," says McCall. "The term election derives from the Greek word for amber. This is an ancient tidbit of useless information I have been longing for years to drive back to its origin... It's obvious to any really biased judge that automation implies some device that 'does it' by itself."

Third-prize winner was submitted by P. Paul Porcasi of North Hollywood, Calif. We quote from his letter:

'The word should draw upon the wedding aspects of those two comers, Electronics and Automation. From Electronics we might select the letters T, R and E. From Automation, the letters O and M. From

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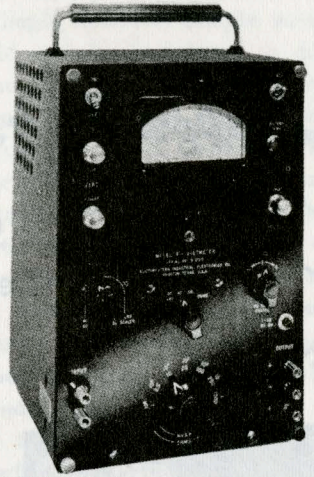

SIGMA *(Continued from page 9)*

the allied word Machine we abstract the letter H. Put them all together and there you have it, gentlemen, a word that means the world to me—MOTHER . . . Sell with Mother!"

Fourth prize was awarded Eugene Wesselman, Riverside, Ill., for his entry, "Puttertronics." Wasselman says, "The word is formed by the wedding of the words 'Putter' and 'Electronics.' The significance lies in the fact that attempts at automation in the electronics industry so far have usually kept all parties concerned busy puttering to see that the system remains in operation. In many instances the number of production operators has been overcompensated by the number of such putterers employed."

From Great Neck, L. I., S. S. Osder suggested the name, "autocybernetamechanelectronomation." Osder says, "I refuse to yield to the simple needs of simple men who should not be permitted to dabble in the profound field of automatic control. This title, synthesized in the true tradition of German science, is certain to repel the untrained dilettante who attempts to voice an opinion on the subject. If he can't pronounce it, how can he talk about it? It is time we adopted the German language technique of excluding the common man from matters he should not understand."

In terse verse, James Kilpatrick of Norfolk (suh!) offers:

"Sig-mation is a lovely word,
It fills one with elation;
It's tailor made to sell your stuff
For any application."

"Frankenstein" is the name suggested by F. Gregg Bemis, Jr., of Wayzata, Minn. Bemis explains,

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IRE AND JOINTLY SPONSORED NATIONAL MEETINGS

1956 Date	Meeting	Place	Sponsored by	For Info. Regarding Exhibits	For Info. Regarding Publicity	For Info. Regarding Program
Aug. 20-21	Nat'l. Telemetering Conf.	Biltmore Hotel, Los Angeles, Calif.	PGTRC; AIEE; IAS; ISA	Ernest Robischon 7660 Beverly Blvd. Los Angeles, Calif.	John Spargo Wm. C. Copp Assoc. 1475 Broadway New York 36, N. Y.	R. E. Rawlins Lockheed Aircraft Corporation, Burbank, Calif.
Aug. 21-24	WESCON	Los Angeles, California Pan Pacific Aud., Ambassador Hotel	L.A. & S.F. Sec; WCEMA; All P.G.'s	Mal Mobley, Jr. Business Manager, WESCON 344 N. La Brea Ave. Los Angeles, Calif.	Mal Mobley, Jr. Business Manager, WESCON 344 N. La Brea Ave. Los Angeles, Calif.	Bruce Angwin, General Electric Co. 11840 W. Olympic Bl. Los Angeles, 64, Calif.

PGAP NEWS *(Continued from page 5)*

V. L. F. SYMPOSIUM

The chapter is planning to sponsor a two-day symposium in January, 1957 on the propagation of very low frequency (VLF) radio waves. Details in the next issue.

SIGMA *(Continued from page 11)*

"This is a simplified contraction of 'Benjamin Franklin,' and 'Albert Einstein.' i.e., Frank and Stein. Since Franklin was the discoverer of electricity, and since Einstein was the epitome of modern man's logical attack on new, vast-new-era problems, it seems proper that they be singled out for tribute in naming this new field."

"Nonstopphitting." According to George Fass, Kew Gardens, N. Y., "The non-stop speaks for itself. To all who may have come in contact with electricity, the 'phit' is obvious . . . Isn't it?"

—Courtesy of Control Engineering, A McGraw-Hill Publication

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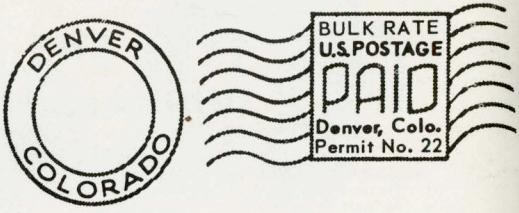

FORM 3547 REQUESTED