

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Communication Division  
1955-56

September 16, 1955

Messrs. L. G. Abraham  
E. D. Becken  
E. C. Chamberlin, Jr.  
J. B. Epperson  
H. R. Huntley  
W. Keister  
R. B. Shanck

Communication Division Chairman's Letter No. 4

It is appropriate, at the beginning of the AIEE administrative year, for Technical Committee chairmen of the Communication Division to think a bit about their programs in terms of the Institute's competition. The subject of IRE is therefore being placed on our agenda for confidential consideration at the Communication Division Committee meeting in Chicago, October 4th.

These notes will serve the purpose of directing attention to several facets of the problem which the Communication Division shares with others, particularly with the Science and Electronics Division. For convenience the remarks are being divided into two general topics:

- (1) Competition in serving the communication-electronic segment of the electrical engineering profession (treated in this letter); and
- (2) Competition in college recruitment of new members (to be covered in Communication Division Chairman's Letter No. 5).

Numerical Evaluation of Communication-Electronic Interest

Published figures indicate that AIEE at the end of its most recently completed administrative year had 47,923 members-less-Students; IRE had 36,222. (See Table I). Because IRE makes no attempt to cover applications of electronics to power, and as yet only exploratory attempts to cover general professional subjects like engineering management, its membership may be said to comprehend the AIEE interests of (a) the Technical Committee structure of the Communication and the Science and Electronics Divisions and of (b) the AIEE bi-monthly magazine "Communication and Electronics." In IRE, this segment of interest comprehends, therefore, practically all of its 36,222 members above Student grade. In AIEE, the same segment of interest embraces far fewer engineers.



How much fewer can be estimated roughly. A questionnaire circulated in 1951 showed that, of all AIEE members, 70% found their primary interests in Power, Industry, and General Applications, and 30% in Electronics (17%) and Communication (13%). The most recently published figures of circulation of the three AIEE bi-monthly publications (1953-54) show 9,052 (36%) members receiving "Communications and Electronics" and 16,382 (64%) receiving "Power Apparatus and Systems" and "Applications and Industry." Division of activity between the specialties is also to be gauged broadly by the number of papers presented at conventions, where the latest available figures indicate:

	<u>1953-54 Forecast</u>		<u>Summer &amp; Pacific 1955</u>	
	<u>Papers</u>	<u>%</u>	<u>Papers</u>	<u>%</u>
Electronics	230	33	64	29
Communication	70	10	33	15
Sub-Total	300	43	97	44
Power, etc.	395	57	123	56
Total	695	100	220	100

By these three criteria, Electronic and Communication interests in AIEE represent 30%, 36%, or 44% of membership and activity. Applied to membership, where it is evident that there has been recent growth on the Communication and Electronics side due to energetic measures adopted to publish up to the prevailing interest, a fair conclusion might be that about 40% of AIEE's membership in that line (that is, 19,200 members-less-Students) matches in interest 100% of IRE's membership of 36,200. AIEE, despite its total of 47,900 non-Student members, is thus seen to be only 53% of IRE's size in IRE's line.

That places a burden of competition on AIEE to maintain itself as the one all-inclusive electrical engineering society. That we have points of superior attraction is demonstrated by our ability to secure and hold against prodigious competition nearly 20,000 members interested in communication and electronics. It is also demonstrated by the action of roughly (determination by spot sampling) 4,800 engineers out of that number (amounting to 10% of AIEE's and 13% of IRE's non-Student membership) in joining both societies, finding their programs, associations, and other advantages complementary rather than identical.

#### Evaluation of Professional Groupings in AIEE and IRE

Both societies have recognized the need of subdividing their organizations to cater to the specialized interests of their members. AIEE has done this by recasting its Technical Committee structure into five Divisions, of which the Communication Division and the Science and Electronics Division are of primary concern in this analysis. IRE's corresponding move has been to create 22 semi-autonomous Professional Groups, with names descriptive of their delimited and approved scopes.

In Table II an attempt has been made to correlate the AIEE Technical Committee structure with the IRE Professional Group structure. Examination of this Table leads to the following observations:



- a. At practically every phase of IRE Professional Group activity, AIEE has an active Technical Committee or subcommittee covering the field in some degree. (An exception may exist in Ultrasonics and in Component Parts, as such).
- b. IRE has Professional Groups covering AIEE's interest in electronics, except that it avoids 60-cycle power theory and applications. AIEE has undisputedly superior organizational coverage of power conductors and dielectrics; electronic power generators and converters; magnetic and dielectric amplifiers; and certain industrial applications (although IRE is in Industrial Electronics).
- c. In certain topics like Engineering Management and Audio, the IRE Professional Group system appears to be more highly developed than the AIEE Technical Committee system.
- d. IRE's handling of basic science and mathematics is through its magazine rather than through its Professional Group structure.
- e. There is at least superficial evidence that, in dividing its field into 23 parts, each part may be more closely knit in IRE. (For example, compare 7.— Instrumentation in Table II.) However, it might be otherwise held that, with proper coordination within AIEE, its Technical Committees, by sheer weight of numbers, must more certainly cover the field and leave nothing overlooked.
- f. In communication, AIEE is more highly organized in telegraphy, telephony, carrier, facsimile, and switching; it matches IRE organizationally in Information Theory and in Navigation; and fails to cover Vehicular Communication as a named specialty.

Of course there is a chance for disparity between being organized for accomplishment and accomplishment itself. The IRE Professional Group has, perhaps, along with wider scope, more latitude for exercising initiative than does the AIEE Technical Committee, as a result of financial and publication policies. The AIEE Committee on Technical Operation has concerned itself with this comparison, and has created a subcommittee, headed by Mr. Affel, to make an investigation of the situation. Mr. Callahan feels that the AIEE Technical Committee structure, if rearranged somewhat and given more autonomy, might prove to be superior to the IRE Professional Group system in important respects. The investigators are not overlooking the organizational and publication expedients adopted by the American Society of Mechanical Engineers in meeting similar problems. (See Minutes, 1955 Summer Forum, p. 3). Their grouping system, like IRE's, provides specialized publications and autonomous organization of a number of divisions more akin to IRE's 23 than to AIEE's five.



# AUTONOMOUS DIVISIONAL OPERATION

The IRE's P/G organization assumes importance to AIEE to the extent that its appeal to engineers keeps them out of AIEE. The IRE member pays dues of \$15 per year, against AIEE's rate of \$20; he then joins as he wishes, a Professional Group or Groups, each of which assesses him, on the average, \$2 extra per year. Published reports show 31,797 P/G memberships held by more than 50% of IRE's 41,778 members (including Students), indicating a substantial number of duplications (that is, the average member belongs to more than one P/G). In effect, then, for no more dues than in AIEE, the IRE member has the advantages of specialized Group identification: the right to publications covering the fields of his principal interest in addition to the Proceedings of the IRE (the generally circulated periodical); the right to attend and participate in Group symposia; the right to hold office in the national Group organization; and the right to join a Section Chapter (wherever established) of the national Group.

IRE furnishes publication machinery for 20 Group periodicals, and routine editorial assistance. Publication policies are established by the Groups rather than by the Institute, and the Groups approve and edit their own papers.

The publication record of the IRE P/Gs, measured in current pages per year, is impressive:

<u>IRE Professional Group on:</u>	<u>Published pages:</u>	
	<u>1953</u>	<u>1954</u>
—Aeronautical & Navigational Electronics	84	144
—Antennas & Propagation	72	188
Audio	180	208
Automatic Control (1954)	—	—
—Broadcast Transmission Systems (1955)	—	—
—Broadcast & Television Receivers	160	312
Circuit Theory	112	256
—Communications Systems	76	414
Component Parts	—	172
Electronic Computers	136	228
Electron Devices	184	524
Engineering Management	—	132
Industrial Electronics	44	—
Information Theory	290	404
Instrumentation	116	60
Medical Electronics	44	—
—Microwave Theory & Techniques	100	244
Nuclear Science	—	48
Production Techniques (1954)	—	—
Reliability and Quality Control	56	104
—Telemetry & Remote Control	—	56
Ultrasonics Engineering	—	116
—Vehicular Communications	144	104
Total 23 (Sec'y report, 1955 June, p.764)	1798	3714



For purposes of comparison, AIEE's "Communication and Electronics" ran to 740 pages in 1954, and, unlike the IRE publications, comprehended the power aspects of electronics. It went to 9,052 AIEE members in 1953-54.

Institutional professional notices are run for fees in IRE Group publications, but advertising must not conflict with that in the Proceedings. Other funds come from symposia registrations and profits from exhibitions. These funds, within established limits, are matched by IRE to encourage Group initiative, and are kept under Group control. A general IRE committee on P/Gs is responsible for recommending establishment of Groups, defining their scopes, aiding them in matriculation, and keeping general oversight over them with minimum interference.

### Some Introspective Questioning

Since it is likely that any evolutionary movement would go in the direction of more specialized conferences (corresponding with the IRE P/G Symposia), Communication Division Technical Committee Chairmen should engage in some introspection as to whether we are even now measuring up to present opportunities. Do we understand the financial and other "parameters" for holding specialized conferences? Is it good that the Division as a whole has not even one programmed for 1955-56? Are we assiduously cultivating the communication field for AIEE, apart from our papers canvass? Are we riding our momentum in the telephone and telegraph fields?

The symposium activity of IRE P/G Communication Systems may prove stimulative to us. Here is its score, apart from participation at Conventions, which is considerably less than ours:

1. Radio Telegraph Transmitters, Brentwood, N.Y., January 1952.
2. Military Communication Systems, Red Bank, N.J., November 1952.
3. Overseas Radiotelephony and Solar Research, New York, June 1953.
4. Microwave Radio Relay, New York, November 1953.
5. Military Communications, New York, April 1954.\*
6. Global Communication, Washington, D.C., June 1954.
7. Radiomarine & Navigational Systems, Boston, Mass., October 1954.

### Futures:

8. Communication by Scatter Techniques, Washington, November 1955.
9. Aeronautical Communication, Civil & Military, Utica, N.Y.,  
November 1955.

\* Jointly with AIEE.



Our final question may be: Could any better use of the present AIEE organization, within the Communication Division, or any modification of it, produce a better record of extra-Convention accomplishment and publication, in view of the activity of our sister society?

Very truly yours,

(Sgd.) I. S. Coggeshall, Chairman.



Table I

COMPARATIVE CURRENT NUMERICAL STRENGTH OF  
MEMBERSHIPS—AIEE and IRE

<u>Comparable Grade</u>		<u>AIEE</u> <u>As of Apr. 30, 1955</u>		<u>IRE</u> <u>As of Dec. 31, 1954</u>	
<u>AIEE</u>	<u>IRE</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Honorary	—	4	—	—	—
Fellow	Fellow	1,507	2.7	489	1.2
Member	Senior Member	10,947	19.7	4,780	11.4
Associate Member	Member	34,798	62.6	6,107	14.6
Affiliate	Associate	667#	1.2	24,846*#	59.5
Student	Student	7,666#	13.8	5,556#	13.3
	Totals	55,589@	100.0	41,778(@)	100.0
Grand Total 97,367					

\* Includes 803 voting.

# Non-voting.

@ Less Students, Total 47,923—AIEE

Less Students, Total 36,222—IRE

Sources:

1. Report of Board of Directors, AIEE 1954-55, Electrical Engrg., August 1955, pp.709 ff.

2. Report of the Secretary, IRE, 1954. Proc. IRE., June 1955, pp. 761 ff.



Table II

COMPARATIVE PROFESSIONAL GROUPINGS IN AIEE and IRE

1. Engineering Management

<u>IRE Professional Group</u>	<u>AIEE Committee Structure</u>
P/G Engineering Management P/G Production Techniques P/G Reliability & Quality Control	Management Committee (General)

2. Systemic Applications — General

P/G Industrial Electronics	General Applications Division Subcommittee on Geophysical Instruments & Measurements Subcommittee on General Spectroscopy Subcommittee on Infrared Applications
P/G Automatic Control P/G Telemetry and Remote Control	Committee on Industrial Control Electronic Control Subcommittee Committee on Feedback Control Systems Regulators and Feedback Systems Subcommittee Committee on Communication Theory Committee on Special Communication Applications Group Subcommittee on Tele- metering Subcommittee on Stationary Tele- metering Activities Subcommittee on Telemetry Aspects of Recorders & Control Instruments
P/G Electronic Computers	Committee on Computing Devices Digital Computer Subcommittee Digital Computer Comparisons Subcommittee Analog Computers Subcommittee Analog-Digital Converters Subcommittee
P/G Nuclear Science	Committee on Nucleonics Nuclear Machines Subcommittee Application of Nuclear Reactors to Production of Power Subcommittee Group Subcommittee on Nucleonic & Radiation Instruments Nucleonics & Radiation Instruments Joint Subcommittee
P/G Medical Electronics	Committee on Electrical Techniques in Medicine and Biology



### IRE Professional Group

(Note— No IRE P/G counterpart  
to certain AIEE activities  
in electronics, opposite)

### AIEE Committee Structure

Committee on Insulated  
Conductors (and its sub-  
committees—Power Division)  
Subcommittee on High Frequency  
Conductors, Cables, &  
Connectors  
Working Group on Evaluation  
of Thermal Stability of  
Insulating Materials  
Subcommittee on Dielectric  
Measurements in the Field  
Subcommittee on Industrial  
X-Ray  
Subcommittee on Electrostatic  
Processes  
Hot Cathode Converter Sub-  
committee

### 3. Systemic Applications—Communication

P/G Information Theory  
P/G Communication Systems  
P/G Aeronautical & Navigational  
Electronics  
P/G Vehicular Communications

Committee on Communication  
Theory  
Committee on Wire Communication  
Systems  
Committee on Carrier Current  
(and subcommittees— Power  
Division)  
Committee on Telegraph Systems  
Facsimile Subcommittee  
- Committee on Radio Communication  
Systems  
Committee on Communication  
Switching Systems  
Subcommittee on Electronic  
Aids to Navigation  
Group Subcommittee on  
Navigation Instruments

P/G Audio

Committee on Special  
Communications Applications

P/G Broadcast Transmission Systems  
P/G Broadcast & Television Receivers

Committee on Television &  
Aural Broadcasting Systems

### 4. Transmission

P/G Antennas & Propagation  
P/G Microwave Theory & Techniques

Committee on Radio  
Communication Systems  
Use of Microwave Equipment  
for Relaying, Telemetry &  
Supervisory Control Sub-  
committee (Power Division)

P/G Ultrasonics Engineering

(Note—No AIEE Technical  
Committee directly in-  
volved).



IRE Professional Group

5. Circuit Elements

P/G Electron Devices

P/G Antennas & Propagation

P/G Component Parts

(Note—No IRE P/G counterpart  
to certain AIEE activities  
in electronics, opposite)

6. Theory

P/G Circuit Theory

(Note—No IRE P/G handling topics  
opposite, but IRE Proceedings  
thoroughly publishes in its  
field)

AIEE Committee Structure

Committee on Electronics  
Subcommittee on Electron Tubes  
Committee on Metallic  
Rectifiers  
Metallic Rectifiers for Magnetic  
Amplifiers Subcommittee  
Power Rectifiers Subcommittee  
Subcommittee on Electronic Semi-  
conductor Devices  
Semi-Conductors (Rectifying  
Devices) Subcommittee  
Semi-Conductors & Transistors  
Subcommittee  
Germanium Rectifiers Sub-  
committee

Committee on Radio Communication  
Systems  
Committee on Television & Aural  
Broadcasting Systems

(Note—No AIEE Technical  
Committee directly in-  
volved)

Magnetics Subcommittee  
Committee on Magnetic Amplifiers  
Magnetic Amplifier Theory  
Subcommittee  
Dielectric Amplifiers Sub-  
committee

Electric Circuit Theory Sub-  
committee  
Subcommittee on Electronic  
Circuits & Systems  
Engineering

Committee on Basic Sciences  
Basic Concepts Subcommittee  
Applied Mathematics Sub-  
committee



IRE Professional Group

7. Instrumentation

P/G Instrumentation

AIEE Committee Structure

Committee on Instruments &  
Measurements  
Group Subcommittee on Indicating & Integrating  
Instruments  
Subcommittee on Indicating  
Instruments  
Subcommittee on Watt-Hour Meters  
Group Subcommittee on Recording  
& Controlling Instruments  
Group Subcommittee on Electronic  
& High-Frequency Instruments  
Subcommittee on High-Frequency  
Instruments  
Subcommittee on Electronic  
Instruments  
Group Subcommittee on Special  
Instruments & Auxiliary  
Apparatus  
Instrument Rectifiers Subcommittee  
Subcommittee on Instrument  
Accessories



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Communication Division Chairman's Letter No. 5.

In my Letter No. 4 the professional aspects of IRE's competition with AIEE were examined for the purposes of background for Technical Committee consideration and action in the Communication Division—this Division, together with Science and Electronics Division, being most vitally concerned with the situation. *and Instrumentation*

In this letter we shall examine competition and cooperation at the colleges, as they bear upon recruitment of members for AIEE who one day will constitute the Institute. Here again, the two AIEE Divisions named have the greatest future stake in the outcome of competitive recruitment of engineers.

Statistical Situation in Student Memberships *overlap?*

It was shown in Letter No. 4 that it is a fair conclusion that 19,200 members-less-Students in AIEE have substantially the same interests in the field of electronics-communication as 36,200 members-less-Students in IRE. Our sister society is therefore much stronger numerically in its own field—a fact which though not statistically available at the colleges, is pretty well known and emphasized to Students by IRE Representatives there.

Offsetting that fact are those published on total memberships (see Table I in Letter No. 4). Including enrolled Students and all other membership grades, voting and non-voting, the gross membership comparison is:  $AIEE/IRE = 55,589/41,778 = 57/43$ .  $AIEE = IRE \times 1.33$ .  $IRE = AIEE \times 0.75$ . These figures are available to any interested AIEE Student Counsellor, whose emphasis is, naturally, placed on electrical engineering as the basic unit of comparison, rather than the more restricted electronics-communication field.

Comparative rates of growth are also of significance, so additional information is appended to this letter.



Figures in Table I, covering the past five years, tell the story in the colleges. From that table these conclusions may be drawn:

Both societies suffered in Student acquisitions in 1951 and 1952 by virtue of expiration of World War II "G. I. Bill of Rights" educational privileges.

IRE has recovered more rapidly than AIEE.

Since 1951, AIEE's percentage of total Students has gone steadily down; IRE's steadily up.

The total number of Students (both Societies) has increased over 2,000 in the last three years; AIEE has participated in only 884 of the increase, or about 2/3 as many as IRE. In the past year IRE picked up 4 to AIEE's 3 net acquisitions.

Considering the fact that AIEE, alone of the two, is covering the power field, these facts give pause for thought.

The lower part of Table I shows that Students, as a supply of Associate raw material, are steadily decreasing in AIEE, proportionately to other sources:

The number of Student applications for Associate has gone down steadily for 5 years.

Last year the Student index was only 65% of three years ago.

Meantime the other sources(non-college men working into professional status by Constitutional standards) have shown no similar decrease.

As of now, Students supply less than 1/3 of all applications. Five years ago they supplied 2/3.

#### Concern of Communication Division in the Situation

All branches of AIEE are, alike, concerned when an important source of raw supply of superior engineers has to be divided progressively disadvantageously with a competitor who covers only part of our field. In addition, we Communication Division people are concerned because wire telegraphy and telephony have been fundamental to AIEE's founding and factors in its growth. The "accident" of introduction of radio as a medium of transmission is not to be looked upon as a sufficient reason for our losing further ground in the communication field. Especially, we should not be lulled into inactivity because IRE happens not to have invaded strictly wire transmission in any broad sense.



I am sure that any suggestions we can give will be welcomed by the Committee on Student Branches if directed to clinching for AIEE most Students inclined towards the communication arts. We may also be sure that the Science and Electronics Division is working to similar ends.

### The Competitive Situation in the Colleges

Until recently, AIEE has been able to use size and catholicity arguments to sweep college Students its way. Organization at the colleges has promoted "the broad look." The Students are enrolled in an Electrical Engineering curriculum, of which electronics-communication courses are only a part. The Head of Department (often the AIEE Counsellor) is the senior professor, and has a natural following. Besides, AIEE was "there first."

This "prestige" demarcation can be similarly traced in the older engineering organizations to which Students gravitate after graduation. But the "electronics" pressures have gradually been built up in both the industrial and academic precincts. AIEE has gradually had to surrender the ground which it did not intensively cultivate.

From the viewpoint of many of the colleges, AIEE/IRE competition should be driven underground. The successful expedient employed has been the Joint Student Branch. Table II shows the wide growth of this device which, though adopted voluntarily by AIEE, has in practice worked out to an equal division of unequal fields. The following facts may be gleaned from the Table:

Ninety-five of 153 first-line technical schools have Joint Branches. In a dozen of them AIEE and IRE have the same representative.

In 20 colleges there is open Branch competition.

In one form or another IRE representation is disclosed at all but 14 out of the 153 colleges, and these are of comparatively minor size.

AIEE does not appear at 16 colleges (again, comparatively minor) where IRE either has a branch (8) or a representative (8).

IRE has cultivated the Affiliate Branch idea, which AIEE has recently embraced, and is ahead in that field.

The two Societies have identical, reduced-rate, Student dues, for which the primary publication ("Electrical Engineering" or "Proceedings of the I.R.E.") is furnished at less-than-cost. In addition, the AIEE Student, for an additional dollar, may receive a subscription to one (but only one) bi-monthly Proceedings publication of his choice; others are at standard other-publication fees.



The IRE Student receives without charge, copies of a Student Quarterly published and slanted toward the Student as an I. R. E. member. For an extra dollar each, the I. R. E. Student may join any number of IRE Professional Groups of his choice, receiving the P/G Transactions and other full P/G membership privileges at reduced rates.

The cohesive effect of the I.R.E. Student Quarterly — carrying college Student Branch news, and Student, faculty, and industry articles — has been recognized by various members of A.I.E.E. Mr. Dean, Secretary of the Communication Division, has initiated consideration of means by which AIEE could combine its efforts with IRE in a joint Student publication.

Professor Dow is exponent of a plan to have AIEE Students elect to receive one of the bi-monthly Proceedings publications in lieu of "Electrical Engineering." (See Minutes, CTO, 10th meeting, New York, Feb. 2, 1955, p. 11.)

I suggest that the Communication Division, (and the Science and Electronics Division if the latter are interested), concern itself with this matter at our Chicago meeting. My present feeling is that "Electrical Engineering" is in itself an invaluable cohesive medium for college engineers, hence that it should not be sacrificed for an alternative. Rather, I believe, AIEE should meet its competition (particularly in the absence of the equivalent of a Student Quarterly) by offering its Students the elective of a free subscription to any one of our three bi-monthly publications, in addition to "Electrical Engineering."

AIEE has points of acknowledged superiority of its own. Our system of prize awards for Student papers is of long standing and better organized. We have tended to be more liberal in our treatment of Student Branches financially and in propaganda material furnished. We have done more than others in supplying identification badges and in encouraging their wearing.

The report of the Committee on Student Branches for 1954-55, appearing in Electrical Engineering for August 1955, p. 718, is commended to the Communication Division for thoughtful reading. It discloses steady activity in maintaining and improving AIEE's standing at the colleges and presents a challenge which our Division should help in every way possible to meet.

Very truly yours,

(Sgd.) I. S. Coggeshall, Chairman.



STUDENT MEMBERS (New Applications and Renewals)  
Sources, Electrical Engineering and  
Proceedings IRE:

<u>Comparable Dates</u>					
<u>AIEE</u> , Apr. 30	1951#	1952#	1953*	1954	1955
<u>IRE</u> , Dec. 31	1950	1951	1952*	1953	1954
<u>AIEE</u> Number	15,028	8,857	6,782	6,904	7,666
Index	222	130	100*	102	113
% of Total	67	67	61	60	58
<u>IRE</u> Number	7,560	4,427	4,283	4,530	5,556
Index	176	103	100*	106	130
% of Total	33	33	39	40	42
<u>Combined</u> Number	22,588	13,284	11,065	11,434	13,222

AIEE SOURCES OF ASSOCIATE MEMBERS

Apr. 30	1951#	1952#	1953*	1954	1955
Applications from:					
<u>Students</u>					
Number	4,168	2,591	1,614	1,157	1,045
Index	258	160	100*	72	65
%	67	52	40	31	29
<u>Others</u>					
Number	2,082	2,430	2,405	2,547	2,544
Index	87	101	100*	106	106
%	33	48	60	69	71
<u>Totals</u>	6,250	5,021	4,019	3,704	3,589

\* Index: 1953 = 100

# 1951 and 1952 reflect a sharp drop-off of Senior college enrollments due to expiration of World War II "G. I. Bill of Rights" educational program.



Table II

INFORMATION REGARDING REPRESENTATION OF A.I.E.E. AND I.R.E.  
IN COLLEGES AND UNIVERSITIES

(Sources— A.I.E.E. data from Electrical Engineering, Sept. 1954, page 860; I.R.E. data from Proceedings of the I.R.E., June, 1955, pages 770-771.)

List No. 1 — COLLEGES HAVING JOINT A.I.E.E.—I.R.E. BRANCHES (Total 95).

Akron	Maine	Pratt
Alberta	Manhattan	Princeton
Arizona	* Marquette	Rensselaer
Arkansas	Maryland	* Rhode Island
British Columbia	M.I.T.	Rutgers
Brooklyn (Day)	Massachusetts Univ.	South Carolina
Brown	Michigan Mining	South Dakota Mines
Bucknell	Michigan State	Southern California
California Tech.	Michigan Univ.	Southern Methodist
California Univ.	Minnesota	Stanford
Carnegie	Missouri Mines	Stevens
Cincinnati	Missouri Univ.	Syracuse
Colorado A. & M.	Montana	Texas A.&M.
Colorado Univ.	Nebraska	Texas Tech.
Columbia	* New Hampshire	Texas Univ.
Connecticut	New Mexico A. & M.	Toledo
Cooper Union	New Mexico Univ.	Toronto
Cornell	* C.C.N.Y.	Tufts
* Dayton	New York Univ.	* Tulane
Delaware	North Carolina	Utah
Denver	North Dakota State	* Vermont
Detroit	North Dakota Univ.	Villanova
Drexel	Northeastern	Virginia Poly.
Florida	Northwestern	Virginia Univ.
George Washington	Notre Dame	* Washington (Seattle)
Illinois	Ohio State	Washington (St. Louis)
* Iowa	Ohio Univ.	Wayne
Johns Hopkins	Oklahoma A.&M.	West Virginia
Kansas Univ.	Penn State	Wisconsin
* Lafayette	* Pennsylvania	Worcester
Louisiana State		Wyoming
Louisville		Yale
		** Youngstown

\* The A.I.E.E. Counselor (member of faculty) is different from the I.R.E. Institute Representative in all cases, except same when indicated by single asterisk.

\*\* Recent (June 1955).



List No. 2 — COLLEGES HAVING SEPARATE  
A.I.E.E. AND I.R.E. STUDENT BRANCHES (Total 20)

Alabama Polytech.	Lehigh
Brooklyn (Evening)	Mississippi
Case	Newark
Clarkson	Oregon
Fenn	Pittsburgh
Georgia Tech.	Purdue
Illinois Tech.	Rose
Iowa Univ.	Saint Louis
Kansas State	Tennessee
Kentucky	United States Naval Academy

Note— A.I.E.E. Counselors different from I.R.E. Institute Representatives in all cases.

List No. 3 — COLLEGES HAVING AN A.I.E.E. STUDENT  
BRANCH AND AN I.R.E. INSTITUTE REPRESENTATIVE ONLY (Total 8)

Duke	**Puerto Rico
**Milwaukee	Rice
Nevada	*Santa Clara
Oklahoma	Washington State

\* A.I.E.E. Counselors different from I.R.E. Institute Representative except as indicated by single asterisk.

\*\* Considered by I.R.E. a "Technical Institute"—not an approved branch; by A.I.E.E., a Student Branch.

List No. 4 — COLLEGES HAVING AN A.I.E.E. STUDENT  
BRANCH AND NO I.R.E. REPRESENTATION (Total 14)

Univ. of Alabama	Norwich
Catholic Univ. of Ama.	Ohio Northern
Clemson A. & M.	South Dakota State
Howard Univ.	Swathmore
Univ. of Idaho	Union
Laval Univ.	Vanderbilt
Louisiana Poly.	Virginia Military Inst.

List No. 5 — COLLEGES HAVING I. R. E. STUDENT BRANCHES  
BUT NO A.I.E.E. REPRESENTATION (Total 8)

Calif. State Polytech	San Diego State
John Carroll Univ.	San Jose State
Univ. of Miami	Seattle Univ.
Ohio Univ.	Utah State



List No. 6 — COLLEGES HAVING NEITHER A.I.E.E. REPRESENTATION  
NOR I.R.E. STUDENT BRANCH BUT HAVING AN I.R.E. REPRESENTATIVE (Total 8)

Univ. of Calif. at L.A.  
Dartmouth  
Harvard  
Univ. of Manitoba

McGill Univ.  
Queens Univ.  
Western Ontario Univ.  
Univ. of Witwatersrand

List No. 7 — COLLEGES HAVING A.I.E.E. AFFILIATE BRANCH  
AND I.R.E. STUDENT BRANCH STATUS (Total 1)

Texas College of Arts & Industry

List No. 8 — COLLEGES HAVING A.I.E.E. AFFILIATE BRANCH  
AND I.R.E. TECHNICAL INSTITUTE STATUS (Total 2)

Lamar State College

Univ. of Houston

List No. 9 — COLLEGES HAVING A.I.E.E. AFFILIATE  
BRANCH STATUS AND NO I.R.E. REPRESENTATION (Total 1)

Tennessee Polytech

(Note to Lists 7, 8, 9:

A.I.E.E. Affiliate Student Branches established by action of  
Board of Directors, April 1955; see Elect. Engrg., June 1955,  
p.533).

List No. 10 — COLLEGES HAVING I.R.E. TECHNICAL  
INSTITUTE STATUS AND NO A.I.E.E. REPRESENTATION (Total 12)

Capitol Radio Eng'g Inst.  
Central Technical Inst.  
Franklin University  
Lincoln Memorial Univ.  
Oklahoma Inst. Technology  
RCA Institutes

Southern Technical Inst.  
Temple Univ.  
Valparaiso Tech. Institute  
Washington & Lee Univ.  
Wentworth Inst.  
Wesleyan Univ.

RECAPITULATION

List No.	No.	Cumulative Percent of Sub-Total
1. Joint AIEE-IRE Student Branches	95	62
2. Separate AIEE-IRE Student Branches	20	75
3. AIEE Branch-IRE Representative	8	81
4. AIEE Branch-No IRE Representation	14	90
5. IRE Branch-No AIEE Representation	8	95
6. IRE Representative only	8	100
Sub-total	153	
7. AIEE Affiliate Branch- IRE Student Branch	1	
8. AIEE Affiliate Branch- IRE Technical Institute	2	
9. AIEE Affiliate Branch- No IRE Representation	1	
10. IRE Technical Institute- No AIEE Representation	12	
Total	169	



AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Communication Division  
1955-56

January 27, 1956

Messrs. L. G. Abraham  
E. D. Becken  
E. C. Chamberlin, Jr.  
J. B. Epperson  
H. R. Huntley  
W. Keister  
R. B. Shanck

Messrs. H. A. Affel  
F. B. Bramhall  
D. I. Cone  
C. E. Dean  
J. Meszar  
H. I. Romnes  
cc: Prof. S. Reid Warren, Jr.

Communication Division Chairman's Letter No. 7

Issuance of the I.R.E. National Convention prospectus prior to our own Winter General Meeting makes it possible to make a comparison entitled "Two Conventions". The New York conventions of the two organizations do not constitute the respective organizations' scope and interests but are indicative of them. Therefore this analysis must be examined for its broad implications other than for specific comparisons. Furthermore, this analysis is not accurate enough for minute comparisons: no one man can undertake to break down the organizational interests of A.I.E.E. and I.R.E. into components without making certain guesses, and time does not permit of the job's being done by a committee large enough to include all angles.

In Table I has been set down the number of sessions and papers being held at the two conventions. As might be expected, I.R.E. gives comparatively scant coverage of overall engineering subjects, except for Management Engineering where it is giving more emphasis this Winter than is A.I.E.E. As is also to be expected, I.R.E. remains aloof from the scopes of the Power Division and the General Applications Division, and overlaps the interest of the Industry Division by virtue of the following: Electrical Heating, 1 session, 4 papers (1/4); Feedback Control 2/9; Quality Control (a subject which may be hidden in the A.I.E.E. committee list) 1/4.

By and large, it may be concluded from Table I that our Science & Electronics Division is presenting a full quota of papers. The tabulation of Table II, however, shows up what may be a weakness in the Communication Division which suggests increased activity on our part, perhaps even dictating some reorganizational measures.

In Science and Electronics, Table II, A.I.E.E. shows comparative strength in Circuit Theory, High Frequency Radiation from Cables, and Computers; and shows predominating strength in Metallic Rectifiers, Solid Dielectrics, Liquid Dielectrics, Gaseous Dielectrics, Electrostatic Processes, and Magnetic Amplifiers. I.R.E., on the other hand, is giving more emphasis this Winter to Nuclear Science, Electron Tubes, and Mobile Telemetry.



Within the scope of the Communication Division's interest, Table II breaks down A.I.E.E.'s total of 11/46 and I.R.E.'s high total of 30/152. This tabulation shows facets of A.I.E.E. strength in Telegraph Systems including Facsimile; in Wire Communication Systems, and in Switching, none of which I.R.E. appears to touch except possibly lightly in certain radio aspects.

However, our A.I.E.E. Radio Communication activity (2/10) is very much in contrast with I.R.E.'s 13 $\frac{1}{2}$ /67. I.R.E. is strong in Microwaves and use of Ferrites; in Antennas and Propagation; Over-the-Horizon Communication; Vehicular Communication and in such items as Component Parts, Printed Circuitry, and Modules.

Our A.I.E.E. Committee Communication Theory has just recently got under way (1/3) so that ~~A.I.E.E.'s~~ impressive 3/12 may represent only a temporary superiority. *I.R.E.'s*

Our committee on TV & Aural Broadcasting (2 $\frac{1}{2}$ /9) has an up-hill fight against I.R.E.'s 7/38. Whether we can or should attempt to bring ourselves more nearly even with I.R.E. in this field is a facet of the big overall question with which A.I.E.E. management and the Affel Committee are dealing.

So, too, is the ground covered by our Special Communication Applications Committee, which was obliged to cancel its one projected session at this meeting, but whose field was roughly productive in I.R.E. of 6 $\frac{1}{2}$  sessions with 47 papers—a total as large as the entire Communication Division's participation in the A.I.E.E. Winter General Meeting. Included in this total are Audio Techniques, Navigation, Air Traffic Control, and Ultrasonics, although the latter includes phases other than communication. Also included are the communication aspects of Computers, which is a new field of interest worthy of the Communication Division's special attention in spite of the excellent showing of S&E in the general Computer subject.

It would be highly desirable either to arrive at a conclusion as to remedial measures at our Committee Meeting on January 31, or to appoint a select ad-hoc committee to bring in recommendations. My present feeling, subject to discussion with you gentlemen, is that Special Applications might be dissolved because of the difficulty of publicizing its importance to the membership under that name; its Navigation and Air Traffic Control content might be re-allocated to Radio Communication; Audio might go to TV & Aural; communication aspects of Computers might be picked up by Telegraph Systems or become a new committee; and Ultrasonics would either find a haven with Radio or TV-Aural or become a new committee. Perhaps Telegraph Systems, Radio Communication, and TV-Aural should be reorganized with a sub-committee structure more like Science and Electronics'. In any event, these considerations and alternatives merit your immediate and sympathetic attention, since competition is pressing us and there is a certain amount of formality required in having organizational changes accepted by the other Divisions and the Committee on Technical Operation.

Very truly yours,

(sgd.) I. S. Coggeshall  
Chairman



TABLE I — Analysis of Sessions and Papers at A.I.E.E.  
Winter General Meeting 1956 and at I.R.E.  
National Convention 1956

	A. I. E. E.			I. R. E.		
	Sessions	<u>Papers</u>		Sessions	<u>Papers</u>	
		No.	%		No.	%
General—						
Profession	2	5		1	1*	
Ethics	1	1*		0	0	
Education	2½	13		0	0	
Safety	1	5		0	0	
Research	3#	9		0	0	
Management Eng.	1	2		2	8	
Sub-total	10½	35	8.5	3	9	3.3
Power Division	30*	128*	31.2	0	0	-
Gen'l Applic'ns Div.	5½	20	4.8	0	0	-
Industry Division	11#	46*	11.2	4	17	6.2
Sub-total	46½	194	47.2	4	17	6.2
Cumulative	57	229	55.7	7	26	9.5
Communication Div.	11#	46	11.2	30	152	55.7
Science & Electronics	25#	136	33.1	18	95	34.8
Sub-total	36	182	44.3	48	247	90.5
Grand Total	93	411	100.0	55	273	100.0

Notes:

Single papers are allocated regardless of sessions. "½ session", approximate.

\* Symposiums included; each entered as single paper and session.

# Includes even number of joint sessions; number of papers pro-rated.

Prepared Jan. 25, 1956 — ISC.



TABLE II — Analysis of Sessions and Papers in Table I  
involving Communication and Science &  
Electronics Divisions

Communication Division	A. I. E. E.		I. R. E.		No. List No.
	Sessions	Papers	Sessions	Papers	
Telegraph Systems	1½ a	6	0	0	
Facsimile Sub-Com'tee	½ a	2	0	0	
Wire Communication Sys'ms	2½ b	12	0	0	
Comm'n Switching Systems	1	4	0	0	
Communication Theory	1	3	3	12	
Radio Comm'n Systems	2	10	13½	67	
Microwaves			2½	11	1
Ferrites			1	6	2
Antennas			2½	13	3
Propagation			1½	8	4
Vehicular			1	5	5
Over-Horizon			1	5	6
Systems, Gen'l			1	4	7
Components, Printed					
Circuits, Modules			3	15	8
Special Comm'n Appl'ns	0	0	6½	35	
Audio			2	10	9
Navigation			1	7	10
Air Traffic Control			1	6	11
Ultrasonics			1	6	12
Computer Transmission			1½ e	6 e	13
TV and Aural Systems	2½ c	9	7	38	
TV Equipment —Trends			1	5	14
TV Transmitters			1	5	15
Color TV Tape			1	6	16
Receivers			1	5	17
Color Receivers			1	5	18
Color TV			1	5	19
Broadcast Transmission			1	5	20
Totals	11	46	30	152	

(Table II continued on next sheet)

Notes:

- a Facsimile session joint with Telegraph Systems.
- b One session joint with Power Division (Inductive Interference)
- c One session joint with General Applications Division (Light)
- d Two sessions joint with Power Division (Transformer Design)
- e Total I.R.E. Computer Sessions 4½, Papers 17; A.I.E.E. Sessions 4, Papers 24.



A. I. E. E.  
Sessions Papers

I. R. E.  
Sessions Papers  
No. List

Science & Electronics Division

Basic Science	1	5	1	5	21
Medicine & Biology	2	11	2	9	
Nuclear Science	0	0	2	10	
Instrumentation	3	14	2	14	
Circuit Theory	3	17	2	10	
HF Radiation-Cable	1	5	-	1	
Electron Tubes	2	9	3	18	
Solid State Devices	1	10	1	7	
Metallic Rectifiers	1	5	0	0	
Solid Dielectrics	1	5	0	0	
Liquid Dielectrics	1	5	0	0	
Gaseous Dielectrics	1	5	0	0	
Electrostatic Processes	1	6	0	0	
Magnetic Amplifiers	3	15	0	0	
Mobile Telemetry	0	0	2	10	22
Computers	4 d	24	3 e	11 e	23
Totals	25	136	18	95	

REFERENCE LISTS OF I.R.E. PAPERS

List No. 1 — MICROWAVES — GENERAL

1. Leakage Radiation from a Braided Coaxial Cable. Schatz, Taylor, Robl, Konnerth.
  2. A Trimode Turnstile Waveguide Junction. Potter.
  3. The H-Guide, A Waveguide for Microwaves. Tischer.
  4. Microwave Spectrum Synthesis Using the Traveling Wave Tube. Lacy.
  5. An Orthogonal Mode Transducer. Fogel.
- MICROWAVES — FILTERS
6. Directional Channel-Separation Filters. Cohn, Coale.
  7. A Resonant Cavity Frequency Duplexer. Bowers, Curtis.
  8. Synthesis of Wide Band Microwave Filters to Have Prescribed Insertion Loss. Jones.
  9. Crossed-Mode Tunable Selectro for Microwaves. Spencer.
  10. The Susceptance of a Circular Iris to the Dominant TE<sub>11</sub> Mode in Circular Waveguide. Handelsman.
  11. Coaxial Components Employing Gaseous Discharges at Microwave Frequencies. Geiger, Dorney.

List No. 2 — MICROWAVES — FERRITES

1. The Design of Nonreciprocal Phase Shift Sections. Chait, Sakiotis.
2. Tensor Permeabilities of Ferrites Below Magnetic Saturation. Spencer, LeCraw.
3. A Miniaturized High Temperature Isolator. Sullivan, LeCraw.
4. Broadbanding Ferrite Microwave Isolators. Vartanian, Melchor, Ayres.
5. Ferrite Microwave Phaseshifters. Soohoo.
6. A Balanced Stripline Isolator. Fix.



List No. 3 — ANTENNAS

1. Cross Polarization Effects on Antenna Radiation Patterns. Marchand, Scott.
2. A Vertical Antenna Made of Transposed Sections of Coaxial Cable. Wheeler.
3. Electrically Small Ferrite Loaded Loop Antennas. Rumsey, Weeks.
4. A Wide Band Coaxial Hybrid. Alford, Watts, Jr.
5. Dielectric Bifocal Lenses. Brown.
- MICROWAVE ANTENNAS
6. High Efficiency Metallized Fiberglass Microwave Lens. Smedes.
7. Ferrod Radiator Systems. Reggia, Spencer, Hatcher, Tomkins.
8. A Design Method for Very Long Linear Arrays. Chernin, Bickmore.
9. Some New Antenna Designs Based on the Trough Waveguide. Rotman, Karas.
10. Future Trends in Radomes for Ground Electronic Equipment. Ratynski.
11. A Toroidal Microwave Reflector. Peeler, Archer.
- ANTENNAS AND PROPAGATION
12. Analysis of Conical Scan Antennas for Tracking. Damonte, Stoddard.
13. Correction to Current Distribution on Curved Reflectors. Plonsey.

List No. 4 — PROPAGATION

1. Wave Propagation over a 350-Mile Path at 960 Mc. Gerks, Svien.
2. Ionospheric Cross Modulation from a 1,000 Kw Long Wave Broadcast Transmitter. Martin, Jacobs.
3. Atmospheric Refraction of 8.7 Mm Radiation. Marner, Ringoen.
4. Recent Developments in the Theory of Sea Clutter. Katzin.
5. Radar-Type Propagation Survey Experiments for Communication Systems. Lacy, Sharp.
- ANTENNAS AND PROPAGATION
6. A Theory of Scattering by Non-Isotropic Irregularities with Application to Radar Reflections from the Aurora. Booker.
7. Correlation of Radar Sea Clutter on Vertical and Horizontal Polarization with Wave Height and Slope. Macdonald.
8. Precipitation Particle Impact Noise in Aircraft Antennas. Tanner.

List No. 5 — VEHICULAR COMMUNICATIONS

1. Miniaturization Techniques Utilized in a Multi-Channel Crystal Controlled VHF Oscillator. Stryker, Jr.
2. A New Concept for Communication Vibrator Design. Tollefsen.
3. More Words Per Minute Per Kilocycle. Plummer.
4. A Vehicular User Looks at the Future. York.
5. Is 960 Mc Suitable for Mobile Operation? Schultz.



List No. 6 — OVER-THE-HORIZON SYSTEMS

- 1.VHF Transhorizon Communication System Design. Ringoen.
- 2.Over-The-Horizon Radio Transmission Tests Between Florida and Cuba. Stiles.
- 3.A Broadband Over-The-Horizon Link—Florida to Cuba. Adams, Havstad, Pollack, Sichak.
- 4.An Over-The-Horizon Radio Link Between Puerto Rico and the Dominican Republic. Gray, Felsenheld.
- 5.Relative Interference Produced by UHF Scatter and Line-of-Sight Systems. Ringoen.

List No. 7 — GENERAL COMMUNICATIONS SYSTEMS

- 1.A New Means for Analysis of Communication Equipment and System Performance Using Log-Log Selectivity Curves. Toth.
- 2.Transmitting Tubes for Linear Amplifier Service. Norton.
- 3.Methods of Reducing Frequency Variations in Crystals over a Wide Temperature Range. Koerner.
- 4.Electronics Problems. Gordon, Could, Davis, Hollingsworth.

List No. 8 — PRINTED WIRING

- 1.Engineering of Printed Circuits to Facilitate Production. Calcut, Artz.
  - 2.Principles of Circuit Design for Automation. Dordick.
  - 3.Modular Construction—Its Implications to the Design Engineer. Bauer.
  - 4.A New Automation Technique for Soldering Components to Foil-Wire Boards. Lawson, Ritt, Jr., Hazel.
  - 5.Printed Circuits via Xerography. Schwertz, Van Wagner.
  - 6.Cupric Oxidized Copper Foil for Printed Circuit Laminates. McGinnis, Tatnall, Mains.
- COMPONENT PARTS — I
- 7.The Power Supply in Military Equipment. Perlman.
  - 8.The Silver-Zinc Rechargeable Battery. Howard.
  - 9.The Wafer Coil Pulse Transformer. Babcock, Zack.
  - 10.Developments in Magnetic Component Packaging. Lucic.
  - 11.A Transistorized Polarized Sensitive Relay. Meissner, Miller.
- COMPONENT PARTS — II
- 12.Preparation of Standards and Test Procedures for Printed Circuits. Gamson, Henesian.
  - 13.New Ceramic Feedthrough Capacitors with Tremendous Increase in Effective Capacitance. Schlicke.
  - 14.Performance of Continuous and Discontinuous Tube Feedthrough Capacitors at VHF and Higher Frequencies. Williams, Foster.
  - 15.Piezoelectric Ceramic IF Band Pass Filters. Mattiat.

List No. 9 — AUDIO TECHNIQUES

1. A Simplified Procedure for the Design of Transistor Audio Amplifiers. Wells, Hayes, Jr.
  - 2.An Audio Flutter Weighting Network. Comercl.
  - 3.A Flutter Meter Incorporating Subjective Weightings. Cotter.
  - 4.Performance Measurements of Magnetic Tape Recorders. Hull
  - 5.A 3,000-Watt Audio Power Amplifier. Bereskin.
- HIGH QUALITY SOUND REPRODUCTION
- 6.Equalization Considerations in the Design of High Quality Tape Recorders. Snyder.
  - 7.Design of a High Fidelity 10-Watt Transistor Audio Amplifier. Crow, Mohler.



8. Performance of the Distributed Port Loudspeaker Enclosure. Petrie.
9. A Phonograph System for the Automobile. Goldmark.
10. The Recent History of High Quality Magnetic Phonograph Pickups. Pickering

List No. 10 — NAVIGATION

1. A Radiometric Inertial Reference System. Bolie.
2. Analytical Prediction of Missile Guidance Accuracy. Mathews.
3. Considerations Affecting the Choice of a Long Range Navigation System. Rosenberg.
4. Doppler Type High-Frequency Radio Direction Finder. Fantoni, Benoit, Jr.
5. USAF UHF Direction Finding Facility. Benoit, Jr., Fantoni.
6. Collocation of TACAN VOR-DME Systems. Ricketts.

List No. 11 — AIR TRAFFIC CONTROL

1. Symbolic Display System for Air Traffic Control. Harris.
2. A New Look at Requirements for Electronic Systems in Air Traffic Control. Grubmeyer.
3. Traffic Control Electronics Research Goes Modern. Storrs, Ryerson.
4. An Analysis for Human Flight Control. Fogel
5. Enhancement of Aircraft Radar Return by Use of Airborne Reflectors and Circular Polarization. Panasiwicz.
6. A Three-Dimensional Aircraft Visibility Diagram. Feiner, Diamond.

List No. 12 — ULTRASONICS

1. Ultrasonic Stroboscope. Heidemann.
2. Surface Resonances of Bubbles and Biological Cells. Ackermann, Proctor.
3. Electronic Design Considerations in the Application of Piezoelectric Transducers. Bradley, Jr.
4. Propagation of Elastic Pulses near the Stressed End of a Cylindrical Bar. Meitzler.
5. Transient and Steady-State Response of Ultrasonic Piezoelectric Transducers. Cook.
6. Resonator Properties of Synthetic and Doped Synthetic Quartz. Chi.

List No. 13 — GENERAL COMMUNICATIONS SYSTEMS

1. The Place of Communications in Integrated Data Processing. Mann.
  2. Sixteen Channel Time Division Multiplex System Employing Transistors and Magnetic Core Memory Circuits. Myrick, Morrow.
- FLIGHT DATA REDUCTION SYSTEMS
3. An Improved System for Collecting and Processing Flight Test Data. Royce.
  4. Airborne Data Acquisition System. Foster.
  5. Requirements of a High Speed, High Quantity, All-Electronic Data Processing System. Williams.
  6. Techniques for a High Speed, High Quantity, All-Electronic Data Processing System, IDIOT II, Klein.



List No. 14 — TRENDS IN TV EQUIPMENT

- 1.High Stability Television Synchronization Generator. Thompson.
- 2.A Pedestal Processing Amplifier for Television. Kennedy.
- 3.A New Electronic Masker for Color Television. Haines.
- 4.Reworking the Network or Remote Video Signal. Embree.
- 5.A New Color Camera for Closed-Circuit Applications. Anderson.
- ELECTRON TUBES
- 6.Image Orthicon for Pickup at Low Light Levels. Rotow.

List No. 15 — TV TRANSMITTING TECHNIQUES

- 1.High-Gain Antenna Arrays for Television Broadcast Transmission Using a Slotted Ring Antenna. Alford, Leach.
- 2.Self-Diplexing Antenna for TV Transmitters. Mayer, Pan.
- 3.Television Field Intensity Measurements—A Tool in Transmitting Antenna Planning. Rohrer, Reed, Jr.
- 4.A New Monitor for Television Transmitters. Cady.
- 5.A Pack Type Television System. Harris.

List No. 16 — COLOR TELEVISION TAPE RECORDING

- 1.A Magnetic Tape System for Recording and Reproducing Standard FCC Color Television Signals—General Considerations. Olson.
- 2.Electronic System. Houghton.
- 3.The Magnetic Head. Zenel.
- 4.The Tape Transport Mechanism. Morgon, Artzt.
- 5.Audio Systems. Woodward.

List No. 17 — BROADCAST AND TELEVISION RECEIVERS

- 1.Application of Transistors to Battery—Powered Portable Receivers. Englund.
- 2.Stability Considerations in Transistor IF Amplifiers. Holmes, Stanley.
- 3.Analysis of Double Tuned Transformers for Transistor Amplifiers. Hellstrom.
- 4.Transient Response Versus Chrominance Bandwidth in Simultaneous Color Television Receivers. Baugh, Sweeney.
- 5.A Deflection and Convergence System for Use with the Color Picture. Gethmann.

List No. 18 — COLOR TELEVISION RECEIVERS

- 1.The Chromatron as the Basis for Low-Cost Television Receivers. D'Amato, Dressler, Jacobs, Popkin-Clurman, Decker.
- 2.The Optimum Relative Phosphor Efficiencies. Altes.
- 3.A New Color Television Display—The Apple System. Bryan, Clapp, Creamer, Moulton, Partin.
- 4.A Beam-Indexing Color Picture Tube—The Apple Tube. Barnett, Bingley, Parsons, Pratt, Sadowsky.
- 5.Current Status of Apple Receiver Circuits, Components. Bloomsburgh, Boothroyd, Fedde, Moore.



List No. 19 — COLOR TELEVISION

1. Recent Improvements in the 21AXP22 Color Kinescope. James, Headrick, Evans.
2. GE Post Acceleration Color Tube. Lob.
3. Correct Prints of Color Tube Screens. Heil
4. The Unipotential Mask-Focusing Colortron. Fyler, Cain, Hambleton.
5. Focusing Mask Color Kinescopes. Ramberg, Law, Allwine, Darling, Henderson, Rosenthal.

List No. 20 — INFORMATION THEORY — III

1. Multipath Distortion of TV Signals and the Design of a Corrective Filter. Balarkrishnan.  
BROADCAST TRANSMISSION SYSTEMS
2. The Technical Boundary Conditions of Subscription Television. Ellett, Adler.
3. An Integrated System of Coded Picture Transmission. Roschke, Druz, Eilers, Pulles.
4. Trichromatic Coefficient-Plotting Photometer. Highleyman, Cantella, Babits.
5. Recent Improvements in Black-and-White Film Recording for Color Television Use. Hughes.

List No. 21 — U. S. EARTH SATELLITE PROGRAM

1. The Background of the Program. Hagen.
2. The Satellite Program. Pickering.
3. Placing the Satellite. Rosen.
4. Orbital Changes and Optical Tracking. Whipple.
5. Locating the Satellite by Radio. Mengel.

List No. 22 — TELEMETERING COMPONENTS

1. Calibration Errors in Wire Strain Gauge Transducer Systems. Harrison.
2. Precision Subcarrier Discriminator for FM Telemetry. Duerig.
3. Automatic Tracking Antenna Array for the 217 Mc Telemetry Band (APOTA). Oltman, Jr., Bittner.
4. Subminiature Telemetry Transmitter. Hendershot.
5. A Bi-directional Pulse Totalizer for Control and Telemetry. Wright.  
U. S. EARTH SATELLITE PROGRAM
6. The Satellite Telemetry and Propagation Problems. Ziegler.  
TELEMETERING SYSTEMS
7. Automatic Remote Control and Telemetry by Telephone. Doersam, Jr.
8. Noise and Crosstalk in Multiplexed FM Systems. Runyan.
9. High Capacity Pulse Code Telemeter and Data Reduction System. Shaw.
10. The Development of a High Speed Electronic Multiplexer and Coder for Use with a PCM Telemeter. Bishop, Marquand.



List No. 23 — ELECTRONIC COMPUTERS — I

1. A Multiple Input Analog Multiplier. Porter, Robinson.
  2. Analog Multiplying Circuits Using Switching Transistors. Chen, Decker.
  3. Logic Design of the RCA BIZMAC Computer. Beard, Bensky, Nettleton, Poorte.
  4. Input and Output Devices in the RCA BIZMAC System. Brustman, Chien, Cole, Jr., Flechtner.
  5. The Burroughs Series G High Speed Printer. DiGiulio.
- ELECTRONIC COMPUTERS — II
6. A Magnetic Drum Sorting System. Cox, Goldberg.
  7. A Transistorized Digital Differential Analyzer. Downey.
  8. The Univac Magnetic Computer. Part I. Logical Design and Specifications. Gehring, Stowe, Wilson.
  9. The Univac Magnetic Computer. Part II. Megacycle Magnetic Modules. Smith.
  10. The Univac Magnetic Computer. Part III. Drum Memory. Porter, Smith, Naiman.
  11. IMPACT OF COMPUTERS ON SCIENCE AND SOCIETY. Astin, Meagher, Sayre, Forrester.



AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Communication Division  
1955-56

June 5, 1956

Messrs. L. G. Abraham  
E. D. Becken  
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C. E. Dean  
J. Meszar  
H. I. Romnes  
cc: Prof. S. Reid Warren, Jr.

Communication Division Chairman's Letter No. 10

In my letters Nos. 4, 5, and 7, a number of comparisons were made between A.I.E.E. and I.R.E., justified, in the writer's opinion, by the fact that A.I.E.E. occupies the place it does in the entire field of electricity by virtue of its ability to attract and hold a great many of its members (and students) to whom I.R.E. presents itself in some aspects as a counter-attraction.

I have come to an entirely personal conclusion that the optimum relationship of the two societies need not be mere co-existence (as indeed it is not, considering the degree of joint effort which already goes into the college program and into cooperation participation in papers symposia and other national and local meetings). Rather, I suggest that the bodies participate in promoting each other—with an avowed purpose of increasing the already large number of engineers whose names spontaneously appear on both rosters: perhaps exchanging self-advertising pages in each other's periodicals—and otherwise fostering a "Join Two Societies" movement. Such is my belief, founded upon many years of service in both, that the coverage of the two organizations is sufficiently different (and could, by design, well remain so) to underline their complementary, rather than substitutive, services to individual engineers and the profession.



But even if such a campaign were embarked upon and met with success, there remain students and others who might feel impelled to limit themselves to dues-paying in a single society and whose choice would naturally fall on the one which in their opinion best served their needs. So, whether we wish to or not, we have to look over our shoulder from time to time; and that is what we have been doing in this series of letters, of which this, I promise, is the last.

### A.I.E.E. Communication - Electronics at National Level

A.I.E.E. has adjusted its national activities admirably to changing requirements brought about by "electronics," which now permeates the entire organization, including Divisions concerned with distribution and use of electrical power. The creation of Science & Electronics and Communication Divisions (and a substantial portion of the new Measurements Division might be included), and the degree of autonomy and influence they have been given, are indicative of A.I.E.E.'s successful national adjustment. So are the specialized bi-monthly publications program and the specialized sessions patterns of General Meetings, Special Technical Conferences, and the coordination machinery of the Committees on Planning and Coordination and Technical Operations. It is difficult to see how, except as to minutiae, any fault could be found with the way in or the degree to which A.I.E.E. has accommodated itself, on a national level, to the persuasive pressures of weak-current engineering.

The Institute's honors are predominantly national and here, too, electronics and communication have found a prominent place in the sun, as evidenced by the following list of illustrious medallists counted among "electronics" scientists and engineers:

#### Edison Medal

1914 Alexander Graham Bell  
1917 John J. Carty  
1920 Michael I. Pupin  
1922 R. A. Millikan  
1927 Wm. D. Coolidge  
1928 F. B. Jewett  
1930 Frank Conrad  
1932 Bancroft Gherardi  
1933 A. E. Kennelly  
1942 E. H. Armstrong  
1943 Vannevar Bush  
1944 E. F. W. Alexanderson  
1946 Lee de Forest  
1952 Vladimir K. Zworykin

#### Lamme Medal

1935 Vannevar Bush  
1936 Frank Conrad  
1948 V. K. Zworykin  
1953 F. A. Cowan

#### John Fritz Medal

1905 Lord Kelvin  
1907 Alexander Graham Bell  
1923 Guglielmo Marconi  
1928 John J. Carty  
1932 Michael I. Pupin  
1939 Frank B. Jewett  
1947 L. W. Chubb  
1951 Vannevar Bush



### A.I.E.E. Communication - Electronics at the Grass Roots

Down in the Sections and the sub-Sections, at the grass roots where our members live, A.I.E.E.'s adjustment to electronics presents a less favorable picture. The Sections do not directly come under the influence of the national Divisional organization; and with all too few, but notable, exceptions, have not embraced the original technical Group idea.

In connection with its consideration of the Membership Opinion Survey in 1955, the A.I.E.E. management raised some introspective questions, one of them being: "What lines of communication exist between the Division Committees and the Sections?" So far as the Communication Division is concerned, do we not have to say: "None, except as individual members may be active in both?"

The Group Idea had its inception years ago in the New York Section, I believe, and spread to the national level where it has seen its greatest fruition. Meanwhile, it has not flourished in the Sections except in a few of the larger cities. It is still dominant in New York. The communication Divisional unit there holds about four meetings a year, one of them usually jointly with I.R.E.; it also sponsors its own and joint paid lecture courses. Its officers and committees are active throughout the meeting season.

Similar groups are active elsewhere. In Table A, attached, is an analysis consolidated from Section Meeting Reports for the year ending April 30th, 1956, wherever electronics-communication Group activity was identifiable.

The Table A figures show that communication and electronics are beneficiaries of the technical Group idea (so far as meetings are concerned) in only 28 of A.I.E.E.'s 100 Sections; that the idea is made fully manifest in Communication and S&E, as intended, only in Philadelphia, Los Angeles, New York, Milwaukee, Washington, Pittsburgh, Oklahoma City, and Sacramento, with desultory effectiveness in 20 other places; and that there is no observable benefit of the type in 72% of A.I.E.E.'s 100 Sections.

I.R.E.'s Sections, like A.I.E.E.'s, are not uniformly successful. However, wherever I.R.E. has a Section it has a minimum of a set of officers interested in communication or electronics or both, a local treasury, and an obligation to hold at least five meetings a year or forfeit their Section charters. I.R.E. lists 76 such active Sections in continental United States and Canada. Among the places where I.R.E. has Sections but where A.I.E.E.'s specialized activities in electronics do not place them in the Table A Divisional meetings list are the following larger cities: Akron, Atlanta, Baltimore, Beaumont, Cincinnati, Columbus, Dallas, Ft. Worth, Detroit, Ft. Wayne, Indianapolis, Louisville, Miami, Buffalo-Niagara, Phoenix, Portland (Ore.), Rochester, St. Louis, Salt Lake City, San Antonio, San Diego, Schenectady, Syracuse, Toledo and Tulsa.



A.I.E.E. has Sections in all these places except Atlanta, Baltimore, Dallas, Ft.Worth, Detroit, Indianapolis, Salt Lake City, and San Antonio. Most of these cities are embraced in State-wide A.I.E.E. Sections; and of course, theoretically, A.I.E.E.'s Section territory overlaps I.R.E.'s at all points.

One conclusion to be reached from this analysis is that in the functional field of electronics, A.I.E.E.'s yield may be thinner because of relatively shallow cultivation at the grass-roots.

One might have reached the same conclusion by observing the meager electronic offerings (apart from telephony and the universities) which the grass roots have returned to the Institute in the way of Vice-Presidents and Directors, over the years. But here one has to tread lightly lest he make his point but fail to emphasize that higher education and American telephony have contributed more than their share both to the growth of the knowledge of electronics and to the membership roster of A.I.E.E. Nevertheless, anyone scanning our list of officers will find almost no names (apart from the two splendidly representative categories mentioned) suggestive of either electronics or communication at their grass roots.

What harm does this do, if it be conceded that these very Boards, though so constituted, are the ones which have so skilfully adjusted the Institute structure to meet evolutionary electronics' demands? Merely that it dulls one's sense of "belonging" on the part of several thousand members we wish to keep and many thousands more we hope to win. Everyone can see the "Great Gulf Fixed" and annually the Sections and the Nominating Committee let the great gulf yawn.

The remark is often heard in A.I.E.E.: "What a pity I.R.E. didn't find haven with the Electrical Engineers in 1912!" One answer may be that, on the record, engineers representing a vast industry would still be operating on Board concessions rather than with Board voice 44 years later, and that in the meantime the list of A.I.E.E. Presidents would have shaped up like this:

A. I. E. E. Presidents

<u>Year</u>	<u>Power</u>	<u>Education</u>	<u>Telephony</u>
1911-12	Dunn		
12-13	Mershon		
13-14	Mailloux		
14-15	Lincoln	Lincoln	
15-16			Carty
16-17	Buck		
17-18	Rice		
18-19		Adams	
19-20	Townley		
20-21	Berresford		



	<u>Power</u>	<u>Education</u>	<u>Telephony</u>
21-22	McClellan		
22-23			Jewett
23-24	(Ryan)	Ryan	
24-25	Osgood		
25-26		Pupin	
26-27	Chesney		
27-28			Gherardi
28-29	Schuchardt		
29-30	(Smith)	Smith	
30-31	Lee		
31-32	Skinner		
32-33			Charlesworth
33-34	(Whitehead)	Whitehead	
34-35	Johnson		
35-36	Meyer		
36-37	Mac Cutcheon		
37-38			Harrison
38-39	Parker	(Parker)	
39-40	Farmer		
40-41	(Sorensen)	Sorensen	
41-42	Prince		
42-43			Osborne
43-44	Funk		
44-45	Powel		
45-46		Wickenden	
46-47	Housley		
47-48			Hull
48-49	Lee		
49-50	Fairman		
50-51	Le Clair		
51-52		Mc Millan	
52-53			Quarles
53-54	Robertson		
54-55	Hooven		
55-56		Coover	

Note: Electronics, Communication—Other: Not One.  
I.R.E., same period: Education 12, Telephony 5,  
 Other Communication and Electronics 27.

Yours truly,

*I. S. Coggeshall*

I. S. Coggeshall, Chairman.

1962  
 1912  
 50



APPENDIX—TABLE A

Number of Technical Group Meetings Held Y/E April 1956

Section	Basic Science S & E Group	Elec- tronics Tech- nical Group	Elec- tronics & Com- munica- tion	Com- muni- cation Tech- nical Group	Other Communi- cation and S & E	Total
1 Arizona			1			1
2 Arkansas		1				1
3 Boston	1					1
4 Chicago		1		1		2
5 Cleveland	1			1		2
6 Connecticut				1	1	2
7 Dayton		1				1
8 Denver			1			1
9 Houston				2*		2
10 Kansas City				1		1
11 Los Angeles	3	4	3		2	12
12 Maryland				2		2
13 Michigan				1		1
14 Milwaukee	4	3				7
15 Montreal	2*					2
16 North Texas				1		1
17 Oklahoma City				4		4
18 Philadelphia	9*			3	1	13
19 Pittsburgh	3*		1*			4
20 Providence		3				3
21 Sacramento		4				4
22 San Francisco		1*			1*	2
23 Seattle	3*					3
24 South Texas					1	1
25 Toronto				2		2
26 Washington	2			2	1	5
27 West Virginia	3					3
Totals	31	18	6	21	7	83

28 New York (breakdown not available)

\* Includes joint participation with I.R.E.



SECTIONS WHICH HELD S & E AND COMMUNICATION

TECHNICAL GROUP MEETINGS# Y/E APRIL 1956

<u>No. of Meetings Held by Each Section</u>	<u>No. of Sections Holding Meetings</u>	<u>No. of Meetings Held - Total</u>
13	1	13
12	1	12
7	1	7
5	1	5
4	3	12
3	3	9
2	8	16
1	<u>9</u>	<u>9</u>
Total	27	83
	1	Holding Group Meetings
	1	New York (held Group Meetings)
	72	Holding No Group Meetings
	<u>100</u>	Total Number of Sections

#Note — Power Division and Other Group Meetings not covered in this analysis.



AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Technical Operations Department

January 21, 1957

Mr. W. R. Clark, Chairman,  
Technical Operations Department

Answering your inquiry of January 3 regarding I.R.E. Professional Groups, the following data have been made public by appearance in the Proceedings of the IRE:

From Proc. IRE, June 1956, Pages 835-837:

Professional Group System

General. There are 24 Professional Groups operating actively within the IRE. One new Group—the Professional Group on Military Electronics—was organized in 1955. Its scope covers the electronic sciences, systems, activities and services germane to the requirements of the Military. This Group has also undertaken to aid other Professional Groups in their liaison with and services to the Military through joint meetings and activities.

Approximately 50% of all IRE members have taken advantage of the Professional Group system which now has a total membership of 39,778. 2,074 Student Members of the IRE have joined the Groups at a special Student Member rate of \$1 annually.

23 Groups have now levied publications assessments and 36,562 members have paid these assessments and are receiving the pertinent Group Transactions regularly. In addition, a large number of company, university and public libraries have subscribed to the Transactions of all the Groups and there is also a demand for individual Group subscriptions and individual copies of the Transactions from outside sources.

In addition to supplementary financial and editorial assistance, the many services rendered by Headquarters to the Groups during 1955 included 763 mailings to Group members.

Symposiums. The procurement of papers and management of national symposia are now entirely in the hands of the Professional Groups. Each of the Groups had sponsored one or more technical meetings in the past year in addition to technical sessions at the IRE National

Established { Education  
Engineering Writing & Speech  
Being formed { Human Engineering  
Radio Interference Voltages



Convention, the WESCON, the National Electronics Conference and other joint meetings, for a total of 91 meetings of national import in 1955.

Professional Group Chapters. 146 Professional Group Chapters have been organized by Group members in 37 IRE Sections to date. Chapter growth is continuing at a healthy rate. The Chapters are meeting regularly and sponsoring meetings in the fields of interest of their associated Groups.

Publications. 21 Groups are currently publishing IRE Transactions covering their specific fields of interest and to date 167 issues (10,564 pages) have appeared. Transactions were first published in 1951 when the Audio and Airborne Groups issued 6 Transactions containing 98 pages. In 1952 10 Groups published 22 Transactions containing 1474 pages. In 1953 15 Groups published 32 Transactions containing 1798 pages. In 1954 20 Groups published 51 Transactions containing 3714 pages. During the past year 21 Groups published 56 Transactions containing approximately 3508 pages.

Twelve of the Groups are currently on a regularly stated publication schedule and the remaining Groups are working toward this goal. When this has been accomplished approximately 100 Transactions issues per year will be published

13 Groups' Transactions are now printed by letterpress and the remaining Groups will follow this practice as soon as their circulation warrants it.

In addition IRE Transactions, several Groups are issuing Proceedings of meetings jointly sponsored with other societies, such as the Eastern and Western Joint Computer Conferences, the Electronic Components Conference, et al.

Transactions. The year 1955 saw the Transactions output of the Professional Groups continue to increase substantially. The year also saw an improvement in the Transactions themselves, with 6 more Groups adopting letterpress composition for improved appearance, bringing the total to 12.

The Editorial Department published 56 issues of Transactions totaling 3504 pages for 21 Groups during 1955, as compared with the 1954 totals of 51 issues totaling 3714 pages for 18 Groups. The apparent decline in total pages is due to space saved by the increased use of letterpress composition. Actually, there was a 20% increase in the amount of material published.



Volume of Transactions Pages

	1955		1954	
	Is-	Pages	Is-	Pages
	sues		sues	
Aeronautical and Naviga- tional Electronics	4	188	4	144
Antennas and Propagation	4	248	4	188
Audio	6	236	6	208
Broadcast and Television Re- ceivers	4	196	4	312
Broadcast Transmission Sys- tems	2	168	0	0
Circuit Theory	4	396	4	256
Communications Systems	1	96	3	414
Component Parts	2	144	2	172
Electron Devices	4	228	4	524
Electronic Computers	4	196	4	228
Engineering Management	1	56	2	132
Industrial Electronics	1	88	0	0
Information Theory	3	184	2	404
Instrumentation	1	188	1	60
Medical Electronics	2	104	0	0
Microwave Theory and Tech- niques	6	480	3	244
Nuclear Science	1	20	1	48
Reliability and Quality Con- trol	1	60	2	104
Telemetry and Remote Con- trol	3	72	2	56
Ultrasonics Engineering	1	76	2	116
Vehicular Communications	1	84	1	104
	56	3504	51	3714

IRE Convention Record. The practice of publishing a Convention Record containing papers presented at the IRE National Convention, begun in 1953, was continued. The 1955 Convention Record, containing 236 papers and 31 abstracts totaling 1450 pages, was issued in ten Parts. Approximately 30,000 paid members of Professional Groups received free of charge a copy of that Part pertaining to the field of interest of his Group.



The foregoing material supplies direct answers to your inquiry as to number of issues and number of Professional Group Transaction pages published. The number of articles was not stated, but may be estimated on the basis of 5.6 pages per article.

To the number of Transactions articles and pages should be added the number of articles and pages credited to each Professional Group in the single-issue 9-part Convention Record, since each Group member receives free, after the manner of Transactions, the part pertaining to his Group. Thus computed, the composite year's circulation of material (exclusive of the Proceedings of the IRE, the monthly magazine) was as follows:

<u>Convention Pairing</u>	<u>Professional Group</u>	<u>Total Recent Year#</u>		
		<u>Issues</u>	<u>Articles</u>	<u>Pages</u>
8	Aeronautical & Navigational Electronics	5	51	296
1	Antennas & Propagation	5	72	409
7	Audio	7	52	281
4	Automatic Controls	1	5	34
3	Broadcast & Television Receivers	5	50	260
7	Broadcast Transmission Systems	3	54	314
2	Circuit Theory	5	85	506
8	Communications Systems	2	27	147
6	Component Parts	3	36	201
3	Electron Devices	5	58	335
4	Electronic Computers	5	46	235
6	Engineering Management	2	17	77
6	Industrial Electronics	2	20	108
4	Information Theory	4	47	279
5	Instrumentation	2	44	243
9	Medical Electronics	3	28	152
5	Microwave Theory & Techniques	7	108	624
8	Military <del>Electronics</del>	1	19	70
9	Nuclear Science	2	9	42
6	Production Techniques	1	6	35
6	Reliability & Quality Control	2	22	126
1	Telemetry & Remote Control	4	33	191
9	Ultrasonics Engineering	2	20	113
8	Vehicular Communications	2	20	104

# Professional Group Transactions, Calendar 1955, plus Convention Record, March 1956.

24

Very truly yours,

I. S. Coggeshall

John 2 more - page 1  
From Proc IRE Vol 45 p1560 JSC Dec. 1957



**ER-OFFICE LETTERS ONLY**

HIBSHMAN

1885 Shore Drive South, Apt. 525  
St. Petersburg, Florida 33707

**DATE** April 13, 1968

**TO** Dr. I. S. Goggeshall, Editor, ELECTRICAL ENGINEERING

**FROM** N S Hibshman

**SUBJECT** ELECTRICAL ENGINEERING and stuff

I continue to be impressed with the publication ELECTRICAL ENGINEERING and its supplements. Certainly no one can say he hasn't been told , and told good, what's what and why. I admire the publication and even more so the Editor.



Antiphonal response, G# Minor, 3/4:

"You ma-a-a-de me what I am today,

I'm glad you're satisfied!"

I. S. Coggeshall, Editor  
"Electrical Engineering"

5/25/68





# AMERICAN INSTITUTE of ELECTRICAL ENGINEERS

(HEADQUARTERS: 33 WEST THIRTY-NINTH STREET, NEW YORK 18, N. Y.)

## COMMUNICATIONS DIVISION COMMITTEE

Address Reply to 59-25 Little Neck Parkway  
Little Neck 62, L.I., N.Y.

November 4, 1959.

Mr. I. S. Coggeshall  
Western Union Telegraph Co.  
60 Hudson Street  
New York 13, N.Y.

Dear Coggie,

Enclosed is the present draft of the paper about IRE and AIEE, which I was mentioning yesterday.

*Horden*  
I would appreciate very much any comments you might have on this text. You remember that I have to get it in to the Editor of the "Long Island Pulse" by day after tomorrow, the 6th. So I plan to give you a phone call late Thursday morning or that afternoon so as to receive your comments and incorporate them before sending the material on for publication. *early*

Thanking you very much for your interest and assistance,  
I remain

Very sincerely,

*Charlie*  
Charles E. Dean

CED:ehh  
Encl.





# AMERICAN INSTITUTE of ELECTRICAL ENGINEERS

(HEADQUARTERS: 33 WEST THIRTY-NINTH STREET, NEW YORK 18, N. Y.)

## COMMUNICATIONS DIVISION COMMITTEE

1-17

C. E. Dean  
Address: 59-25 Little Neck Parkway  
Little Neck 62, New York  
April 19, 1960  
8200-60-R128

Messrs. L. G. Abraham  
I. S. Coggeshall  
E. I. Green  
G. W. Heumann  
W. S. Hill  
J. P. Jordan  
C. H. Linder  
R. F. Shea

Dear Sirs:

A few copies of the publication of the Long Island section of the Institute of Radio Engineers, which is called "The Pulse of Long Island," are available, and I am pleased to enclose one of these for the reason that it gives an article which I contributed (page 10) on "Relations Between the IRE and AIEE".

In this article, I tried to give a brief account of the history and present relations of the two organizations and to emphasize the trend toward cooperation in the various fields of common interest.

Very sincerely yours,

*Charles E. Dean*

Charles E. Dean  
Chairman, Communication Division

CED:AW

cc: H. Kulik



# Relations Between the I.R.E. and the A.I.E.E.

By Charles E. Dean

Historian of L.I. Section of I.R.E.  
Chairman of Communication Division of A.I.E.E.

EDITOR'S NOTE: Charles Dean's numerous I.R.E. activities and the many interesting articles which he has written for the PULSE have made his name well known throughout the Long Island Section. It may surprise some of our readers to learn that Dr. Dean is also a member of the A.I.E.E. and equally active in that organization. This background plus his considerable experience in engineering allows him to speak with considerable authority on the subject which he has chosen for this month's issue. Your comments will be most welcome.

Whereas many engineers unfortunately do not belong to any professional organization there are quite a few who feel that membership in only one society does not adequately satisfy their requirements. A check of membership lists reveal, for example, that about 9,000 IRE members also belong to AIEE. While these engineers undoubtedly appreciate the benefits of the publications and other activities of both societies and feel that they are getting good value for their dues, the question still frequently arises as to why there should be two organizations instead of one. In this article I will try to give an account of IRE-AIEE relations in the past and present, and suggest the course of the future. As a member of both organizations, I hope that I can give an accurate picture of the subject.

When the IRE was formed in 1912, thought was given to whether a separate organization or operation within AIEE would better serve the needs of the radio engineers. A separate society offered the advantage of a radio meeting every month, while under AIEE there might be two or three radio meetings during a year's activities—most of the meetings being devoted to power practice. Also, there was at that time very little common technology between the two areas, so that the idea of having a single organization seemed unnatural. For these reasons the decision of the radio engineers was to form a separate society.\* Relations between the two organizations were and have remained friendly, and for many years IRE, along with AIEE and other engineering groups, had headquarters in the Engineering Societies Building on 39th Street in New York.

The technical fields served by the two societies in the period just after 1912 consisted chiefly of radio telegraph manufacture and operation for IRE, and the various phases of power practice plus wire telephone and telegraph for AIEE. But as the years went on this situation changed greatly, especially in the wide expansion of the radio field and its related areas.

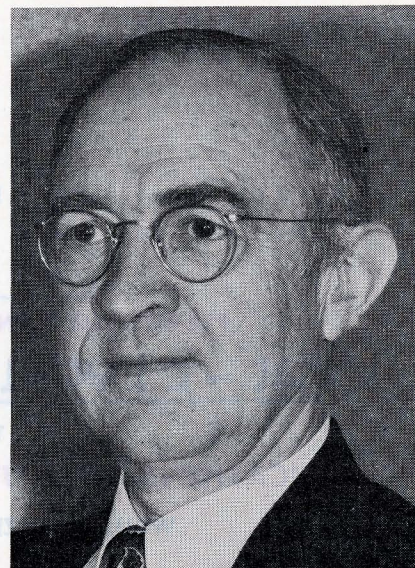
To IRE's scope of 1912 was added such major fields as AM broadcasting, FM radiotelephony, television, radar, other aids to navigation, Page, scatter propagation, and tele-

metering and remote control for space vehicles. Shared between radio and wire technologies have similarly been electronic computers and semiconductor devices. To render service in these new fields IRE offered the well-established publication, meeting, and convention facilities, and then notably added the professional-group system, which made additional such facilities available and furnished an easy method for extension of activity wherever an appreciable number of members are interested. On the part of AIEE the new technical areas were recognized by publication, the bestowal of honors, and more recently by good support of the computer, magnetic amplifier, and semiconductor fields by the Science and Electronics Division and of various other new areas by the Communications Division and the Instrumentation Division. AIEE has also assiduously supported telephony, including carrier, radio, and electronic phases.

This discussion would not be complete without a brief statement of the scopes of the two organizations, which are generally well understood. The aim of IRE can be said to cover radio and all the related subjects for which the members express a substantial interest. The aim of AIEE can be said to cover all portions of the electrical engineering field, and in particular there has been emphasis on the systems aspects of communications and electronics. So from the IRE standpoint, a complete, or at least very large, overlap of interest exists. But it would be erroneous to conclude that such a situation is an unqualified fault or that similar ones are unknown in other entirely different areas of human activity. Actually, the existence of general and specialized organizations in such fields as medicine, chemistry, etc., has been the case for countless years. We are, of

Continued on Page 15

1-17  
I. R. E.



CHARLES E. DEAN, Historian of the Long Island Section, has been a member of IRE since 1929 and a resident of Long Island since 1930. He is consulting engineer of Hazeltine Research Corporation and recently received his 30-year Hazeltine pin. He was born in South Carolina in 1898 and grew up mostly in Atlanta, Ga. From there he went to Harvard, graduating with the class of 1921.

During the period of 1921-24 he was located in New York and engaged at the Engineering Department of the Western Electric Company, which Telephone Laboratories. While here he took an M.A. degree in physics at Columbia University.

From 1924 to 1927 he studied physics at Johns Hopkins University in Baltimore and received the Ph.D. degree. He then returned to N.Y. and worked for two years at the headquarters of the American Telephone and Telegraph Company.

Since 1929, when Dr. Dean joined the Hazeltine staff, his work has included various patent studies and writing or editorial activity. During World War II he was responsible for the large volume of instruction books on equipment made by Hazeltine and numerous subcontractors. This work was recognized after the war by the award of a Certificate of Commendation from the U.S. Navy.

He took an active part in the early work of the Professional Group on Broadcast and Television Receivers, and established their *Transactions* on a regular basis. On this account he recently received one of the first plaques awarded by the group.

Continued on Page 11



RELATIONS BETWEEN IRE AND AIEE

By Charles E. Dean, Historian of L. I. Section of IRE,  
and Chairman of Communication Division of AIEE

About 9000 IRE members belong also to AIEE. Members of both societies have frequently asked why there should be two organizations instead of one. In this article I will try to give an account of IRE-AIEE relations in the past and present, and suggest the course of the future. As a member of both organizations, I hope I can give an accurate picture of the subject.

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\* J.V.L.Hogan, "What's Behind IRE?", Proc. IRE, Vol. 39, pp. 340-341, April 1951.

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To the scope of 1912 was added such major fields as AM broadcasting, FM radiotelephony, television, radar, other aids to navigation, scatter propagation, and telemetering and remote control for space vehicles. Shared between radio and wire technologies have similarly been electronic computers and semiconductor devices. To render service in these new fields IRE offered the well-established publication, meeting, and convention facilities, and then notably added the professional-group system, which made additional such facilities available and furnished an easy method for extension of activity wherever an appreciable number of members are interested. On the part of AIEE the new technical areas were recognized by good support of the computer and semiconductor fields by the Science and Electronics Division and of various other new areas by the Communications Division and the Instrumentation Division.

This discussion would not be complete without a brief statement of the scopes of the two organizations, which are generally well understood. The aim of IRE can be said to cover radio and all the related subjects for which the members express a substantial interest. The aim of AIEE can be said to cover all portions of the electrical engineering field. So from the IRE standpoint, a complete, or at least very large, overlap of interest exists. But it would be erroneous to conclude that such a situation is an unqualified fault or that similar ones are unknown in other entirely different areas of human activity. Actually, the existence of general and specialized organizations in such fields as medicine, chemistry, etc., has been the case for countless years. We are of course concerned particularly with IRE and AIEE, and it is with the relations between these two that the remainder of this discussion is concerned.



The great expansion of technology, especially during the last generation, was accompanied by a corresponding influx of young engineers, and to these the appeal of IRE was very attractive. The total membership increased fivefold, from roughly 5000 to 25,000 in the decade from 1939 to 1949, and further continued growth brought the membership to where IRE can claim to be the world's largest engineering society. And the IRE enjoys a rapid rate of growth, so that its position appears safe from early challenge.

The question of what should be the proper relation between the two societies is worthy of careful consideration by all members of both organizations, and during recent years such thought has led the boards of directors of both groups to pass motions aimed at the promotion of co-operation. In 1955 the IRE suggested that whenever a member of either society applies for membership in the other society the payment of a second initiation fee be waived - in other words, there would be a common initiation fee which would never have to be paid twice. This suggestion was renewed by IRE, along with other proposals for cooperation, in 1958 and now appears very likely to be adopted.

In AIEE an extended discussion of AIEE-IRE relations took place in 1956, in which the importance of cooperation in technical meetings and other activities was emphasized, and a special task force was appointed to study the subject. In 1958 IRE under the presidency of Don Fink and A. I. E.E. under L. F. Hickernell considered four specific suggestions of IRE, and an AIEE committee headed by Estil I. Green was appointed to <sup>study</sup> ~~consider~~ these suggestions and the general subject of relations between the two societies.



This committee rendered its report last June, recommending work toward closer cooperation in all fields of activity, including the geographical sections, the student branches, technical conferences, convention activities, joint committees, and standardization. In addition, the appointment of various joint coordinating committees was recommended to supervise the joint activities to the satisfaction of both societies.

The Green report has been accepted by the AIEE and the formation of a committee to consider this and other intersociety matters is in progress. It is expected that certain members of this committee will represent AIEE on a joint committee with representatives of IRE and that this group will develop definite plans of cooperative activity on a broad scale by the two societies.

Cooperation in certain activities is already well established. For example, there are 115 joint student branches. The sponsorship of various conferences, including the National Electronics Conference, includes both societies. *Considerable activity* in the computer and in the transistor field is jointly sponsored or carried on by joint committees.

One area in which a special need for closer cooperation now exists is that of standard definitions of technical terms. The IRE committees have produced numerous groups of such definitions, and these have been well coordinated by the IRE Definitions Coordinating Committee. However, this work is separate from that under Sectional Committee C42 of the American Standards Association which has been assigned responsibility for "Standard Definitions of Electrical Terms." This sectional committee and its subcommittees operate under the sponsorship of AIEE, but include representatives of all interested groups such



as IRE. Thus there are two largely independent channels for developing standard definitions. This situation has the drawbacks that numerous more or less conflicting definitions are published and that considerable time of the committee members is wasted in the duplication of effort. So here is a field where cooperation should be especially fruitful.

With the background of the various facts mentioned in the preceding paragraphs in mind, the reader will agree, I think, that an era of much increased cooperation in numerous technical activities and numerous geographical areas bids fair to come into being, and that this will bring great benefits to the members of both societies. Such an era of effective cooperation offers immediate good results in itself, and also might serve as a period of rapprochement which could even lead, in the course of time, to a consideration of merger.



*McCoyhill*



1-17

# THE INSTITUTE OF RADIO ENGINEERS

INCORPORATED

1 EAST 79 STREET  
NEW YORK 21, N.Y.

RONALD L. MCFARLAN, PRESIDENT

LEHIGH 5-5100

March 9, 1960.

Mr. J.H. Foote, President  
American Institute of Electrical Engineers  
33 West 39th Street  
New York, 18  
New York

*W Scott Hill  
G H Brown  
E I Green  
L C Holman*

Dear Mr. Foote:

Thank you for your letter of February 19th advising me as to the composition of the committee to join with a similar group from IRE in a study of the suggestions for closer co-operation made by the IRE Board some time ago. The members of the IRE committee will be as follows :

Mr. Donald G. Fink, Chairman  
Mr. Haraden Pratt  
Dr. John D. Ryder

By copy of this letter, I am asking Mr. Fink to contact Mr. Scott Hill, Chairman of the AIEE committee, relevant to a suitable meeting time and place.

I shall follow with great interest the discussions of these two committees, and have every hope that closer and wider co-operation between IRE and AIEE will result.

With best personal regards,

Sincerely,

Ronald L. McFarlan.

cc: Mr. D. G. Fink  
Mr. H. Pratt  
Dr. J. D. Ryder  
Dr. E. Weber



TO: MR. N. S. HIBSHMAN  
FROM: I. S. COGGESHALL  
SUBJECT: IRE PRESIDENT, R. L. MC FARLAN

File 1-17

March 21, 1960

You asked me to find out a little bit about Dr. McFarlan.

His election as President of IRE stemmed from a desire to recognize the important role of physics in radio engineering and electronics. He was trained as a physicist and received his PhD in physics, and instructed at Harvard. He specialized in X-ray diffraction and scattering, ultraviolet spectroscopy, but has worked all over the physics field for drug and chemical companies, Bulova Watch Company, and in computers, radar, sonar, microwaves, and optics.

He has never been employed as an engineer, and his principal contact with engineering professionally has been through IRE.

Although his early career was in the mid-west, he has resided in Boston for a number of years. There he was employed by Raytheon. When Raytheon and Minneapolis-Honeywell got together and formed Data-matic Corporation, he became consultant, and that is his present job.

In addition to his recognition as a physicist, his election to the Presidency of IRE also recognized the claims of New England and Boston Section.

ISC:epw




1-17  
(3-98)

I cannot agree with you entirely that IRE will be in a position to take over AIEE. I do not believe that number of members is the controlling factor that controls the functions of a society. I have just recently had the occasion to look over the list of current IRE Standards as compared to AIEE Standards. It is quite evident that IRE covers only a very limited field as compared to the several fields which AIEE covers. If one attends the Annual IRE Meeting and Exhibits in New York, I believe that they will gather the impression that their membership has a high percentage of technicians in it.

see  
3-98

I wish to thank you for your comments and you can trust that these comments will be passed on to the committee which will be studying this subject.

Very truly yours

  
C. T. Hatcher, Chairman  
Technical Operations Department

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Copies to Messrs. I. S. Coggeshall  
N. S. Hibshman

Messrs. W. A. Lewis  
A. C. Muir

7 5    Y E A R S — A    P R O L O G U E    T O    T H E    F U T U R E



1-17  
March 18, 1960

Leeds & Northrup Co.  
4901 Stenton Avenue  
Philadelphia 44, Pa.

Mr. L. F. Hickernell  
Anaconda Wire and Cable Co.  
Hastings-on-Hudson, N. Y.

Dear Mr. Hickernell:

I have read with interest your discussion of my talk on "Institute Technical Groups" and while it is true that the voting members in the AIEE may exceed those in IRE as of the date given in your discussion, it certainly is real apparent from the information you give that at the rate of growth of the two societies, even on the basis of voting members, the IRE is going to or has just surpassed the AIEE.

While looking at the voting members may make the AIEE picture brighter to you, I think we should worry about the total members in the two societies because this shows very definitely to me that there are more engineers interested in the IRE than what there are in the AIEE and that it has become the leading engineering society as far as members are concerned. This is particularly alarming when you consider the IRE does not cover nearly as many fields of electrical engineering as what the AIEE covers.

I think we have just got to face the facts and the figures and realize that something very radical has to be done to jolt the AIEE out of its lethargy if it wants to continue to maintain a leading role in the engineering profession. I for one am very anxious that it maintains its leading role, and I cannot sit by complacently and see the IRE continue to attract more and more members to its fold than what are attracted to AIEE.

Frankly, in my opinion, it is a tremendous mistake which we are perpetuating in having the two societies. I am very strongly in favor of a merger. I am very much afraid if the growth pattern of the two societies continues as they have in recent years a merger may not be necessary because the IRE will have such a commanding position in the engineering field that they will not require merging.

I trust this will explain to you why I used the figure I did in my talk, which I think is a bona fide figure to use, and which was obtained for me by Mr. Coggeshall. I think we must lay the true facts on the table, and to me the true facts are the total numbers of the Institutes.

Yours sincerely,



cc: N. S. Hibshman  
✓ I. S. Coggeshall

W. R. Clark



Ivan S. Coggeshall  
670 Maywood Avenue  
Maywood, N. J. 07607

May 25, 1968

Dear Nels:

I thought you weren't a-going to get it, and was all ready to sit down and tell you so, when I found it in the garage among some papers I had snared from AIEE/ISC files at the time of my retirement at end of '62. Meanwhile I had hunted for it from garret to basement, unearthing priceless mementos that my heirs, including my wife, would never recognize as such, and giving half of them the heave-ho. Among the treasures heaved were the next papers you'll be looking for, no doubt.

The series of 10 letters I wrote the Communication Division was on scattered subjects, of which only Nos. 4, 5, 7, and 10 held up AIEE and IRE for comparison in various aspects. Copies of those four I preserved in a green cover for convenience in reference. I see that I added a letter of January 21, 1957, on IRE Professional Groups and their publications, written to Russ Clark.

You need not return them. If you are building up a file in support of your history project, you may wish to lay them to rest in that file. If not, when you've finished with them, give 'em the heave-ho in Florida.

While I'm writing, I'll report that I turned over to Bill Keyes the envelope labels taken from duplicate mailings of "Electrical Engineering," and I hope he applies his "preventer". He claims he has one, but since computers are inexorable, I 'ave me doubts. At any rate don't expect it to work on the June issue mailing—I got it in too late for that.

Did your rabbit's foot work on seeing Pratt, McFarlan, and especially Haggerty at the Convention? All three of them were witnesses in the IRE Board of the germination of the merger idea on that side of the house, together with Lloyd Berkner, deceased. Someway I get the impression that Berkner was the catalyst, and you will recall that at a History Committee meeting in 1967, Pratt's memory was vivid as to the circumstances under which Berkner met Chase in Washington, the matter having been talked over at an IRE Board meeting. In the spring of 1961, the cast of characters was:

For AIEE, Linder, President  
(until July 31)  
Chase, Pres't pre-  
sumptive (Aug. 1)

For IRE, Berkner, President  
McFarlan, Jr. Past-Pr.  
Haggerty, on deck for  
President 1962

As ever, Yours Truly

*Coggeshall*



Loggie May 27, 1968

Thanks for four letters. Together with your "Endowment" paper they put the basic comparisons of the essential "national" activities in perspective and explain a lot of what made merger imperative, at least to AEE.

Yes, I had useful interviews with McFarlane and Haggerty. I failed to spend any very effective time with Bratt. Harner, I understand he is going to prepare a comprehensive piece ~~for~~ covering his part in and knowledge of the merger background. I haven't heard from him since the convention.

Unfortunately, I have had no response from Teare, Robinson or Linder. Chase acknowledged my request as did Scott Hill, but Estell Green has not responded. These latter two were active in ~~critical~~ bringing about the last important steps ~~for~~ in cooperation just preceding the merger. Ernst Weber's report on <sup>AEE</sup> "Organization & Policy" was an important document, but did not, as I recall suggest merger.

I'm hopeful that Chase will tell me what he and Beckner talked about. I have the same thought as yours about the likelihood that it was LVB who gave merger its deadly push.