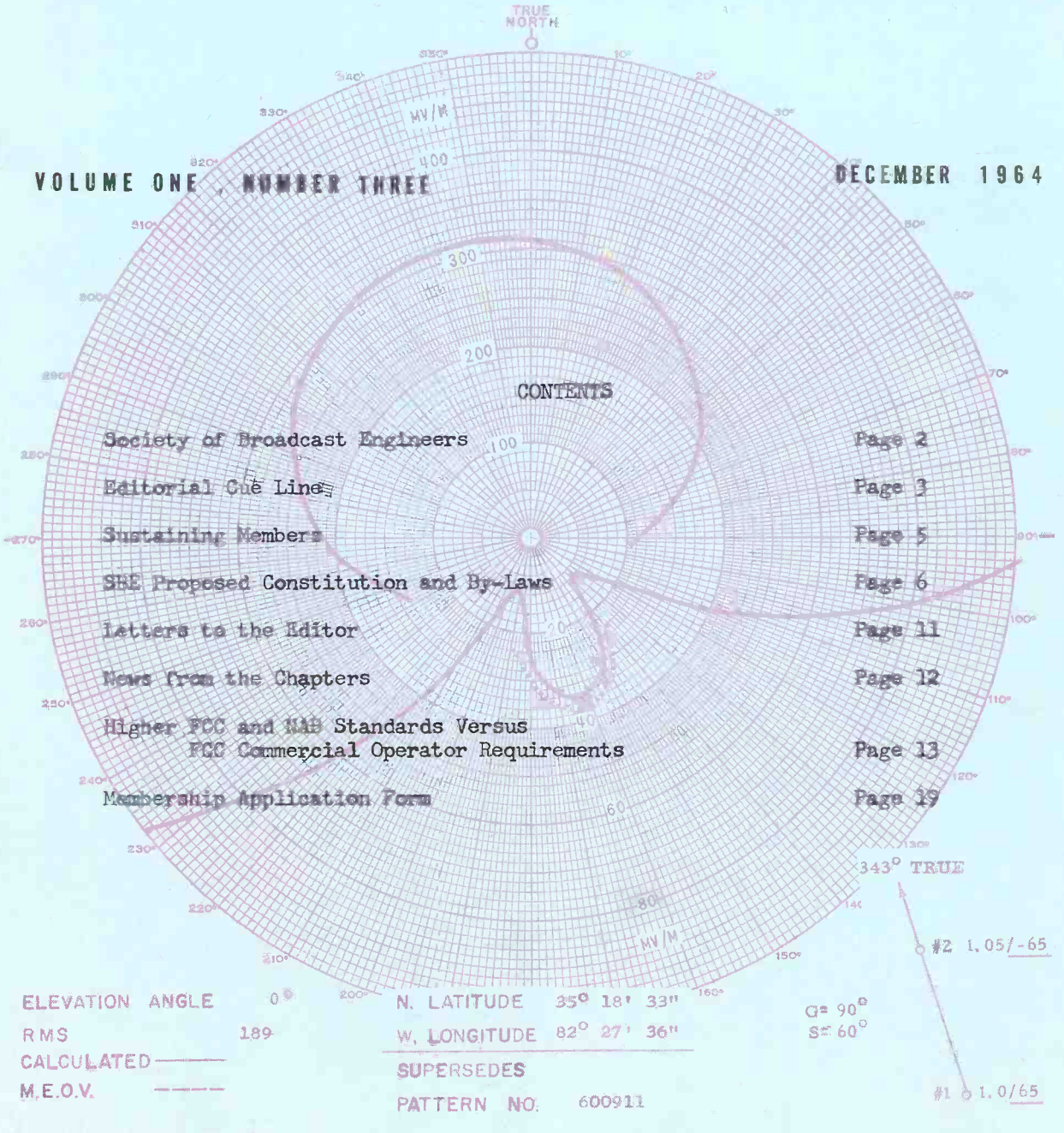
THE JOURNAL OF THE SOCIETY OF BROADCAST ENGINEERS

VOLUME ONE , NUMBER THREE DECEMBER 1964

CONTENTS



THE

SOCIETY OF BROADCAST ENGINEERS

EDITED AND PRODUCED BY - John H. Battison

THE JOURNAL OF THE SOCIETY OF BROADCAST ENGINEERS
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EDITORIAL

CUE LINE

YEAR END THOUGHTS

As we write this, Christmas is fast approaching, and the year is nearing its end. The past nine months ha seen a very encouraging increase in memberships. The Society now numbers almost 300 members, and no doubt we shall have that number before January 1st, 1965. But we are not exactly overjoyed----500 was our hoped for goal for the first nine months. We had planned to remove the application form from the back of this issue, but have decided to leave it in with the earnest hope that every member will tear his out and personally see that his associate(s) complete it and mail it in. Don't forget, membership in the SBE would make a good Christmas gift for your assistant (chief) or otherwise; in fact if the chief engineer is not a member, how about getting him as your Xmas gift to the SBE?

NEW CHARTER

This month we welcome Chapter Nine, Phoenix, Arizona under the able chairmanship of Albin R. Hillstrom, Director of Engineering of KOOL Phoenix. We hope that you will be able to evoke a lot of interest in the Society, Albin, and get as active a chapter as Number One in Binghamton, New York State.

SBE AMATEUR NET

The idea of an SBE amateur net is still growing, and two members--Ken Benner K7VJF, KBOW, Butte, Montana, and Fred Hervey of Chilton, Wisconsin W9IIU are anxious to set up a schedule on 40 meter phone. How about it OM's perhaps we could hold some of our meetings that way!

NEW WORKERS

Our plea last month did not go unanswered---we now have an associate editor in the works, and a book reviewer. Now we need more authors, and more headquarters staff. Please?

THE CONSTITUTION

This issue contains the first draft of the proposed Constitution and By-Laws. Fred Hervey of WHKW was the father, together with his fellow committee members, and they are to be congratulated on a fine piece of work. Any comments received will be sent on to the committee, and after their consideration and action the final revision will be published in the next issue.....in time for the Second Annual Meeting.

Also in this issue, and associated with the Constitution, are the proposed membership standards. Again, after consideration by the membership, a final form will be presented to the general membership for final approval.

MEMBERSHIP PINS

Elsewhere in this issue will be found a design for an SBE Membership Pin. Please let us have your comments on it as soon as possible, so that we can draw a final design and then have some made up.

ENGINEERING STANDARDS

Our lead article this month is a fine approach to a subject that is important to us all---that of an engineer's technical ability and responsibility. This should stir up a good deal of controversy among our readers----and a professional society is not worthy of the name if it does not give its members cause to think. No questions of union pros or cons are involved, merely the needs for higher standards of engineering qualification. At first glance the idea of a "Supergrade" engineer is very acceptable. What do our readers think?

SUSTAINING MEMBERS

As our members know we had five staunch supporters in our Sustaining Members. These members joined as the result of invitations sent out by the Society. We have now had the happy experience of receiving an application from CONRAC who, having heard about SBE, have now become our sixth sustaining member. We welcome your membership and thank you for your support. Additional inquiries regarding advertising in the JOURNAL

have also been received. These are truly signs that the SBE is receiving national notice.

REFRAINING MEMBERS

Unfortunately a word that rhymes with "sustaining", describes far too many of our members. These are all good men who have joined and sent in their dues, but now they are content to lean back and wait for the other members to provide the reading material that goes between the covers of the JOURNAL. If the SBE is to grow and prosper, all the charter members must help it with deeds, such as material for the JOURNAL, or at least a new member or two. Unless we receive some more articles the following issue will consist of editorials, book reviews and chapter news, plus the final form of the Constitution and By-Laws. We know our members do appreciate the efforts of others in writing technical articles; for instance, the article on line voltage problems in the last issue received a number of plaudits, and resulted in a request, printed in this issue, for a subsequent article on telephone lines and their usage. No, who will help out with that topic for the March issue? We need it by January 30 at the latest!!!

SECOND ANNUAL MEETING

The Second Annual Meeting of the Society of Broadcast Engineers will be held in Washington, D.C. during the NAB Convention in March, 1965. At this meeting a report will be made of the progress to date, the membership will be asked to ratify the Constitution, By-Laws and Membership Standards, and to elect a slate of officers for the coming year. Plan to be present if at all possible. Date is Sunday March 21st, 1965 - time 2:30 PM. Room location to be announced later. Again our meeting space is provided through the courtesy of NAB to whom we would like to ex-express our sincere appreciation.

TWO MISSING MEMBERS

We have located two of our missing members (whose records were destroyed in the fire), we still need addresses to contact Messrs. Roos and Bryen. Where are you?

BOOK REVIEWS

Standard Electronic Questions and Answers, Volumes I and II. Authors: Steve Elonka and Julian Bernstein. Published 1964 by McGraw-Hill Book Company, 330 W. 42 St., New York 30, N.Y. Price (both volumes) $15.95.

In simple, non technical language, this two-volume set provides comprehensive and dependable coverage of basic and practical electronics for the man engaged in all fields of technology. The books are broad in scope, andaall major topics are presented in easy-to-read, question-and-answer form. A minimum of mathematics is used.

Volume I, entitled Basic Electronics, presents the fundamental principles of electronics simply so that the reader will easily understand this complex science without having to wade through chapters of mathematics. The material covered in this volume includes direct current, magnetism, inductance, capacitance, alternating current, vacuum tubes, semiconductors and transistors, voltage amplifiers, and power supplies.

Volume II, entitled Industrial Applications, presents the many basic industrial circuits in their simplest form and explains exactly what happens inside each circuit and device to make it function. This volume covers oscillators, special circuits, transducers and sensors, control systems, closed-circuit and color TV, industrial processes and devices, and test equipment.

This has a lot of "meat" even for the advanced station engineer who may have forgotten some basics!

* * * * *

Electronic Analog and Hybrid Computers by Granino A. Korn, Ph.D., Professor of Electrical Engineering, University of Arizona, Tuscon, Arizona, and Theresa M. Korn, M.S. 564 pages plus index; 442 illustrations; 6 x 9, McGraw-Hill; $17.50. Publication date: October 1964

"Electronic Analog and Hybrid Computers" presents authentic, up-to-date design information on hybrid analog-digital computing devices and systems, including circuits for instrumentation, control, and data processing as well as for general-purpose problem solving.

SUSTAINING MEMBERS

It is with the greatest appreciation that the Society of Broadcast Engineers lists the following organizations as Sustaining Members. It is their support that has helped make these JOURNAL issues possible, and we hope that from time to time we shall have the pleasure of publishing articles from the pens of their engineers.

The Alford Manufacturing Company
299 Atlantic Avenue
Boston 10, Massachusetts
Manufacturers of Antenna Systems, transmission lines and equipments, etc.

Burke and James, Inc.
321 S. Wabash Avenue
Chicago 4, Illinois
Suppliers of every conceivable form of photographic equipment for TV.

Electro Voice Incorporated*
Buchanan, Michigan
Noted for top quality broadcast microphones and loudspeakers.

Andrew Corporation
Box 807
Chicago 42, Illinois
Coaxial transmission line, switches, transmitting antennas and masts, etc.

Auricon Division of Bach-
Auricon Corporation
6968 Romaine St.
Hollywood, California
Everyone knows that this is the home of the "Pro" and "Super-Pro" 16 mm S-o-F Cameras for TV

Conrac Division (Giannini Controls Corporation)
Glendora, California.
Top quality television monitors and video receivers for rebroadcast purposes.

*Also an advertiser. SBE JOURNAL rates available on request.

NEW PRODUCTS AND INFORMATION

The Andrew Corporation of Chicago, Ill. has just issued Andrews Catalog Number 23. This presents the widest selection of antenna system equipment in the industry. 96 Pages cover complete product information and performance data together with engineering information, on antennas from 2.5 mc to 13.2 gc. Transmission line data is also included.

The latest developments in antenna positioners, and associated equipment is also included together with comprehensive user information.

The catalog is available from Andrew Corporation, P.O. Box 807, Chicago, Ill. 60642.

SBE EMBLEM

Here is a suggestion for an SBE lapel badge or pin. It represents a microphone with antenna and ground symbols surrounding a TV Camera. Background could be blue with various colors indicating degrees of membership level. Comments please.

PROPOSED CONSTITUTION: THE SOCIETY OF BROADCAST ENGINEERS, INC.

Article 1. Name:

1. The name of this organization shall be the Society of Broadcast Engineers, Incorporated.

2. As shall be deemed necessary geographical groupings of members shall be authorized by the Officers: Chapters or Regions of the Society of Broadcast Engineers to encompass natural sectional designations of the United States; Sections, locally organized groups of Members and Associates; and Student Sections, either a part of a regular Section, or to be established on an accredited university campus under the sponsorship of the SBE Regional Officers.

3. The Society shall be incorporated.

4. The Society shall be a non-profit corporation, and any assets remaining at a time of dissolution of the society shall be returned in equal shares to all currently paid up members.

Article II. Objects:

The purposes and objects of the Society of Broadcast Engineers shall be:

1. The diffusion and increase of operational and scientific knowledge, in Broadcast Engineering; and the promotion and advancement of this science and its allied arts, in both theoretical and practical applications.

2. The establishment of standards of professional education, training, and competance for engineers engaged in the profession of broadcast engineering; and to afford professional recognition of the achievement of these standards.

3. The stimulation of interest in Broadcast Engineering, the encouragement of the exchange and intercourse of ideas among its members, and the promotion and maintenance of the highest professional standards among its members.

4. The creation of a working alliance, and a meeting of minds, all aspects of broadcasting: including the FCC, other organizations allied to Broadcasting, management groups, and the ultimate and most important facet of all broadcasting, the listener and listener groups.

5. To these ends it shall be the purpose of the Society to hold meetings for the reading and discussion of professional papers, publications, communications and for such other professional activities as shall properly fulfill the objects of the Society.

Article III. Membership:

The Membership of the Society shall consist of persons elected to the Society by procedures set forth in Article I of the By-Laws of this Constitution. The rights and privileges of membership shall be as hereinafter defined:

1. Honorary Member: A person of outstanding repute and eminence in the Art and Science of Broadcast Engineering or any of its allied professions, may be elected to Honorary Membership by the Board of Governors (National Officers) and thus become entitled to all of the rights and privileges of the Society.

2. Fellow: A member who has rendered conspicuous service, or is recognized as having made valuable contribution to the advancement of broadcast engineering, dissemination of knowledge thereof, the promotion of its application in practice, or having rendered signal service to the Society, may be elected a Fellow of the Society.

3. Member: Any person active in Broadcast Engineering who has an academic degree in engineering or its equivalent in scientific or professional experience in Broadcast Engineering or a closely related field or art, shall be eligible for election to Membership in the Society and upon election shall be entitled to all the rights and privileges of the Society.

4. Associates and Students: Any person engaged in the objectives of the Society, yet falling short of the requirements of the higher grades may be eligible for election to Associate grade. Any person actively engaged in the study of related Engineering fields shall be eligible for election to the grade of Student Member. These two classes shall not vote in Regional or National elections, nor shall they be eligible to hold office in other than Student Sections of the Society.

5. All of the above named classes of Membership shall hold a valid radiotelephone First-Class license, as issued by the Federal Communications Commission, unless specifically exempted by the Governing Officers of the Society.

6. Sustaining Members: Any person, corporation, or organization annually contributing substantially to the Society shall be eligible to election to Sustaining Membership in the Society.

Article IV. Dues:

1. The amount and method of collection of initiation fee and dues shall be provided for in the By-Laws of the Society.

2. The amount of rebate of dues collected from members to local and regional sections shall be determined by action of the Governing Officers and remitted to these sections.

3. Assessments upon members shall be made only upon resolution of the Governing Officers, and approved by a majority vote of the eligible Membership.

Article V. Government and Officers:

1. The governing body of the Society shall be known as the Board of Governing Officers and shall consist of the President, Executive Vice President, Regional Vice Presidents, Secretary, Treasurer and such Governors as shall be deemed necessary at the first organizational meeting of the Officers Pro Tem, all of which shall be elected by the membership. There shall also be established the office of Editor, to be appointed by the Governing Officers. Chairmen of the Admissions, Nominations, and Finance Committees shall also be designated Governors for the terms of their appointments with confirmation by election.

2. The terms of office of the President and Vice Presidents shall be for one year.

3. The terms of office of Secretary and Treasurer shall be one year.

4. The terms of the elected Governors shall be for two years.

5. With the exception of the Secretary, Treasurer, and Editor, no Officer or Governor shall serve consecutive terms.

6. Each term shall begin and end with the Annual Meeting, the time of which shall be established by the Officers, but no later than the Annual NAB Convention.

7. No Officer shall receive any emolument or fee from the Society except as authorized by resolution of the Governing Officers and approval by the Membership.

8. The Executive Committee shall consist of the Elected Officers and the chairmen of all standing committees.

9. Five members of the Governing Officers shall constitute a quorum.

10. The President shall preside at the regular meetings of the Society or Governing Officers, and shall be Chairman of the Executive Committee.

11. The Executive Vice President shall assume the duties of the President in his absence or incapacity, and shall otherwise assist the President.

12. The Secretary shall be responsible for all records and books of account of the Society, and shall record the minutes of all meetings of the Society and the Governing Officers. He shall also conduct the correspondence of the Society and the Governing Officers. All of the Secretary's records shall be open to inspection by members in good standing at reasonable times.

13. The Treasurer shall generally supervise all accounts and monies of the Society, under direction of the Governing Officers, and shall establish such

accounts as shall be designated by the Governing Officers. He shall have charge of all funds of the Society, and shall be responsible for the prompt collection of Dues from the Membership. All checks shall require at least two signatures of the Governing Officers for authorization.

Article VI. Meetings:

1. There shall be an annual meeting of the Society at a time and place to be determined by the Officers Pro Tem. The decided date of the meeting shall become a part of this Constitution.

2. Regular meetings shall be held as determined by the Board.

3. Meetings of the Governing Officers shall be held as necessary, but in no event at intervals of more than one year.

Article VII. Amendments:

1. This Constitution and By-Laws may be amended as follows: On a Resolution proposed by the Governing Officers, or Petition by not less than twenty-five Members in good standing and after approval as to legality by counsel. The proposed amendment or amendments or copies thereof shall be submitted to the Membership for majority approval by ballot thereon.

2. The Amendment Ballot shall be mailed to every Member in good standing, at least 30 days but not more than 40 days prior to the date of the election which shall be determined by the Governing Officers. The Ballot shall include the date for return to the Society for it to be counted.

3. All Ballots shall be counted within 30 days of the date of the election, and if two-thirds or more of the ballots cast are in favor of the amendment, the amendment shall become part of the Constitution and By-Laws, and shall take effect 30 days after its adoption.

4. Copies of the amendment shall be distributed to all members as soon as practicable after passage and enactment.

Article VIII. Regional, Local, Sectional Constitution:

1. Subdivisions of the Society shall be governed by Constitutions and By-Laws substantially in form and agreement with this Constitution and By-Laws, with such special provisos necessary that will not be inconsistent with this Constitution.

2. The Constitution and By-Laws of such sub-sections of the Society shall be approved by counsel, The Executive Committee of the Society or such sub-committee as they shall designate, and the Governing Officers, before authorization is granted.

BY-LAWS OF THE SOCIETY OF BROADCAST ENGINEERS

Article 1. Membership:

1. Honorary Membership: Candidates for election to Honorary Membership shall be proposed in writing by a voting member. Such proposal shall include a brief biography of the candidate and the endorsement of ten voting members, and shall be submitted to the Govering Officers for consideration. If elected, the candidate shall be notified by the Secretary. The Governing Officers shall confer the Honorary Membership in such manner as they deem appropriate.

2. Fellowship: Candidates for election to Fellowship shall be proposed in writing by a voting member. Such proposal shall include a brief biography of the candidate and the endorsement of five voting members and shall be submitted to the Governing Officers for consideration. If elected, the Secretary shall notify the candidate, and the Governing Officers shall confer the Fellowship upon the candidate in such fashion as shall be deemed appropriate.

3. Membership: Candiates for election to Membership shall make application to the Admissions Committee on forms provided. Upon acceptance by the Committee, the candidate shall be notified by the Secretary.

4. Associate and Student Membership: Candidates for election to the Associate grade shall make proper application to the Admissions Committee upon forms provided.

Candidates for the grade of Student Member shall make proper application to the Admissions Committee on forms provided: However: Students must provide the endorsement of their College Advisor to certify their Student status. Student membership shall not exceed the member's term in college or university, and shall be convertible to Member grade with no further action, provided all membership requirements are met on satisfactory completion of their education.

5. All members in all grades shall be actively engaged in the art and science of Broadcasting and/or its allied fields, and must be the possesor of a valid FCC Radiotelephone First-Class license, with the sole exception of Honorary and Sustaining Members.

6. Sustaining Membership: Upon acceptance, by majority vote of the Governing Officers of a substantial contribution to the Society by a corporation, or organization, Sustaining Membership shall be conferred upon such contributor.

7. Society members shall be authorized to use the following abbreviations or symbols indicating their grade of membership:

Hon. Member S.B.E.
F.S.B.E.
M.S.B.E.
Ass. or Student Mem. S.B.E.
Sustaining Mem. S.B.E.

The right to wear the Emblem of the Society is restricted to Members.

Article II. Dues:

The annual dues shall be as determined by the first elected Board and shall be specified for:

Honorary Member - None
Fellow -
Member -
Associate Member -
Student Member -
Sustaining Member -

Annual dues shall be payable in advance and shall become due and payable on the 1st day of April of each and every year...

A bill for annual dues shall be mailed to each member 30 days before due date.

A Membership card shall be mailed to each member upon receipt of dues.

New Members shall receive a diploma-type Membership certificate suitably engrossed, to indicate their grade of Membership and year of joining the Society. Charter Members shall be so indicated upon their membership certificates.

When a member's dues are two months in arrears, a notice shall be mailed: when a member's dues are three months in arrears, a final bill shall be mailed. When a member's dues are four months in arrears, his membership shall be terminated.

Reinstatement and Resignations shall be handled upon a basis to be determined by the first elected Board.

Military Service: Any Member entering Military Service shall have his dues placed in abeyance, with no further payments necessary until his release from Military service. His Membership shall become inactive until dues payments are resumed.

Dues from local and Regional Sections will be determined and established by the first elected Board.

Article III. Governing Officers:

1. Regular Meetings of the Governing Officers shall be held.

2. The time or place of a regular meeting of the Governing Officers may be altered or cancelled by a majority vote of the Governing Officers.

3. Special Meetings may be called by the President or any three of the Governing Officers on 21 day notice.

Article IV. Committees:

1. Executive Committee: This Committee shall execute the policies of the Society as determined by the Governing Officers.

2. Chairman of the following committees shall be appointed by the President with the consent and approval of the Governing Officers in majority.

a. Nominations
b. Convention
c. Admissions
d. Membership
e. Finance
f. Papers procurement
g. SBE Journal
h. ..... as required .....

Such other chairmen of committees relating to any of the subdivisions or branches of broadcasting or its allied arts and crafts as shall be from time to time determined to be necessary.....

All Officers shall be ex-officio members of the foregoing committees.

3. The duties of these committees shall be defined by the Governing Officers....

Article V. Order of Business:

1. At each annual meeting of the Society, the general order of business shall be as follows:

Remarks or address of President.
Report of Secretary.
Report of Treasurer.
Reports of Committees.
Results of Elections.
Unfinished Business.
New Business.

2. Robert's Rules of Order, to establish procedure and ensure decorum shall govern all meetings of the Society and its subdivisions.

Article VI. Nominations and Elections:

1. A nominating committee shall be appointed as provided herein and consisting of at least ten members.....

At least 90 days prior to the date fixed for the Election of Officers, and shall nominate a slate of officers and notify each member by mail.....

Any voting Member in good standing, by letter to the Secretary, not less than 60 days prior to the election date may propose and nominate a candidate, and the name of any eligible candidate so proposed by ten members or more shall be entered on the ballot.

2. Elections shall be by mail ballot which shall be mailed to every voting member in good standing at least 30 days prior to the election date. The votes shall be canvassed by a Board of Tellers, consisting of not less than five members in good standing, appointed by the Governing Officers.

The results of the Election shall be reported by the Chairman of the Board of Tellers to the President within twenty days of the date of the Election, and shall also report to the Secretary, who shall notify the membership by mail.

3. Any vacancies occuring among the officers or the elected members of the Governing Officers may be filled for the unexpired term by majority action of the Governing Officers.....

Frederick C. Hervey, Charter Member of the Society of Broadcast Engineers: Member, Admissions Standards Committee.
Radio Station WHKW
Route 3 (Quinney Road)
Chilton, Wisconsin

HIGHER BROADCAST ENGINEERING STANDARDS
continued from page 18

this article may be wholly or partially unacceptable or distasteful to a majority of the broadcast industry, however it is hoped the discussion may serve as an invitation to responsible persons or groups, among broadcasters, equipment manufacturers, and the FCC to even more constructive criticism and objective thinking concerning these matters. Perhaps a look backward and this quote from President Washington's first inaugural address "error of opinion may be tolerated where reason is left free to combat it", will inspire us toward a more progressive, equitable, and well oriented industry.

LETTERS TO THE EDITOR

Editor:

Activity in this area for the Society seems to be growing rather slowly; although the Journal is received and read by many of the local engineers.

We should have some basic membership standards in final draft by the time we have a general membership at the NAB.

I do get a bit of comment on the "John" Reetz on the Membership Standards Committee. Perhaps it could be changed in the next issue.

All of your hard work is very evident and much appreciated.

Sincerely,
s/Leo W. Reetz
Chief Engineer
KCRG

Editor: Sorry "John", you are now "Leo W." again. JHB.

* * * * * *

Editor:

I received the October '64 issue of the SBE Journal and noticed that a number of chapters have been started. I would like to organize one for Arizona. How would we do it? Could you send me some application blanks; then I could call an introductory chapter meeting and get as many members as possible.

Yours truly,
s/Albin R. Hillstrom
Director of Engineering,
KOOL, Phoenix, Ariz.

* * * * * *

Editor:

I enjoy the Journal and have learned quite a bit about subjects that that I do not come into contact with very often but are necessary to have for later use.

I would like to see an article by an SBE member familiar with telephone company equipment on:

The proper use of the repeater transformer.
The use, by the phone company, of the line equalizer and the losses therein.
The proper use of remote lines, levels allowed and connections thereto.

I read with great interest the article in the latest issue about mercury vapor rectifiers and changes to solid state. I have checked with my transmitter manufacturers (Gates) and find that they do not recommend changing to solid state, but to cut down on the arc back, they recommend the use of the XE8008(Xenon). These are directly interchangeable. Although they do not have the long life of the 8008 they seem to be more reliable.

I have just gone through the same troubles as shown in the article on line voltage fluctuations. As our transmitter is out in the woods and on a "farm" line, to help stabilize the line the utility company puts capacitors on the line to change the power factor and thereby raise and lower the line voltage, raising havoc with our transmitter output especially around "milking time", six oclock at night. This is rough on us as we operate remote from the studio and we have to monitor the output more often than usual to keep within our limit. The article covers the subject very well.

Keep up the good work. I hope the more experienced Engineers will write articles to help those who are just starting in the station engineering business.

s/Burton B. Landry, Jr.
WESO
Chief Engineer
Southbridge, Mass.

NEWS OF CHAPTERS

The Binghamton Chapter (No. 1), Society of Broadcast Engineers held its second meeting 27 October 1964 at WKOP Studio, Binghamton, New York.

The meeting was attended by:

Ronald Simpson
WPEL Montrose, Pa.
Thurlow Greene
WSYE-TV Elmira, N. Y.
David Shult
WPEL Montrose, Pa.
Charles Lissner
WDLA Walton, N. Y.
Franklin Shelly, Jr.
WINR Binghamton, N.Y.
Louveer Stantz
WINR Binghamton, N. Y.
Gino Ricciardelle
WINR Binghamton, N. Y.
Edward Pettingill
WENY Elmira, N. Y.
Art French
WELM Elmira, N. Y.
Robert Fiedler
WPEL Montrose, Pa.
Charles Hallinan
WKOP, Binghamton, N.Y.

Mr. John W. Beck of Rust Corporation of America gave a talk and demonstration of a new automatic transmitter logging device.

The next meeting will be held December 1, 1964 at the Colonial Motor Inn, Vestal, N.Y. Mr. John P. Gallagher of Visual Electronics Corporation will give a talk and demonstration on the KRS Tape Cartridge Machine and some of its applications, including radio station automation.

The Binghamton Chapter (No. 1), Society of Broadcast Engineers held its third meeting of the 1964-1965 season at the Colonial Motor Inn (Tally-Ho Room), Vestal, New York, Tuesday, 1 December 1964.

Mr. John Gallagher of Visual Electronics gave a talk and demonstration on "Radio Program Automation using KRS Tape Cartridge Machines."

The Meeting was attended by:

Art French
WELM Elmira, N. Y.
Thurlow Greene
WSYE-TV Elmira, N. Y.
Ed Pettingill
WENY Elmira, N. Y.
Ronald Simpson
WPEL Montrose, Pa.
Gino Ricciardelli
WINR Binghamton, N. Y.
Wiley Bates
WCHN Norwich, N. Y.
Bruce Mackey
WKRT Cortland, N.Y.
Charles Lissner
WDLA Walton, N. Y.
Chalres Hallinan
WKOP Binghamton, N. Y.
Allen Bell
NY-Penn. Microwave Corp.,
Corning, N.Y.

Plans for our January meeting have not yet been completed. We propose to discuss the possibility of holding an "Area Meeting" with the Scranton Chapter in April or May of 1965. We would like to include Syracuse, N.Y. if they ever get a chapter established.

Please forward additional application forms as we would like to increase the number of paid up members. According to our records we now have twelve.

HIGHER FCC and NAB BROADCAST ENGINEERING STANDARDS Versus FCC COMMERCIAL OPERATOR QUALIFICATIONS

by R. J. Hendrick
Bowling Green, Ky.

Three developments, that have taken place within the broadcasting industry and the FCC during the past few years have motivated and given impetus to the ideas, questions, and incongruities discussed in this article. First; the FCC rules allowing automatic logging of program and operating logs, second; the much discussed problem of overpopulation or "birth control" of AM stations by the industry and the FCC, and third; the recent FCC rule changing commercial radiotelephone operator requirements.

Just to set the record straight and remove any chips that may already be perched upon some shoulders (since I know station owners and managers are also numbered among readers of this publication) let me say that this article in no way intends to reflect the thinking of union or non-union groups. It is presented in the hope of stimulating some objective thinking and perhaps provide some motivation and incentives for seeking more realistic solutions to the problems that are plaguing the industry and the FCC. I have been employed in the broadcast industry for twenty years and have never been a member of any labor union - not that I am particularly against the unions, "the cookie just crumbled that way."

AUTOMATIC LOGGING

The subject of automatic logging is mentioned here to question, and perhaps to emphasize, some of the inconsistencies in the approach of broadcasters to the subject and some unclear points and lack of up-dating of the FCC rules and regulations. So far as this writer has been able to determine no rules or regulations in the present FCC Standards relieve the station licensee of the responsibility of logging the entire program content of broadcast day, including ID's, spot announcements, mechanical transcriptions, et cetera, in other words he must account for every second of programming and the time it was on the air. Somewhat similar requirements are set forth for the automatic logging of the operators' log, briefly it is required that each parameter be logged a minimum of once each ten minutes if a continuous aural alarm is not provided to warn the operator if any of the operating constants are out of tolerance at any time.

Now, in what position does this place the station licensee as far as complying with the present FCC rules? He is exactly where he has always been, responsible for logging all required entries on the program and operator logs, whether manual or automatic means of logging is employed. No provision has been made to protect him if his automatic logging equipment fails, and that includes the two days each week that he is not required to have the transmitter equipment inspected and logged in the maintenance log if the station falls in this class.

Since the FCC has seen fit to permit the use of automatic logging devices, and in some instances relaxation of operator requirements, it seems that a logical sequence to these decisions would be amended FCC rules and regulations, giving station licensees some form of relief in case of automatic logging equipment failure.

A few specific instances that might get a station involved in logging violations or lack of logs, under present FCC rules due to automatic equipment failure would be during an inspection by an FCC Field

Engineer, at license renewal time if the composite week logs were not complete, or during routine FCC monitoring. Of course failure to log at any time is a violation; the three instances mentioned are just more likely to be checked and noticed. Assuming that the preceding statements are essentially correct, the recent actions of the Commission and the subsequent necessary revisions of the regulations to protect the licensee in case of automatic equipment failure would be tantamount to lowering the engineering standards. These developments lead to one question. How can the FCC and the NAB, which proposed and sanctioned these actions of the commission, reconcile these proceedings with previously released information that the FCC and the NAB were for the most part agreed that the logical and most practical means of dealing with AM station overpopulation and deteriorating operating practices, was by implementing and enforcing higher engineering standards? Incidentally, a considerable group of responsible broadcasters and professional engineers have insisted that there would be no overpopulation problem in AM if the FCC, over the years, had stuck to engineering standards.

EQUIPMENT RELIABILITY

I would be the last person to deny that tremendous improvements and increased reliability in modern broadcast equipment have occurred since the early days of broadcasting, in fact greater strides have been made along these lines since World War II than at any other period. The beautiful, sleek, and highly dependable present day equipment from the microphone and camera, to the transmitter, is a far cry from the massive and at times crude installations of the stations thirty or thirty-five years ago. If you have ever had the (pleasure?) of maintaining or possibly building one of these old time composite rigs, you can have no doubt or reservation about the tremendous progress that has been made in the performance standards of equipment.

However, equipment failures still occur and in many instances under odd and sometimes weird circumstances. What broadcast technician or engineer "worth his salt" has not found himself sweating and fuming over an audio amplifier or transmitter knowing he has isolated the defective stage? (with everything pointing to a bad tube). A first, and then a second new tube off the shelf is substituted and the trouble still persists, now he really begins to get upset, and loses time by checking other components only to come back later and try a third new tube - and behold everything is normal again. This is not too unusual a situation to occur in newly installed electronic equipment or replacement components (although in all fairness to equipment and component manufacturers the percentage is very low).

Another incident, I am sure everyone is familar with, occurred during the space flight of Gordon Cooper in May 1963. Although the flight was not directly associated with broadcasting, much of the electronic equipment used in the spacecraft and ground station installations is very similar to components used in broadcasting, and must pass a much higher reliability and performance standard. Yet, with hundreds of millions of dollars invested in this space project, equipment failure did occur. During orbit number nineteen Cooper advised the ground station that the lamp indicating a re-entry sequence was on. This threw the ground station personnel into a frenzy. Luckily only a section of the electronic equipment had failed; however ground telemetry control, and the automatic control in the spacecraft were inoperative, which meant that Cooper with the aid of a fellow astronaut giving instructions from a station aboard a ship at sea had to attain his re-entry maneuver and position manually. In other words with all the planning, huge monetary investment, and every means of avoiding failure by the use of back-up systems, if it had not been for the "human element" of engineering knowledge to manually operate the system, Cooper and spacecraft Faith VII would undoubtedly still be orbiting the earth because of "automatic" equipment failure.

Now, I do not mean to suggest that failure of automatic or regular broadcast equipment would create the type of hazard just discussed, (although some station managers and program directors have been known to exhibit similar states of frenzy when an off the air outage occurs).

The preceding example was given only to

emphasize that equipment is not yet fail-proof. Apparently many broadcasters have reached the devious conclusion that the "pinnacle of perfection" and the ultimate in equipment design, development, and performance has been attained. Admittedly the use of automatic logging is a technological advancement and definite advantage to many stations when properly integrated with their particular operation. Equipment reliability and performance standards have risen sharply, but on the other hand the equipment is much more intricate, and complicated, requiring technical personnel with higher qualifications than the usual VOM, soldering iron, screwdriver, and plier type technician. It is hoped that broadcasters will not go overboard on the reliability angle and drop their guards on proper maintenance and employment of qualified technical personnel and discover too late that they have created a state of pandemonium for themselves with the FCC.

EQUIPMENT STANDARDS

Broadcast engineering standards are specified by the Federal Communications Commission, and promoted by the National Association of Broadcasters dedicated to up-grading and improving the industry through self-regulation.

The FCC sets specific and minimum acceptable standards that equipment manufacturers must meet for transmitters, frequency monitors, and modulation monitors as well as minimum performance standards for all other equipment from microphone and camera to transmitter. The NAB sets minimum industrywide technical requirements for all types of audio amplifiers, disc recorders, tape recorders, turntables, pick-up arms and cartridges and in addition specifies recording standards for disc and tape and many other standards too numerous to mention. Obviously the NAB standards are not binding but since this organization's activities are generally respected and accepted by broadcast equipment manufacturers and the FCC, NAB specifications are more or less a guide for the industry.

Now all of these fine standards and technical requirements for broadcast equipment should provide the industry with an excellent technical image. However the fact that many stations do not adhere to the standards and enforcement procedures are rather lax, although the FCC has tightened its checks somewhat in recent years. As was mentioned earlier it seems that the NAB has taken a totally contradictory attitude toward the technical operation of broadcast stations. NAB is apparently operating on the principle of not letting its right hand know what the left hand does. To be specific, NAB has established a commendable set of engineering standards for broadcast equipment and then plays "the ostrich game" by hiding its knowledge of factual information and promotes and endorses an action by the Commission, that in this writer's opinion, actually leads to lower standards, (recent operator requirement changes).

A recent controversy that developed between broadcasters and some advertising agencies over disc-to-cartridge transfer quality somewhat substantiates the preceding condemnation of NAB policies, and emphasizes the need for a stepped up effort of controlling the technical standards of all stations. Recent efforts of the NAB have been directed toward setting up acceptable standards for disc-to-cartridge transfer and also issues a guide for technical personnel intended to aid them in this task, but neglects to specify personnel qualifications.

It appears that if the NAB is really sincere in promoting higher engineering standards, a plan similar to the present system of the NAB Code Authority for controlling program and commercial material could be incorporated as a technical department within the scope of the NAB Code Authority. Member stations could be checked by the Code Authority for the performance of equipment and qualifications of personnel with suitable penalities levied against violators.

PRESENT OPERATOR REQUIREMENTS

The end of World War II brought an upsurge to our domestic economy and many businesses and industries boomed, broadcasting being one of them. The FCC was besieged with applications for new AM stations. This was the beginning of the proliferation of these facilities which exists today and as mentioned previously the cause for considerable concern by the Commission and the NAB. Follow-

ing the wholesale granting of new station facilities there soon emerged a "new breed" of first class licensed operator, namely; the combination operator or "combo man" as he is commonly known. Prior to this time this class of station personnel was practically non-existent as a predominate type.

At the present time there are over 5000 authorized AM, and FM stations and literally hundreds of combination operators. Combination operators are employed at all classes of stations from 250 watt to 50 kw, and directionals. Station owners and managers are largely responsible for the improper use of these men. "Shoestring operators" and promoters usually with only one first class licensed man use him as a salesman, announcer, program director, copywriter and anything else they can find for him to do with little or no time to devote to maintenance and equipment care. This is far removed from the implied standards of the FCC.

The increased demand for combination operators has led to the intensive training, --- drill and test --- type of school, which is nothing more than a "license mill." These training courses usually guarantee a first class license within five to six weeks. Let me emphasize that the nationally know accredited technical and trade schools, resident and home study, that offer courses in technical training leading to a first class license, rarely, if ever offer a "quickie" course of this type. The preceding statements are in no way a reflection on the high standards of these fine schools which have trained thousands of highly qualified technical personnel throughout the years.

Many "combo men" readily admit that they know relatively little regarding maintenance and technical operation of a station and have no desire to pursue this line of employment. The only reason they secured their first class license was to enhance their ability to get a job, or an increase in pay, plus the fact that the license was not too difficult to secure. I personally know men who have held a first class license for ten years or longer to find themselves completely helpless when a technical breakdown occurs. At the risk of being repetitious, I pose this question. Are the above conditions and procedures the intent of the FCC as set forth, or implied, in the rules and regulations?

Recent FCC changes in operator requirements effective April 19, 1964 will do little to alleviate the inadequacies discussed in previous paragraphs. Replacement of the restricted operators permit with a third-class radiotelephone license with broadcast endorsement requiring applicant to take a written examination of elements 1, 2, and 9, raises the standards at the lower end of the scale.

But the five day a week inspection of the transmitter by first class operators for some classes of stations, and allowing part time or contract basis employment of first class operators for certain other class stations could in effect lower the standards at the upper end of the scale. Although it is true that the five day a week transmitter maintenance log puts a more rigid burden of proof on all stations and a greatly added burden on certain stations using remote control, particularly certain FM stations; it is highly probable the contract operator provisions of the regulation will result in more serious abuses of the operator and maintenance requirements of the FCC than the previous full time first class operator requirement.

The unfairness and the inequities of the operator burden upon various classes of stations created by the new rules becomes of considerable magnitude and importance, particularly in multi-station, highly competitive markets. A typical example would be three AM stations operating in a city under 50,000 population. One station, a full time class IV; another, a class III 1 kw non-directional day, directional at night; and the third a class III 1 kw directional full time. Now these three stations are on a fairly equal basis as far as power and coverage are concerned, but the class IV station has a definite advantage with respect to operator requirements. Of course the major advantage gained with the new rules is the five day transmitter inspection requirement gained by the class IV station, the other two stations continue to have to employ one or more first class licensed operators seven days a week. Many stations are affected in

this manner and a definite and unjust economic and operational advantage is afforded those stations that are able to avail themselves of the new operator requirements.

SUGGESTED OPERATOR QUALIFICATIONS

After serious review and evaluation of existing FCC rules and regulations relating to operator requirements and qualifications, the following facts are believed to be most pertinent in achieving a more practical and realistic approach to operator standards. No faults of any consequence could be found with the type or the material content of the present FCC examinations for the various classes of licenses. However, the type of examination lends itself well to the "license mill" type schools mentioned earlier. The one glaring weakness is the Commissions qualification requirements (or lack of requirements) in order for an applicant to take an examination. The only qualifications necessary relate to citizenship, character, age, physical fitness, and ability to read and write. No minimum educational background, technical or otherwise or previous experience is required.

The Commission by revising the rules and regulations of Section 13.5 to include a minimum educational or experience requirement for applicants seeking operators licenses before being permitted to take an examination could be an effective step toward providing the answer to the industry's problems, of AM station overpopulation and higher engineering standards and also serve to strengthen the industry and the FCC's control in these areas in the foreseeable future.

Table I lists suggested revisions of FCC operator qualifications and also an additional higher class license, designated FCC Radiotelephone Engineer. This higher grade license would require passing a written examination on a new element (possibly being designated 10) covering advanced material on directional antennas, FM stereo and multiplex, and TV operation and theory, in addition to elements 1, 2, 3, and 4. By incorporating these operator standards in the FCC rules and regulations, it would be practical to utilize second and third class operators as combination operators at additional stations not now permitted to do so. It seems feasible that this class of operator could be used at some directional and higher power stations for periods of possibly six hours or less, as long as an operator with a higher class license was readily available at all times, and who checks the equipment at several key intervals during the broadcast day. This line of reasoning agrees with the concept that modern broadcast equipment is more reliable and is based upon the fact that with higher technical qualification standards these lower grade operators will have the equivalent or better technical knowledge than many first class operators on duty today.

It is also recommended that the rules be revised to require at least one person holding the proposed Engineer grade license be employed by AM stations with directional arrays or with 10 kw power or higher, FM stations with 25 kw power or higher, FM stereo or multiplex stations, and all TV stations.

The preceding changes and revisions are considered to be of prime importance as a means of providing qualified operators for all classes of stations with the greatest degree of fairness as possible with minimum burden placed upon stations and operators consistent with maintaining high engineering standards. A transitional period of perhaps three to five years would be necessary to give holders of existing operator licenses and stations maximum opportunity to meet the requirements listed in Table I. A grandfather clause would allow present first class license holders meeting the requirements to automatically receive the Engineer grade license without examination. Any first or second class license holder not meeting the new requirements for their class of license at renewal time would automatically be reduced to the next lower grade, subject to restoration of the higher grade upon meeting the qualifications and passing a re-examination test.

CONCLUSION

The enforcement of existing higher technical standards for stations and the updating of operator qualifications are long past due. The criteria, changes, and remedial processes mentioned in

Table I

SUGGESTED CHANGES IN FCC LICENSING REQUIREMENTS FOR COMMERCIAL BROADCAST OPERATORS	
Class of License	Minimum Education or Experience To Be Submitted On Revised FCC Operators License Application Form 756.
Third Class Radiotelephone Operator Broadcast Endorsement	At least 6 weeks study with successful completion of course for FCC elements 1, 2, and 9 at an accredited school, either resident or home study or affidavit from 1st class radiotelephone operator attesting to at least 3 months training and supervision indicating adequate knowledge to operate and attend licensed equipment.
Second Class Radiotelephone Operator Broadcast Endorsement (NEW)	At least 3 months study with successful completion of course for FCC elements 1, 2, 3, & 9 at an accredited school, either resident or home study or affidavit from 1st class radiotelephone operator attesting to at least 6 months training and supervision indicating adequate knowledge to operate and perform limited maintenance on class of licensed equipment covered.
First Class Radiotelephone Operator	At least 6 months study with successful completion of course for FCC elements 1, 2, 3, & 4 at an accredited school, either resident or home study or affidavit from 1st class radiotelephone operator attesting to at least 1 years training and supervision indicating adequate knowledge to operate and maintain the class of licensed equipment covered.
FCC Radiotelephone Engineer (NEW)	At least 1 years study with successful completion of Communications Electronics or similar course at an accredited school, either resident or home study or affidavits from at least two competent persons; consulting engineers, 1st class radiotelephone operators, station managers etc., attesting that you have held a 1st class license for at least 5 years, performed installation and maintenance duties at one or more of the following class stations. AM stations with 10 kw. or higher power or employing DA, FM stations with 25 kw. or higher power or utilizing stereo or multiplex, or TV stations.

continued on page 10

THE INSTITUTE OF BROADCAST ENGINEERS
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APPLICATION FOR MEMBERSHIP

Application is hereby made for membership in the Institute of Broadcast Engineers with the grade of *..... The following information is supplied to assist the admissions committee in assessing my qualifications.

Name .....

** Address .....

Position .....

Employer .....

** Address .....

Engineering Qualifications .....Degree?.....University.....Year.....

FCC Licenses.....
Years of Responsible Engineering Experience.....
Brief Professional History.....

Fields of Engineering Activity...Radio....Television....Transmission.....

Studio....Other.....

Two References who are Familiar with my Work

Name and Address.....

.....

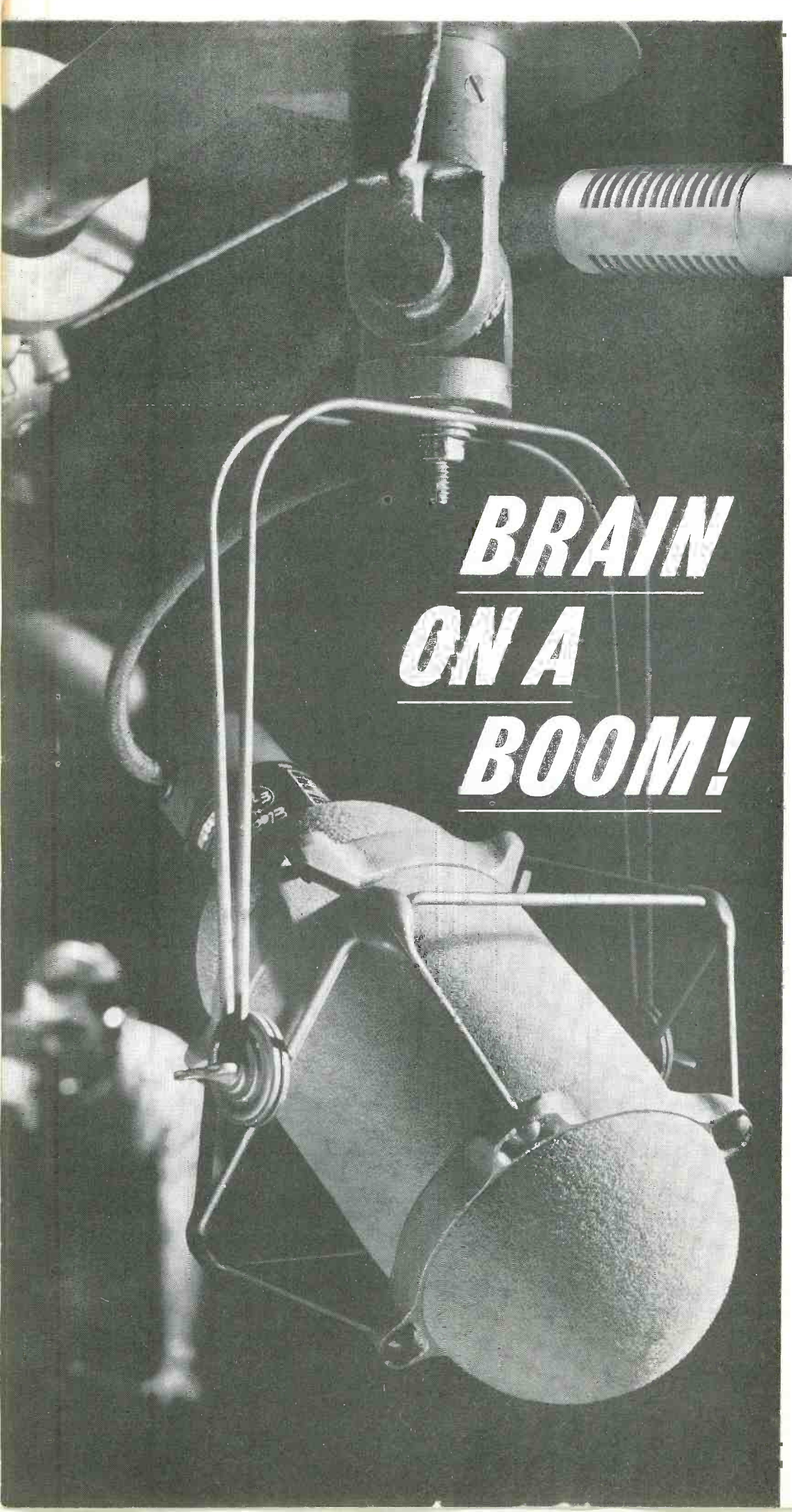
Name and Address.....

.....

Annual Dues of $10 are enclosed herewith (no action can be taken if dues do not accompany application). I agree to follow the Constitution and By-Laws of the Institute if admitted. Signed.....Date.....

Admissions Committee Action. Date.....Approved for Grade....Approved for Grade indicated..... Action deferred for more information.....
Canditate Notified.....Chairman's Signature..... Entered in Records.....

* Until By-Laws are adopted all members enter as Charter Members.
** Indicate Mailing Address Preferred.



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