THE JOURNAL OF THE SOCIETY OF BROADCAST ENGINEERS

VOLUME TWO NUMBER ONE JUNE 1965

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THE

SOCIETY OF BROADCAST ENGINEERS

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Edited and Produced by-John H. Battison
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EDITORIAL CUE LINE

This is our first issue of the second year of our existence, and although four months have passed since our March issue we can be proud of what has been accomplished. In this issue appears the Articles of Incorporation that were filed for the Society in the District of Columbia. They make happy reading. Our constitution and By-Laws are being prepared, and a copy will be mailed to each member in due course. In this regard we had only a few comments from members, but those received were very well thought through, and in particular we are indebted to Thomas Haskett for a most comprehensive and thoughtful review.

The Convention--(both NAB, and SBE) was well attened, our various committees performed well in planning future operations for the Society, and much was accomplished.

Elsewhere in this issue appears the official tally of the election results; we had very impressive return of cards; shows a lot of interest. Thank all you members who cared enough to vote, and also thanks to all you members who worked last year to help get us started.

SBE NETWORK

Ken Benner the very active President of the Montana Chapter Six, and a newly elected Director has activated an SBE Net on 3910 KC sideband at 2 pm MST. We can't put our finger on his call letters at this moment (3.15 am EST) but give him a call. Here at Annapolis we are in the process of rebuilding our ham station and hope we can soon put out an SBE signal from here.

LAPEL PINS

Plans have gone ahead to have some lapel pins made up along the lines shown in the December issue. The price will probably be $2.50 including mail: for the moment the pins will be one color only--the cost of different colors for each grade is too high at present. Full details next month.

NEW SECRETARY

The appearance of Bob Houston, Chief Engineer of WEAM Arlington, Va. as Secretary has begun to relieve yours truly of a lot of work--nice work Bob! He is a happy soul who revels in writing letter in brown ink. He must be a potential accountant with a yen for red ink! Anyhow, with the advent of Bob the Society work has been divided, and membership matters can be sent straight to Bob leaving us free to devote more time to the JOURNAL.

JOURNAL

We still need manuscripts for upcoming issues. Because of the slightly longer than usual time between issues we have more material this month, but we need lots for September. How about it please? And how about more members?

CHAPTERS

This month we carry news of Chapter One, and Chapter Six. Charles Hallinan who is Executive Vice President of SBE as well as the President of Chapter One has contributed an article of the formation of Chapter One. Other Chapters please note and follow suit. Headquarters has funds available to help out with local costs if they are kept reasonable, for mail, letterhead, etc.

As an interesting sidelight, reversal of the usual routine this month if space permits (if not, next month) we are carrying a reprint of an article by John Moseley, President of Moseley Associates, concerning remote control. This appeared first in the Montana Chapter Newsletter--Yes we said Montana Chapter Six Newsletter. If they can do it others can do it!

How about letting us have your questions and requests for items you would like to read in the JOURNAL?

And finally (Charles Hallinan wrote such a fine "thank you" for his election that he has expressed my feelings too!) thank you for your support in electing me President. I shall do my best to advance our Society in every way possible. Now more than ever I need your support and advice -- so please let me hear from you.

J.H.B.

MESSAGE FROM THE NEW EXECUTIVE VICE PRESIDENT

I wish to express my sincere thanks and appreciation to all members, Society of Broadcast Engineers, for my election to the office of Executive Vice-President. This is an honor and a challenge.

The informal beginning is behind us. We are now incorporated and a recognized professional Society.

Our initial task is urgent and threefold. Larger membership, more ACTIVE chapters and a strong Journal. Chapters, both active and on paper, must get busy and enlarge membership. Many broadcast engineers have not yet heard of our society or know little of its purpose and benefits.

Members in areas where no chapter exists should meet to form a new chapter, no matter how small, and continue in the effort to make this society a larger one.

Chapters must be active, hold regular meetings and make membership attractive, interesting and educational.

The Journal needs strength, not only in circulation and advertising but in editorial content as well. Articles for the Journal are needed and welcomed.

Educational information obtained through reading the Journal should be another strong attraction for membership in our society.

Please be assured that as your Executive Vice-President, I will direct every effort toward the achievement of a greater Society of Broadcast Engineers. Again, many thanks!

Charles Hallinan

The Secretary's Corner

As our Society swings into its second year, we find it having elected an executive staff. In taking over the secretarial duties from our much over worked founder, we hope to be able to expedite much of the correspondence with which he has been saddled. In future communications to and about the Society, please address it directly to the secretary, unless it is for some other officer directly. Names and addresses and election results appear elsewhere in this issue.

During our meeting in March, a small change in the membership tenure was made. Starting next year we will accept applications made after July of the year on a six month basis, at the rate of five dollars for the period through December 31. We hope this will encourage new members, while at the same time simplifying our bookkeeping. Thus all memberships will expire at the end of the year, without such a severe penalty to late comers.

As with any club or publication, we can not know where you are unless you keep us informed. In going through the files, your secretary has noted several cards with bad addresses. Please try to let us know where you are when you change your mail address.

Several requests have come in from directors, and others who want to start regional Chapters, for names and addresses of members in their area. We have a cross file on members by states, so if you desire this information, send your request, and it shall be done. If you are near a state boundary, please suggest the contiguous area you wish to cover. If there is enough interest in a publication covering this information, it will be considered for future issue. We hope we can publish a club roster before the year is out for the benefit of our members.

It has been interesting to note, in glancing through the files, where many former acquaintances of your secretary have landed through the years. Being an inveterate directory reader, it has been possible to chart many men in their travels. Browsing through the club files is a nostalgic ramble through personal history.

Please send all routine correspondence to:

Bob Houston
1210 N. Buchanan St.
Arlington, Va.

THE HISTORY OF SBE CHAPTER ONE

I would like to present a brief report on the history and current activities of Chapter One in the hope that it may be of some interest and help to other Chapters and prospective chapters.

Beginning in 1960 a group of supervisory engineers from the various radio and television stations in and around the Binghamton, New York, area began to hold monthly luncheon meetings to discuss mutual problems of the day. As time went on, engineers from nearby out-of-town stations joined our group.

One year ago, this month, in the interest of getting something really worth while started, we applied for membership in the Society of Broadcast Engineers.

Eight meetings have been held since we became Chapter One. In the last five of these meetings we have been able to present a speaker, equipment demonstration or motion picture film of an educational nature. We usually assemble once each month at 5:30 P.M. for a dinner meeting followed at 7:30 with a regular meeting program. Attendance at the dinner is optional.

Although our membership at the present time totals only fifteen, we believe that our Chapter represents a true cross-section of the broadcast engineers in our area. In our group we have 9 in AM-FM, 3 in AM-TV, 2 in TV only and one in the microwave business. Accordingly we find that 12 have interests in AM-FM and 6 have interests in TV. Therefore, we try to cater to the interests of the majority by scheduling programs pertaining to such topics as AM-FM equipment, audio, automation, instruments and occasionally television.

Fortunately, we find that the speaking program is not necessarily the prime attraction to our meetings. Our membership is widespread. Many are from "one engineer" stations and otherwise rarely have contact with other engineers. Some drive as far as 60 miles to attend our meetings and feel that the time and effort expended are well worth while.

Mutual problems are discussed and sometimes solved.

Test equipment has been loaned.

Spare parts have been exchanged.

Stations have assisted each other in "Directional Antenna Field Days" in providing personnel, measuring equipment and Citizens Band communications equipment. Agreement between stations to use a common frequency channel has made possible the use of the C.B. units.

One of our members was the victim of a disasterous fire in which the entire AM-FM transmitting plant was lost. Members assisted with the loan of equipment and in getting new transmitting equipment on the air.

This, briefly, is what Chapter On has accomplished thus far.

Based on experience we would recommend to other Chapters and prospective Chapters the following:

Continued on Page 16

ANSWERS and COMMENTS

by Robert J. Hendrick
Ch. Engr. WKCT
Bowling Green, Ky.

Needless to say I was pleased and most gratified that my article in the December issue of The SBE Journal concerning operator qualifications, received as much initial response and comment as it did. As mentioned in the article, that was the basic intention of writing the article in the first place. The fact that it has created the interest, comments, and varying viewpoints indicates that this is an area where some degree of re-examination and re-evaluation of the technical man's place and responsibility at broadcast stations is a matter of vital concern of every broadcast engineer.

I shall try to comment and answer Messers. Schneider, Lefebvre, Landry, and Behr's letters and comments collectively, since commenting completely on each one separately would be somewhat repetitious.

I see Mr. Schneider has had some difficulty with the FCC, and apparently some of the trouble stems from unqualified first class licensed operators. I can sympathize with Mr. Schneider's predicament. Mr. Schneider's comments to the Commission and proposed operator qualification changes are similar in many respects to my own suggestions and indicate that I am not the first or only engineer who realizes that some changes and up-dating in the FCC regulations are needed.

Mr. Lefebvre for the most part seems to be in agreement with my suggestions. The new Element 10 that I proposed is not the equivalent to a Professional Registered Engineer which I believe Mr. Lefebvre confused in my plan. The registered engineer is licensed by a licensing board of each state and is usually a graduate engineer, although not necessarily so if he has acquired the qualifications to pass the examination through experience and self study. Many consulting radio and TV engineers hold this type license, however so far as I know it is not a requirement of The FCC.

The additional Element 10 I had in mind in order to hold the top FCC radio telephone license would expand and go a step higher, strictly in the theory, operation, maintenance, and installation of radio and television broadcast facilities.

I believe Mr. Landry's concern for certain persons presently holding a first class license not being able to qualify for the top license is due to the fact that he assumed that the educational and experience requirements I mentioned were completely in-flexible. I can see where he might come to that implied conclusion. However, that was far from my intentions. You will note that I suggested the requirements as a minimum amount of experience or education and I intended to imply that a sufficient combination of the two would qualify a person. Certainly the military experience and training along with the broadcast and two-way radio experience and training would combine to adequately qualify Mr. Landry for the top license.

Now, Mr. Behr pretty well takes me to task for the whole "uproar" that I have caused and on the surface completely rejects and disagrees with the whole idea. However, after studying Mr. Behr' comments and viewpoints rather closely, which I must say were all well taken and appreciated, I believe we may not be as far apart on some of our conclusions as would seem.

First of all I would like to comment on Mr. Behr's statements concerning over-regulation by the FCC as an evil within itself and the suggestion that self regulation by the broadcasters as the solution to the problem. Now, this assumption is a simple, sure cure for all of our troubles, provided we look at the problem through rose colored glasses, but let's face facts and realities and add up the score. I believe the records of the past, and present actions and procedures on the part of the Commission and the broadcasters themselves for the most part refutes and negates this line of reasoning.

Let's look at the record. For the last four or five years the FCC has issued citation after citation and made operative the system of levying fines on violators, and mind you these fines have been quite numerous and in many instances quite stiff. Many of the infractions were related to technical violations concerning licensed operators, or the lack of proper grade operators, or none at all.

With the channel allocations problem becoming increasingly difficult in all classes of service, the broadcast industry must face an ever increasing amount of FCC regulation, however they should, as Mr. Behr states resort to every possible means of self regulation for improving the industry at every opportunity.

Mr. Behr apparently got the idea that I disapproved of automatic logging. Not so. In fact, I stated in the article that it was a definite technilogical advancement and asset to any station that properly integrated it into their system of operation, but I emphatically maintain that no piece of equipment is completely failproof and a regulation by the FCC spelling out protection for the broadcaster in case of failure of automatic logging equipment is needed.

Mr. Behr implies that I wish to do away with his "six week wonder" and my "license mill graduate", not so, I merely proposed to reclassify them into a lower

class if they did not meet certain qualifications. He is also concerned that the plan would force a hardship on stations, be economically unfeasible, and an unwieldly task for the FCC.

In all sincerity, I believe Mr. Behr has misunderstood my whole idea and plan. He mentions that this is an electronic world. I agree. I go even farther and state that this is an electronic world, an automated world with progress in every direction one may turn and no person or group can stand in the way of progress.

In an effort to clarify some points, may I re-state the ideas expressed in the article. The whole concept revolved about a reclassifying of commercial operators and changing the requirements of various classes of stations as to operator requirements. All of this was taking into consideration the improvement in equipment reliability and suggested the lowering of operator requirements in order for stations to utilize Mr. Behr's "six week wonder" and my "license mill graduate". In other words, the crux of the whole problem is that no station should be allowed to use a person with no real technical knowledge (in many instances by their own admission) or require him to accept the responsibility for having that knowledge when he does not possess it just because he has passed an inconclusive examination.

How can Mr. Behr or anyone else reconcile the thinking behind classifying his "six week wonder" or my "license mill graduate: in the same category with men that are technical and vocational school graduates many college graduates with engineering degrees? This very line of thinking poses a threat to securing and keeping high quality broadcast engineering personnel in the industry.

I sincerely hope I have cleared up some points of confusion and misunderstanding in the article. I realize to the fullest degree that the plan and ideas discussed must not be considered the ultimate answer at this time. I did not intend them to be. I do believe, as Mr. Battison mentioned in the editoral page of the March issue of The SBE Journal, that the time may be near when The Society should appoint a committee looking toward studying the problem more fully and formulating recommendations that can be presented to the Commission.

COMMENTS ON RADIO REMOTE CONTROL FOR AM STATIONS*

by John A. Moseley, President
Moseley Associates, Inc.
135 Nogal Drive
Santa Barbara, California

The majority of broadcast transmitters being operated remotely rely on wire control circuits provided by the telephone company. Fortunately, in most cases this means of control has been practical, economical, and reasonably reliable. There are, nevertheless, complaints about the use of wire lines. These usually result from having the control circuits interrupted at the central exchange, electrical cross talk from adjacent telephone or teletype circuits, or line failures due to heavy ice, wind etc. And, too, when springtime arrives, the warm weather brings out the hunter and the line insulators become targets for these carefree and frustrated individuals. Or, perhaps, a vehicle may veer from the road and remove the lower section from a telephone pole. This usually results in many broken lines. All of these circumstances (and many more) mean a loss of program, control, or both. When the control lines are interrupted, the transmitter is turned off due to the fail-safe circuitry in the remote control equipment.

An aural Studio-Transmitter Link (STL) operating in the 942 mc/s to 952 mc/s band can be used to overcome many of the problems associated with wire lines. Since an STL is under the complete control of the station, repairs when needed can be effected immediately and not at the convenience or in accordance with the schedule of a third party. Furthermore, the response, distortion, noise, and transient characteristics of a well designed STL are usually superior to the best telephone circuits.

FM broadcasters are indeed fortunate in that complete freedom from wire program or control lines is possible. In these cases the STL conveys the program and control tones to the remote transmitter site. Fail-safe operation is accomplished by sensing the presence of the STL carrier or control tones. Metering information from the transmitter is telemetered to the controlling studio on an SCA multiplex subcarrier. STL control and metering systems are completely compatible with stereophonic programming and SCA background music. Standard (AM) broadcast stations do not presently enjoy the same circum stances with respect to multiplexing metering information over the AM carrier. Because of the c annel allocations, the use of supersonic frequencies is not possible because of the sideband interference problems. It should be mentioned, however, that FSK signals have been transmitted by a number of high powered AM stations simultanely with programs. Being at a relatively low rate and employing phase modulation, these FSK signals did not interfere with the normal operation of the station.

Recognizing the need for a radio remote control system for AM stations, Moseley Associates filed a Petition in March, 1962, based on the premise of using low level, subaudible, amplitude modulated metering tones. Amplitude modulation was selected so as not to conflict with those stations transmitting FSK signals. Tests were made with the 50 KW transmitter at WSM, Nashville, to show that the system

*Reprinted from Chapter Six Meeting

was completely compatible with FSK transmissions and was not objectionable to the listener. Satisfactory metering performance was obtained using frequencies in the 22 cps to 36 cps spectrum and at levels between 5% and 10%. Because the modulation levels were low, transmitter difficulties were not encountered when modulating at these low frequencies.

The Petition has been assigned a rule making number (RM-320), but unfortunately, action on the matter has been delayed pending the selection of an EBS warning signal. However, as the warning signals currently under consideration operate in the audible range and require the pressence of two tones, either simultaneously or sequentially, it is expected that the Commission will act on the Petition in the near future. Favorable action would mean that the standard broadcast station could employ an STL to relay the program and control tones to the transmitter and obtain metering information back at the studio by applying a subaudible telemetering oscillator to the AM carrier. This technique conserves the RF spectrum and is free from interference at the controlling point.

When voice or teletype circuits are avialable and are reasonably reliable, and when DC control lines are non-existent, the new Model PBR-21 channel solid-state Control System employing all silicon semiconductors can be used. The design incorporates a novel push-button channel selector using binary control logic and requires only a single voice-quality line for both control and telemetry. This apparatus eliminates the need for the frequently used dial mechanism. By virtue of its design, the Control System is adaptable to STL operation and, with favorable Commission action on RM-320, will provide a flexible, modern, "wireless" control system for standard broadcast stations.

BROADCAST ENGINEERING AT COLLEGE

by David D. Allen
Engineering Supervisor
Radio-TV Film Dept.
Ithaca College
Ithaca, N.Y.

Today colleges and universities are including more and more courses in radio and/or television in their curricula.

Some colleges have been offering radio-TV courses; with others it is a relatively new field. In addition, more and more academic institutions are applying for educational FM and ETV channels. All this means that another field for broadcast engineers is opening up: i.e., broadcast engineering at college.

The purpose of this paper is to show some of the ways that the FCC licensed engineer or operator fits into such a picture using Ithaca College as an example.

Ithaca College is a small liberal arts college located in Ithaca, New York. It has fully equipped radio and television studios. At the present time, the staff of the Radio-Television Department consists of three full time professors, two part time professors, two secretaries and one full time engineer.

The course of study ranges from Broadcast Fundamentals to Directing and Producing for Radio and Television. No all courses are production courses. For example, one covers all types of mass media, while another, Station Administration, examines administrative theory and practive. The Department also offers courses in related fields such as filming and film techniques.

As mentioned previously the Department has fully equipped studios for radio and television. Ithaca College has a 10 watt educational FM station. This station has a separate control room and shares a common studio with the carrier current AM station. TV, of course, has its own control room and studios.

The primary job of the engineer is the same as that at a commercial station, namely proper care and operation of the equipment. However, the broadcast engineer at college must be not only a good technician but a teacher, diplomat and supervisor as well. The ability to get along well with others and to work well with others is an absolute must. This point cannot be too highly stressed. To understand this the reader has only to remember that the first function of a college is to teach. By the very nature of this function, equipment will be misused. No matter how carefully students or faculty are instructed in the proper use of the control boards or cameras or switchers, someone, sometime, somehow is going to turn the wrong switch, turn up the wrong pot or drop something. Then no matter how badly the engineer wants to shout or throw things he must, (a) repair the equipment (b) explain why that should not have been done and (c) resign himself to the fact that it, or a similar mishap, will happen again.

The engineer at college will also be invited to contribute to the teaching of various classes, such as broadcast fundamentals. Here his problem is to explain how a piece of equipment works so that non-technical persons will understand and yet explain it thoroughly enough so they know and respect it.

Where there are three different stations operating on

three different schedules, with three dirrerent staffs, the one engineer had better be a diplomat! How else can he explain to the FM Program Director and the AM Program Director that needed repairs to their equipment must wait while he puts TV's camera back together; or explain to the TV Program Director that he cannot fix "camera two" right now because the FM transmitter is off the air?

Ithaca College the course work in radio and television is non-technical, but there are still several students who have FCC licenses of various classes and are interested in engineering. This semester, for instance, there are two students with FCC First Class Radio-Telephone licenses and one with a Second Class Radio-Telephone lice se. There are several "ham" operators who are interested.

These students present rather interesting problems: how to get the most out of their services without endangering their studies, or how to explain to the "ham" that his general class license does not authorize him to tune up the FM transmitter. In order to assume that student engineers balance their engineering and studies, they are required to give the supervisor a copy of their class schedules and a complete schedule showing were they will be studying and when they will be engineering. In addition, he confers frequently with each student's advisor regarding the student's academic standing. Students on probation are not allowed to engineer. The class schedule also enables the supervisor to know who is available and when, excluding exam periods or those times when papers are due.

The chain of command used at Ithaca College is fairly simple and straight forward. The engineer assumes the title, Engineering Supervisor, Radio-TV Department. Then under him is the Student Chief Engineer (First Class, some commercial experience). Then separate supervisors for AM, FM, and TV. Any budding engineers left over are used wherever and whenever needed.

The broadcasting engineer has a definite place at college. He functions as a teacher, technician, diplomat and supervisor, all at once. The better he is in all these fields the smoother the station will operate and the happier everyone, faculty and students, and the engineer himself will be. For the engineer with these qualifications, a very real opportunity exists in this expanding field.

READING TOWER BASE CURRENTS WITHOUT MODULATION

by Leo W. Reetz
Cheif Engineer
KCRG-TV-AM
Cedar Rapids, Iowa

Reading tower base current meters without modulation can be a problem with the tight operations run by today's disc jockeys. They never leave two seconds of dead air for the ammeter thermocouple to cool off and stabilize. KCRG has solved this problem by making it possible to reduce the transmitter modulation while at the tower base watching the meter.

A pair of telephone wires was installed from the transmitter building to the base of each tower. These are normally used for sound-powered phones when communicating from the transmitter to the towers. It was decided to see if this pair could be used to short out the audio input to the transmitter without any detrimental effects to the operation. Connecting the open pair across the audio input produced no noticeable hum or rectified RF feedback. The next step was slowly to reduce the audio to zero. This was accomplished by connecting a 5000 ohm potentiometer across the telephone wires with the tap jumpered to one end of the pot so that as it is rotated, the resistance will go to zero.

Telephone type plugs and jacks are used on the phone line and an extension cord was constructed with a phone plug on one end, and a patch plug on the other, to go from the patch panel to the telephone lines in the building. For use at the towers the 5000 ohm potentiometer was installed in a small "minibox" with a short cord and plug to connect into the telephone circuit. To eliminate modulation, the pot intiometer is rotated to zero resistance. This gives a smooth reduction from 100% to no modulation, and enables base meters to be read accurately.

It would be inadvisable to interfere with the modulation when the announcer is talking, or when a commercial is on, but during a musical selection the modulation interruption will create less of a disturbance, therefore, a means of monitoring the modulation was needed. A transistor radio was tried, but the high RF field at the base of the towers burned out the transistors.

In a 3" x 4" x 1" plastic box were mounted to a phone jack, a diode, and a loopstick. The diode is connected to the phone jack tip, and the loopstick is connected to the diode. The other end of the loopstick is connected to the sleeve terminal of the phone jack. Plugging a pair of headphones into the phone jack gives adequate volume while at the base of the tower. If additional pickup is needed, it can be achieved by attaching a short piece of wire to the junction of the diode and the loopstick.

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.,
333 West Lake Street,
Chicago, Illinois.

Suppliers of every conceivable form of photographic equipment for TV.

Electro Voice Incorporated*
Buchanan, Michigan
Noted for top quality braodcast 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 Street
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.

** NOTE: Change of address and telephone number to 312-327-5422

ARTICLES OF INCORPORATION

OF

SOCIETY OF BROADCAST ENGINEERS

To: The Recorder of Deeds, D.C.
Washington, D.C.

We, the undersigned natural persons of the age of twenty-one years or more, acting as incorporators of a corporation adopt the following Articles of Incorporation for such corporation pursuant to the District of Columbia Non-Profit Corporation Act:

FIRST: The name of the corporation is Society of Broadcast Engineers.

SECOND: The period of duration is perpetual.

THIRD: The purpose or purposes for which the corporation is organized are as follows:

(a) 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.

(b) 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.

(c) 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.

(d) 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 listerner groups.

(e) To these ends it shall be the purpose of the Society to hold meedings 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.

FOURTH: The corporation is to be divided into seven classes of members.

The designation of each class of members, the qualifications and rights of the members of each class and conferring, limiting or denying the right to vote are as follows:

(a) 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 with the exception of voting rights.

(b) 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.

(c) Senior Members: Any member of the Society with at least 10 years active participation in the Broadcasting Field who has demonstrated his professional improvement as approved by the Membership Standard Committee and recommended by one Senior Member.

(d) Member: Any person active in Broadcast Engineering or a closely related field or art, who holds a first class telephone license or be endorsed by his chief engineer if a member, or else by a senior member 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.

(e) Associates and Students: Any person supporting 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.

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

(g) Charter Members with 10 years of experience in the broadcasting field may be admitted as Senior Members of the Soceity.

FIFTH: The directors of the corporation shall be elected in the manner provided in the By-Laws.

SIXTH: The private property of the members, officers and directors of the corporation shall not be subject to the payment of corporate debts.

SEVENTH: The corporation shall not be operated for profit and no part of the earnings of the corporation shall inure to the benefit of any member other than for reasonable compensation for services rendered the corporation in pursuance of the purposes specified in item THIRD. Provision for the regulation of internal affairs of the corporation is made in its By-Laws. Distribution of assets on distribution or final liquidation shall be in accordance with the law of the District of Columbia at the time of dissolution or final liquidation of the corporation, unless otherwise provided in the corporation's By-Laws.

EIGHTH: The address, including street and number, of its initial registered office is

Washington, D. C., and the name of its initial registered agent at such address is

NINTH: The number of directors constituting the initial directors until the first annual meeting or until their successors be elected and qualified are:

NAME	ADDRESS
Joe H. Battison, President	Box 345 Rt. 3 Annapolis, Maryland
Charles Hallinan, Ex. V.P.	W K O P Binghampton, New York
Robert Houston, Secretary	1210 N. Buchanan Street Arlington, Virginia

TENTH: The name and address, including street and number of each incorporator is:

NAME	ADDRESS

_____

_____

_____
Incorporators

Dated: March , 1965

City of Washington)
) SS
District of Columbia)

I, a Notary Public, hereby certify that on the day of March, 1965, personally appeared before me who, being by me first duly sworn, declared that they signed the foregoing document as incorporators, and that the statements therein contained are true.

_____
Notary Public, D.C.

LETTERS TO THE EDITOR

While attending the 43rd Convention of the NAB in Washington, I picked up your Journal, Volume 1 Number 4. The article entitled "MORE ON ENGINEER QUALIFICATIONS was extremely interesting. Being a Broadcast Engineer for almost 10 years, I have experienced, first hand, the havoc that "technically incompetent" people can produce for a station. Such incompetence in our profession, slanders all Broadcast Engineers.

The Federal Communications Commission's rules state that technically qualified people maintain broadcast equipment. To insure that technically competent people are available, the FCC requires written proof of their compentence. That certain people have obtained FCC certification and yet display almost total ignorance of their technical jobs, infers a basic weakness in the FCC method of testing.

In 1961, I sent a letter to Chairman Minow proposing stricter engineering testing techniques. It was suggested that the examinations be revised monthly and also to be up-dated. The idea behind this was to prevent an applicant from obtaining a license based strictly on his memory. Also proposed was the thought that licenses not be automatically renewable. Instead, the licensee would be re-examined. This would prevent the applicant from losing his theoretical background. He would be forced, moree or less, to keep his mind continuously refreshed with new data of pertinerce to the broadcasting business.

Needles to say, nothing in this area was done. Indeed, instead of enforcing the requirements for Broadcast technicians, the Commission went in the other direction, making it even easier for Broadcast Stations to jeopardize their station license by obtaining incompetent people. On person is a voice crying in the wilderness. What is needed are many people crying with one voice---A Society. A Society to set codes of technical quality, disseminate information of the advances in our field and to foster better communication and understanding to Broadcast Engineers. I believe you are that Society.

Sincerely yours,

Joseph J. Brey

Thank you for the back issues of the Journal. I must say the Article has created so far much more comment and interest than I had expected. I hope this is

a go ahead sign for me and others interested in creating an improved technical image for the industry.

From the report of the SBE meeting in Broadcasting, I assume and am happy that the organization is making progress. It is encouraging to see that a considerable number of responsible engineers are interested and taking part in the effort, which I must commend you on initiating.

I have another article practically completed concerning broadcasters procedures, attitudes, and conduct during FCC field inspections and dealing with the Commission in general.

This will also probably prove to be a controversial article, but I feel if "the shoe fits one must wear it" regardless of how much it hurts. I am sure if you see fit to print the article many broadcasters will have their feet stepped on and find themselves aware that they are guilty of some or all of the conditions expressed.

Best wishes for continued success in this worthwhile activity.

Sincerely,

Robert J. Hendrick

I happened to see the first issue of the JOURNAL a couple of months age when I visited Courtney Watson, Chief Engineer of WQXT, Palm Beach. Since I had not received a copy of the JOURNAL I figured it was time to write. I had no idea that you had a fire and my records were destroyed.

Now that I have read the first few issues of the JOURNAL I can only say that you have done a great job. I appreciated your timely article on Sine-Squared Testing which preveously had never been explained to me. The article on Higher FCC Commercial Operator Requirements also impressed me and I am in agreement.

For 5 or 6 years now, several co-technicians and I have had many discussions on the inclussion by the FCC of a MASTER Class Commercial Operator license. This class may be attained only after having 5 years active experience in transmitter and/or studio maintenance plus be a holder of a First Class Operator License during the last three years. To become a Chief Engineer of any TV, FM-Stero or High Power AM station he must be a holder of MASTER Class License.

I have given several applications to prospective members of the SBE. Many thanks.

Sincerely yours,

Ed Roos

It is my pleasure to enclose a check for $10.00 for my second year's membership in The Society.

Please consider this as a vote of confidence for the fine leadership the Society has enjoyed throughout this first critical year of initial organization.

I am particularly interested in the efforts being made to secure more than one class of license for the proper operation of a broadcast station. Those of us who have been associated with the increasing complications with more towers and tighter patterns in directional arrays, feel that this is now a necessity. If the Commission would meet this need now, it would not only cause the improved standards of broadcast operation, but would add some recognition to the years of experience on behalf of the Broadcast Engineer who is serious about his profession.

Thank you, gentlemen, for a job well done.

Sincerely,

George E. Carroll

I see that I am not alone in concern over the sad state of the Broadcast "Engineer". The piece by Mr. Paul R. Schneider is most interesting and the replies to Mr. Hendrick are good reading.

The letters by Mr. Lefebvre and Mr. Landry point up some interesting shortcomings of many "Chief Engineers". Neither of them seem to know just what they have in a First Class Operator. Mr. Lefebvre states: "Mr. Hendrick proposes a new grade of engineer, the FCC Radio Telephone Engineer. Isn't this the grade that all registered consulting engineers hold?"

The answer to that question is of course a big NO, the FCC has nothing to do whatsoever with registering engineers of any type, shape or form.

Mr. Landry states: "to qualify for the Radio Telephone Engineer license". I wanted to give it to you as a quote but I can't put my finger on the document at this moment. As I remember it they state "The FCC does not license radio or TV Engineers, its licenses are all Operator licenses etc."

What this all means is that the present license setup is to license several classes of Radio Telephone Operators, not Engineers of any sort. It is all a holdover from the early days of Marine and Aviation radio when each vessel carried a wireless operator who not only operated but also did maintenance at sea or in the air. Until the whole system is up dated to meet present day operations we can only hope that the "shot gun courses" teach a little theory along with the answers to the FCC exams.

I for one don't think the term Engineer should be applied to any person unless he holds at least a BS degree from an accredited College. The states have various forms of applying the term Registered Engineer to those persons who pass the required professional examinations in their respective fields.

I might point out to Mr. Lefebvre that one can be a Consulting Engineer and not even hold the First Class Phone license. Of course he cannot legally do

transmitter work alone but since he is nearly always accompanied by station technical personnel this is no great hinderence.

Yours truly,

C.L. Riecke, III

Yes, I'm one of your sustaining members, as you put it. Having started to drum up interest after last year's NAB I got myself involved in all sorts of other things and as far as the SOBEs are concerned I've sat on my duff ever since.....By the way, I suppose you have had Aaron Shelton's reaction to SOB? Me, I'm all for it I derive a certain perverse pride in being known as a SOB.....you can always tell a man by his friends AND his enemies!

Hendricks' opus in the December issue was marked for comment but I just never got around to it. So, having finally gotten myself around to writing here's at you:

First of all on the sorry state of AM broadcasting in general. It hasn't been any secret to those of us who have been in this business for a few years (I go back to 1936) that if the FCC had left their AM standards alone and not succumbed to pressure we'd all be a lot better off.....The horror will really be upon us if the Commission repeats and lefts TV standards slide.....

The situation still might have been semi-human if the FCC had wrapped up the remote control rules in rigid safeguards which would have included some sensible type of operator cum engineer supervision. This was all the more necessary in view of the extreme manpower shortage of the Commission's field offices. For example, the Atlanta office now has but three men assigned to it. Shortly after the war (before my time here) this office had seven men with a work load that was fractional in comparison to today's.

I remember bearding the former technical director of the NAB at the 1955 convention. This was the time that the NAB was whipping up the remote control campaign for AM. I asked this question: "What does the NAB propose as built in safeguards (in the hope for granting of remote control privileges) so that all operating parameters, especially directionals, conform to licensed values?" The reply was: "That is none of our business!"

Both the NAB and the FCC are to be blamed for the horrid state of the AM art. The NAB first for developing dollar signs for eye-balls. The FCC second for allowing itself to be pressured.

The FCC is now going off in all directions at once in trying to plug the multiple holes in the busted dam. Some of it is good, although terribly late. Some of it is obviously, to me at least, intended to be prelude to remote control of television transmitters (enforcing the full weight of the maintenance log requirement on TV, for example).

I still can't find any requirement in the current rules, that a minimum inventory of spare tubes must be carried.....the fellows, out in the boon kocks, don't even bother keeping the burn outs as evidence for the RI, Police Inspector nowadays.

Equipment: Some of it good in this day. Some poor. A great deal of it is designed by men who have had little or no operating experience or knowledge. The result is quite a strain on the men who have to operate and maintain it.

The major difficulty is invariably, however, poor quality control. For my money Telemet is one of the few manufacturers that has yet, to my knowledge, to fall down in any way. GE has done a very fine piece of work in their 4-V film chain.

All of which brings me around to saying that we are engaged in a sizable project down here.

First of all, just prior to last year's NAB we gave up this idea of adding to the present studio plant and decided to go for broke by moving out to the transmitter site near Emory University.....I'd been agitating for this ever since we put up that plant in '55.....On February 5th we finally started grading, although progress has been awfully slow due to rain, rain and more rain.

Secondly, we're building as much of our gear as we possibly can. We can design and build far better gear (in some categories) than we can buy. We can build it for about 20% of store costs (assuming that you could buy some of it, which you can't). It is a good educational project for the crew and sparks up interest and morale.

Included in this home brewed gear are:

- 100 Video distribution amplifiers (solid state).
- 10 Video mixing amplifiers.
- 2 Studio switchers (15 noncomposite inputs, 7 composite inputs.....this is an up dated version of the first solid state switcher in the business which we developed in 1957).
- 1 Reduced version of the above with 7 NC and 7 C inputs for use in video control.
- 2 Cross bar (video) switchers that assign any one of 15 NC signals to any NC input on the two studio switchers and any of 7 C signals into anyone of the C inputs on the same switchers.
- 1 Cross bar, reduced in size to feed the 7 NC-7C switcher.
- 1 7C input and four output master switcher.
- 40 Relay units (tally lights, interlocks, etc.) for the large units above.
- 60 Relay units (tally lights, interlocks, etc.) for the small units above.

All gear requiring power supplies, where possible, is provided with build in power sources.

Where external power supplies are necessary or where such must operate more than one piece of equipment these are provided with automatic trip overunits to a spare supply.....this has saved

Continued on Page 15

ONE MAN'S OPINION

AN EQUIPMENT REPORT

by F. C. Hervey
WHKW
Chilton, Wisc.

Once upon a time, all a radio station had to worry about as far as sound quality was concerned was the ubiquitious AC-DC table model radio with a four inch speaker, single-ended audio stages, and little thought by the manufacturer as to how it sounded. Those days have gone forever, along with the nickel beer and the 98 cent buck. These days, a goodly proportion of any radio station's audience will be made up of people with more or less "High Fidelity" equipment: lots of knobs, plenty of power, impressive looks, and up to a dozen speakers.

We all know that the FCC says in effect "Thou shalt be flat - from the mike input to the antenna" and prescribes rigid specifications to bear out the ruling. No doubt about it - wer are "flat", and run frequent checks to prove it. But - and here comes the gimmick - just what does all of this mean? "Flat" it is - any good FM station worthy of the name can feed 20 cycles to 20 kc at -55 db into a console mike input, and measure within a db or less of the sum of the pre-emphasis - de-emphasis curves; "flat", if you will, out of the Monitor. But is it? Does your gear play back the records and tapes exactly the same as the recorder "heard"? How about the mike channels - they are flat, fine - but how about the mikes? Their curves may be very impressive and all that - but they were taken in anechoic chambers, and we don't exactly have anechoic chambers for studios and announce booths; do we?

So - what is all the to-do about? It is about quite an important item - the over-all sound of the station: how do you sound to your listeners, be they hearing you strained through an overworked 50C5 and a 4 inch speaker, or through a pair of 6550's, loafing along at half a dozen watts output into speakers worth a month's pay for a hard working BC engineer. This writer has long maintained that you simply cannot check the overall sound of any radio station unless you have the best "listening" equipment available (and that includes a well-trained pair of ears), a monitoring amplifier at least a grade above average, and the best monitor speaker that money can buy. "Golden Ears" are hard to come by - you either have them or you don't, although a few years of experience listening to quality audio will train you to a certain extent to know good audio when you hear it. A good monitor amplifier is easy to come by - any of the versions of the "Williamson" circuit are readily available, and they don't cost a small fortune, either.

Now we come to the most important part - the speaker system: "system," not speaker; just as Benedictine and Brandy must be matched to perfection for best results, so must the speakers, crossover networks, and enclosures be matched together as a system for best results. Now we come to an anomaly in the Hi-Fi field: Hi-Fi means by inference that the whole system is flat, but when it comes to speaker systems, such is not necessarily the case. Most Hi-Fi speaker systems now on the market are anything else but flat. Their overall response curves are tailored to best suit the prospective purchaser's likes and dislikes, and in the case of most people, this seems to mean that the low end should have a decided rise in it - not quite the boomy "juke box bass" of the old time open back and the early reflex enclosures; but not far from it - or such has been this writer's impression at Hi-Fi shows, demonstrations, and listening sessions at the local parts house. No two speaker systems sound alike, each has its own "color", which adds or detracts from the sound depending on one's personal preference. This we should depend on for a monitor? NEVER!

In this aging engineer's opinion, the only satisfactory monitor speaker system for any radio station is one that is as flat as good engineering and quality manufacturing can make it - then and only then will you have a good idea of what you, as a radio station, sounds like. There are several approaches to this problem: from the Olson speaker system of RCA on through the catalogs, there are several speaker systems now available to suit almost any station. None of them are cheap - but all of them are very, very good - and they meet their published specifications with no trouble at all.

In this writer's opinion (and this is where the "One Man's Opinion" comes in) the best monitoring loudspeaker system available, based on price, performance, size, availability, and amplifier power required, is the Electro-Voice "Sentry II;" a 32" x 20" x 13" box that lists for $248 and will knock your ears off with a ten watt amplifier connected. It is essentially flat from 50 cycles to about 15 kc, and is down only about 12 db at 30 cycles and about 8 db at 20 kc. The overall sound is pleasant - no boomy bass, no screechy treble, and E-V has apparently licked the problem of directivity in the HF speakers used, as high end dispersion is excellent. You don't have to sit squarely in front of this speaker system to hear the triangles tinkle. It has a built-in

matching transformer with terminals for 16, 150, and 600 ohms. Rated at 20 watts power handling capacity, it will chase you out of the control room long before this level is reached, suiting it ideally for those of us who don't notice a monitor speaker at levels less than ear-splitting.

This writer, having recently installed a pair of these E-V "Sentry II" speaker systems as a stereo monitor must admit an immediate liking for their overall performance and the pleasing quality of the sound. In this man's opinion, the Sentry II (and the Sentry I, same thing in a wedge-shaped box for wall mounting) are one of the best buys on the market today for a radio station interested in keeping a reputation for top-notch, high-fidelity sound. As C. J. LeBel once put it, "It may measure out flat from here to there - but if it doesn't sound good, it isn't high fidelity!" Amen. If you can't hear what you sound like from an unbiased source (the speaker, I mean - not you!) how will you ever know? Even your best friends may not tell you - they may just quietly tune to another station. Besides, the chronic griper about the tone quality of the violin concerto that gets played frequently can always be invited into the control room for a convincing listen. And there is always the comforting thought that your monitoring gear is the equal or better of any listener's. To an FM station, with the usual FM audience of "Good Music" listeners, the best in monitoring gear is none too good in the battle to keep that "quality" sound.

LETTERS TO THE EDITOR...CONTINUED

several times in the past.

All gear, including push button assemblies for the above switchers as well as control circuitry on projectors and tape recorders is plug in.....this does not include the relay units. These have some 300 odd external connections, in the case of the large units. But all relays are plug in.

I'd like to build our own audio boards but afraid I'll have to call a halt on that one. These will probably be built by Howard Decker (Electronic Equipment Co.) to our design and specs.....By the way, who DOES make an audio-board or, for that matter, a video switcher that is really designed for the broadcaster?

So, I haven't been exactly loafing down here.

Well, I don't often wind up but you shamed me into it. For the once, this is the cream off the bucket.

Hugo A. Bondy
Chief Engineer
Chairman Chapter Five
WAGA-TV
Atlanta, Georgia

I attended a recent meeting of The New York City Group of Broadcast Engineers. Mr. Pete Onnigian spoke on Vertical-Antenna Polarization for FM Stations. I enjoyed it very much.

Thought you might be interested in a first-hand report that Chairman Bob Wilson read your letter to the group mentioning that they would be welcome to merge with The National Society and become members. He handed out the application blanks which you sent.

In talking to Bob, later, he seemed to feel that once they were a little bit organized, they would like to merge with us. I mentioned to him that some of our chapters which already are established are considerably less active than his group and that he should not wait on this account. They seem to have a very active and interested group.

Joseph A. Risse
Director, School of Electronics

REFRAINING MEMBERS--IN RETROSPECT

The first year of life of the Society of Broadaast Engineers has been a busy one, and a rewarding one. But also in many ways a disappointing one. We have twelve chapters, seven of whcih have been in existence for almost a year. Only two have done anything---Chapter One has bden conducting meetings on a very successful basis since it began and Chapter Six has produced a very fine newsletter and series of Chapter meetings. I hate to belabor a dead horse; in this case moribund chapters----but if the SBE is to grow we must have active groups. All chapter Chairmen, and any other interested member canobtain from the secretary a list of members in his area. Then he can call a meeting and get the local group off the ground. If two groups can do it, subely others can!

MANUSCRIPTS
Even if you can't produce an active chapter every member is a potential author.....so PLEASE let us have your material. We need material from members if the JOURNAL is to meet your requirements.

ADDRESS CHANGE:::Please note all correspondence regarding membership, dues, etc, should go to the Secretary, Robert Houston, 1210 N Buchanan St. Arlington Va.

DUES:::::::::::::::BILLS ARE NOW GOING OUT. SOME OF YOU HAVE PAID ALREADY. IF YOU GET A NOTICE PLEASE FORGIVE US. IF YOU HAVEN'T PAID FOR 1956/66 PLEASE DO SO WHEN YOU GET YOUR BILL, OR SOONER TO SAVE US WORK AND POSTAGE.

Chapter One

Chapter One held its fifth meeting of the 1964-1965 season, Tuesday 16 March 1965, at the Meter Calibration Laboratory of Compton Industries, Vestal, New York.

Mr. Ludwig Kuhl, Supervisor of the laboratory, showed the calibrating equipment and gave a talk on calibrating techniques as well as the use and care of metering instruments. An interesting discussion period followed.

It was learned by a show of hands that four members of Chapter One would be attending the N.A.B. Convention.

Chapter One

Chapter One held its sixth meeting of the 1964-1965 season, Tuesday 13 April 1965, at the Colonial Motor Inn, Vestal New York.

Mr. Lewis D. Wetzel of Triangle Stations, Philadelphia, Pa. presented a paper entitled "Practical Experience Derived from Dual Polarized F M Antennae."

The meeting was attended by:

Lamar T. Cox	WNBF Binghamton, N.Y.
Thurlow Greene	WSYE-TV Elmira, N.Y.
Art French	WELM Elimra, N.Y.
Wiley Bates	WCHN Norwich, N.Y.
James Steffen	WNBF Binghamton, N.Y.
Klaus Binder	WNBF Binghamton, N.Y.
George Sitts	WHEN Syracuse, N.Y.
Louveer Stantz	WBJA-TV Binghamton, N.Y.
Gino Ricciardelli	WINR Binghamton, N.Y.
Robert Brigham	WTTC Towanda, Penna.
John Rejmer	WPEL Montrose, Penna.
Edward Pettingill	WENY Elimra, N.Y.
Charles Hallinan	WKOP Blinghamton, N.Y.
Allen Bell	N.Y.-Penn. Microwave Co. Corning, N.Y.
Leroy Hartman	Thatcher Glass Research Labs., Elmira, N.Y.
Richard Burden	Burden Associates, Mt. Kisco, N.Y.

Chapter One

Chapter One held its seventh meeting of the 1964-1965 season, Tuesday 18 May 1965 at the Colonial Motor Inn, Vestal, New York.

Mr. Richard Burden of Richard Burden Associates, Mt. Kisco, New York, delivered a talk on "The origination, design and manufacture of the Burden Associates AC-8 Stereo Transistorized Console".

Book Review

Name:	Field Effect Transistors
Author:	Leonce J. Selvin, Jr.
# Pages:	136 # Chapters 7 plus Index
Price:	$10.00 Published May 1965
Publisher:	McGraw-Hill Book Company Inc. 330 W. 42 Street., New York, N.Y.

Written in the Texas Instruments style, this book presents a coherent development of the subject of Field-Effect Transistors (FET). The treatment is clearly aimed at the engineer who must use the FET but who has not the time to spend in a lengthly literature search.

Starting with basic semiconductor concepts the necessary physics of the FET are explained in both qualitative and quantative terms. From this, the equivalent circuit is developed to help describe the interaction between the FET and its associated electrical circuitry.

The bridge to practical circuit application is completed by development of the FET as an active circuit element in low-level linear and non-linear power circuits. The treatment is brought to state of the art in the final chapter with a discussion of the FET in integrated circuits.

Because of the manner of presentation, this book will prove a valuable asset to anyone concerned with the use of the FET, regardless of technical level.

HISTORY OF CHAPTER ONE continued from Page 4

1. Membership. Recruiting of members from small and medium sized stations has been found to be the easiest. Men who work alone have the greatest need for contact with others and are most eager to join. Engineers from stations with large engineering staffs are slow to join will come in as the Chapter becomes larger and more active.

2. Program. In planning a program obtain good speakers, demonstrations or films. Manufacturer's Sales Engineers, Consulting Engineers and Instructors of electrical and communications engineering from nearby Colleges or Universities are good sources for program material. Do not cut down or eliminate your discussion time. One of the primary reasons for coming to a meeting attraction in itself even if you have no speaker available.

This we believe to be a simple formula for the successful operation of a local chapter.

Charles Hallinan

March 20, 1965

TALLY OF VOTING , SOCIETY OF BROADCAST ENGINEERS, INC.

NUMBER OF BALLOTS COUNTED ; 157

FOR PRESIDENT:
JohnH.Battison 157

FOR VICE PRESIDENT:
Charles Hallinan 155

FOR SECRETARY:
R.Houston 153

FOR TREASURER:
A.W.Kramer 154

FOR DIRECTOR:

Hugo Bondy	SOUTHEAST,	WAGA-TV	142
K.Benner	NORTHEAST,	KOPR	149
Al.Browdy	WEST,	KCOP	152
Ben Wolfe	EAST,	Westinghouse	151
Phil Whitney			1
Howard Town			1
Thomas Cowan			1

(STATE OF FLORIDA)
(COUNTY OF WALTON)

Before me this day personally appeared Ambrose W.Kramer ,who, first being duly sworn, deposes and says that the above tally of voting for officers of the SOCIETY OF BROADCAST ENGINEERS, INCORPORATED, IS TRUE AND CORRECT to the best of his belief and knowledge.

WITNESS my hand and official seal, this 20th day of March 1965

Mary E. Kramer

Notary Public
State of Florida at Large

My Commission expires June 9, 1965

15 Years Old and Still Ahead of the Times!

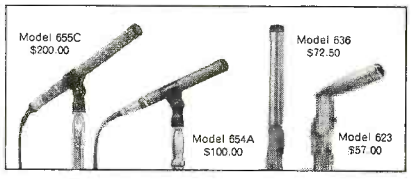
It may not look revolutionary today, but fifteen years ago the E-V 655 shown here was unique. Then it was the only truly omnidirectional dynamic microphone on the market. And it offered ruler-flat response from 40 to 20,000 cps, plus plenty of output for critical broadcast applications.

Even today, those specs are first rate. Many of the early 655's are still proving that in dependable daily service. But during the years, E-V has continued to refine and improve so that today's Model 655C can set even better records for performance and service.

Having proved the point, the 655 inspired a complete series of Electro-Voice omnidirectional microphones that serves every need over a wide price range. The full benefit of our fifteen years of design leadership is lavished on even the most modest model in the line.

For instance, every slim E-V dynamic microphone uses the famed Acoustalloy® diaphragm. This E-V exclusive insures more uniform response while withstanding the effects of high humidity, temperature, corrosion and shock. It makes E-V omnidirectional microphones almost indestructible.

You'll learn the real value of engineering leadership when you put any of these slim E-V dynamics to work in the field. You can do it with the extra assurance of a *lifetime* guarantee against defects in materials or workmanship. See them now at your franchised E-V microphone headquarters, or write for complete catalog today.



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SETTING NEW STANDARDS IN SOUND

SOCIETY OF BROADCAST ENGINEERS

P.O. Box 1841, Annapolis, Md.

APPLICATION FOR MEMBERSHIP

Application is hereby made in the SOCIETY OF BROADCAST ENGINEERS. The following information is supplied to assist the admissions committee in assessing qualifications and grade.

NAME _____ POSITION _____

ADDRESS _____ CITY _____ STATE _____

EMPLOYER _____

ADDRESS _____ CITY _____ STATE _____

(check preferred mailing 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 herewith enclosed. (No action can be taken if dues do not accompany this application.) I agree to abide by the Constitution and By-Laws of the Society if admitted.

SIGNED _____

DATE _____

ADMISSIONS COMMITTEE ACTION: Date _____ Approved for Grade _____

Action Deferred for more Information _____ Candidate Notified _____

Chairman's Signature _____ Entered in Records _____