

THE BROADCAST ENGINEERS' JOURNAL
116-03 91ST AVENUE, RICHMOND HILL 18, N. Y.

POSTMASTER: IF UNDELIVERABLE FOR ANY
REASON, NOTIFY SENDER, STATING REASON,
ON FORM 3547, POSTAGE FOR WHICH IS
GUARANTEED

F A GENRES WGBF-WEOA
2232 E POWELL
EVANSVILLE 14 IND
5145

Sec. 562, P. L. and R.

U. S. POSTAGE
PAID

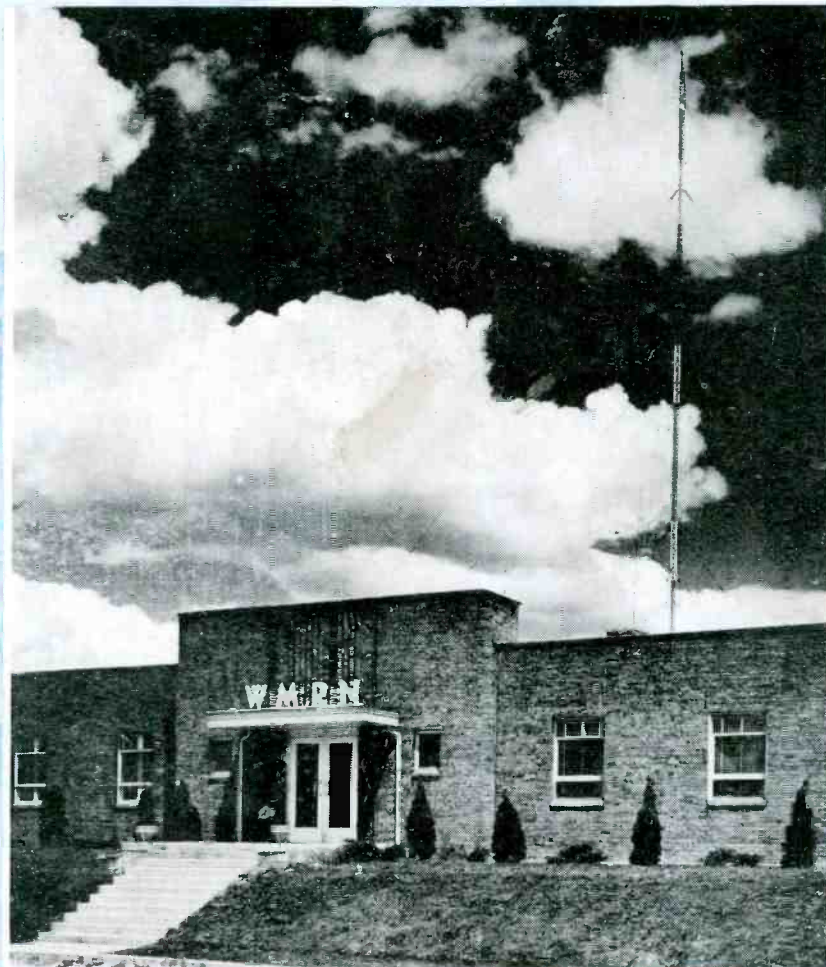
New York, N. Y.
Permit No. 2961

The Broadcast Engineers' Journal

*Since
1934...*

*Of, By,
and For*

The Broadcast Engineer



WMRN
Marion, Ohio

—See Page 17

**DEC.
1944**

**VOL. 11
No. 12**

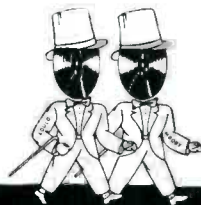
GOULD-MOODY "BLACK SEAL" GLASS BASE INSTANTANEOUS RECORDING BLANKS . . .

RECORDING AMERICA'S POWERFUL VOICE

Transmitter of America's Powerful Voice is Radio . . . awake twenty-four hours a day . . . talking to our friends and our enemies . . . transporting Broadway and Hollywood and the girl next door to the boys over there . . . building morale on the home front.

Recording America's Powerful Voice . . . in leading broadcasting stations from coast-to-coast . . . are Gould-Moody "Black Seal" Glass Base Instantaneous Recording Blanks. Made entirely of glass, "Black Seals" are as thin as aluminum, thereby eliminating the necessity of recorder adjustments. No foreign inserts . . . no metal grommets . . . no ageing, hardening or deterioration. Every disc has four holes . . . center-flow thread action . . . may be played back for months without appreciable loss of fidelity. Enclosure of your preference rating extensions with your order will expedite deliveries.

SHARE YOUR BLOOD WITH A WOUNDED SOLDIER
— donate a pint to the Red Cross today



THE GOULD-MOODY COMPANY

RECORDING BLANK DIVISION

395 BROADWAY, NEW YORK 13, N. Y.

THE BROADCAST ENGINEERS' JOURNAL

Ed. Stolzenberger
Editor

Coordinator F. R. Rojas

Volume 11, No. 12  409 December, 1944

Contents Copyright, 1944, by A.T.E. Publications, Inc.

TABLE OF CONTENTS

	Page
Elemental Electronics, Part XI—	
Electronic Switching and Triggering	3
NABET Convention Facts	4
Indicial Response of Telephone Receivers	5
The NABET National Council in Annual Convention	11
They Didn't Play Rook	12
New Television Stations	12
Meet the Men Who Run NABET	14
WMRN—Marion, Ohio	17
New York News; New York Blue News	18
From Hollywood	20
Mr. Hiller's Foot	23
This is KECA	24
Hudson Chapter NABET News	26
From Rochester, New York	28
Doings in Denver	29
Chicago Chapter Chatter	30
KFI-KECA Los Angeles News	34
Wider Range CRO	36

THE BROADCAST ENGINEERS' JOURNAL

Trustees: V. J. DUKE, H. E. HILLER, G. B. RILEY, R. A. SCHLEGEL,
H. E. MEYER

Treasurer C. W. PHELAN
Assistant Treasurer D. J. MOLONEY
Staff Writers JORDAN MCQUAY; TOM MCKAY
Contributing Photographer SERGEI DE SOMOV

ASSOCIATE EDITORS

Chicago	A. W. HJORTH
Cleveland	NORMAN M. DRYSDALE
Denver	GEORGE POGUE
Detroit	DAVE STEWART
Engineering Chapter	V. J. DUKE
Hollywood	NORMAN DEWES
Hudson Chapter	RICHARD H. DAVIS
KFI-KECA	E. F. WILMSHURST
New York	{ Blue—GIL McDONALD NBC—G. F. ANDERSON, JR.
Rochester, N. Y.	ARTHUR KELLY
San Francisco	S. A. MELNICOE
Washington	R. E. SHENTON
WLW-WSAI-WLWO	BOB BROCKWAY
WOW, Omaha	BOB RUDD
WPTF, Raleigh	H. W. ROOD

The Broadcast Engineers' Journal is a privately printed monthly publication issued by A.T.E. Publications, Inc., a corporation of the State of New Jersey. Address all communications to Editor's office: E. Stolzenberger, 116-03 91st Avenue, Richmond Hill 18, L. I., N. Y. Telephone Virginia 9-5553. **THE BROADCAST ENGINEERS' JOURNAL IS THE OFFICIAL PUBLICATION OF THE N.A.B.E.T.**

Advertising rates and information supplied on request. Subscription, \$1.50 per year; \$3.00 for three years. Single copies, except Christmas Yearbook, 25c; Christmas Yearbook free to subscribers. All remittances in advance. Foreign: Add postage.

Nothing appearing in The Broadcast Engineers' Journal shall be construed to be an expression of The Broadcast Engineers' Journal or the National Association of Broadcast Engineers and Technicians, but must be construed as an individual expression of the author or authors.

NATIONAL N.A.B.E.T. OFFICE
Suite 1009, Investment Bldg., Washington 5, D. C.
A. T. Powley, President



This War . . .

is daily emphasizing the importance
of dependability and permanence in
all of our equipment.

This is especially true of
**Radio Recording
Equipment**

The Test of Time has proven

**SCULLY
Master Recorders**

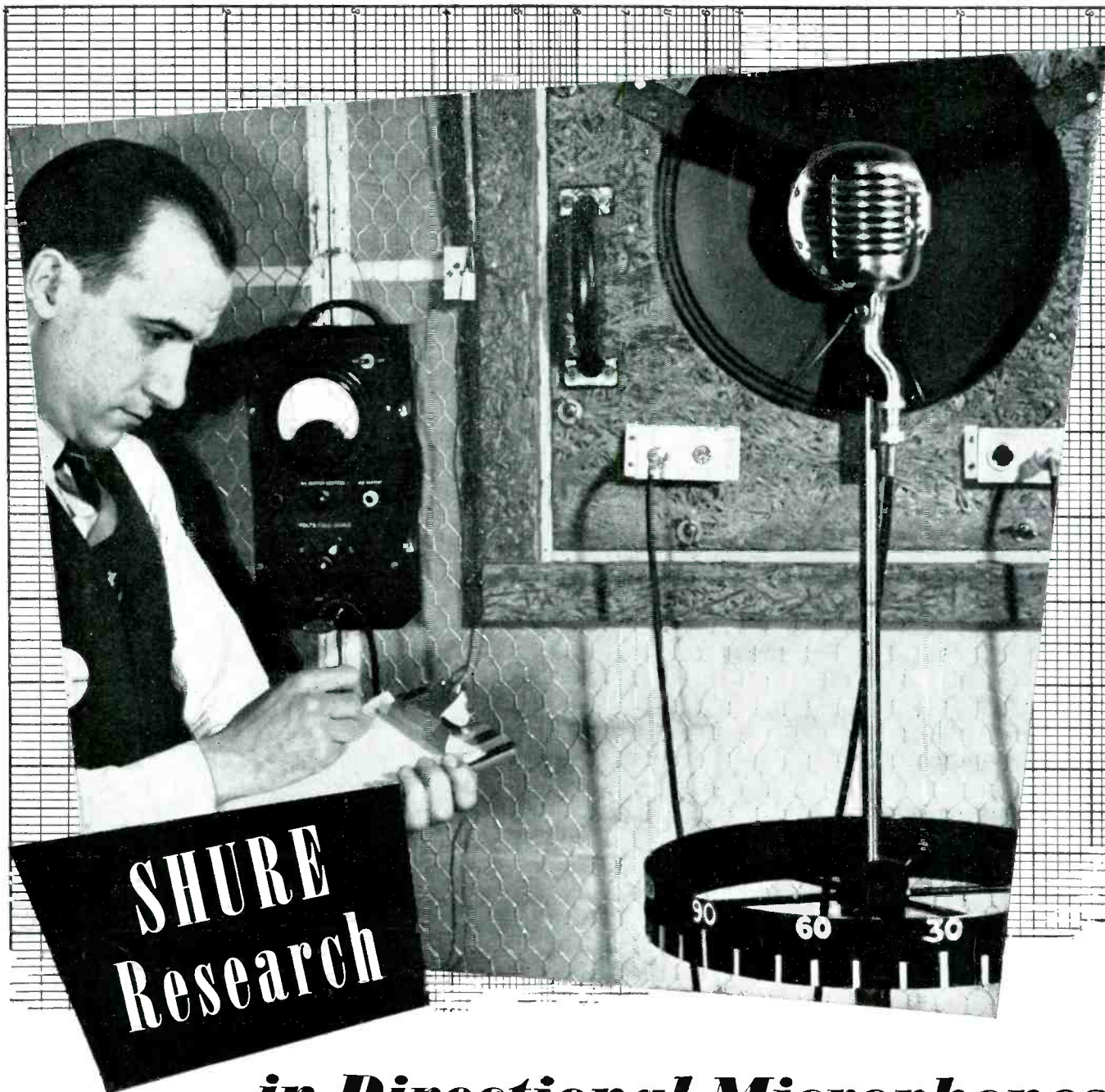
to be unsurpassable as precision,
superb recording machines

BUY U. S. WAR BONDS NOW
and plan to install
SCULLY MASTER RECORDERS
After the Victory!

**SCULLY
Machine Company**

62 Walter Street Bridgeport, Conn.

Telephone BRidgeport 4-5300



**SHURE
Research**

... in Directional Microphones

It is not enough to design a Microphone that merely converts sound waves into electrical impulses. A Microphone, to be truly useful in modern broadcasting, should be discriminating enough to accept wanted sounds — and reject unwanted sounds. Shure Research was the first to develop a single unit uni-directional Microphone, both crystal and dynamic.

Shure Research is the reason why practically every major broadcasting station uses the Shure 556 Unidyne. Shure Research is your assurance of postwar microphone superiority.

SHURE BROTHERS, 225 West Huron Street, Chicago
Designers and Manufacturers of Microphones and Acoustic Devices



Elemental Electronics Part XI

Electronic Switching and Triggering : By Jordan McQuay

IN THE earlier discussion of square waves and pulses (Part X, *B. E. Journal*, Nov. 1944) we learned that one important use of the pulse was to trigger or switch other related electronic circuits—and thus to provide synchronized control over several components.

Although the terms *switching* and *triggering* are somewhat similar in use and meaning, there is a sharp distinction between them. An *electronic switch* is an energizing circuit whose output is used to both *start* and *stop* the action of another circuit; this is very similar to the action of a mechanical switch. An *electronic trigger* is an energizing circuit whose output is used to *start* an action in another circuit, which action then proceeds for a time under its own control and generally stops of its own accord.

Figure 1 illustrates this fundamental difference between electronic switching and triggering. Wave form A is the voltage output of the controlling circuit. If the application of this pulse causes the secondary circuit to start and then continue for some time *after* the control voltage is removed, the action is that of an *electronic trigger*, as shown in wave form B. If a secondary circuit is turned on by the application of the voltage pulse and is turned off immediately when this control voltage is removed, the action is that of an *electronic switch*, as shown in wave form C.

Some of the uses and characteristics of electronic triggering will be first considered.

Triggering by the application of a pulse may begin the operation of a secondary circuit, as previously mentioned, or it may stop its operation, or cause some other electronic action to commence sooner or later than it normally would.

Any circuit which is acted upon in this manner is said to be a triggered circuit.

There are many different methods of using electronic triggers as control devices. For instance, the *voltage* across a coil or resistance of the trigger circuit may be applied as a control voltage to the grid of the secondary circuit. Or, the *current* passing through some part of the trigger circuit may be used to operate a current-controlled device in the secondary circuit. In some electronic applications the current drawn by a grid-limiting resistor may be used to operate a relay in another circuit; in some cases the entire voltage drop across a vacuum tube is used to trigger the action of a secondary circuit.

The important characteristic of triggering circuits is that the *leading edge* of the trigger pulse is the governing or controlling part of the wave form. (See wave form B, figure 1). Electronic triggers are concerned primarily with the *start* of an action in a secondary circuit, and not the conclusion of that action.

Trigger circuits are used widely to control special oscillators, such as the various kinds of multivibrators used in industrial and radiolocation applications. Electronic triggers are also used to synchronize properly the operation of saw-tooth generators (Part V, *B. E. Journal*, May 1944).

Electronic switching requires greater precision than triggering, since both the leading and trailing edges of the control wave form are utilized in the action of switching. This method of switching is *non-mechanical*, extremely fast, and usually silent in operation.

It is common for electronic switches to make use of the

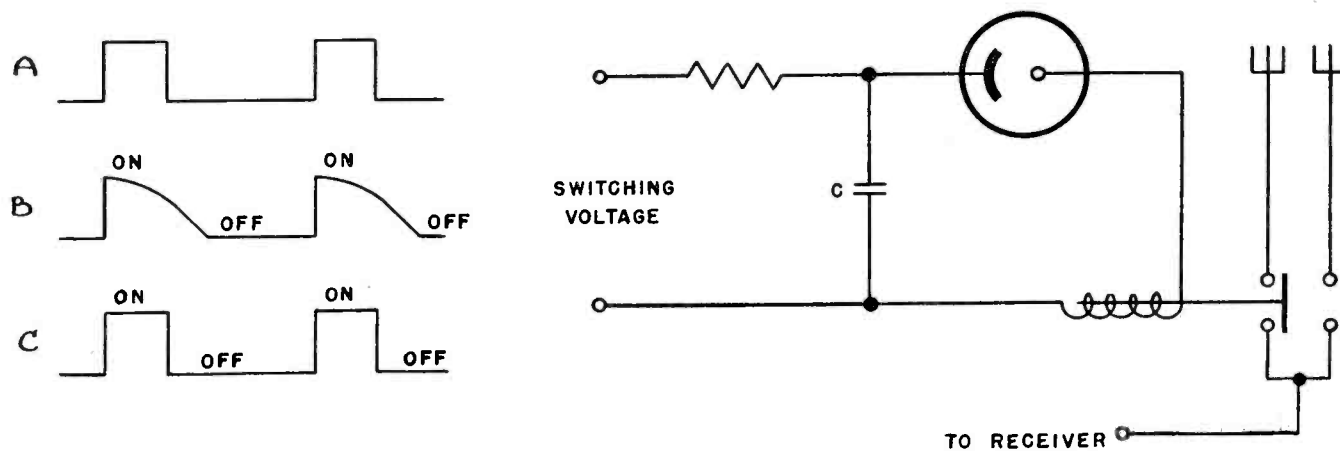


FIGURE 1 (left)—Illustrating the actions of triggering and switching. (A) Controlling voltage. (B) Action of triggering. (C) Action of switching. FIGURE 2 (right)—A simple type of electronic switch using a neon diode.

properties of gas-filled and high-vacuum tubes (Part III, *B. E. Journal*, March 1944) for opening, closing, or affecting the operation of a secondary circuit.

The most widely used form of electronic switch employs a gas-filled diode, or neon tube—used because of its low internal resistance, and unusual conducting properties. When the tube is not conducting, the resistance of the diode is very high. As the potential of the plate is increased, a certain point is reached at which the resistance of the gas in the tube is overcome by the movement of the electrons. These electrons cause the gas to ionize, providing a conduction path between the cathode and plate at the instant when the plate voltage passes a critical value. Current then flows freely through the tube and around the related circuit—until the plate voltage is lowered to a second critical value, at which time the gas in the tube becomes de-ionized and the diode ceases to conduct.

A simple electronic switching circuit is shown in figure 2, to illustrate the action just described. In this diagram a receiver can be connected to either of two antennae, and it is desired to switch between them alternately at a very fast speed. The application of a controlling pulse wave form (such as the wave form A of figure 1) charges the condenser C, which applies this positive potential to the plate of the gas-filled diode. When this plate potential reaches the critical break-down voltage of the tube, the diode will conduct. Heavy current passing through the tube and its related circuit will operate the relay coil—causing the switch arm to move from one antenna to the other. When the trailing edge of the wave form suddenly reduces the control voltage to zero, or minimum, the condenser C is discharged. This action removes all or most of the plate voltage on the tube, and the diode ceases to conduct. The de-energized relay switches the antennae back to their original position.

From this example it can be seen that the two antennae (of figure 2) can be switched as often as desired, and the action is wholly dependent upon the controlling input pulse voltage. If this control or switching voltage is very slow in frequency, the antennae will switch back and forth at a slow rate. But if the switching pulse is of a frequency of perhaps 5000 or 6000 cycles per second, the two antennae would feed alternately into the receiver at that rate. Thus, if the two antennae were directional and were beamed in different directions, the receiver could be made to register the two different signals almost simultaneously—by suitable arrangement of the r-f stages, and proper damping of the switching circuit to prevent receiver clicks. Obviously, the circuit shown in figure 2 is purely basic and is used merely to illustrate one method of electronic switching.

Switches controlled by electronic means find wide use in almost all kinds of electronic circuits, and particularly in industrial applications. With precision-controlling wave forms, any number of related secondary circuits can be controlled, synchronized, and switched with split-micro-second accuracy.

NABET Convention Facts

By Bert Pruitt

MEMBERS of Cleveland's Chapter of NABET are unanimously agreed that the big-wigs, those Kilocycle Czars who make NABET click, undoubtedly earn their pay. This agreement came about while the National Convention was in session here in Cleveland during October. Previous to this convention some of us suspected the annual Convention was somewhat like a Sunday outing at Turkey Run State Park. Those oscillating walls over at the Hollended Hotel were ample proof that something other than a friendly pat on the back was taking place in Parlour D where the delegates were seated at a table capable of doing justice to the one of King Arthur fame.

Legend has it that the groundhog comes out of his den each February to see if his long stay inside has left enough fat to throw a shadow. Now we would be the last person in the world to class a NABET delegate with the woodchuck, nevertheless, the NABET potentate outdoes this woolly little creature of the clover patch in one respect . . . the NABET delegate isn't interested in his or anyone else's shadow when he finally comes out of his den . . . he comes out raring for food and in this case, cigarettes. We'd better explain our mention of cigarettes. It's tougher to get a pack of cigarettes here in Cleveland than it would be to get an announcer to admit he poked the wrong button in your fair city!

Getting back to our Potentates. President Al Powley and the boys held daily sessions which began at 9 A. M. and came to an end at 11 P. M. That adds up to 14 hours each day. Five times 14 gives us 70 hours for a five day week. And this shows that the world is inconsistent. Seventy minus forty leaves thirty hours overtime to anyone who speaks the NABET language, and they certainly do. And it's reasonable to assume they discussed ways and means of doing all that's humanly possible to see that we continue getting time-and-a-half for any time in excess of 40 HPW. Thus we find ourselves gazing at a picture that can be seen without bifocals. What about their 30 hours overtime? Should the rest of us return their favor by holding a convention with the paramount thought being to discuss ways and means whereby they will get time and five-tenths for anything in excess of 40 HPW? Or could we do it without holding a convention? If so, I'll make the motion that we double the amount they now receive as admirals who stroll the quarterdeck on the good ship NABET. A liberal gesture of this nature would undoubtedly bring a quick answer of appreciation and gratitude from these men.

So much for overtime. The fact remains that these men did dash out occasionally for a bite to eat. We dashed with them one day and we were hardly seated in a restaurant when one of our dignified delegates said, "Pruitt, what kind of high-ball is this?" We took one look and told him he was drinking the famous Lake Erie Highball. He wanted to know what that was and we explained that it's famous coast to coast as a drink composed of one part water and the remainder chlorine. He said he'd never heard of it on either coast and we said that certainly was odd, inasmuch

(Continued on Page Thirty-two)

Indicial Response of Telephone Receivers

By
E. E. Mott

[Reprinted by permission of *The Bell System Technical Journal*, Vol. XXIII, No. 2, April, 1944]

A method of analyzing telephone receiver characteristics by indicial response is discussed and illustrated by oscillograms. The indicial response of a telephone receiver is the instantaneous response of the receiver to a suddenly applied electromotive force. This type of response is of particular fundamental interest because it furnishes a key to the solution of transient problems such as are involved in the response to speech waves.

Oscillograms of indicial response, together with the more familiar steady-state frequency response characteristics, are shown for different types of receivers. The relationships existing between the two types of measurements are discussed.

From the standpoint of most faithfully reproducing transients, indicial response data indicate that a receiver having a limited range of frequency response should have a frequency response characteristic which droops gradually rather than abruptly near the upper end of the range.

Introduction

THE use of indicial response analysis as an outgrowth of the Heaviside operational calculus¹ has been extended to a number of different fields. The indicial admittance as defined by J. R. Carson² in his analysis of the submarine cable and other transmission problems has been an effective tool in the study of transients. More recently, a similar type of measurement has been used as an indication of performance of amplifiers³, television equipment⁴, and audio frequency transformers⁵.

In the field of telephone receivers⁶ an analysis by means of impressed square waves has been found useful as a measure of transient response. In the trans-

mission of speech, so much emphasis has been placed upon steady-state frequency response as an indication of performance, that it seems in order to consider the possible advantages of a transient method of analysis, as obtained by measuring the indicial response. Only recently has the technique of such measurement been made feasible by the improvement at low frequencies of amplifiers and related apparatus.

The Indicial Response

The indicial response of a telephone receiver may be defined as the instan-

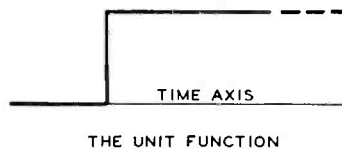


Figure 1

aneous sound pressure generated by the receiver in a closed air chamber due to a suddenly-applied unit voltage. This term differs from Carson's indicial admittance only in that sound pressure rather than current response is used. The sound pressure in an air chamber of pure stiffness is a measure of the volume displacement, and as such it is proportional to the transfer displacement admittance of the system. When we are interested in the charge rather than in the current, the admittance takes the form of a displacement admittance, related to the ordinary admittance by a factor of the frequency w . That Carson's original equations apply to such a system with little if any change may be easily demonstrated. The term $A(t)$ may be used to denote any of these forms of indicial admittance or indicial response.

The form of the applied voltage assumed is shown by Fig. 1. This form, defined by Heaviside as the *unit func-*

tion, is a function of time equal to zero before, and unity after the time $t = 0$. More properly, however, it may be regarded as an increment in voltage closely analogous to Isaac Newton's concept of infinitesimal elements of rectangular area, the summation of which forms the basis of the integral calculus. The successive application of small increments of voltage likewise forms the basis of the operational calculus, or more particularly, the basis of the Carson extension theorem.

The Carson Extension Theorem

Having obtained the indicial response, either experimentally or theoretically, we have the key to the more general problem where the applied voltage $e(t)$ may be of any form, such as that of speech waves. Let $e(t)$, Fig. 2, be any arbitrary voltage wave corresponding to speech⁷. Let a series of consecutive increments of voltage, differing in time by $\Delta\tau$ be applied, of such magnitude as to build up the form of the curve $e(t)$. By analyzing each of these components in terms of the indicial admittance $A(t)$, and synthesizing them again, the instantaneous sound pressure may be related to the voltage producing it and the indicial admittance $A(\tau)$ by the Carson extension equation²:

$$p(t) = \frac{d}{dt} \int_0^t A(\tau)e(t - \tau) d\tau$$

When the above integration is carried out, the term τ disappears and is replaced by t . The above sound pressure $p(t)$ represents the sound pressure generated by the receiver in a closed coupler due to an applied voltage $e(t)$.

From the above, it is evident that the ideal form of receiver response to a suddenly-impressed voltage would be a copy of the unit function shown in Fig. 1,

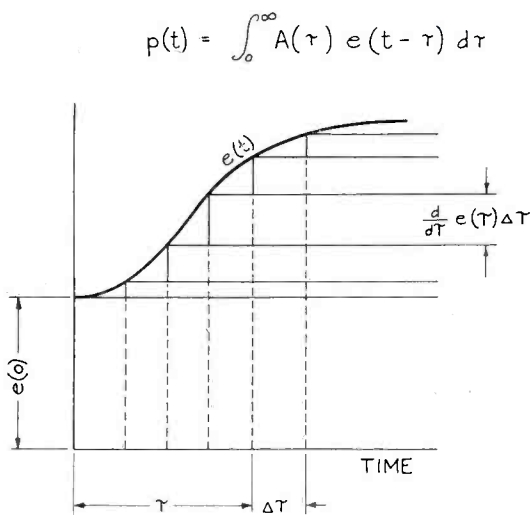


Figure 2

Method of derivation of Carson's extension formula.

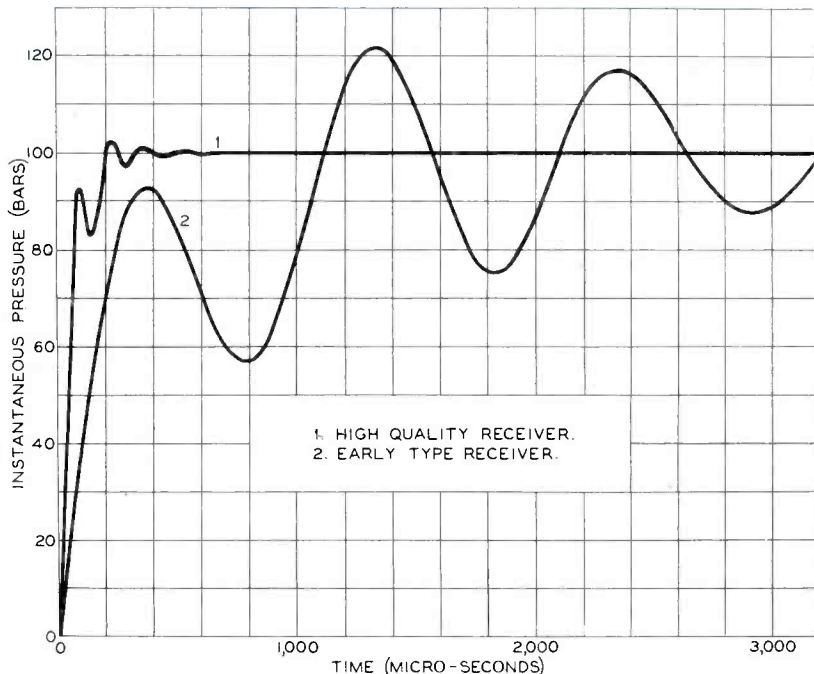


Figure 3—Indicial admittance of two types of telephone receivers.

and that any deviation from this form will cause distortion. If the building blocks of the curve $e(t)$ are undistorted, the curve itself will likewise be reproduced free from distortion of wave form. Thus, the more closely the indicial response can be made to approach the form of the unit function, the more closely the receiver sound pressure $p(t)$ will be a copy of any arbitrary speech wave $e(t)$. Curve 1, Fig. 3, shows the indicial response of a receiver having a frequency range of 8000 cps, which comes rather close to this ideal. On the other hand, the further the indicial response departs from this ideal form, the more it will deviate from any impressed transient, such as speech waves. Thus curve 2, Fig. 3, corresponds to a receiver of narrow range, which contains resonant oscillations, and rises much later in time than the other receiver.

Conversion Formulae

The indicial response is as fundamental in character as frequency response, and may be converted into frequency and phase response if the proper integrations are carried out for any particular system, as follows:

where $A(\omega)$ is the transfer admittance of the system. In order to carry out these conversions, certain integrations must be performed, either mechanically or theoretically. The following are conversions⁷ which may be used to carry out this process:

$$A(t) = \frac{2}{\pi} \int_0^{\infty} \frac{P(\omega)}{\omega} \sin \omega t d\omega$$

$$A(t) = P(0) + \frac{2}{\pi} \int_0^{\infty} \frac{Q(\omega)}{\omega} \cos \omega t d\omega$$

$$\frac{P(\omega)}{\omega} = \int_0^{\infty} A(t) \sin \omega t dt$$

$$\frac{Q(\omega)}{\omega} = \int_0^{\infty} [A(t) - A(0)] \cos \omega t dt$$

Where $P(\omega)$ and $Q(\omega)$ are the real and imaginary parts of the frequency response, $A(\omega)$ is expressed in terms of pressure response⁸, while the indicial response $A(t)$ is expressed as an instantaneous sound pressure. The integrations are difficult to carry out, but serve to show how the two systems of measurement are related, and how they may theoretically be converted one into the

other, provided in the case of frequency response the magnitude and phase are both known.

General Applications

The use of indicial response as a tool in telephone receiver studies is particularly adapted to the study of transients. Since all voice and sound transmission, particularly that of orchestral music, may be regarded as essentially a transient problem, it is appropriate that we visualize the effects on the complex wave forms of any distortions which may be present in the transmission apparatus. The indicial response will, in general, depart from the ideal square form, and the amount of this departure may be regarded as indicative of the relative faithfulness of wave form reproduction by apparatus having different frequency characteristics. An examination of these departures should therefore be helpful as a supplementary method of appraising the relative merits of different frequency response characteristics. The effect, for example, of small resonance peaks or dips upon transients is very forcefully shown in the form of the indicial admittance.

(Continued on Page Eight)

$$\text{Indicial Response } A(t) \Leftrightarrow \left[\begin{array}{l} \text{Frequency Response} \\ + \text{Phase Response} \end{array} \right] A(\omega) = P(\omega) + jQ(\omega)$$

You'll Want this New

JAMES KNIGHTS "Crystal Controlled" Frequency Standard



This is the ideal secondary frequency standard to check frequency of oscillators and transmitters, to calibrate and align receivers, etc. Can be used by the crystal manufacturer to check frequency standards for production. Useful many ways in the electronic laboratory or factory. Provides output up to 40 megacycles at 1,000, 100 and 10 kilocycle intervals. Complete cost only \$59.50. Descriptive catalog sheet on request.

BUY WAR BONDS FOR VICTORY!

The **JAMES KNIGHTS Co.**
SANDWICH, ILLINOIS

CRYSTALS FOR THE CRITICAL

Indicial Response of Telephone Receivers

(Continued from Page Six)

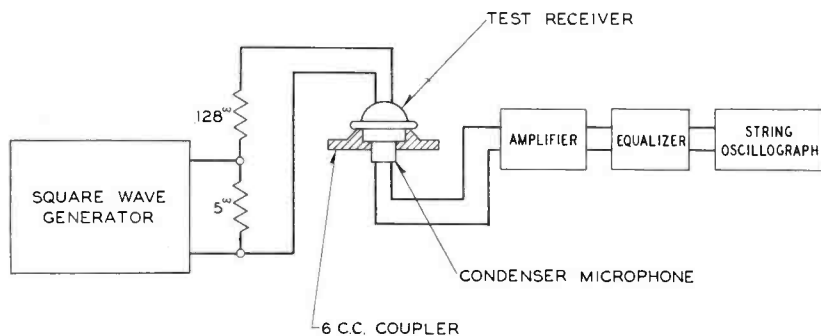


Figure 4 — Circuit diagram of apparatus for indicial response measurements.

tance. The departure from squareness of a particular system may often be improved by use of the proper shape of frequency characteristic.

The use of a closed coupler when measuring telephone receivers is particularly adapted for such studies, because the disturbing effects of deficiencies at the low frequencies due to leakage may thus be eliminated. Interpretation by inspection then becomes a matter of observation of the various types of departures at the higher frequencies from the ideal form.

Since listening tests do not always agree with interpretations of physical measurements of steady-state frequency response, it often becomes a matter of interest to obtain different criteria of judgment in which the weight given to the various frequencies may be judged by the relative effects of irregularities in various parts of the frequency spectrum upon the indicial response.

Apparatus and Method of Testing

Various forms of apparatus may be used for receiver testing with square

waves. Square-wave generator circuits have been published both for audio⁵ and video³ frequency use, involving vacuum tube circuits which overload at low voltages. For low speeds using low-frequency waves of the order 60 cps, a simple mercury switch operated by an oscillator gives very satisfactory results.

The square-wave voltage is introduced across a small part of the resistance termination as shown in Fig. 4, the whole resistance termination being matched to the magnitude of the receiver impedance at 800 cps. The receiver is then operating from an idealized resistance source having an impedance which matches that of the receiver approximately, over the range of interest.

The receiver is coupled acoustically to a small-diameter condenser microphone by means of a closed coupler⁸. The condenser microphone has a substantially uniform characteristic up to a frequency of 10 kc. The microphone voltage is then amplified to the point where it can be measured by an oscillograph.

Either the cathode-ray oscilloscope or a rapid-recording string oscillograph⁹ may be used, but in the latter case it is necessary to equalize the string oscillo-

graph to a frequency of about 10 kc in order to cover the audio frequency range. The choice of these instruments depends somewhat upon whether a permanent record is desired or whether a visual indication is sufficient.

The amplifier must be compensated at low frequencies in order to maintain a strictly square-wave output. The entire system characteristic is shown in Fig. 5 and covers a range of 1 to 10,000 cps with a substantially uniform frequency response. The indicial response of the system is also shown to be reasonably free from irregularities. Such irregularities as do exist are due largely to the sharp cut-off of the system at 10 kc which was necessitated by the limitations of the string oscillograph.

Indicial vs. Frequency Response

The calculated pairs of curves for telephone receivers in Fig. 6 show the relations between the frequency response and the indicial response. Since the characteristics of receivers measured on a closed coupler of known volume are readily amenable to calculation if the constants of the receiver are known, such a procedure is often useful in pre-determining the design of a receiver.

The upper three curves, Fig. 6, are the characteristics of a moving coil receiver calculated for three different frequency ranges, being otherwise similar in shape, the curve being shifted in frequency by an arbitrary factor K . The effect on the indicial admittance is to shift it in time by the same factor without change of shape, if the plot is logarithmic as shown. In general, if the cut-off frequency is divided by the factor K , the corresponding time delay will be increased by the

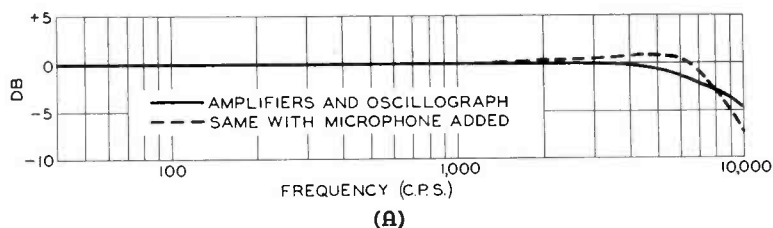


Figure 5 — Frequency response (A) and indicial response (B) of measuring apparatus.

factor K . This is an application of a theorem by Carson² that:

$$\frac{1}{pZ(kp)} = \int_0^{\infty} A(t/k) e^{-pt} dt$$

where $p = j\omega$ is proportional to frequency, and t is the time, $\frac{1}{Z(kp)}$ is the frequency response, and $A(t/k)$ is the indicial response. In other words, the curve may be shifted in frequency by a simple transformation and the effect on the indicial admittance curve is very similar except that the shift is in a direction opposite to the change in frequency, and is inversely proportional to the change in frequency scale.

The second group of curves, Fig. 6, relates to the effect of damping on an early magnetic type of receiver, showing the freely resonant condition, a moderately damped, and a highly damped receiver. The curves of indicial response show the effects of free resonance to be very detrimental, and the ringing of the diaphragm is sustained over such a long period that any speech waves would have superposed on them a continual train of sine waves. If the rate of decay of these waves is increased, as shown by the damped curves, a noticeable improvement results. By using critical damping as in the highly damped curve, all oscillations can be eliminated, but the time of pickup is degraded and the departure from a square wave is somewhat greater than for the moderately damped condition.

The indicial response shows more emphatically than frequency response, the importance of damping and the oscillations which are to be avoided, or reduced to a minimum. It also shows that the effect of delay is closely related to attenuation of the higher frequencies, and that frequency of cut-off is inversely proportional to the time delay, for a given type of receiver circuit.

There is a noticeable similarity between the appearance of the frequency response and the indicial response curves, and in many cases one curve is approximately the image of the other. As an example of this, the three pairs of linear curves show the similarity of indicial and

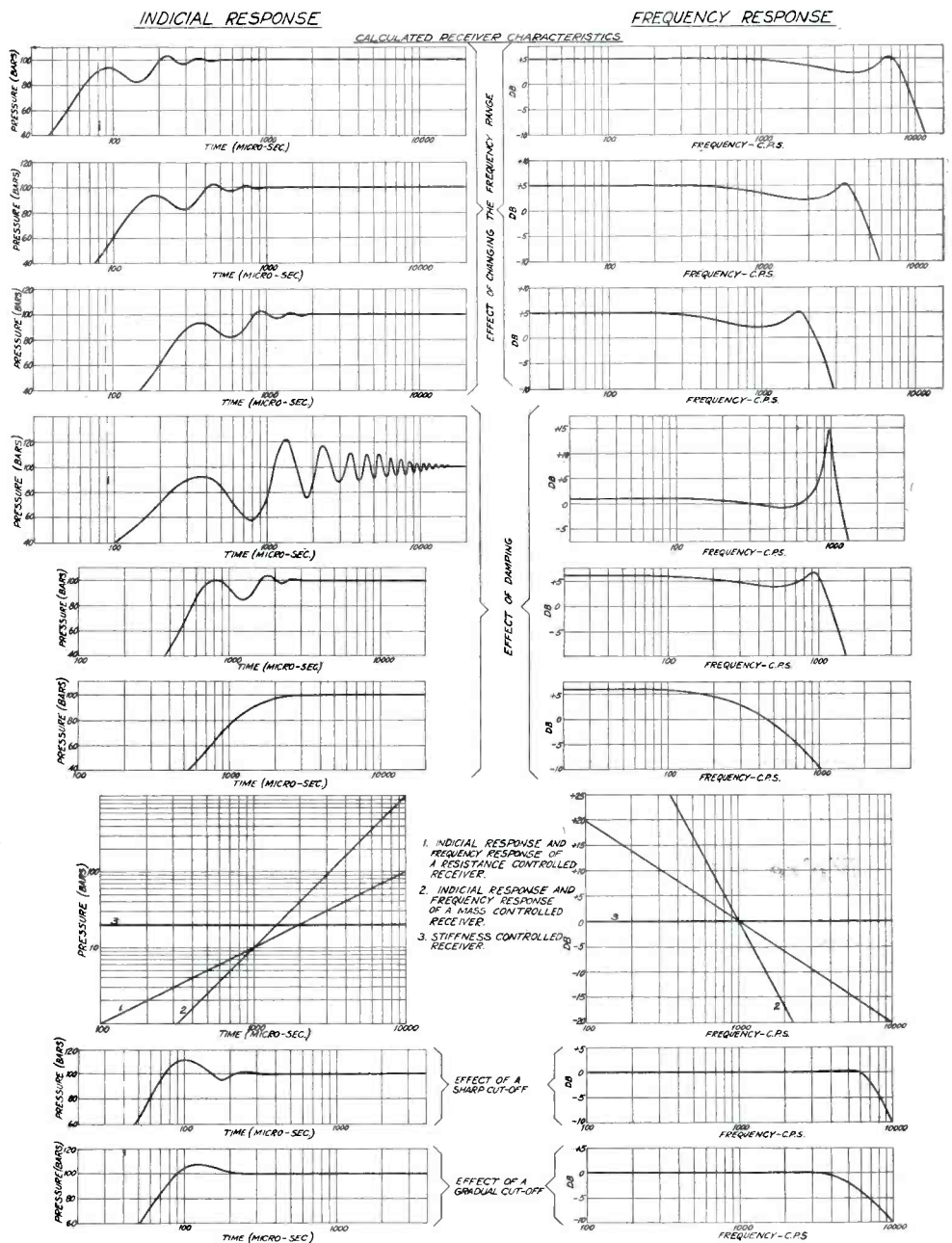


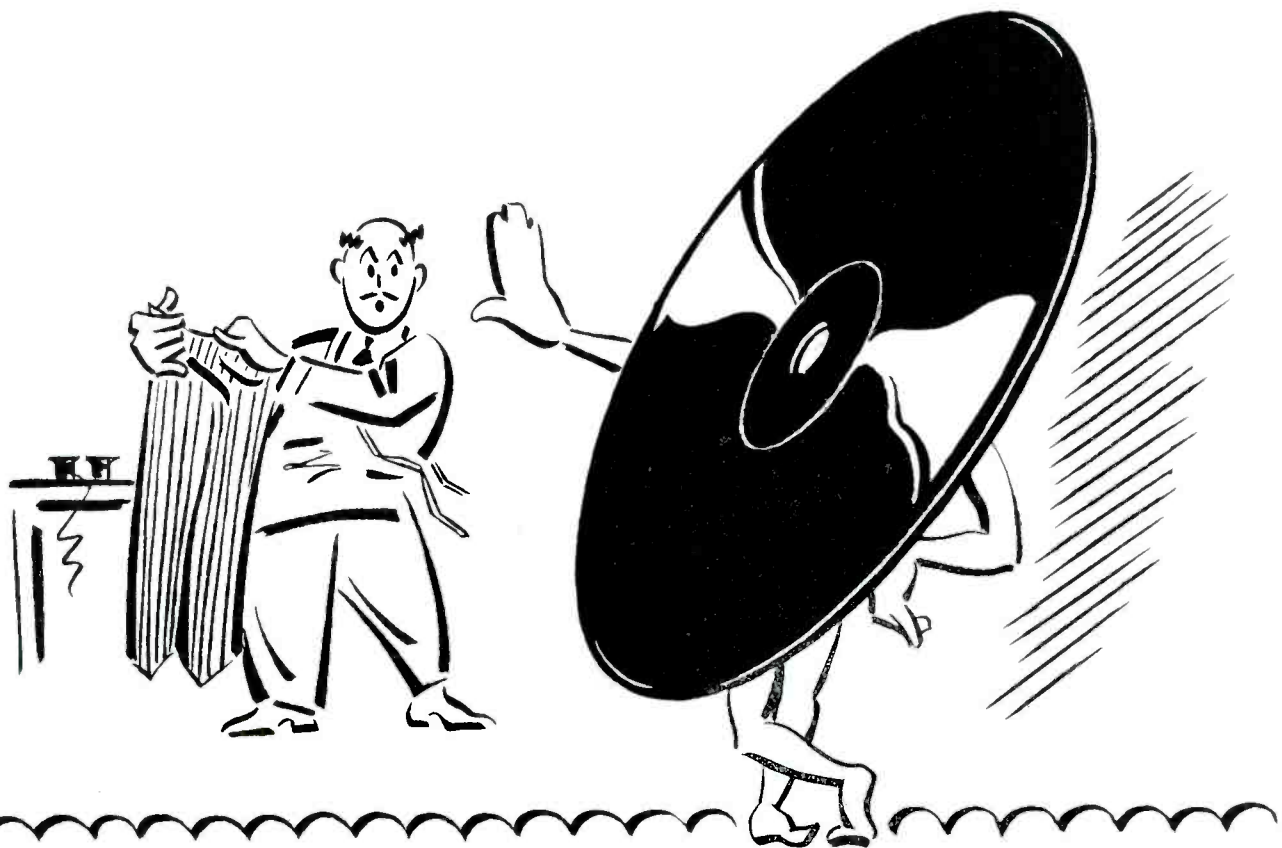
Figure 6 — Calculated indicial response versus calculated frequency response of various types of telephone receivers.

frequency response for constant velocity, constant acceleration, and constant amplitude devices, as depicted by the three curves denoted by 1, 2, and 3 in which the three moving-coil instruments are assumed to be controlled by (1) a predominance of acoustic resistance behind the diaphragm, (2) a mass controlled system, and (3) a stiffness controlled system. In either case, the fundamental shape of the curves is such that the indicial response is the image of the fre-

quency response in its general character.

The two lower curves, Fig. 6, indicate the effect of a sharp cut-off versus a gradual one. In terms of indicial response, the gradual cut-off appears to be the better of the two, a principle which is widely accepted in television and telegraph transmission.

[Part II of this paper, *Experimental Measurements, and Conclusions*, will appear in our next issue.]



We're not talking to tailors when we say

“No trouble with threads . . .”

• We're talking directly to you broadcast engineers who know what a nuisance poor thread action on a recording blank can be. We're talking to rational men who have gone temporarily beserk when the threads on a disc being cut suddenly became entangled in the stylus, or twisted hopelessly around the center drive pins. There is no longer a reason to gnash one's teeth at these annoyances. Simply buy ADVANCE RECORD-

ING BLANKS. Because the threads on Advance Blanks are not statically charged, they flow smoothly away from the cutting needle. And Advance Blanks have other advantages. They are flat, and they stay flat without warping or ageing; they have no surface noise; and they reproduce clearly. In fact they have all of the advantages considered necessary for true, natural reproduction and satisfactory performance. Try them today.

SUPPORT THE SIXTH WAR LOAN DRIVE.
SEW YOUR MONEY UP IN WAR BONDS.

36-12 34th STREET • Stillwell 4-7837 • LONG ISLAND CITY, N.Y.

Advance
Recording Products
Company



The NABET National Council in Annual Convention CLEVELAND, OHIO

Seated (Left to Right)—R. R. Jensen, Hollywood Chapter; G. B. Riley, Hudson Chapter; Harold Brandt, Cleveland Chapter; Sec'y-Treas. C. A. Allen; President A. T. Powley; Bev Fredendall, Chicago Chapter; M. W. Dunnigan, San Francisco; A. J. Doran, Detroit Chapter; R. C. Thompson, Denver Chapter.

Standing (Left to Right)—V. J. Duke, Engineering Chapter; H. E. Hiller, New York; Don Morey, Mohawk Chapter.

They Didn't Play Rook

By Bert Pruitt

ROOK, as you well know, is a good old American game of cards; a game that is dear to our strong, yet sentimental hearts. This game is usually enjoyed to its fullest when played by the light of a kerosene lamp which twinkles bravely in the living room of a drafty farm house. Apple cider and wood burning stoves add a certain amount of Early American atmosphere to this game when the bidding gets hottest.

Well, it's like this. There isn't a NABET member between Maine and California who would even think of dealing Rook without the farmhouse living room, apple cider and wood burning stove. A shuffle of the cards without these three things would be a desecration to the memory of our dear old ancestors who, in all likelihood, never attended more than five or six NABET Conventions in their entire lifetime. Furthermore, you could search until that afternoon shadow became a threatening cloud before you'd find a wood burning stove or a pitcher of apple cider in the Hollenden Hotel. As to the drafty rooms? Well, that's something you may or may not find in the minutes of the meeting as logged by Brother Allen from Washington.

You now know why our delegates played poker instead of Rook. One look at those four players gives us enough material for a book as bulky as *Gone With the Wind*. What about those 4 aces President Al Powley is holding with that four spot? Men who specialize on the laws of chance would in all probability say the odds were in the neighborhood of 1,000,000 to one against getting four aces in one hand unless the dealer can handle the deck of cards like those experts handle your pay check each month when they make those fancy deductions. The million to one odds would create a field day for our friends the statisticians. They'd quote figures to prove Mr. Powley has played one million hands of poker in order to get those four aces. Allowing one minute for each hand gives us one million minutes Mr. Powley has spent playing poker. This converted into hours gives something like 1666.6. From this point onward the statisticians could convert over to days, weeks and months. Then as a convincing conclusion they could total the years and prove beyond a doubt that Mr. Dewey's age theory applies the same to President Powley as it does to President Roosevelt.



(Left to right)—Powley, Brandt, Dunnigan, and Riley.

Then there's Harold Brandt's cigar. A person with your imagination could really go to town and tell me that the tobacco in that cigar came from Tennessee. By mentioning the state of Tenn. you could write an essay about the political outlook down there in that state. Was President Roosevelt responsible for the hailstorm that destroyed a choice crop of Kentucky Burleigh in Raccoon County last August? And who caused that gnat to fly in the horse's eyes which ran away and destroyed 74 cartons of cigarettes you and I could have used this past October and November. Was it Dewey or Roosevelt?

Mr. Dunnigan of California has his shirt collar open. Where did his shirt come from in the first place? Was it made by child labor in the state of Maryland? If so, did the child receive overtime pay for making it? If not, why does Dunnigan feel justified in riding a train from California to Ohio in order that he be properly located geographically to discuss the Wage and Hour situation? Were those cards he's holding made by union labor? If so, did he smile when he had to fork out \$1.25 for them? You could continue with his tie and vest except for the fact that the war has created a paper shortage. If you were to write more about Dunnigan you would add to the shortage and might logically be called unpatriotic. This verges on treason and they've been known to put a rope around one's neck for being a traitor.

That's a fine looking pipe G. B. Riley from the Hudson Chapter is smoking. But what about the dollar bill he eagerly gazes at? What will he have if those cards beat President Powley's four aces. Will he win a frog skin worth a huck or will it be a piece of Washington paper worth a thirty-five cent breakfast?

Inasmuch as we are making use of your imagination in writing this it stands to reason you are asking us these questions. And inasmuch as we get paid for twisting knobs, instead of Quiz Kidding, we'll have to admit we have not the slightest idea as to what you are talking about!

New Television Stations

From FCC Report No. 1654

Central Ohio Broadcasting Co., Columbus, O. Channel 8, 162-168 mc.

Indianapolis Broadcasting, Inc., Indianapolis. Channel 5, 84-90 mc.

Francis Taylor, Seekonk, Mass. Channel 8, 162-168 mc.

From FCC Report No. 1655

Philco, Arlington, Va. Channel 4, 78-84 mc.

From FCC Report No. 1657

Zenith Radio Corp., Chicago. 488-504 mc (experimental).

From FCC Report No. 1658

WAVE, Inc., Louisville, Ky. Channel 1, 50-56 mc.

From FCC Report No. 1660

Yankee Network, Inc., Hartford, Conn. Channel 9, 180-186 mc.

Intermountain Broadcasting Corp., Salt Lake City. Channel 1, 50-56 mc.

From FCC Report No. 1661

Filene's Television, Inc., Boston. Channel 7, 102-108 mc.
Times-Herald, Washington, D. C. Channel 8, 162-168 mc.

AGAIN!



*For the 5th time
Hallicrafters
employees
win Army-Navy
"E" Award!*

First exclusive manufacturer of short wave radio equipment to receive the coveted Army-Navy "E" Award for the fifth time . . . the result of the continued and untiring devotion to duty of the company's 1,500 employees.

hallicrafters

THE HALLICRAFTERS COMPANY • MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT • CHICAGO 16, U. S. A.



Builders of the famous SCR-299

Meet the Men Who

Here are the pictures of NABET's leaders who do 99 per cent of the work and get about 1 per cent of the publicity. That statement, as any engineer knows, applies equally well when it comes to broadcasting. On the other hand these men, who know you cannot square a circle, are well aware of the fact you cannot purchase food with sufficient vitamins if you have nothing more convincing than a roll of publicity to hand to your local butcher.

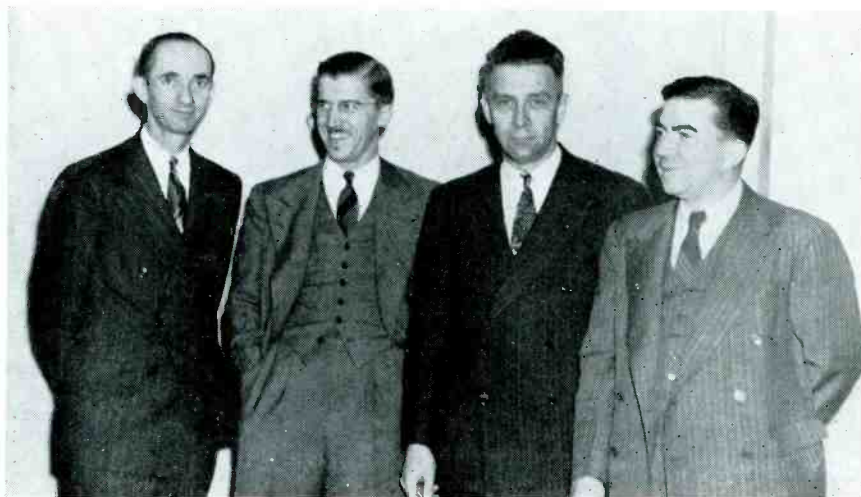
Seriously speaking—The mem-

NABET President



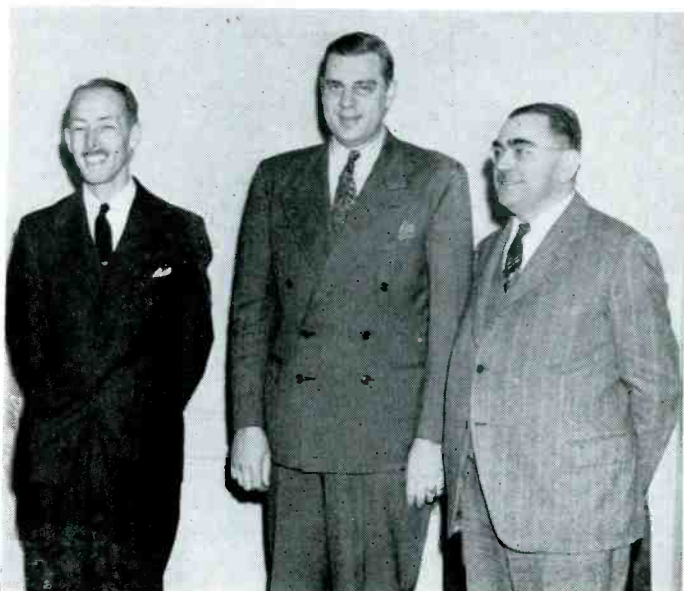
A. T. Powley

bers of Cleveland's NABET Chapter were happy to meet President Al Powley and your representatives. We can assure you these men burned plenty of midnight oil while attending the Convention. Their sessions often began at 9 A.M. and ran straight through till 10 or 11 P.M. The serious manner in which this Convention was conducted shows that the men who represent us came to Cleveland with the intention of doing their best to promote the interests and welfare of NABET. —B. P.



~
V. J. Duke, New York; G. B. Riley, Hudson; H. V. Brandt, Cleveland; C. A. Allen, Secretary-Treasurer.
~

Run N. A. B. E. T.



~

D. Morey, Schenectady; R. R.
Jensen, Hollywood; H. E. Hiller,
New York.

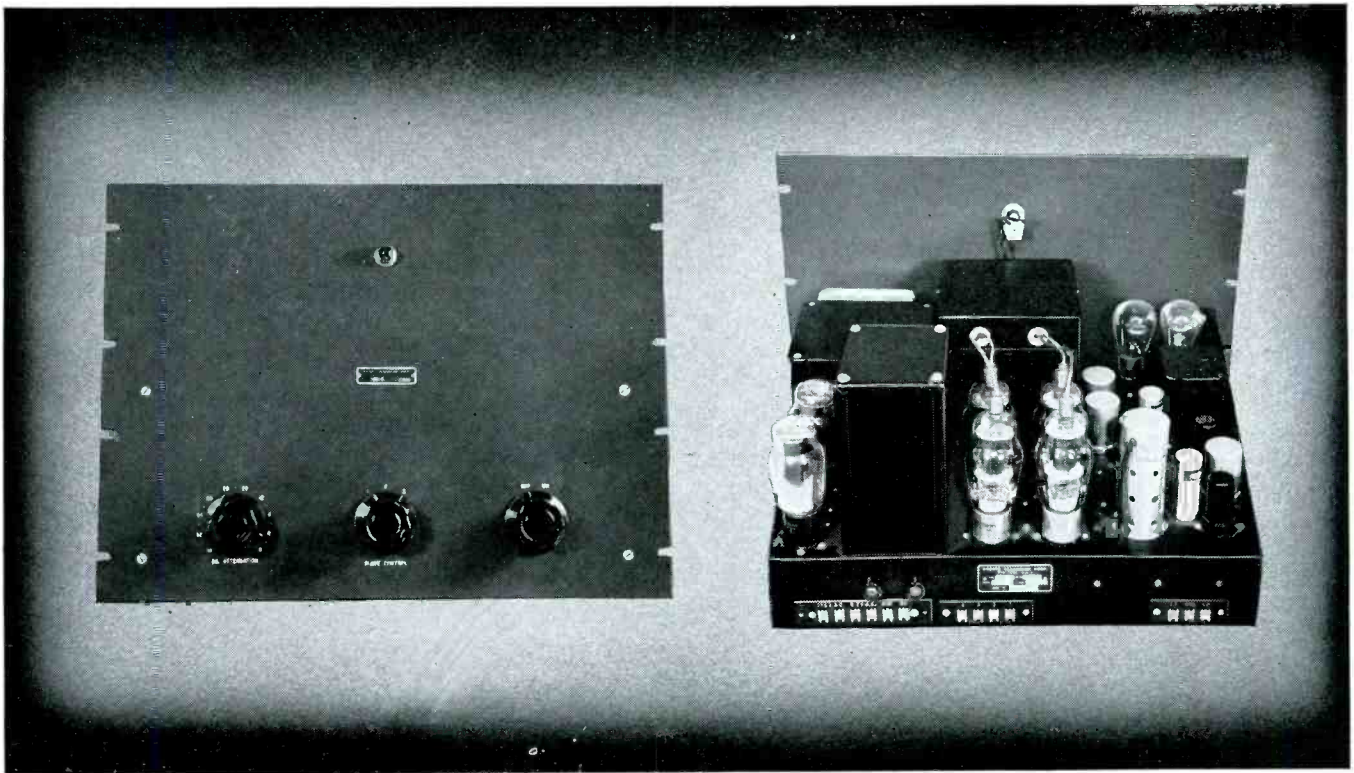
~

~

Bev "VP" Fredendall, Chicago;
Mark Dunnigan, San Francisco;
Al Doran, Detroit; Russ Thomp-
son, Denver.

~





You Can Buy This Amplifier TODAY

Under a recent ruling of the War Production Board radio station owners may buy up to \$500.00 worth of new capital equipment, using their AA-1 MRO CMP-5 priority.

Here is a piece of equipment that will make a vast improvement in the quality of your instantaneous recordings. And it can be delivered to you promptly.

It is the Presto 88-A amplifier, designed especially for use with Presto 1-C and similar high fidelity cutting heads.

Maximum power output is 50 watts with 4% distortion, measured by the inter-modulation method. Feed back circuits maintain the output impedance essentially constant when driving a cutting head, thus reducing overall distortion. Three frequency response curves are available on a selector switch. (1) Flat response, 30 to 15,000

c.p.s. ± 1 db. (2) NBC orthacoustic recording response. (3) World-AMP lateral recording response.

Designed for relay rack mounting; panel height 14"; input, 500 ohms; output, optional, 15 ohms or 500 ohms; gain, maximum, 85 db. Shipment 4 to 5 weeks after receipt of order placed with your electronic distributor.



**Buy Bonds. Keep on Buying.
Keep 'Em Flying.**

PRESTO RECORDING CORPORATION

242 WEST 55th STREET, NEW YORK 19, N. Y., U. S. A.

Walter P. Downs Ltd., in Canada

W-M-R-N : Marion, Ohio : Blue Network

By Bert Pruitt

FRONT COVER PHOTO

Outside view of the WMRN building which houses all equipment, studios, and offices. The building sets back 150 feet from State routes 23 and 4, on a five-acre plot. The 165 foot Wincharger tower in the background with a few of Marion County's nicest cumulus clouds as a backdrop.

RADIO Station WMRN is located in Marion, Ohio. They operate on 1490 KC with 250 watts. WMRN is a 4-year-old, but don't let that statement mislead you. They have gone a long way since they first took the air on December 23, 1940.

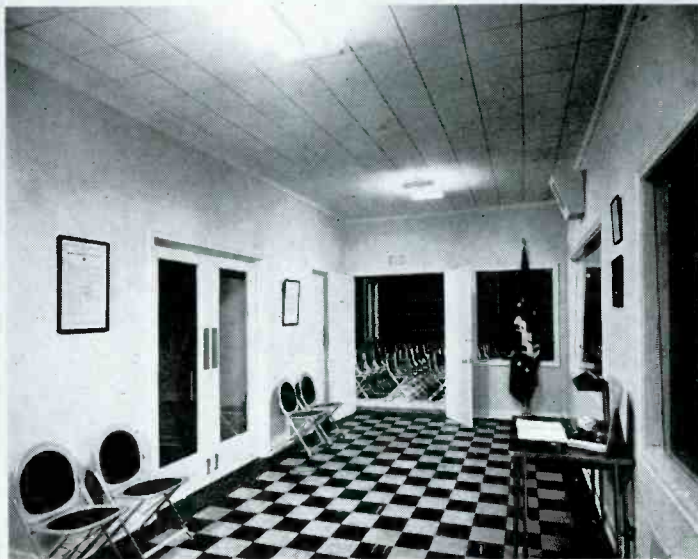
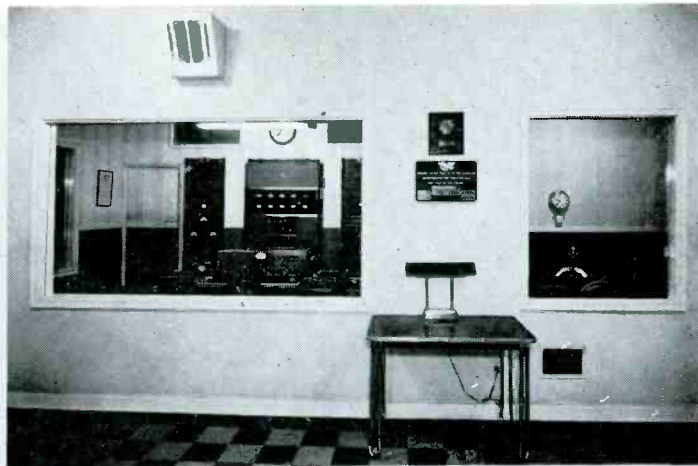
Station WMRN is the pride and joy of Marion, Ohio.

The station was started by Robert T. Mason and his brother Frank Mason, Vice President of NBC. Frank Mason sold out, however, due to increased work in Washington and at the present time Robert Mason is sole owner.

WMRN has had the usual turn-over in personnel, having lost men to the army and navy. The only two original staff members left are Mr. Mason and Vice President Robert Morrison.

Mr. Morrison came to WMRN from WBNS in Columbus, Ohio, on November 26, 1940. He made the

(Continued on Page Thirty-two)



(TOP LEFT) Control Room, houses all equipment (RCA) 76B-2 console, 70C TT's, 250K transmitter rear center, GR frequency monitor and RCA modulation monitor in rack on the left. Rack on right: 82B mon amp, 86A limiter amp, jack fields, AR77 receiver used primarily in daily rebroadcasts from BBC. Control desk has since been replaced by a custom built job shown in other photo. (TOP RIGHT) A view from the entrance doors across the lobby looking into Studio B and the Control Room. Note new control room console. (BOTTOM LEFT) View of the general office, Studio B, the Control Room, and Studio A as they appear from the Program Director's office. (BOTTOM RIGHT) A shot taken from the Office portion of the building, looking across the lobby with the doors of Studio A open, showing the back of the studio and a portion of the seating facilities.



—Photo by Joe Conn

NEW YORK NEWS

By George F. Anderson, Jr.

WELL, that time of the month has again come around and here is an attempt at a bit of news and gab—(Mighty little).

Election is here now and for the Day of Reckoning, NBC again set up Studio 8H as the Election Studio and had multiple teletype and telegraph lines in and also several Radio lines. John Pawlek, Ed. Whittaker and Ray Swane-camp were destined to operate 8H and its many headaches.

During the broadcast, credit was given to all the news-writers, vote tabulators, steno's, announcers, commentators, program directors and assistants in the studio. However, as usual, no mention or credit was given to the studio engineers, transmission, master control, field engineers, transmitter and recording engineers who were responsible for the technical side of these operations. Perhaps the engineer is not needed on a broadcast of this type (or any other). From here it looks as if someone has the idea that all that is necessary for a program is a microphone and a voice.

Recording has been kept very busy the past month recording all the political broadcasts, both off the line and also off the air.

Sergei De Somov, SE, is back at work after a week at home with some eye trouble. Sergei now has several pairs of glasses to wear, and among them a pair of PROSPERITY glasses, Y'know—Rose Colored. However, they have not helped his checker playing any. He still is the Master, and the Master he will remain.

It seems that among all the SE's that are here in New York, Gil Markle always has some kind of a peculiar happening or affair. This one concerns a 30 second transcription being played on a rival network in studio 5C. The only thing wrong with the above mentioned recording is that there should have been a ONE MINUTE TRANSCRIPTION at this particular time.

If anyone is interested in obtaining any hard to locate

(Continued on Page Twenty-three)

NEW YORK BLUENOTES

By Gil McDonald

JOHN and **ELINOR NORTON** became the proud parents of a son, John, Jr., born Oct. 25th. Son and both parents are doing O.K.

Speaking of births, the Blue Maintenance Department for the New York area was born this month with the hiring of one **Robert J. Cooke** as its first employee. He comes to us with a wealth of experience including American Export Airlines, where he was night maintenance supervisor for 2½ years. He did similar work for Eastern Airlines, Farnsworth Television, and Philco.

The editor of the New York BNCI column nominates **Duke Lewis** as the fastest moving engineer on either network. Duke started to run to catch the 2:38 to N. Y. City the other day and found that he had caught the 2:12 at New Rochelle, two miles past his own station.

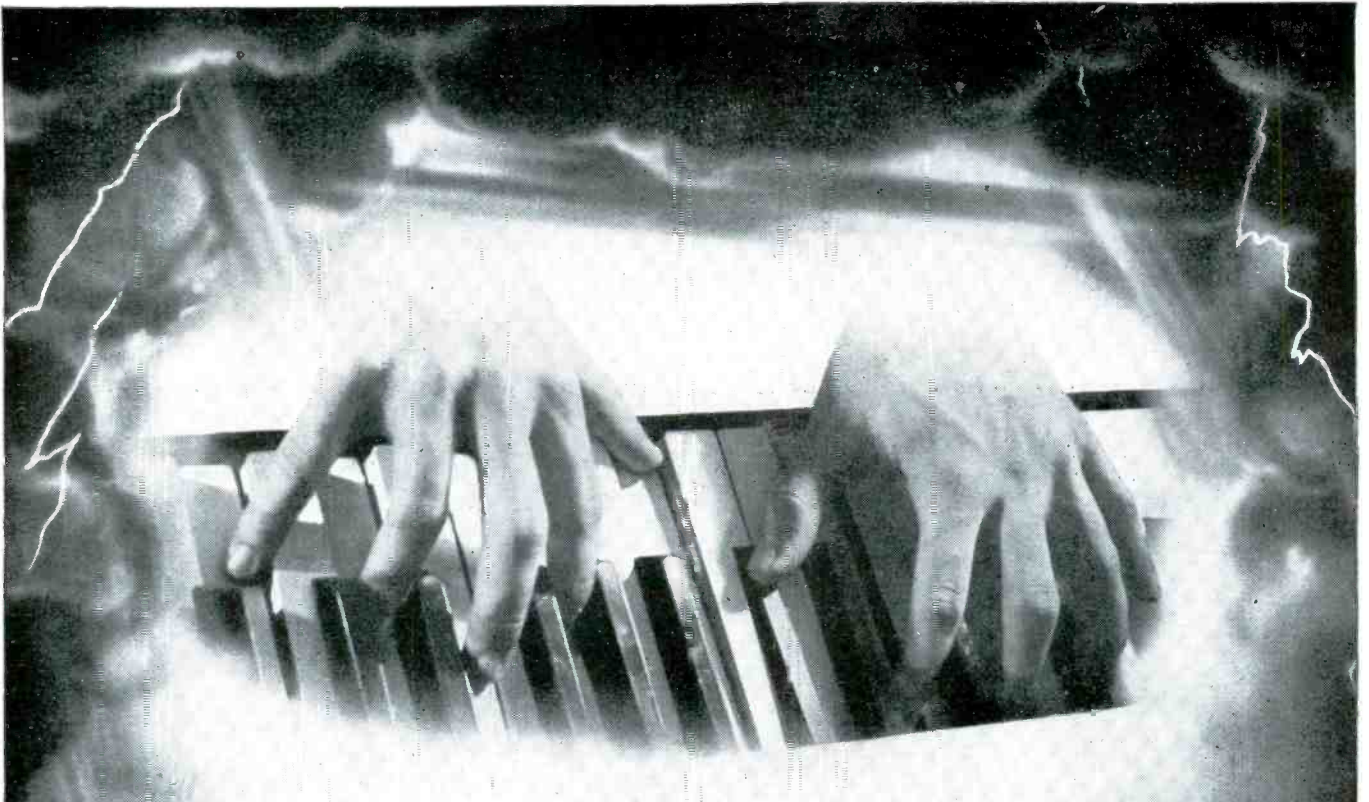
Warren Wright, hired as a summer vacation man, was made a regular as of Nov. 1st. Congrats OM.

The operation of the two theatre studios, i. e., the Vanderbilt and Ritz Theatres was turned over to three fellows, **Paul Green**, **Gil McDonald** and **Bill Simpson**. It is felt that more satisfactory operation will result if fewer men are involved in operating these studios.

As this is being written, we are knee deep in the election. Studio 3A was set up as a large convention hall with a large score board filling one whole wall of the studio. In the center there was a Western Electric Console, with eight mike inputs, fed from eight mikes placed at desks for Presidential returns, commentators, news men, congressional returns, etc. This was fed into the control room as a nemo. Musical interludes were provided by Paul Whiteman from another studio. T'was a wild night, mates.

John O'Neill had a pleasant surprise this month. His son, Walter, came home from war. He was tail gunner in a B-24 Liberator. He took part in 30 combat missions and tells of several wild battles over Berlin, Munich, etc. His

(Continued on Page Twenty-three)



Super-FM Soundproofs the Air

⊙ THUNDERSTORMS charge the atmosphere with static . . . man-made static may also cause interference on the standard broadcast waves . . . but listeners to FM (Frequency Modulation) hear each musical note or spoken word as clearly as though in a sound-proof auditorium. Using very high frequencies—tiny wavelengths—FM brings perfection into radio reception under all atmospheric conditions.

For many years, RCA Laboratories have had a constant interest in the technical development of FM. Research in this field continues, but most of

it is related to the war effort and is of a military nature . . . Prior to the war RCA manufactured and sold FM broadcast transmitters. After the war RCA will manufacture and sell a complete line of FM transmitters as well as high-quality super-FM receivers, utilizing a new type of circuit.

When peace comes RCA will use its background of experience and engineering facilities in the broadcast transmitter and receiver fields, to build the type of apparatus broadcasters will need and receiving sets which will reproduce all broadcast program with utmost realism and tonal quality.



RADIO CORPORATION OF AMERICA
RCA LABORATORIES • PRINCETON • NEW JERSEY

RCA
leads the way in
radio—television—
phonographs—records
—tapes—electronics



Listen to RCA's "The Music America Loves Best"—Sunday, 4:30 P.M., E.W.T., over the NBC Network ★ BUY WAR BONDS EVERY PAY DAY ★

from HOLLYWOOD

By Norman Dewes

FOG . . . fumes . . . motorcycles . . . parties . . . changes . . . horses . . . sheeps . . . Television . . . Valleyarns
. . . visitors . . . YEARBOOK

WEATHER . . . here lately has been perfectly AWFUL . . . soggy, boggy and foggy . . . yearly unusually heavy FOG has set in in Hollywood and environs, making it very difficult in the early hours to find your way home or to work, as the case may be . . . many city citizens find it necessary to drive thru the Pass from the Valley into town with their heads hanging out the car window in order to tell where the white line is . . . and arrive looking like the Ancient Mariner. Sure would be a good testing ground for these utility radar gadgets they say we're all going to have on our cars soon . . . understand ONE of our photo enthusiasts tried taping a pair of infra-red cloud filters over his cheaters, but the only effect was to filter out the white line completely, as well as nearly everything else, so he took 'em off . . . most Coast drivers have worked out their own solution to avoid going off the road, however . . . they simply STRADDLE the line down the center and follow it as you would a homing beam . . . which works fine until some guy comes along going the OTHER way . . .

FUMES . . . continue to contribute to the discomfort of fuming hay-feverites around Los Angeles, and lately have been blown out OUR way by occasional ill winds . . . city fathers claim they can't find out what causes 'em, saying it MIGHT be the synthetic rubber plants, etc . . . all WE know is, it gives much sneezing 'n sniffing . . . also smarting orbs, which tho uncomfortable have been used to advantage by certain ones to explain those morning-after RED EYES. In downtown L. A., it's really bad at times, denizens not seeing the sun for several days at a stretch, which for inhabitants of Southern California is practically SLOW DEATH . . . wonder what they do in Pittsburg when it fumes . . . don't answer that . . .

HORSES . . . they're running again at Hollywood Park . . . after a three year respite, the bang-tails are again flashing around the oval until recently occupied by the Army and a defense plant storage depot . . . the place has been renovated and opened the First to restore the sport of Kings to southern Cal. . . . didn't notice any Kings there tho, but saw plenty of QUEENS . . . movie stars all over the place, together with more than 30,000 there-they-go-ers who rang up over a million and a quarter simoleons on the mutuels, a record take . . . most of the dinero going to the Los Angeles War Chest. Most everybody wonders where they got the gas to get there . . . must be a lot of empty "A" books to go with those likewise pocketbooks . . . wonder how Crosby made out . . . will check, if his nags are in by the next issue . . . highspot was an infield lake with floating geese, presided over by a lovely GOOSE GIRL . . . (don't ask us what a Goose Girl is . . . if you don't know, we can't tell you HERE . . .)

PARTIES . . . a super-colossal shindig and supper

social took place the 3rd at the Riviera Country Club, for NBC Employees ONLY . . . no relatives, friends or agency people, with Sid Strotz declaring a holiday that day for everybody who could attend . . . in and out-door sports were enjoyed, with FREE suds and sizz and a chicken feed in the evening . . . Athletic Association and the Committee did themselves proud, with a GOOD TIME by all being had . . . you shoulda seen certain ANONYMOUS dignitaries playing Socko with the biscuits . . . teehee . . . many were carried away by the evening's events . . . also FROM . . . 'bout time the BLUE came thru with a similar deal, huh Blue? Why not somebody organizing a Blue A.A. and I'm SURE it would be went for in a big way . . . Halloween marked the wind-up of the present series of "Club Good Cheer" programs on the Blue . . . the show, a Coaster for Rainier Beer and Ale, gave out with a fine BEER BUST for orchestra, cast and crew on the stage of "D" after the final sign-off . . . PLENTY of suds for everybody including those around the building, with sandwiches, pickles and dancing under the colored stage lights to music of Coast bands piped from the nets to the stage speakers. QUITE a festive affair, thanx to agency man Jack Gale, who promoted the beer, and producer Leonard Reeg, who dittoed the eats . . . Jack was bartender, and did ALRIGHT, as WE can testify . . . burp . . .

CHANGES . . . Al Nicolay, Recording, has departed to become Chief Engineer of KTMS, Blue outlet up in Santa Barbera . . . a nice opportunity at a nice station, and they are getting a GOOD radio man . . . Tracy Moore, Blue Sales Manager for the Coast has resigned for other fields . . . Frank Hodek, for many years Director of Music for NBC in Hollywood has left to free lance . . . Frank has been around for quite a while and sorta grew up with Radio City . . . beside being a VERY fine musician and piano player, was ALSO a mean hand at Gin Rummy and a little pastime called Poker . . . the boys in Engineering will remember those Poker Parties and hunting and fishing trips . . . also those STORIES . . . biggest shift this month and for some time is D. A. DeWolf's move from his long-held post of Operations Supervisor . . . "De" is one of the oldest men in time of service in Coast Engineering . . . was Field Supervisor in San Fran and came to Hollywood when activities shifted southward . . . became Engineer-in-Charge and supervised building of Radio City . . . when Sax came down, "De" took over duties of Operations Super and in that capacity has kept things humming smoothly for many years . . . Engineering will miss his friendly bossing and sincerely wish him well in his new post as Supervisor for Sound Effects.

VISITORS . . . Standard Symphony down here for a one-niter, with Baron of San Fran down to twirl it . . . we set him up in Studio "D," which he proceeded to FILL with musicians of all descriptions . . . there wasn't room

left for a piccolo, so HELP us . . . we counted about seven-teen mikes, but show sounded swell . . . **Fred Blackburn**, Chief of NBC affiliate KYCA, way up in Prescott, Arizona, flew in on the heels of our recent rainstorm for an overnite visit and was grounded for several days until things cleared up . . . they arrived over L. A. to find it buried in a sea of fog and circled arounding looking for a HOLE until their gas ran out . . . luckily, they CAME THRU in coasting distance of an airport on the edge of town . . . **Walter Winchell** back in town for a time . . . sez he's glad to get back out here and may stay awhile . . . Publicity promised us a pic of **Winch** in action, so you guys can see him giving out with the verbage and sound effects . . . it's quite a show . . . the **William Comegys**, Maintenance, are entering a visitor this month who **Bill** and **Mary Lou** say plans to stay awhile, too . . . she's a lovely named **Karen Louise** who arrived on October 26th, about 2:45 p.m. . . . weighing just four and one-half pounds . . . mother and daughter doing fine at Hollywood Hosp, and we say CONGRATULATIONS . . .

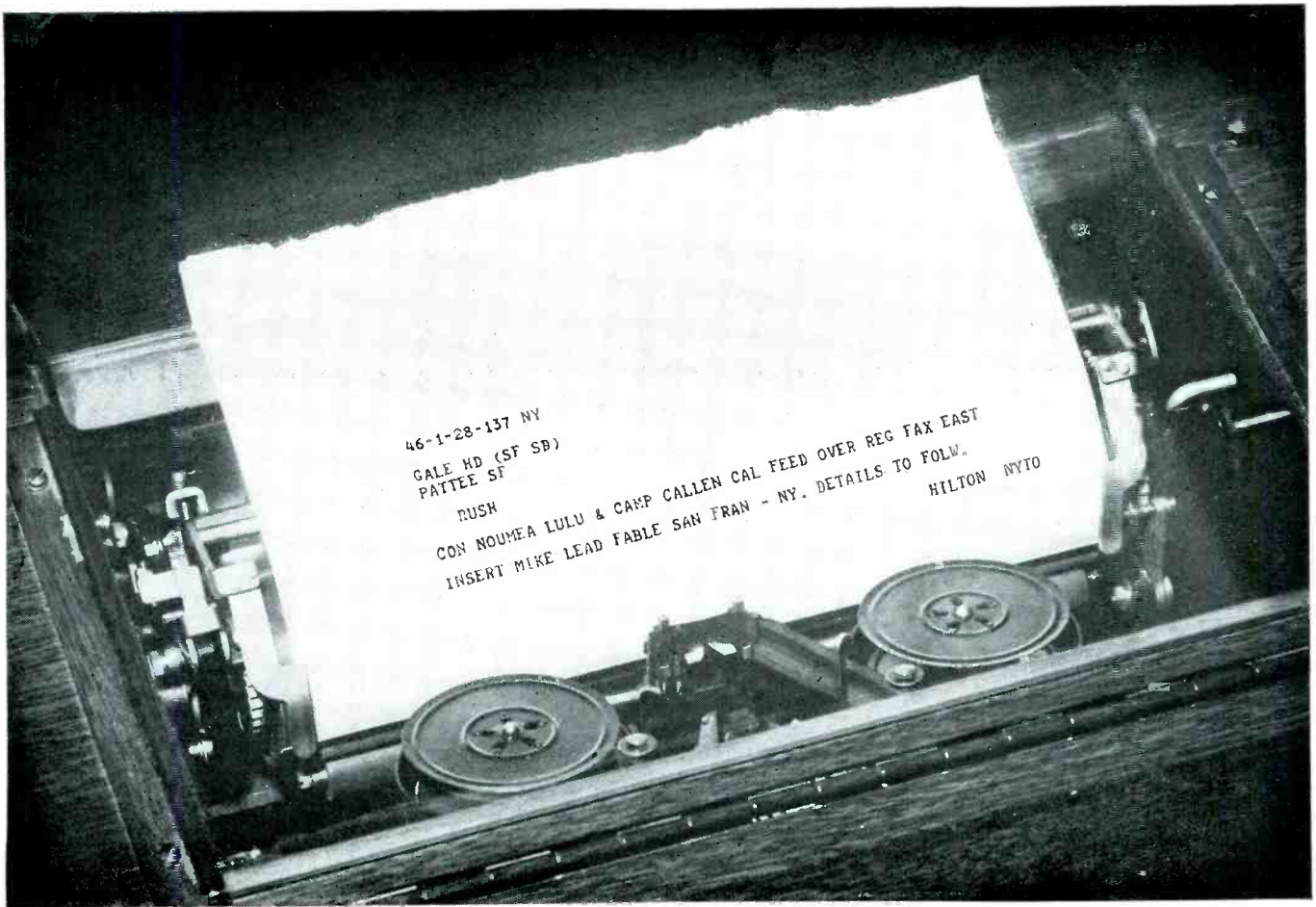
TELEVISION . . . maintaining its status quo, with Don Lee and Paramount on the air on regular weekly nitely schedules, with no visible signs of improvement . . . only real news is story of ACT, the "Affiliated Committee for Television" . . . a mutual benefit society of Hollywood screen and radio Guilds whose avowed purposes in part are . . . "To invite the participation of all guilds of creative artists and allied professional groups . . . to collectively investigate the subject of Television in all its phases and ramifications, with special attention to the education, training and general welfare of the members of the participating groups . . . to engage in projects . . . meetings and lectures," and so on for a page or two. Guilds so far participating include AFRA, American Soc. of Cinematographers, Radio Directors', Screen Directors', Screen Writers', Screen Cartoonists and Society of Motion Picture Film Editors. A fellow named **Curtis Dean** is Chairman, and they have published No. 1 of a four-page Bulletin of Television news and editorials. The organization is admittedly of a non-technical nature, dealing chiefly with the production end of things, altho the B.T.M.G. (Broadcast and Television Mixers' Guild) of Hollywood was offered membership . . . but apparently ACT has little to offer such a group, other than access to a library of books and publications on Television, altho according to **Mr. Dean**, the most fortunate engineer in this new field will be the one who is thoroughly grounded in and has a flair for production, leaving the strictly technical jobs for the guys at the transmitters. Maybe so, but WE wouldn't want to express an opinion at this time . . .

BLUE/KECA . . . **Chief Bettis** reports things rather quiet out in the Baldwin Hills, altho during recent storm lightning flashed around and tower got a static discharge which jumped across protective gaps and concentric line too, knocking the rig off for several seconds until agile man-on-watch restored the relays . . . incidently, this storm was a dilly, it raining, hailing, wind blowing and sunshining all at ONCE in true California fashion . . . **Rex** sez he left his house in Lamert Park where only a few drops were falling nad about a mile away ran into practically a CLOUDBURST, with several feet of water over the sidewalks and running in the stores . . . out in the Valley where WE were driving around on our day off, the HAIL like to came thru the roof of the car . . . getting back to

KECA, **Bettis** reports the annual Visit of the Sheep . . . it seems that there is a guy out that way who has a flock of some 300 sheeps, who saves on feed bills by driving them around from fields to vacant lots in a 40 or 50 mile area and letting them eat down the grass and weeds, to the mutual benefit of the lot owners AND the sheep . . . he hits the KECA property about once a year and **Rex** sez those critters really do a job on the weeds . . . they're genuine black Caracul sheeps, the kind lovely coats are made out of, but the guy COUNTS 'em before and after, so the transmitter boys' wives still have to get along with their old Minks . . . **Charlie Lampkin**, KFI/KECA studio man is to the first Blue SE for KECA . . . he is currently doing the Blue commercial "Hollywood Mystery Time" for Jergens, which is originating from the studios over on Vermont Avenue due to space shortages at NBC . . . **Hefferman**, Blue SE matching wits with Dunninger from Blue Playhouse . . . sent him several THOTS from the booth during the show, but Dunninger IGNORED them . . . maybe he wasn't on the right freq . . . and maybe it was JUST AS WELL . . . **Joe Dessert**, KECA TE, has been chosen NABET Councilman for the KECA Group . . . **Harold Powell**, Blue SE, winging to Dallas to check on two acres of Texas left him by his grandma . . . keeps going back every once in awhile to see if any OIL has seeped thru . . . **Thor La Croix** doing the "Darts for Dough" show and in the RED for FOUR, on the MCD V. I. . . . **Jimmy Banks** no longer our glamour boy on "Glamour Manor" . . . no longer in stitches, either . . . no connection . . . Blue doing shows from stage of Pantages Theatre between movies, due to daily more acute studio space shortages . . . slight CORRECTION on items re: **Tom Baxter** induction in November issue . . . report greatly exaggerated, as **Tom** back among us again having failed to pass last minute check-up on heart . . . young **Baxter** was strictly in the FINALS and standing around between civies and a uniform when it HAPPENED . . . welcome BACK, old man . . .

AROUND THE BUILDING . . . a desk has been added to main corridor . . . presided over by former Page Girl—lovely Miss June Sallberg . . . she is the first thing you see when coming in from the Artists' entrance and always has a SWEET SMILE for each and everyone . . . between smiles she handles phone messages for actors' Call Bureau . . . central exhibit in Main Lobby has been changed . . . glass-cased scale model of the Building has been roofed over and covering is adorned with glamour pix of NBC stars . . . some are in pin-up category, NEEDING protection of glass case from service men who swarm around the U.S.O. Ticket Desk under the big clock . . . between-show studio men doing maintenance duty in **Johnny Morris'** Repair Shop . . . looking vaireee funyay in white coveralls with knee-length crotches . . . **Prod. Tom Hargus** and group of LOVELY LADIES rehearsing on a divan in the hall . . . no studio . . . FUN in MCD during Phillippean invasion news . . . four or five speakers, two teletypes and six or seven phones going, ALL at ONCE . . . with numerous lights flashing and bells ringing as those unpredictable fellows in N. Y. and San Fran would throw it out to US with no warning . . . bet they were SURPRISED a coupla times at what came BACK at 'em . . . rapid line-ups at ciggie machines when word gets around that "the MAN" has been there . . . Air-conditioning easing up on the cooling system and getting

(Continued on Page Twenty-seven)



Double talk? No—trouble talk!

Or rather the kind of talk that helps NBC *avoid* trouble.

Daily, hundreds of these telegraphic messages, abbreviated into lingo unfathomable to all but the initiated, are handled by the NBC department known as Traffic.

Traffic's teletypes clatter night and day in piling up a staggering total of messages...enough to meet the daily telegraphic requirements of a city as large as Schenectady, N. Y., or Trenton, N. J.

75,000 messages a month . . . ordering, improving, testing, renting, buying facilities...grinding out a daily mass of operations, business and program details.

Yes, every "fax" and "fable" is

checked and double-checked before a program goes on NBC—whether it's a routine studio broadcast from NY, Chi, or San Fran or a pick-up from Algiers, Noumea or "lulu."

What's all this got to do with selling products by radio? A lot. Traffic's messages mold the network into a smoothness of presentation which would be impossible without all this advance planning and attention to detail.

* * *

It's the grand total of all these "little things" which has taught advertisers and listeners alike that they can rely on NBC . . . help give NBC its leadership and popularity . . . help make NBC "the Network Most People Listen to Most."

TRAFFIC'S CODE: CON (correction), NOUMEA (Pacific pick-up point), LULU (Honolulu), CAMP CALLEN CAL (Camp Callen, Calif.), FEED (send), REG (regular), FAX (facilities), MIKE LEAD (one-way circuit), FABLE (high-grade leased wire).

National Broadcasting Company

America's No. 1 Network



Regarding Mr. Hiller's Foot

By Bert Pruitt

IT USED to be a good old Oriental Custom to wrap the feet of the fair sex with tight bandages. This was usually done at a tender age . . . the idea being to keep those dainty little feet from becoming too large. We cannot recall having read anything about anyone wrapping one foot only. That being the case, we doubt if that's really the reason why Mr. Hiller came to Cleveland with his left foot wrapped. We checked that point thoroughly. We



Harry Hiller and George Riley.

measured the length of his right shoe by the one I was wearing. I wear 12's and a half and as near as we could judge Mr. Hiller's shoes must have consumed the other half of the cow they used in making the shoes I was wearing. The Chinese custom was merely to prevent the feet from growing—it didn't ungrow them.

The mystery of Mr. Hiller's foot gave us many anxious moments. The mystery got deeper the longer he remained in Cleveland. Rumors were seven cents for twelve. Mr. Duke said a rumor in New York went something like this: The ET situation got so hot it scorched Hiller's foot. That sounded a little far fetched inasmuch as the ET fireworks took place in Washington while Hiller was in New York.

Another rumor, one from West of Denver, went to the effect that a New York design engineer invented a new type flame thrower and used Hiller's left foot as testing grounds. Harold Brandt had a story entirely different from the one West of Denver. Brandt's version was as follows: They were putting on a program from Studio H in New York during the first week of October. The setting of this scene was a wooded spot somewhere along the Yukon Trail. Three studio engineers and a television engineer were on the verge of starvation. Well, they found a bear trap at the crucial moment. Whoever lost the trap had evidently kept it well oiled with seal blubber. The spring was found to be in perfect working order and free from rust. The three studio engineers got a log and sat astride it to hold the spring down while the television engineer sat the trigger. They were just rolling the log from the spring when an announcer dashed into the studio shouting:

"Cigarettes! They're on sale downstairs in the drugstore!" The starving engineers disappeared through the studio door and Mr. Hiller, unfortunately, stepped into studio H and put his left foot where a bear should have put any one of his four feet.

Which one, if any of these stories is true, no one here in Cleveland seems to know. Perhaps Editor Stolzenberger could add a few lines and make it possible for us to get a good night's sleep without worrying about the Hiller mystery.

NEW YORK NEWS

(Continued from Page Eighteen)

radio parts, George Vose, SE, will be only too happy to go to Harveys on his lunch hour and purchase them for you. What's that? You don't say. Oh, you do. O.K.—Sorry folks, George says that he has gone to Harvey's Radio Parts Concern so much lately that they no longer let him into the store; so I guess that if there is anything that you want, you will have to go get it yourself. The Old Saying, "LET GEORGE DO IT" is no longer true.

Harry Hiller back from the convention and again at home with feet trouble. It seems that when he left for Cleveland he thought that it was cured and while in Cleveland the infection returned and the salve that he was unable to purchase in Cleveland caused the infection to increase instead of decrease.

We notice in the Hollywood News that they know what SE-FE-MCD and TE stand for, but the four letter titles such MTCE throw them for a loop. Well, boys, MTCE stands for the honorable pursuit of trouble, "MAINTENANCE".

It is reliably reported from the MTCE department that one of the MTCE group, by name of Mel Lewis was deprived of his pants one nite by two other MTCE engineers, because he did not agree with them as to the time of the day or something like that. TSK, TSK, I bet he looked funny.

Christmas is on its way and before long New Year's will be here also with its attendant parties and the day after. And so from the New York Chapter to all other NABET Chapters and to all NABET Personnel in the service of his country—"A very Merry Christmas and a Happy New Year."

NEW YORK BLUE

(Continued from Page Eighteen)

outfit was called "The Halo Kids" because after their first six missions, they were given a day's rest and next crew to fly their plane never returned. Then after five more missions, they got another day off and the relief crew went down over Nazi territory. After several more missions the same thing was repeated. "Red" is glad to be back with Pop and Mom again.

It's time to sleep off the election, so until next month, a very Merry Xmas from the BNCE Engineers to all other NABET Chapters.

FLASH NEWS—Since writing the above, the details of the Election night broadcasts are available. Paul Green and Gil McDonald handled the Network feeds from 3A with Ed. Watkins as relief. WJZ local cutins were handled by Al Hayward with John Butler as relief. A total of 127 switches were handled during the evening. The 3A boys were aided by George Milne and Bill Trevarthen who stayed with us until we closed down after 3:30 A. M.

This Is K - E - C - A » « By Norman Dewes

KECA—the Blue's newly acquired Southern California outlet is one of Los Angeles' oldest established radio stations, having been owned and operated by **Earle C. Anthony** for over fifteen years prior to its sale to the Blue in May of this year. The call letters are the initials of the former owner, who is one of the West's largest automobile dealers, known for many years as "California distributor for Packard motor cars". When purchased by Anthony, the station's call was KPLA and the location the Commercial Exchange Building in the heart of downtown Los Angeles. This was in the days when "good" locations were on top of the highest and most centrally located office buildings or hotels available, and broadcasters were unaware of blanket areas, vertical antennas and the value of out-of-town sites. Metropolitan stations were fewer in number and interference problems correspondingly less, so KPLA's tall towers and "T" antenna were to be seen against the skyline in company with those of KTM, KFI, the Bible Institute station KJBS and other pioneer Los Angeles stations.

When Mr. Anthony decided to expand his radio activities by the addition of a second station, KPLA was purchased and the transmitter later moved to the new Beaux Arts building. Studio operations were combined with those of KFI, which had been doing business at 10th and Hope Streets, Packard headquarters for Southern California, for many years. New call letters were secured and the new Anthony station began operation in 1929 with a Western Electric 6-B 1000 watter.

Ten years later Anthony again took a major step of expansion and purchased KEHE, station, facilities and frequency. KEHE had been a part of the **William Randolph Hearst** radio interests and was being operated by the Los Angeles Evening Herald and Express. Hearst had decided to drop his radio activities and Anthony became the proud possessor of the new and modern studios on Vermont Avenue. He promptly moved out of the old 10th and Hope location where he had been for nearly twenty years, and set up combined KFI/KECA operations in the

new studios which were enlarged and remodeled to accommodate both stations. Both station transmitters were now out of town, KFI having built their fine new RCA 50,000 watter out in Buena Park and KECA's having been moved to 81st and Compton Avenue: In taking over the Hearst station, KECA relinquished its old frequency of 1430 Kc to adopt the more favorable one of 780, which was changed on Radio Moving

facilities, shop, and an adjoining room where the old faithful W.E. 6-B is kept warmed up for standby use. The station has a directional antenna system of two towers and operates with 5 KW full time on the III-A regional channel of 790 Kc.

The Blue had sought a Los Angeles outlet since shortly after the purchase of the network last year by **Edward J. Noble** and associated interests, as part of expansion plans. Negotiations were carried on over a period of several months, culminating when the F.C.C. denied Anthony's petition for extension of the disposal date under the dual-ownership ruling, and set for hearing renewal applications of both KFI and KECA. The sale was approved by the Commission in July of this year, for the handsome purchase price of \$800,000, for which the Blue received the transmitter and associated gear, building and property, frequency, good-will and a watchdog whose history appears elsewhere in this issue of the Journal. No studio facilities were included in the deal and studio operations remain in conjunction with those of KFI until new quarters now under construction are completed. The new facilities will be in the remodeled Blue Playhouse building at Sunset and Highland Avenues, several blocks up Sunset Boulevard from Radio City.

The staff of engineers at KECA's transmitter include **Rex G. Bettis**, Chief or Station Engineer, and Transmitter Engineers **Jonathan L. Smith**, **Joseph F. Dessert** and **Ernest E. Sams**. These fellows are the first to work under this classification for NBC or the Blue in Hollywood. **W. M. Thornton** is station watchman. The crew began their association with the Blue on September 1st of this year, a month following the Blue's official taking over of the station.

Station Engineer **Bettis'** radio experience dates back to service in the Navy in 1917, followed by operating and installation work for the RCA Marine Division. He has been with **Earl C. Anthony** since 1932, except for a two year period of service in government Radar work. **Joe Dessert** also was out to sea for many years with Mackay and Radio-Marine, and worked with several Southern California broadcast stations including KFI before coming



HOLLYWOOD TRANSMITTER ENGINEERS
KECA—Blue Network Co.

(Left to right) **Joseph F. Dessert**, **Ernest E. Sams**, **Jonathan L. Smith**, and **Rex G. Bettis**, Chief Engineer.

Day in March, 1940, to the present one of 790 Kc.

The present KECA transmitter and much of the associated equipment is the former KEHE rig, of which Hollywood Blue engineer **Fred Ragsdale** was Chief Engineer at the time of the sale. **Rags** made the initial installation at its present location in Radio Row in the southwestern outskirts of Los Angeles, near the sites of KHJ, KFWB and several other local stations. The transmitter is an RCA 5-C, with RCA and Western Electric auxiliary equipment, the whole housed in a modern one-story structure complete with bachelor housekeeping

with KECA in 1942. Joe is an Electrical Engineer, having completed courses at Oregon State and USC.

Ernie Sams is another radio old-timer, having started out like most of us in marine radio, back in 1917. He has worked for a number of broadcast stations, coming to KFI/KECA from an Arizona station in 1942. The fourth member of the KECA engineering crew, **Jonathan Smith**, has been with KFI/KECA in various capacities for fifteen years, and is well-known in Los Angeles radio circles. He became an Anthony employee when Mr. Anthony made the original purchase of KPLA in 1929. A picture of these four handsome gentlemen taken at the transmitter building accompanies this story.

The addition of **Bettis, Dessert, Smith** and **Sams** increased the staff of the Hollywood Blue engineers to a total of fifteen men, at this writing. The group has grown from the original six, namely **O'Kelly, Lorenz, La Croix, Cunningham, Williams** and **Denechaud**, who found themselves on the Blue's operating forces when the Red/Blue split occurred in February, 1942. Of the original charter members, only **Lorenz** and **La Croix** are on the present staff, **Cunningham** and **Williams** having left for war activities and **O'Kelly** having recently transferred back to NBC. **Ralph Denechaud** is now Engineering Manager for the Blue in Hollywood. Further staff additions are anticipated as soon as KECA's new studios are completed.

If you're ever out this way, drop in . . . the boys will be glad to see you.

Harco Steel Construction Co., Inc., of 1180 E. Broad St., Elizabeth, N. J., has made available a well illustrated 24 page catalogue of various types of masts and towers, which should be of interest because of unusual features, construction features, etc. Harco will be glad to send a copy of the catalogue to engineers and executives writing on their business letterheads.

Universal Microphone Co., Los Angeles, in October observed its 16th birthday. During this period it has had only two presidents. Its advertising counsel, **Dr. Ralph L. Power**, at the same time observed his 22nd anniversary in radio. He left a professorship at USC in 1922 to be a pioneer radio announcer. Later he set up his own counselling suite and has been at the same location 14 years.

A

A



ALLIED

*The Name to Remember for
Quality in Recording Discs*

ORDERS SHIPPED PROMPTLY

ALLIED RECORDING PRODUCTS COMPANY

21-09 43rd Ave., Long Island City, N. Y.

Phone **STillwell** 4-2318

Cable: **Allrecord**, New York

Hudson Chapter NABET News

By Richard H. Davis

WOR Mutual Election Headquarters

ELECTION DAY, November 7, 1944, was the day, Studio No. 1 WOR was the place. Here a Master Control, Studio, News Room was assembled in order to handle the returns as they came in over news printers, telephones, and reports from points along the Mutual Network.

From where you are sitting in the control engineer's chair it looks this way. To your left there in front of the PL panel is Dave Driscoll, the head of WOR War Services

The fader next to it is for any special pickups that MC may set up for you.

There are also pickups at Hyde Park and New York for candidate's remarks when the results are conceded.

The cue sheet also shows that we will hear from Mutual Stations at Chicago, Baltimore, Boston, Cleveland, Louisville, Memphis, St. Louis, Philadelphia, Pittsburgh, Minneapolis, Denver, Washington, Los Angeles, Honolulu, New Orleans, and Houston.

Also, standby orchestras from the Roosevelt, Commodore, Edison, and Dixie Hotels. The Meadowbrook, Zanzibar, Village Barn were available in case they were needed.

Focal point of WOR-Mutual Election Coverage was this WOR-Mutual Control Desk. All of the switching was done at this point and constant communication maintained with all points from which programs originated—This included key cities in the country and pickups from overseas.



At the desk are (left to right)—Sam Morse, Gene Clark and Dave Driscoll, Director of WOR'S War Services and News Department, who was in charge of the entire operation.

and News Division. He sifts the reports as they come in and indicates what the next step is to be. To his left are the battery of News Commentators. Prescott Robinson who acts as M.C. is there, Archibald Crosley who conducted the Crosley Poll, Cecil Brown, Fulton Lewis, Jr., Gabriel Heatter, Henry Gladstone, Frank Singiser, and Arthur Hale. You see the tabulators and messengers scurrying about to keep the big blank board which covers the entire wall on your right up to the minute. At your back when the news men get out of the way you can see the six news printers from all the news sources. As you ride gain you note your assistant control engineer on your left who keeps the general levels even and coordinates the switching operations with Studios 3, 5, 10, and Master Control.

Noting the labels on the faders in front, you see that the GOP Headquarters at the Roosevelt Hotel; Democratic Headquarters at the Hotel Biltmore are set up. Also, you have an over-seas position on which will arrive reports from Rome and France for a "GI's reaction" on the election. You note on your cue sheet that a pick up from Hawaii will be on with some comments on what the Navy thinks. O, yes, and this fader is for the special pickup at Times Square where the world's greatest election crowd gathers.



WBAM, WOR's FM Station, stayed on for the entire show.

The facilities and arrangements under the direction of Mr. J. R. Popple, Chief Engineer, were handled by Messrs. Content, Hadden, Boyle, and Harkins. Practically all the engineering department was used during the night with as many as 20 engineers being on the alert at the various pickup points.

In all, it was the biggest, most completely covered one night job for WOR and Mutual.

Dick Quodomine, TE, vacationing up above Lake George, N. Y. Fishing . . .

Ed. Franke, TE, now out in the Pacific to report coming events as he and Larry Meier did, covering the invasion



"And now, just back from the Pacific, WHIZZO SHAVE CREAM reporter says"—

of Normandy. Had a picture of him at Hawaii and he left before we could get a story, but having promise of one when he returns . . .

Bob Barkey, ex-FM, now in SC U. S. Army, can give us the other side of the invasion picture as he was in at Normandy or so we hear . . .

J. Tackash, TE, steamed up the other day in a new gas buggy, just like the old days when a guy got a new car. This wagon is not exactly new, but it has some "peachy" synthetics!

With elections, etc., arrived, Dick Borner and Ted Kasna of Maintenance, busy as beavers with election equipment.

The Recording department too busy with election et al. to have much personals except business. However, traffic signals necessary to keep all cutters going.

Paul Baldwin, Doug. Hawkins, Burt Simpson, Ray McEntee, holding down the fort election night.

HOLLYWOOD

(Continued from Page Twenty-one)

ready to fire up the boilers . . .

VALLEYARNS . . . the neighborhood drug store where the gal behind the tobacco counter releases cigarettes at the rate of ONE carton every half-hour . . . they always run out JUST as you get to be next . . . the guy next to us at the soda fountain who orders a "cheeseburger . . . hold the cheese" . . . picture-shows and eateries which open their doors only at night and do more biz than day-time competitors . . . from warworkers at nearby plants . . . the testing expert over at Lockheed test-firing the guns of new-born P-38's in the dark hours of the night . . . playing a Song of Death as he fires them in perfect tempo of marching drums . . . war-drums of the guys who serve at home . . . ad in Valley gazette, "For Sale: Love seat; makes into double bed. Also Colt 38, Officer's Model" . . .

QUICKIES . . . George Foster, SE, back from trip to Juarez with Benny . . . tells of seeing some VERY interesting FLOOR shows . . . Murphy on same trip and CLEANING UP with his system at the gaming tables . . . Hal Platt, Field, getting rides in the very new jet-pro-

pulsion planes . . . lucky guy . . . sez you climb in, the pilot turns on the "motor" and before you can look around, you're OFF and UP, from a cold start . . . Julius Riekeberg, SE, "shooting it along" . . . now that we've FOUND OUT that "Rick's" handle is "Julius," wonder if he likes ORANGES especially . . . Blue announcer Reed Browning saying over the radio on an organ show that " . . . an engineer is a fellow who thinks a Barcarole is a dog biscuit . . . " . . . the CAD . . . Jake O'Kelly reporting that a Research Foundation is planning an Ultra High Freq lab at Laguna Beach . . . more dope later . . . Benvenuto, the Wise One an adept at making LITTLE THINGS . . . puts together very tiny hearing aids in spare time . . . Field Super Joe Kay back from vac . . . morning Maintenance boys Al Gage and Lew Winkler getting nice experience in STUDIO operation starting early ET shows for tardy studio men . . . mentioning NO names . . . just received a VERY nice letter from Lt. R. O. Brooke, USNR . . . is up at Mare Island neck-deep in Radar and associated activities, about which we had better not say as the War isn't QUITE over yet . . . sez he missed the gang down here and catches some of our stuff on the wireless once in a while . . . ALSO sez some VERY nice things about our column, which coming from an old columnist like HIM are very nice indeed . . . motorcycle stories will have to keep 'till next month, as our space quota probably over-drawn already . . . anyway, gotta get busy on YEARBOOK copy and ads . . . BCNU.

From WPTF

Five of WPTF's distaff members photographed while on tour of the 50,000 watt transmitter located at Cary, N. C. In the usual order they are: Mary Susan Woodall, continuity; Betty Lou Hamilton, transcribed continuity;



Fay E. Biggs, publicity; Betty Rose Thomas, traffic, and Eleanor Royster, receptionist. The tour was conducted by chief engineer, Henry Hulick, who was ably assisted by transmitter engineers Waldo Rood and Joe Stephenson.

From Rochester, New York

By Arthur Kelly

NABET Grants Charter to Newest Chapter at Rochester, N. Y. WHAM, WHEC, WSAY Operators Join. Contract Negotiations Start Soon. Charles Fisher Snyder Elected Chairman at First Meeting

OPERATORS at Rochester's three broadcast stations have joined NABET one hundred percent. Official recognition has been granted by NABET through issuance of a Chapter charter. The Rochester Chapter hereby makes its bow.

Made up of operators from WHEC, WHAM and WSAY, the Rochester Chapter has a membership of thirty. First official business of the Chapter was the election of officers. Charles Fisher Snyder of WHAM was elected Chair-

man. Howard Mouatt of WHEC, Secretary-Treasurer. Salvatore Tomaselli was chosen Councilman for WSAY. Francis "Fran" Sherwood represents the WHEC transmitter gang and Craig Williams the WHEC Control Room. At WHAM, Fred Ambrose represents the Control Room. Donald Anderson heads the Frequency Modulation division while E. "Yo" Seiler fronts the transmitter group.

Of this new group of NABET stations, WHAM is a 50 KW Clear Chan-



Charles F. Snyder

nel station. Owned and operated by the Stromberg-Carlson Company, WHAM is an NBC affiliate. Stromberg-Carlson also operates WHFM, a three kilowatt Frequency Modulation station whose operators are members of the WHAM family.

Station WHEC is a Regional Station owned by WHEC Inc. Operating one kilowatt days and 500 watts nights, WHEC is a Columbia affiliate. Station WHEC also operates 3 Kw. Frequency Modulation Station WHEF.

Station WSAY is Rochester's Local Station operating as an affiliate of Mutual. WSAY is owned and operated by the Brown Radio Service and Laboratories.

The story of Rochester joining NABET is largely a tribute to Al Powley. The gang knew of NABET and was interested in hearing its story. Al stopped off in Rochester and spent an evening explaining what NABET stood for. His sincerity in presenting the story of NABET deeply impressed the boys. This bit of nice presentation,

SINCE 1922

SUN RADIO

HAS BEEN
America's
MOST COMPLETE
★ *Source of Supply* ★
for

RADIO PARTS • TUBES
INDUSTRIAL ELECTRONIC EQUIPMENT
AMPLIFIERS and SOUND SYSTEMS
BROADCAST and COMMUNICATIONS APPARATUS
F/M — television — A/M

★
IMMEDIATE DELIVERY FROM STOCK
ON OVER 10,000 ITEMS!

Write on your company letterhead for FREE 800 page catalog

SUN RADIO 212 FULTON STREET
& ELECTRONICS CO. NEW YORK 7, N. Y.
Tel. BArcley 7-1840

plus a story that seemed to answer all our questions was the reason Rochester signed up almost immediately one hundred percent for NABET.

At present all three stations are busy with the details of drawing up their respective contracts.

Charlie Snyder has been with WHAM for fifteen years. He has served as transmitter operator, Control Room operator and field man. He is six feet, five inches tall and recently married. His hobby is "ham" radio. He has been on the air since 1926 using the call WSATH. His present rig (closed down, of course) is a kilowatt job on 20 with directional beam antennas for any one of five directions.

DOINGS IN DENVER

By George Pogue

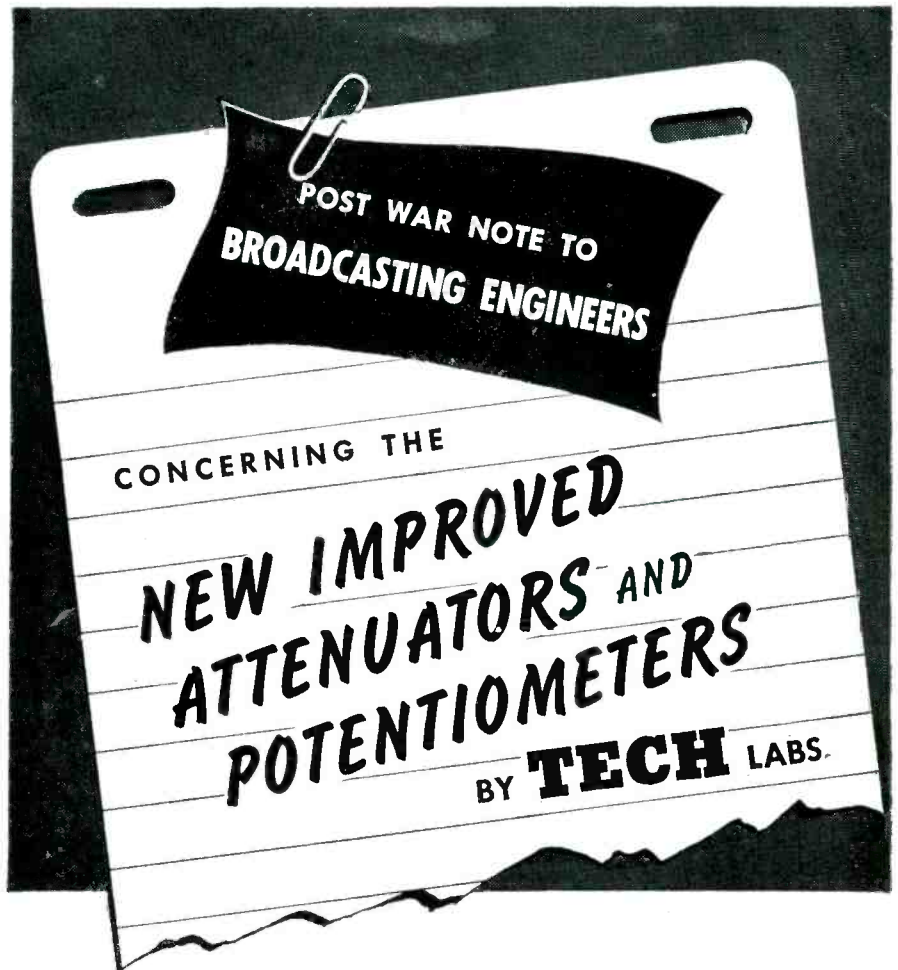
GREETINGS from the gang at KOA in Denver! At the time of this publication KOA will be making big plans for its twentieth anniversary. On December 15th, KOA will be celebrating its 20th birthday. We are proud that we have many of the engineers who started in 1924 still on the job; there are **Bob Owen**, engineer in charge at KOA; **C. A. Peregrine**, **Walter Morrissey**, and **Carl Schuknecht** at the studio, and **Lieut. Commander J. A. Slusser** (now on leave to serve in the navy), and **Francis Nelson** at the transmitter. More about our plans in the next issue.

We were glad to have received a letter from **Lieut. Commander Glen Glasscock**, former studio engineer. He is now with Uncle Sam in the South Pacific. He says he is quite busy, being in charge of the personnel and equipment of a group of navy stations in that area. We pass along the info to him that it was the musicians' union and not the announcers that wanted to spin platters.

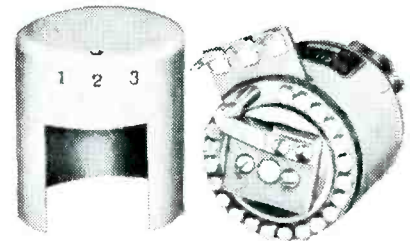
In hunting deer or elk, if all else fails, why not try a sling shot? So says **Douglas "Pinkie" Kahle** (SE). At any rate he came back with a mighty ragtime piano playing including trick endings. Ex-engineer **Charlie Butler** and now **BLUE Producer** is planning a special coast to coast debut of Concert

(Continued on Page Thirty-one)

Broadcast Engineers' **29**
Journal for Dec., 1944

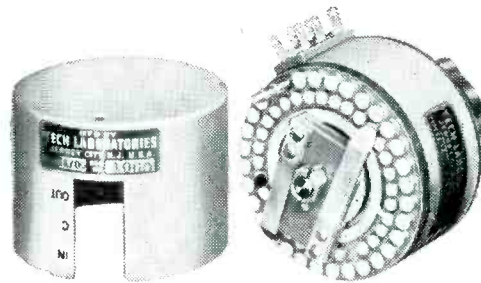


All our modern production facilities, manpower and materials are engaged in supplying our armed forces with quality electrical resistance instruments. Once the Victory has been won, Broadcast Engineers everywhere can rely on Tech. Labs. for prompt shipment on precision attenuators and potentiometers.



TYPE 600

- Stainless silver contacts and wiper arms eliminate the necessity of frequent cleaning and result in less noise.
- Better insulation and moisture proofing result in superior performance.
- Improved mechanical construction — pinned rotor hubs and detent gears—results in longer trouble free operation.



TYPE 700



MANUFACTURERS OF PRECISION
ELECTRICAL RESISTANCE INSTRUMENTS

15 LINCOLN STREET, JERSEY CITY 7, N. J.

Chicago Chapter Chatter

By Arthur W. Hjorth



Photo by R. R. Jensen

NBC Maintenance Department announced a production recently when Michael Wallace Schooley arrived at "high" noon, Sunday, October 15th to Rose and "Bill" Schooley. Bill works midnite to eight a. m.

S. E. on leave, Lt. Hockin breezed thru Chicago one recent Tuesday on his way to Los Angeles.

BLUE S. E. Harry Eckland used his late vacation to make a good-will tour

of NBC points at Hollywood, Los Angeles, and Denver. Sez he covered 6,000 miles on his motor scooter.

Halloween party given by the NBC AA at the Swedish Club was attended by the younger set of rug cutting NABET members, including "Bill" Beeson, Glen Webster, Chuck Corliss,

Pete Cavanah, Ralph Knowles, "Dave" Davis, Joe Rife, Ed Holm, Bev Fredendall, H. G. Newbower, Harold Jackson and Art Hjorth, who was shooting off his face and his flash bulbs. Bob Fitzpatrick and Don Howser of the "Q" transmitter were not present. R. A. Mingle and Don Schroder were.

WBBM transmitter reported Blue station wagon parked for days near their transmitter out in the middle of the prairie with 'nary a soul around. Were worried until they learned that the pheasant season was open.

Despite desperate efforts of his many friends, J. Ralston Miller didn't get quite enough votes to seat him as congressman on the Prohibition ticket for the 1st independent district. He will run again in 1948, 1952, 1956 . . . and on . . . and on . . .

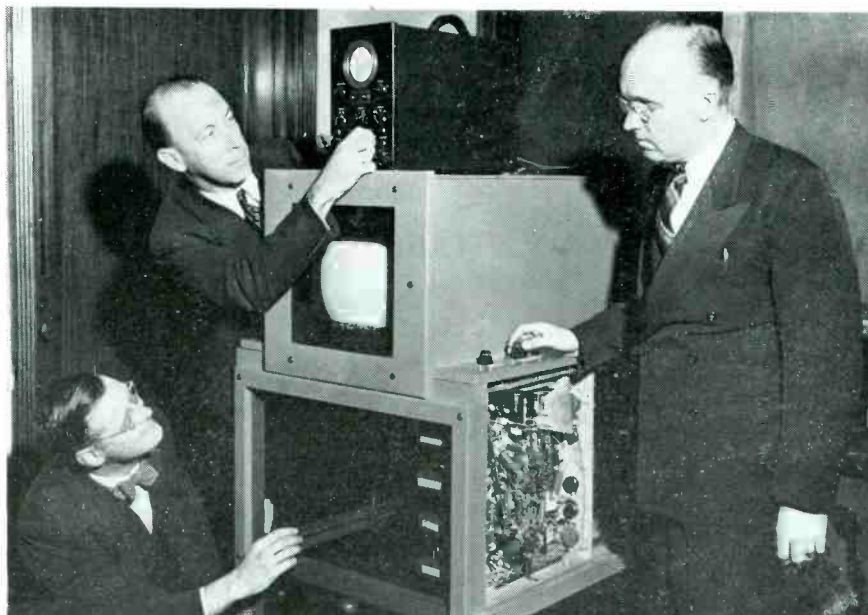
Jim Platz has sold his seventeen cubic inch concrete mixer. He has also sold his piano to Ralph Knowles. Jim Platz bought another piano. Jim Platz has recorded no other transactions during this period.

George Maher and family have taken to the country. Just as soon as he can round-up some of the cattle on his three-fourths acre farm at Lake Bluff a barbecue is planned for the Chicago gang.

Ralph Brocks has put his yacht in drydock for the winter and paid off the crew in bottle caps last week.

Jim Lato of the BLUE is diligently working on Dave Minor's course in

Chicago's NBC Division Engineer HOWARD LUTTGEN's interest in the RCA Television classes being conducted by Instructor CLARENCE RADIUS resulted in the design of a special demonstration model receiver by Maintenance Supervisor W. F. LANTERMAN and its construction by 'MARTY' MARTIN. Pre-class alignment of this television unit is demonstrated by (left to right) Marty Martin at the diagonal sync pulse control, W. F. Lanterman fiddling with the 'scope, and Instructor Radius just fiddlin'.



Pianoist Lato at 3 a. m. some day.

Lou Heiden is designing the first hush-hush model of his high fidelity phono amplifier without the use of valves.

Chairman Bev Fredendall was elected vice-president at the NABET National Council meeting recently held at Cleveland. He also caught a cold.

DENVER

(Continued from Page Twenty-nine)

fine buck last week, after having spent his whole vacation without getting a shot. Pinkie's method is as follows—quote: "You climb up on a mountain with a sling shot (Beanie to you) and a gun. Then with the sling shot you shoot rocks into the underbrush and out comes the deer! He comes right toward you so you just take your gun and shoot him."—unquote!

Russ Thompson (TS), our chapter chairman, is back from Cleveland and the NABET convention, with the sniffles. On his way back he stopped off at Minneapolis to visit relatives and friends. Minneapolis is the old home town where Russ started his radio career many years ago. He says that he had a grand trip even if he did end it with a cold.

Vacations have ended for the transmitter gang, and Dave Jobe, summer relief engineer, has left for New York to work for Western Electric. Good luck, Dave! Vacations at the studio are still on, however, and George Pogue now on his, can be seen spending it—where? Down at the studio with a Yearbook contract in one hand and a club in the other! Beeznis-s-s iss-s goo-od!

Aubrey Blake (SE) is the modern Pied Piper of the 5th floor of the NBC building, except his game are mice not rats. He has been setting mouse traps (not Fibber McGee's) in MCD and studio "D" control. He is doing fine; to date he has caught three mice and two engineers. After all, cheese is rationed, isn't it?

1945 Winter Technical Meeting of the
I R E

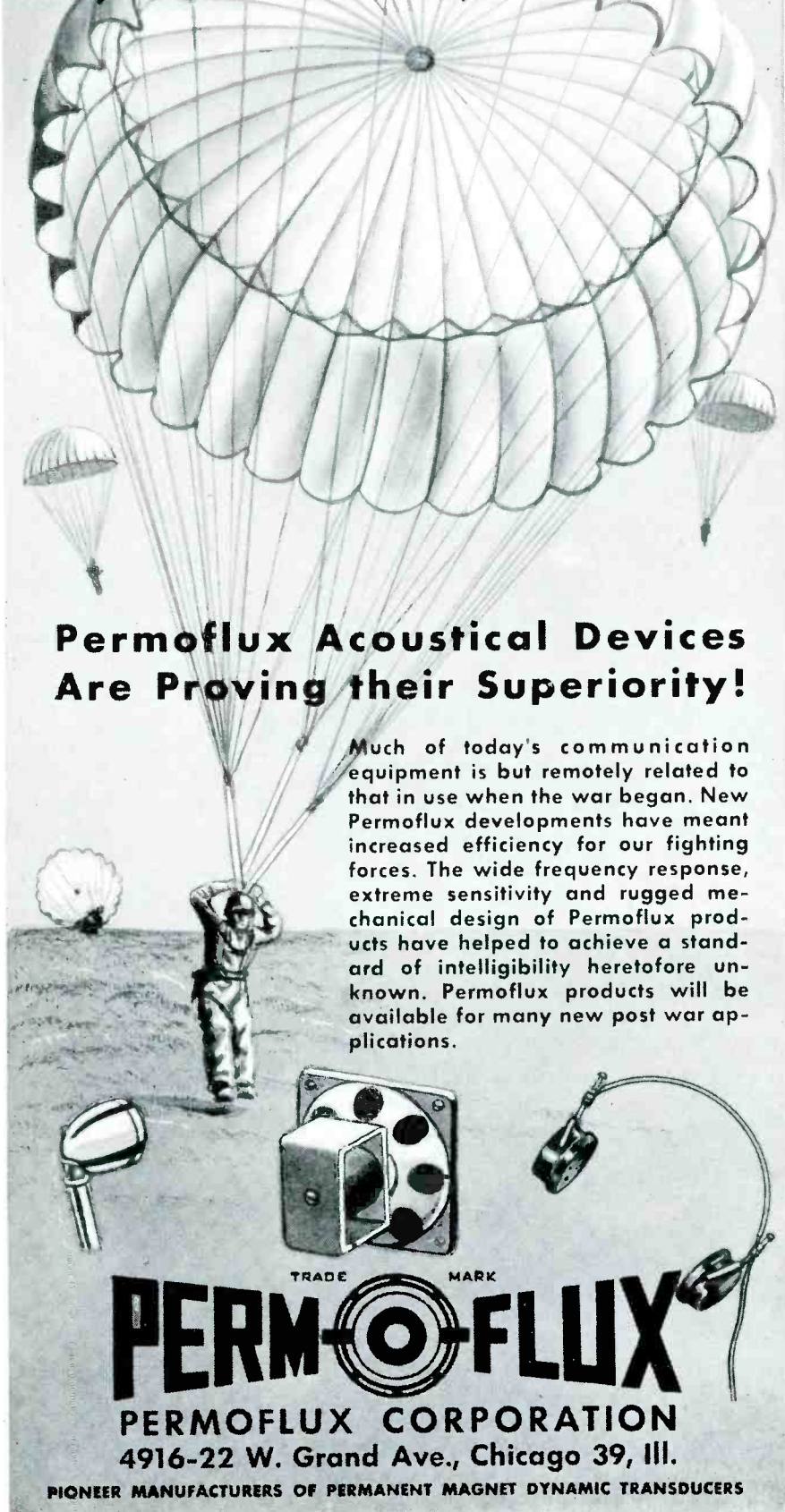
January 24, 25, 26, and 27

Hotel Commodore New York 17, N. Y.

Technical Sessions, Banquet, Exhibit,
Cocktail Party, Etc.

Electronic developments are winning this
war — support the IRE! —Ed S.

Where
Dependability Counts



**Permoflux Acoustical Devices
Are Proving their Superiority!**

Much of today's communication equipment is but remotely related to that in use when the war began. New Permoflux developments have meant increased efficiency for our fighting forces. The wide frequency response, extreme sensitivity and rugged mechanical design of Permoflux products have helped to achieve a standard of intelligibility heretofore unknown. Permoflux products will be available for many new post war applications.

TRADE MARK

PERMOFLUX

PERMOFLUX CORPORATION
4916-22 W. Grand Ave., Chicago 39, Ill.

PIONEER MANUFACTURERS OF PERMANENT MAGNET DYNAMIC TRANSDUCERS

CAPPS*

SAPPHIRE is, and has always been, the only material for making cutting styli for high class recordings.

CAPPS* Patented Sapphire Styli (2187512) are the original and accepted standard for high class professional acetate recordings.

Imitated but not equalled

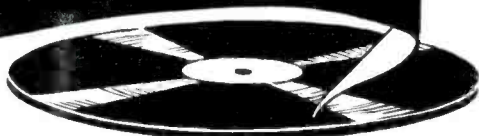
FRANK L. CAPPS & CO.

244 W. 49th STREET NEW YORK CITY

Telephone Circle 6-5285

* Reg. U. S. Pat. Off.

DIRECT-CUT COPIES



OF YOUR RECORDINGS

33 1/3 RPM transcriptions for broadcast or audition use.

24 HOUR SERVICE

—packaged and shipped to your station list from Chicago.

Aluminum based material available where transcriptions can be returned after use.

Write for complete details and prices.

L. S. TOOGOOD

RECORDING COMPANY

223 N. LA SALLE ST. CHICAGO 1

NABET Convention Facts

(Continued from Page Four)

as it's common knowledge this fluid comes from a lake which is the Fountain of Youth that was directly responsible for causing so many explorers to age twenty years with the passing of each decade while unsuccessfully seeking it's beautiful shores. He said he had a hazy recollection of having read something about this Fountain of Youth when he sat at his desk shooting paper wads from behind the sacred pages of his history book. We then asked him if he recalled how Captain John Smith stood on the shores of this Mid-west Fountain of Youth and drank a Lake Erie toast to all the radio men who ever attended a NABET Convention. He dropped his fork and just at this crucial moment the waitress, who may not have been a university graduate, exclaimed, "You'se guys give me a crink in the fanny . . . either order something or go take a swim in your Fountain of Youth!"

A bright idea smote me a right to the cerebellum as we hurried back to the Hollenden hotel. It's a well known fact that many writers have made a literary grand-slam by telling their readers what big-shots eat for breakfast. "Just the thing," thinks I, turning to a delegate who makes his living twisting knobs out there west of the Great Divide . . . "Sir," says I, "do you prefer grape-nuts or cornflakes for breakfast?" Well, this delegate stops dead in his tracks and gives me a look that made my sixth sense telegraph a message saying I should not be surprised if a cold wave suddenly appeared in Cleveland. The cold wave hit when this delegate explained that he is the regular engineer on a Wheaties program.

All of which goes to show you can put your feet in your mouth and still have two feet on the sidewalk in front of the Hollenden Hotel.

W M R N, Ohio

(Continued from Page Seventeen)

original equipment installations and tests.

WMRN has built the station's reputation on public service which includes many remotes from downtown and from all the small towns in the listening area of WMRN. They carry all of the out of town and home football and basketball games played by the local high school.

WMRN makes it a cardinal rule to always maintain a high standard of programming, with network timing on all programs, no matter how small. The engineers have complete charge of all equipment including turntables and mike switches. WMRN acts more or less as a training ground for inexperienced announcers and engineers and can now boast of many former employees who are now working in larger stations throughout the country.

WMRN became a member of the Blue Network on June 1, 1943. They subscribe to both Standard and The-saurus transcription libraries, and they have special UP news service.

In closing we wish to thank Mr. Morrison for furnishing us with the pictures and material. Oh, yes, Mr. Morrison's full title is Vice President of the Marion Broadcasting Co. . . . Chief Engineer and Assistant General Manager.



Announcers Joseph Mulvihill and Bill Mayer; producer Gene Lavelle looks on.

FORE!

By Bert Pruitt

A PICTURE of WTAM's 1100 Club appeared in the BEJ two years ago. With the appearance of the picture we mentioned the fact that manager Vernon H. Pribble had generously furnished the male employees with ample space for a clubroom. The idea being to have a place where announcers, musicians, salesmen, production men, engineers, etc., could go for a friendly game of pool, ping pong or penny ante when they weren't busy broadcasting.

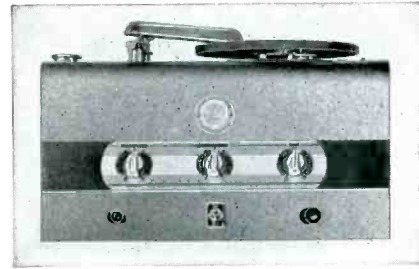
Each of the fellows kicked in with three bucks which went for the purchase of pool, pingpong and card tables plus the necessary gadgets to go with the tables.

Well, things were perking along in fine shape until the birds began to tweet this Spring. WTAM's golfers began to tweet right back . . . "How come," said they, "that we have pool tables, card tables and ping pong but no driving range?"

That question, as everyone agreed, was a logical one to come from our dyed-in-the-wool golfers. Some of the fellows went into a huddle and out of this huddle came the idea of fixing up a driving course in one of our unfinished studios.

Our rabid golfers rigged up a piece of canvas to stop their mighty drives. Then someone got the brilliant idea of arranging the canvas so it would return the ball to the driver. That was only about 50 per cent efficient, so Bob Oatley, our Music Librarian, immediately designed a trough shaped gadget. This gadget works as follows:—you drive the ball into the canvas and the canvas guides the ball into the trough which in turn brings the ball back to the driver. If someone will now design a gadget that will automatically tee the ball we'll all mention you in our wills.

20-WATT UNIVERSAL AMPLIFIER



Plug in for A.C. or 6-volt auto battery; no power pack necessary. Uses mike and built-in phono at same time. 78 RPM motor, 9-inch turntable, crystal pick-up, separate on-off switch. Long-playing needle included. Continuously variable tone control on inclined eye-level control panel. Use one or two 8-ohm speakers without need of extra transformer. Has one 6SJ7GT, one 6SC7, two 6L6Gs in push-pull, two 6X5GTs.

Model 6720, with tubes, F. O. B. New York \$56.28

Model 6721, same as 6720, less phono player \$42.87

TERMINAL RADIO CORP.

85 CORTLANDT STREET, NEW YORK 7, N. Y.

PHONE WOrth 2-4415

KFI-KECA Los Angeles News

By Ernest F. Wilmshurst

A "WHITE ELEPHANT" auction was held by the employees of KFI and KECA. The purpose of the auction-party was to raise funds for the Katherine Johnson Memorial Fund. Any reader not knowing the identity of Katherine, or Kay, Johnson, need only ask ANY employee of KFI or KECA in service either in this country or overseas, and I can assure you that a very fine tribute would be given.

The articles put up for auction were many and varied, and to you who haven't as yet attended a "White Elephant" auction, be it known that a white elephant is an article for which you have no particular use and for which, it is hoped, someone else has a definite use. Ergo! We put it up for sale . . . the bidding is very brisk . . . a good crowd is there (not as many as should have shown) but still a good crowd and a well heeled crowd too. Our take is \$450, which is not at all

bad. The company pays for the hall and the boss is every ready with a bid. The proceeds has in great part been already allotted toward the purchase of Christmas gifts for our men and women in the armed forces. Your reporter weaves his way up Vermont street at 2:45 a. m. in rather tangled possession of a hammock, a ukelele (with extra strings), a deck chair, a student's lamp and assorted glass and pottery ware. I did NOT bid on the packet of nude photos that my wife found in my gray suit the next day but I've surely seen that blonde model somewhere!

The system of bidding was called progressive. When an article was offered for sale, and as each bid was made the amount of the bidders raise (say 50 cents) was tossed into the pot. A person might bid three or four times for a total ante of say \$1.50 and end up by buying at a closing bid of \$12.

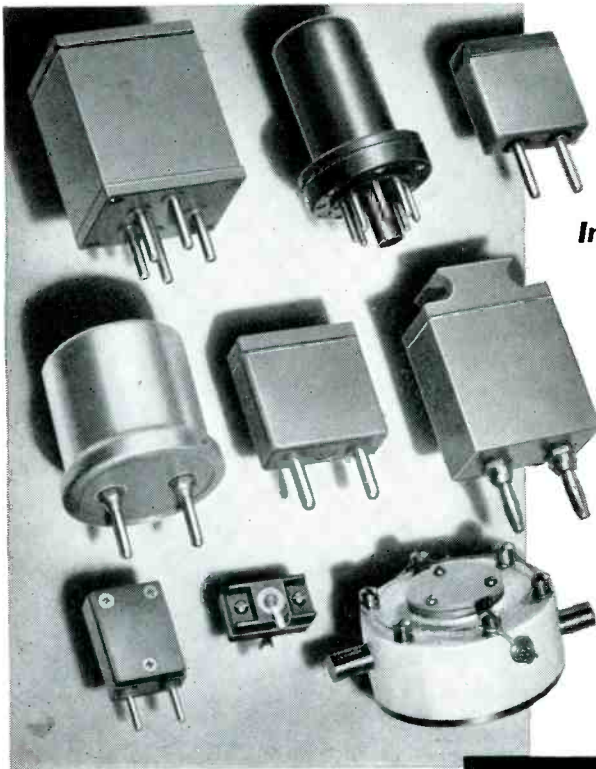
On the other hand you might make two or three bids and end up by not buying the article at all. A bottle of 20 year old brandy and 3 fifths of whiskey brot nice total bids. One purchase was a full set of Life Magazines complete from the first issue (Put up by Ed. Starr). Some very rare books were offered for sale as well as a nice super-het radio and some beautiful silver sets. To Mr. Robert Purcell goes a great deal of thanks for his work in making the auction a success.

Today brings a letter from Bill Erickson who is getting his I.O.'U.'s from the O.W.I. in London-in-the fog. His description of working foreign programs with foreign producers who are foreign to radio is very funny . . . but Bill should get along all right as he learned about producers in Los Angeles. Be a commando if you want, Bill, but please DO heed the Army pamphlets on unpasteurized milk and doubtful ash-trays.

Hogan's Hasty Star takes a blue ribbon . . . You say who is Hog—has— . . . who is STAR? He's a dog. A limey Bull dog. He belongs to Lyman Packard of the KFI transmitter. I knew Lyman was a deep-sea diver, an underwater movie expert and a good man on either end of a bottle but this is news that he's gone to . . . that he's a dog fancier. His pup took a blue ribbon at the Pasadena show . . . in fact when Lyman led his bashed-in-the-face Bull Dog past the judges' stand, it is said that the judge handed Lyman TWO blue ribbons . . . but Lyman, embarrassed, handed ONE back.

Pop Everett (who won't lend me his 8 mm projector) mentions that he finally has his outboard doing its stuff . . . he roared across the finish at Long Beach Marine stadium in fourth place among ten wild rough-racing competitors. "It was the carburetor mix that was causing the trouble," said Pop.

Post-war repercussions are already being felt by us. This month will find Carl Estep, John Hidy and Seymour Johnson back at the old stand. In fact Estep started to work Nov. 1st and Hidy was shaking hands right and left around the place yesterday. We expect Seymour any day. All of this sunshine isn't without its accompanying gloom for we bade goodbye to Tom Darling yesterday, the first post-war casualty. I understand Richard Taggart will also be displaced. Ray Walling, long a mainstay of the USN, passed thru on his way to take up duties in Washington, D. C.



In **QUARTZ**
CRYSTALS
*the most significant
advancements have
been introduced by*
BLILEY

Do more than before . . .
buy extra War Bonds

Bliley
CRYSTALS

BLILEY ELECTRIC COMPANY · UNION STATION BUILDING · ERIE, PENNSYLVANIA

FURTHERING SCIENCE

By Bert Pruitt

EMployees of WTAM are as scientific minded as college professors. At times you would be led to believe they have been bitten by the Scientific Bug. They see something of scientific significance in the most trivial happenings. We do not mean to imply that Byron Wade does things on a trivial scale. Far from it. When Byron does something he does it to perfection. He 'shoots the works' when it's his time to roll the dice.

We now pause for personality identification. Byron Wade is a regular guy. He knows everybody from Oskosh to Timbuctoo. He can be introduced to you today and call you by your first name when he meets you 17 years hence. He's as much concerned about the outcome of the war as anyone but he isn't getting stomach ulcers from trying to fight it from a horizontal position in the land of Nod. Byron Wade has a program here on WTAM called Personalities in the News. He's had a lot of programs on WTAM. He



(Left to right)—Scientist Byron Wade, Pie Plant Pete, Harold Gallagher, and Frank Whittam.

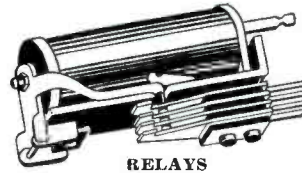
did a series of Sunday morning programs dealing with the history of famous men and women. That series ran for years and included everyone from Johnny Appleseed to Daniel Boone. He has the low-down on all of our ancestors.

The WTAM employees received cards from Byron saying they were expected to appear in the Gold Room. They were asked not to leave before 11 P.M. BI still has a thing or two to learn if he thinks a WTAM'er will give up before the last shot is fired!

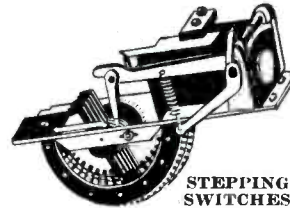
Something was brewing! What could it be? What had scientist Wade concocted? Discussions and theories were a dime a dozen in any studio or control room. One engineer said he'd bet Byron had invented a gadget that would make radar obsolete. An announcer said he suspected Byron was going to demonstrate the paralyzing effects of a secret fluid he had accidentally discovered. Byron, according to the

(Continued on Page Thirty-six)

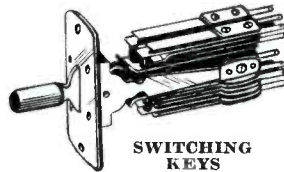
CONTROL APPARATUS by AUTOMATIC ELECTRIC



RELAYS



STEPPING SWITCHES



SWITCHING KEYS

IN AMERICA'S leading radio broadcast studios. Automatic Electric remote control devices are used for the dependable operation of such important equipment as master control boards and announcers' cabinets, for program monitoring and switching, and for other electrical control uses.

These devices have a built-in quality that is the direct result of over 50 years experience in the design and manufacture of communication, signaling, and control systems, utilizing the same engineering skill that revolutionized telephony with the automatic dial telephone.

A complete engineering and consultation service is available to broadcasting studios on any electrical control problem. Avail yourself of this service today by writing—

**Automatic Electric
Sales Corporation**

1033 West Van Buren Street
Chicago, Ill.

AUTOMATIC ELECTRIC

TELEPHONE, COMMUNICATION, AND SIGNALLING EQUIPMENT

Aaron Lippman & Co.

246 Central Avenue

Newark, N. J.

Radio and Electronic Equipment

We Expedite — Ask Anyone

**Courmettes & Gaul
OPTICIANS**

55 West 49th Street

R. C. A. Building (Main Floor), New York

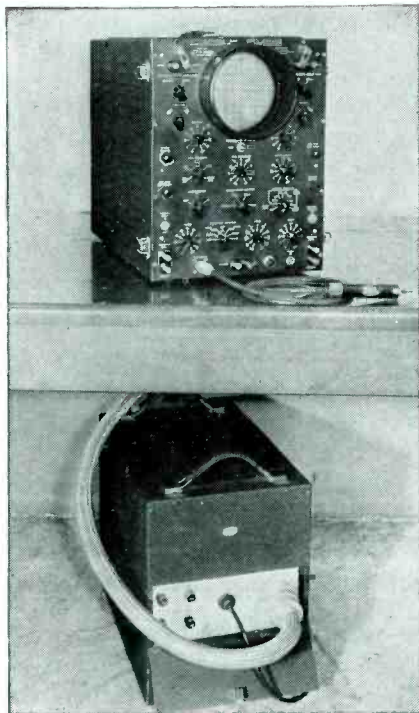
EYE EXAMINATIONS

Prescriptions Filled . . . Prompt Repair Work

Invisible Contact Lenses Fitted

A Wider-Range Oscillograph at Moderate Cost

THOSE heretofore restricted in their oscillographic studies by the inadequate performance or the prohibitive cost of existing equipment will be



especially interested in the Type 248 oscillograph recently announced by Allen B. DuMont Laboratories, Inc., Passaic, N. J. The designers claim that this instrument removes the obvious deficiencies in commercial test equipment performance as brought to light by recent advances in electronic equipment, and yet is made available at moderate cost.

DuMont Type 248 is a portable instrument suitable for lab or production-test purposes. Two units—the oscillograph and the power supply connected by a 6-foot plug-in shielded cable—facilitate handling and installation. A removable cover protects the oscillograph panel when instrument is not in use. The power supply weighs 80 lbs.; oscillograph, 30 lbs. Units each measure 14" x 18" x 21" deep.

This instrument reproduces either transient or recurrent phenomena. Also accommodates phenomena of inconsistent repetition rate. Leading edge of short pulses is not obliterated. The accelerating potential applied to cathode-ray tube is great enough to permit study of extremely short pulses with low repetition rates, usually observed only with specialized and costly oscillo-

graphic equipment. Timing markers are available for quantitative or calibration purposes.

Among the many interesting features of this oscillograph are: Wide band vertical axis amplifier usable to 10 MC. volts accelerating potential applied to cathode-ray tube, allowing observations of fast writing rate phenomena. Extremely flexible time base generator to display signals which heretofore required special sweep circuits. Delay network in vertical channel, permitting observation of entire wave shape of short-duration phenomena. Useful timing oscillator for quantitative analysis. Trigger output signal useful for "synchroscope" applications. Convenient mechanical design which permits placing separate power supply on floor or shelf beneath lab bench. Storage space for cable and leads is provided in power unit. Design is such that modifications to standard specs can be accommodated to special orders in the following respects: (1) Driven sweep durations; (2) Marker oscillator frequencies; and (3) Trigger pulse rates.

YEARBOOK—During the year, we have succeeded in progressively advancing our date of mailing, so that this December issue will be placed in the mail on or before Dec. 1. Our **YEARBOOK** (next issue) will therefore be dated January, 1945, and will be in the mail on or before Jan. 1.—Ed. S.

Furthering Science

(Continued from
Page Thirty-five)

announcer, had attempted to give this demonstration down in Youngstown, Ohio. Alas! Byron used the fluid from the wrong bottle! He injected two grams of this fluid into a mole and things began to happen. The mole, instead of becoming paralyzed, showed amazing signs of life. He escaped from Byron's laboratory and got out on the street. The mole gave a jab with his nose and poked a hole through the pavement. He then followed his nose and soon made a ridge in the pavement clear over to the Youngstown Post-office Building! That, according to the announcer, is a rumor that cannot be verified until the snow melts from the streets of Youngstown. It sounds logical to us so we wouldn't think of questioning the announcer as to its truth.

You can well imagine the excitement of the WTAM employees when they marched into the Gold Room at 6:30 P.M. Some of them were somewhat concerned. Did Byron intend to experiment with poison gas? If so, would he furnish gas masks? And had these gas masks been tested under like circumstances?

Well, everyone walked into the Gold Room and there stood Byron behind a scientific looking table. He was wearing a scientific looking apron and held a scientific looking bottle in his right hand. In his left was a small scientific

looking glass. One look at the glass brought back childhood memories of Gulliver's Travels. You could almost see the midget people, way over yonder beyond the sea, drinking a toast to Beardo the King of Fuzz.

"Step this way", said Scientist Wade. You could tell the WTAM'ers are scientists by the way they rushed forward. Byron sat the small scientific looking glass on the table and picked up a scientific looking bottle opener. He then slipped this over the neck of the scientific looking bottle and gave a scientific jerk. Everyone sighed as he heard the scientific sounding 'plop!

One of our announcers volunteered to be the first to offer his life for the advancement of science. He bravely stepped forward. The room was silent. A cloud of anticipation hung in the Gold Room. What would happen? Well, he took the small scientific looking glass in his right hand then swung it upward toward his unscientific looking face, with a professional swing.

Someone gasped. Would the announcer run out in the street and jab his nose into the pavement like the mole had done in Youngstown? Or would he fall to the floor and wither like the drying leaf from the mulberry tree?

He did neither! Instead, he smacked his lips a couple of times then said, "Byron, that's the best rye I've tasted in years!"

Isn't it wonderful to be scientific?



History of Communications. Number Nine of a Series

MILITARY COMMUNICATIONS BY TELEPHONE



During the Spanish-American War the telephone as a means of electronic voice communication met with favor and played a vital part in military action for the first time. Replacing men and horses, a telephone message could cross and recross enemy territory by wire without delay and cost of life.

Today, telephones in the office and home life of the average American have been an instrumental force in our higher standard of living.

Universal, manufacturing microphones and other voice communication components for the allied forces, will again after Victory is ours, stock dealers' shelves with the Universal components you have been waiting for. Until then — *Buy War Bonds.*

Model T-45, illustrated at left, is the new Lip Microphone being manufactured by Universal for the U. S. Army Signal Corps. Shortly, these microphones will be available to priority users through local Radio Jobbers.



UNIVERSAL MICROPHONE COMPANY
INGLEWOOD, CALIFORNIA



FOREIGN DIVISION: 301 CLAY STREET, SAN FRANCISCO 11, CALIFORNIA .. CANADIAN DIVISION: 560 KING STREET WEST, TORONTO 1, ONTARIO, CANADA

DAVEN

POWER OUTPUT METERS

DESIGNED TO MEASURE POWER OUTPUT

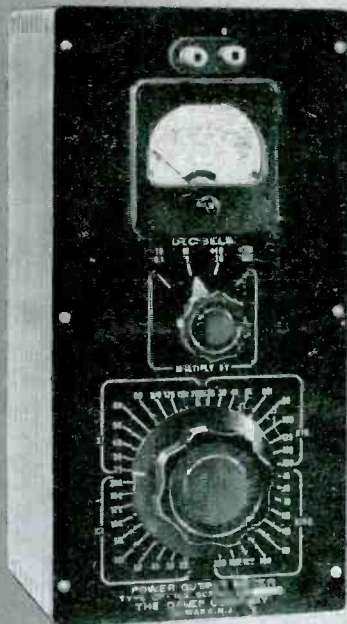
- at fixed impedance and fixed frequency
- at fixed frequency and variable load
- at fixed load and variable frequency



ALSO

- to determine internal impedance or optimum load
- to measure insertion loss of a network
- to measure noise pick-up level
- to test band width, selectivity, fidelity, sensitivity

OP-193-A—OP-193-B
 Power range: 0.1mw to 5 watts.
 Impedance:
 OP-193-A—18 values, 400 to 20,000 Ω
 OP-193-B—40 values, 2.5 to 20,000 Ω
 Accuracy: $\pm 5\%$
 Special Feature: Provision for use of
 headphone and/or meter.



OP-182
 Power Range: 0.1mw to 5 watts.
 Impedance: 40 values,
 2.5 to 20,000 Ω
 Accuracy: $\pm 5\%$.

The DAVEN OP Series Power Output Meters offer a selection of four models for measuring the effect of power and load on audio amplifiers, filters, oscillators and similar equipment, as well as for standard radio receiver tests. Types OP-182 and OP-961 are widely accepted for their wide flexibility, accuracy and durability. Types OP-193-A and OP-193-B are especially adapted for noise pick-up level work in testing radio receivers, where the use of headphones is desired. A special three-position switch enables use of headphones circuit, meter circuit or both simultaneously.

OTHER SPECIFICATIONS

INDICATING METER

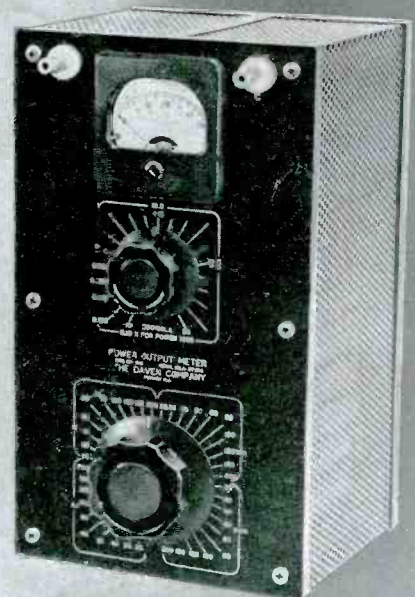
Rectifier type AC, calibrated 1 to 50mw and 0 to 17 DB. Reference level 0 DB = 1mw.

METER MULTIPLIER

OP-182, OP-193-A, OP-193-B—Extends meter power reading, 0.1 to 100 X scale; DB reading, -10 to +20 DB, in 10 DB steps.
 OP-961—Extends meter power reading, 0.1 to 1000 X scale; DB reading, -10 to +30 DB, in 2 DB steps.

MOUNTING

OP-182—Black metal panel, hand rubbed walnut cabinet, 12"x6"x6"
 OP-961—Black metal panel, ventilated metal case, 12"x7"x6½"
 OP-193-A, OP-193-B—Black bakelite panel, portable cabinet with removable cover, 13¾"x7¾"x5¼"



OP-961
 Power Range: 0.1 to 50 watts.
 Impedance: 40 values,
 2.5 to 20,000 Ω
 Accuracy: $\pm 2\%$.

BUY, HOLD, GIVE—WAR BONDS!

THE **DAVEN** COMPANY
 191 CENTRAL AVENUE
 NEWARK 4, NEW JERSEY