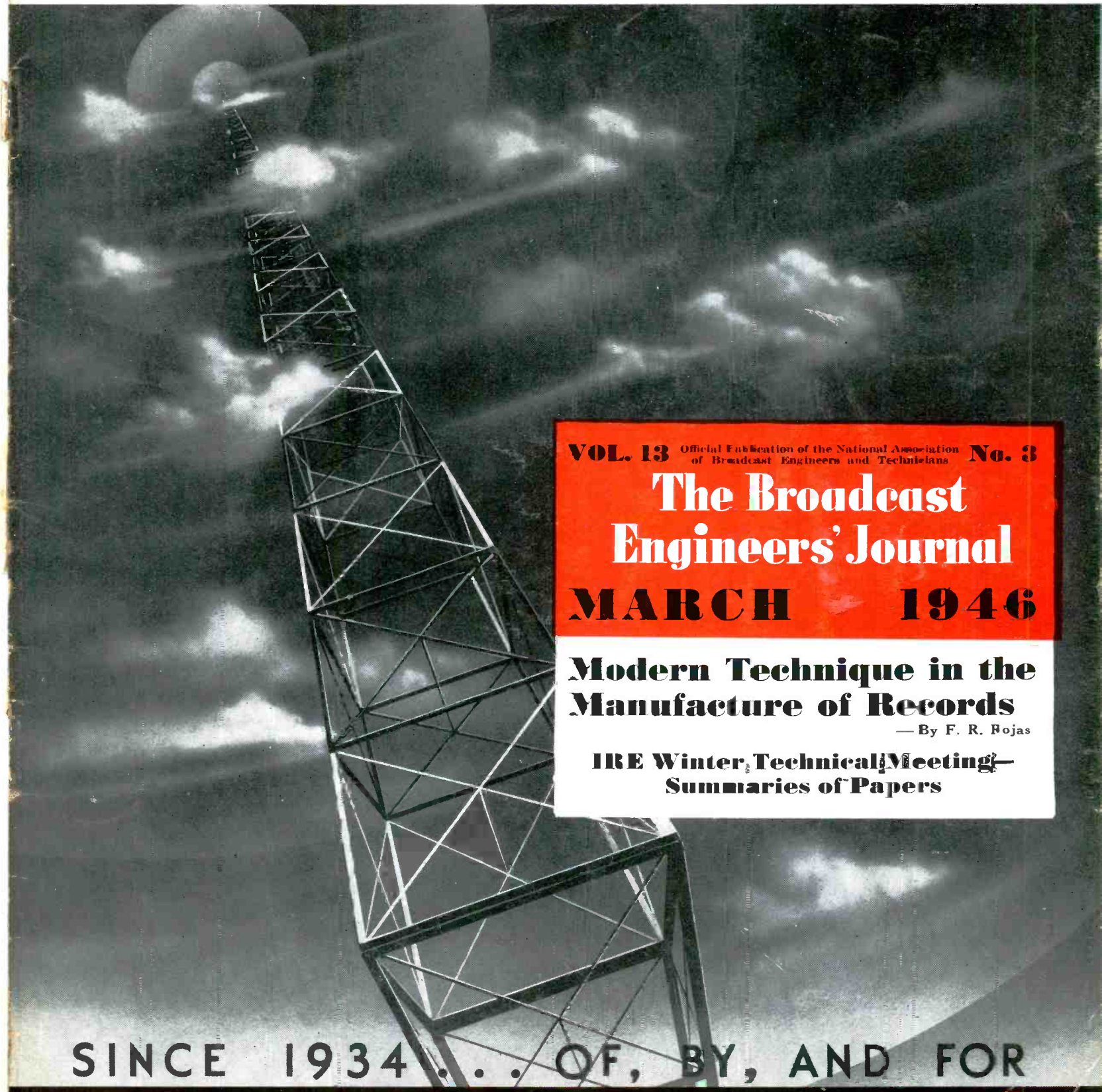
THE BROADCAST ENGINEERS' JOURNAL
ED. STOLZENBERGER, EDITOR
116-03 91ST AVENUE, RICHMOND HILL 18, N.Y.

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

Sec. 562, P. L. and R
U. S. POSTAGE
PAID
New York, N. Y.
Permit No. 2961



VOL. 13 Official Publication of the National Association of Broadcast Engineers and Technicians No. 3

The Broadcast Engineers' Journal

MARCH 1946

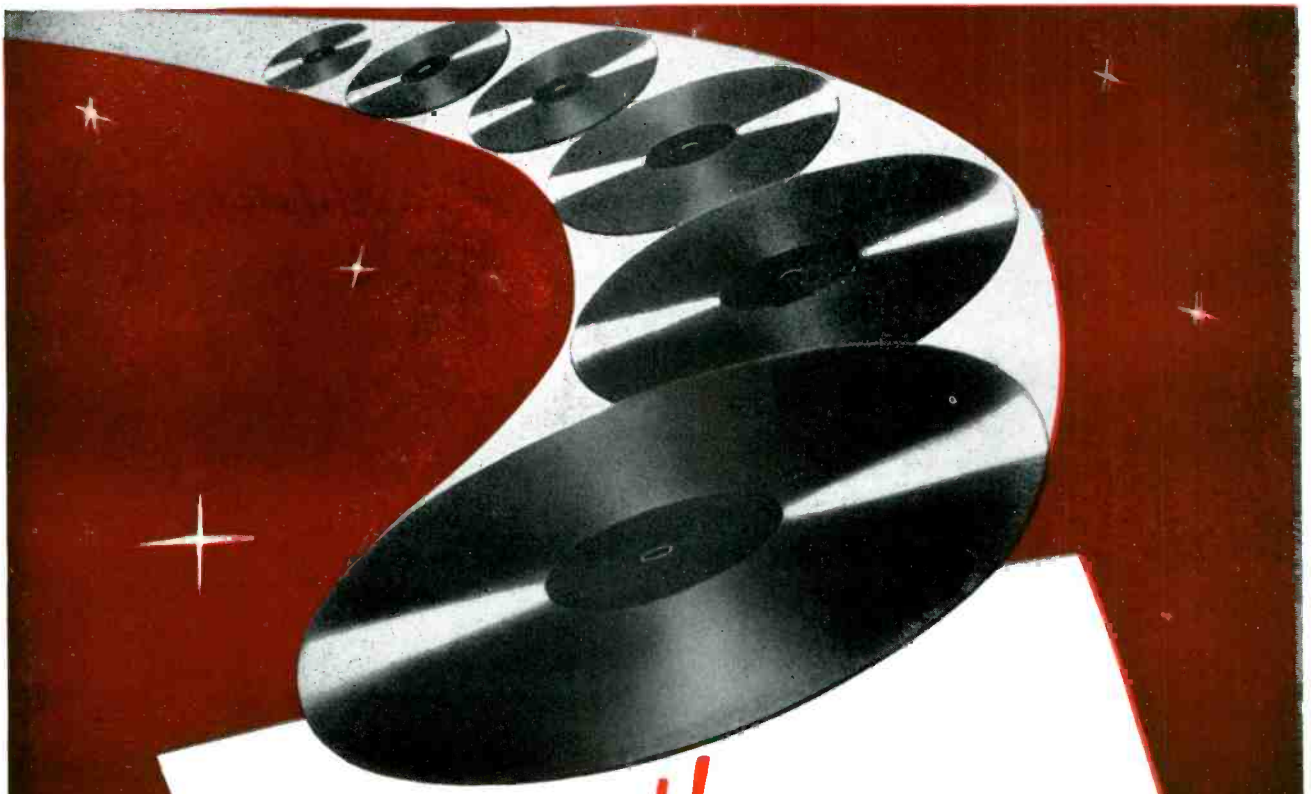
Modern Technique in the Manufacture of Records

— By F. R. Rojas

IRE Winter Technical Meeting—Summaries of Papers

SINCE 1934 . . . OF, BY, AND FOR

THE BROADCAST ENGINEER



Improved!

Now better than ever..

Gould-Moody "Black Seal" Aluminum Instantaneous Recording Blanks

Technological advancements, brought about by our wartime assignments, now provide the critical engineer with "Black Seal" blanks of improved cutting and reproduction qualities, plus more satisfactory playback life.

Gould-Moody "Black Seal" blanks are made of the finest nameplate aluminum, coated with an exclusive compound, and free from all abrasive materials. They are guaranteed not to dry out, age, harden or deteriorate. Continued high fidelity is assured through many months of playbacks. The true tonal qualities, long life and great economy of Gould-Moody "Black Seal" blanks place them head-and-shoulders above competition. The proof of their value is in their performance. Order as a trial a sample case, and see for yourself.

You can get Gould-Moody "Black Seal" Aluminum Instantaneous Recording Blanks without delay.

Old Aluminum Blanks recoated with the famous "Black Seal" formula on short notice

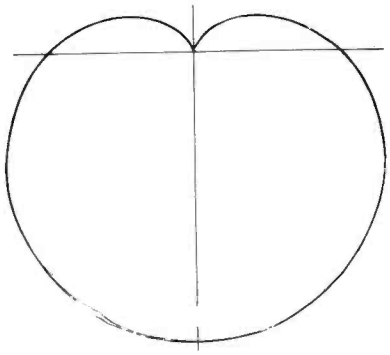
BUY AND HOLD MORE WAR BONDS UNTIL VICTORY

THE GOULD-MOODY COMPANY

RECORDING BLANK DIVISION — 395 BROADWAY, NEW YORK 13, N. Y.

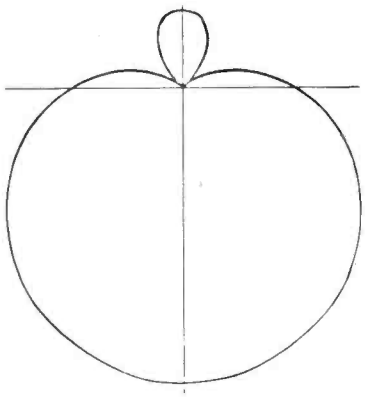
. . This is Cardioid

"Cardioid" means heart-shaped. It describes the pickup pattern of a microphone as illustrated in this diagram. Unwanted sounds approaching from the rear are cancelled out and the pickup of random noise energy is reduced by 66%. The actual front to back ratio of reproduction of random sound energy is 7 to 1.



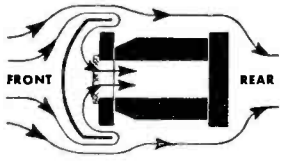
. . This is Super-Cardioid

"Super-Cardioid" also describes a pickup pattern and is a further improvement in directional microphones. The Super-Cardioid has a wide front-side pickup angle with greater exclusion of sounds arriving from the sides and the rear. The front to back random sound ratio is 14 to 1 which makes it twice as unidirectional as the "Cardioid." A 73% decrease in the pickup of random noise energy is accomplished.

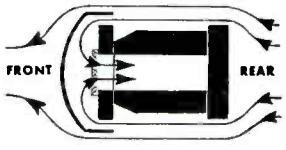


. . This is Uniphase

"Uniphase" describes the principle by which directional pickup is accomplished in a single Microphone unit. This is a patented Shure development and makes possible a single unit "Super-Cardioid" Directional Microphone eliminating the necessity of employing two microphone units in one case—it gives greater uniformity in production, greater ruggedness, lower cost for comparable quality and more uniform vertical pickup pattern.



Sounds entering from front.



Sounds entering from rear.

. . This is the result

The SHURE Super-Cardioid

A decrease in the pickup of random sound energy by 73%—reduction of feedback and background noise—simplification of sound pickup are among the many advantages offered by the Shure "Super-Cardioid" Dynamic. These, plus faithful reproduction, are the reasons why Shure "Super-Cardioid" Microphones are used by more than 750 Broadcast Stations in the United States alone, by our Armed Forces throughout the world, and on thousands of Public Address Systems everywhere.

SHURE BROTHERS

Designers and Manufacturers of Microphones and Acoustic Devices

225 West Huron Street **Chicago 10, Illinois**

SHURE MICROPHONES

THE BROADCAST ENGINEERS' JOURNAL

Ed. Stolzenberger — Editor

Consultant, Business Policy: F. R. Rojas
Consultant, Art & Editorial: Tom Gootee

Volume 13, No. 3 March, 1946

TABLE OF CONTENTS

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, $2.50 per year; $4.00 for two years. Single copies, except Christmas Yearbook, 35c; Christmas Yearbook free to subscribers. All remittances in advance. Foreign: Add postage. Back copies 50c, back Yearbooks, $2.00.

NATIONAL N.A.B.E.T. OFFICE
Room 501, 66 Court Street, Brooklyn 2, N. Y.
A. T. Powley, President

NABET ACTIVITY

February 6, 1946

NEWS BULLETIN

Negotiations were completed with RCA-Victor on January 31st. Principal changes were the wage scales and overtime rates. The overall increase amounted to 15.3%, top scale being $430.00 per month. During negotiations, NABET was represented by Messrs Powley, Hiller, Lynch and Miller.

On January 25th, a petition for certification was filed with the NLRB on behalf of the engineers at Station KYW in Philadelphia, and on January 28th a Petition for Certification was filed for the engineers at Radio Station WFIL, also in Philadelphia. These people have formed a chapter and elected Mr. W. L. Nuss as Chairman. Your President and Mr. Allen were instrumental in organizing this group and have hopes of bringing other stations in the Philadelphia area into NABET as well as Philco Television. KYW is a Westinghouse owned and operated station and the NBC outlet in Philadelphia, WFIL is independently owned and the ABC outlet in Philadelphia.

During the past week I have been in communication with the engineers at KDKA, and expect to make them a visit in the near future and talk to them regarding affiliation.

We are still having meetings with the NLRB in connection with the certification of the Communication and Traffic Departments of NBC and ABC. Management is making every effort to exclude all supervisors from this unit, which action we are protesting.

A meeting of the Board of Directors of the Journal was held Thursday evening, January 31st, at which time A. T. Powley was elected Chairman, Charles Bennis, Secretary, and George Riley of WOR and Mr. Jacobson of NBC appointed Trustees. We expect to have another meeting very soon, at which time the financial standing of the Journal is to be examined.

A. T. Powley
President

Washington Office Report for the Month of January, 1946

A new WMAL scale was negotiated and signed on January 17, and salary increase made retroactive to January 1, 1946.

A contract was negotiated and agreed upon with Radio Station WITH in Baltimore, Md. Contract has been typed and is ready for signing.

Two trips were made to Philadelphia, Pa., to talk to the engineers at Radio Station KYW in regard to NABET affiliation. At the second meeting an overwhelming majority signed authorization cards, and they were turned over to the New York Office for certification before the NLRB.

A wage scale was negotiated and the agreement between Radio Station WMMM, Fairmont, W. Va., and NABET, completed. This ends a dispute that was prolonged due to the dissolution of the NWLB. Pay increase is retroactive to June 29, 1945.

The WOL, Washington, D. C., contract negotiations consumed a great deal of time during January, but are nearly complete now.

A dispute in Greensboro, N. C., Station WBIG, was settled after two days of negotiations.

The situation at WAGA, Atlanta, Ga., is serious and the National Representative is in Atlanta at this writing, and bending every effort to prevent a strike.

C. A. Allen
National Representative

Yearbook Coordinators and others with constructive suggestions for simplifying the Yearbook job for future years, should get their thoughts in writing and get them in to this office while still fresh, to avoid forgetting anything. This Yearbook, the biggest and finest ever, was a credit to everyone who had a part in it. The deadline for the 1947 Yearbook is hereby set at Thursday, Nov. 14, 1946.

Modern Technique in the Manufacture of Records

By F. R. Rojas

Audio and Video Facilities Group, NBC Engineering Department

MOST of us in the broadcast field have heard much lately of recordings, transcriptions, pressings, etc. If the signs are being read properly, we will hear much more of them in the future. The expansion enjoyed in the past by this branch of the art will be continued. Most of us are familiar with some of the steps necessary in the making of records. The purpose of this article is to look at the entire picture and to remove a bit of the mystery as to what occurs when a recording is "processed." No attempt will be made to delve too deeply into any particular process or phase. Rather a descriptive tour will be made from the time the original recording is made until the final commercial record is labelled and made ready for sale. Later articles may look into certain phases of the mechanical process in a more detailed manner.

First in the chain we have the recording which is made in a lathe which most of us have either seen or operated. This lathe is usually called the recording machine. The blank that we place in the lathe is composed of either lacquer or wax. Lacquer or acetate are the usual names given to the synthetic plastic that is "flowed" on to the glass or aluminum based disc as it is spun on a turntable. Lacquer is the preferred name. The exact composition of this material is the trade secret of each manufacturer. In all cases however, it is largely cellulose nitrate, a fancy word for celluloid. The chief characteristic of this material is its high flammability. Other materials are added to it to prevent aging or oxidation, to reduce surface noise and to make a uniform product. Flowed wax is also used. This gets its name from the fact that it is flowed onto the base of the record. It is composed mainly of beeswax and other ingredients are added to give it qualities applicable to its use as a recording. These qualities, which, of course, are similar to those required of lacquers, are:

1. The material must be capable of having a clean chip removed rather than having a smudge embossed thereon.
2. The material must retain its shape a reasonable time.
3. It must not oxidize or age.
4. The surface noise must be low.

In addition, lacquers must be capable of reproduction a few times. Waxes are not intended for playback, and although it can be done, it is neither recommended nor often done.

The base of the recordings may be of either aluminum or glass. Aluminum was prevalent before the war, but glass has done such a superb job that it is here to stay. Glass-based records can be made extremely flat, even though they don't bounce well. In order to get a flat surface, as has been said before, the bases are whirled as the material is applied. In the case of the "flowed wax," a large gas flame is played over the surface as it whirls to make it uniformly flowing and also to remove any entrapped air bubbles. This is the "flowing" operation.

Either the "flowed wax" or lacquer discs are sent to the recording departments where audio is applied while the lathes turn the discs and move the cutter heads. The concentric modulated grooves result. Figure A shows an enlargement of a section of a recording. The base is indicated as is the surface material and the grooves in same. Only one surface is shown here. Where lacquers are processed, only one side is used. Waxes have only one side prepared.

Figure B shows the same section with the surface metallized. In subsequent steps, metals are to be deposited on the original recording. In order to start plating a conducting film must be applied to the recording. Years ago this was done by rubbing extremely fine graphite across the face of the recording. Upon this a layer of copper was deposited. Graphite is a fair conductor, but coarse in size as compared to groove size. Another disadvantage was noise. Nowadays this metallizing process is done by one of two methods.

1. Gold sputtering.
2. Silver flowing.

Good results have been achieved with both methods. The trend appears to favor gold sputtering due possibly to more uniform results. As in the case of the graphite, the idea is to coat the recording with a conducting film.

In sputtering, this is done by exposing the recording to a molecular or atomic rain of gold. Not too much is known as to the exact physical process involved although the mechanics of the process are fairly straightforward. The recording is placed in a chamber parallel and close to a piece of gold of the same size and shape as the recording. The chamber is evacuated to a fairly high vacuum and then a few thousand volts are applied between the gold as a cathode and an anode in the chamber. The positive ions are attracted to the gold and hit it with sufficient force to "sputter" off very finely divided particles of gold. This falls as a rain, according to one theory, and covers everything in the immediate vicinity including the recording. The thickness of the gold film has been measured as one or two millionths of an inch. It is a fine conduction film for the next process.

The silver flowing process is based on the fact that metallic silver may be deposited on a recording by chemical reduction. Many methods are used. One common method is to have a carefully prepared mixture of silver nitrate, ammonia, and potassium hydroxide to which is added one of several reducing compounds. This permits a coating of metallic silver to form on the record. The solutions, which must be kept at definite temperatures for best results, are poured on the recordings and they are rocked to permit uniform coating. Many difficulties are met by either method. In both methods the recording must be free of oil, dust, or minute chips of the recording material. Metal will not form on any contamination. Or, if it does, it does so in a form that is not useful. Extreme care must be exercised in handling the solutions. It must also be exercised in attaining the high vacuum required in sputtering. Sometimes the silver does not deposit down in the grooves. This also happens with sputtering. Despite the many obstacles fine recordings are made by both methods. Now that we have a metallized recording we turn our attention to the plating process.

The metallized recording is immersed in a copper plating solution and on it

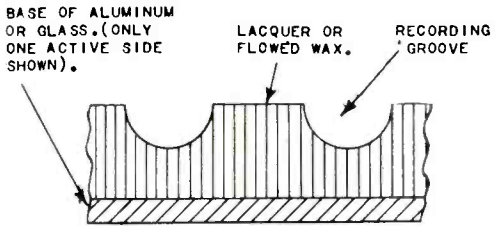


FIGURE A

A RECORDING

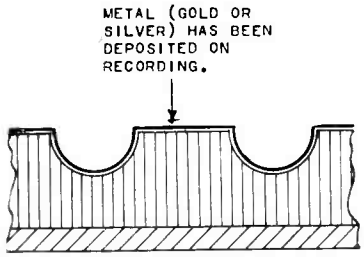


FIGURE B

A METALLIZED RECORDING

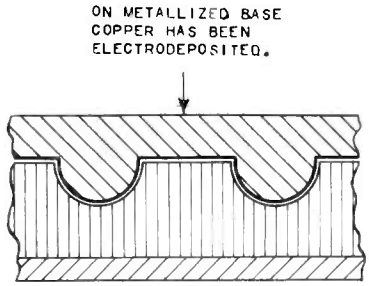


FIGURE C

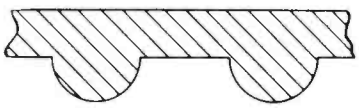


FIGURE D

A COPPER MASTER

THE ORIGINAL RECORDING HAS BEEN STRIPPED AWAY.

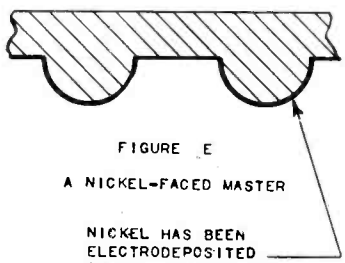


FIGURE E

A NICKEL-FACED MASTER

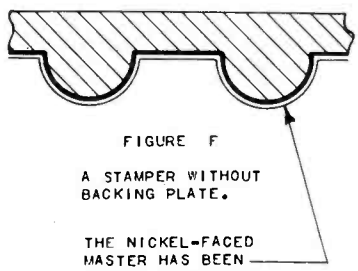


FIGURE F

A STAMPER WITHOUT BACKING PLATE.

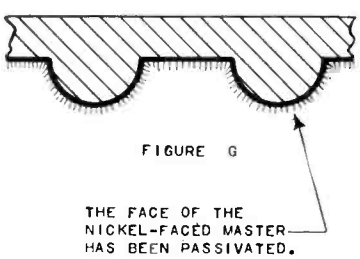


FIGURE G

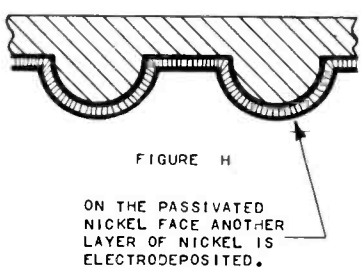


FIGURE H

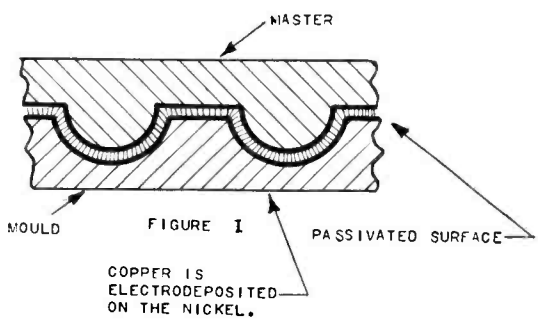


FIGURE I

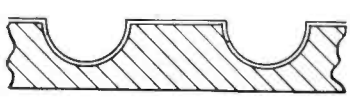


FIGURE J

NICKEL-FACED MOULD

THE MOULD IS SEPARATED FROM THE MASTER.

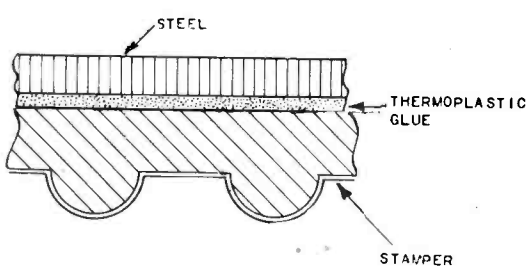
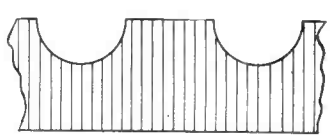


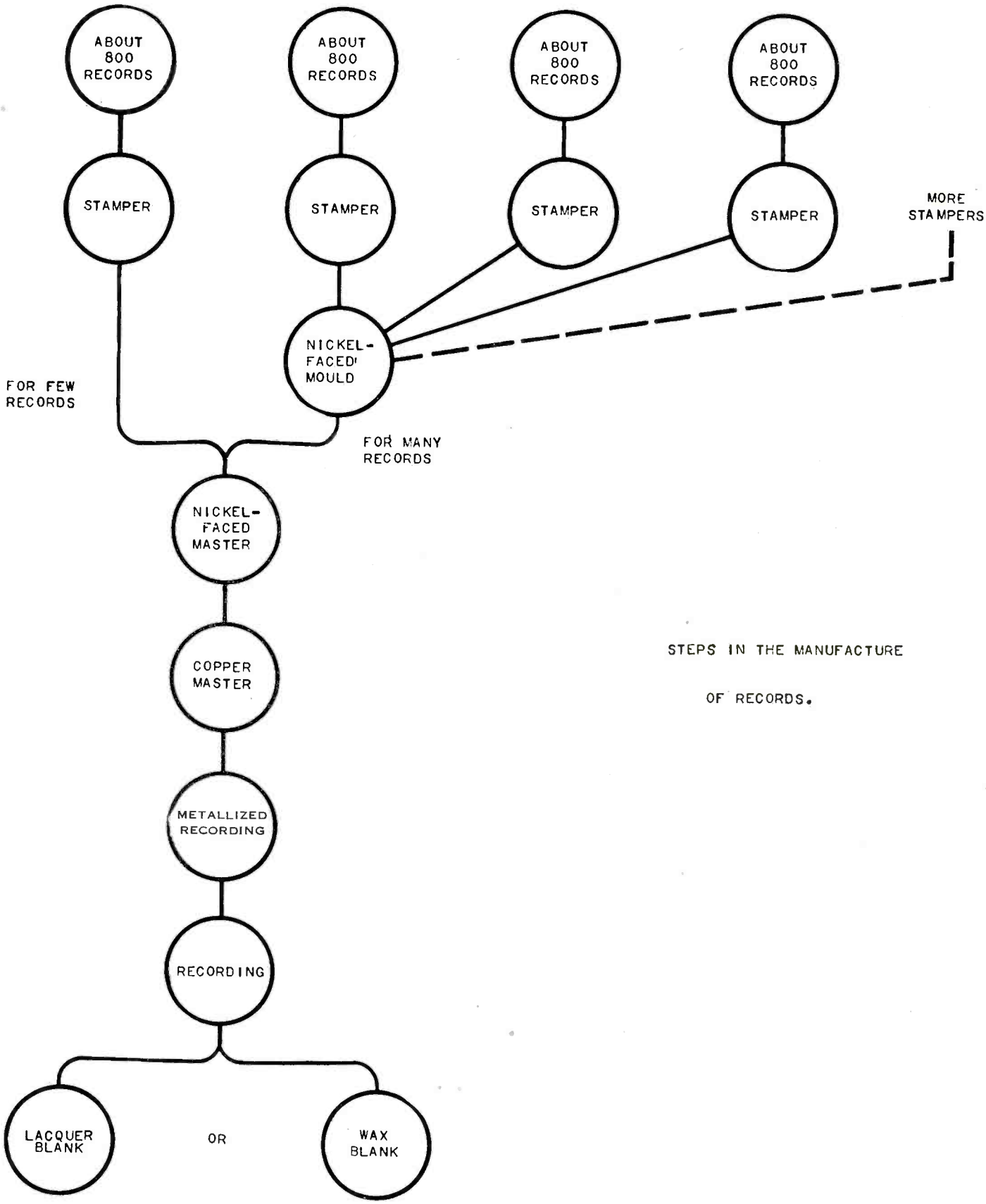
FIGURE K

A STAMPER WITH STEEL BACKING PLATE.



FINISHED RECORD

THESE ENLARGED SECTIONS ARE NOT TO SCALE, ARE MERELY REPRESENTATIVE, AND USED FOR ILLUSTRATIVE PURPOSES.



STEPS IN THE MANUFACTURE OF RECORDS.

copper is deposited. Figure C shows the result of this operation which, after stripping, is called a copper master. Briefly, the process may be described in this manner. The recording is made the cathode and copper bars are made the anode, and are placed close and parallel to the recording. Both are immersed in the plating solution of sulfuric acid and copper sulfate. When a direct current of from 3 to 6 volts is applied, copper ions go from the anode into solution and thence are plated out onto the recording. This plating operation is sometimes broken into two parts. The first is called "preplating," and consists of applying a coating of 0.0015" to 0.002" of copper. The second part is the so-called "high speed" copper plating and results in a final thickness of approximately 0.02". This copper master is a fairly rigid piece of metal and can take a certain amount of abuse on the side that does not have the impressions of the original recording. At this point we have the original recording on whose surface gold or silver has been applied and over which a good thick coat of copper has been deposited and incidentally has worked its way around the edges slightly.

The recording is separated now from the copper and gold. This is done by immersion in warm water and by cutting away the copper edge that has formed around the recording. The recording is discarded at this point and our interest is on the gold faced, copper plate that contains the original engravings, but protruding rather than engraved. This is called the copper master now that it has been stripped of the wax or lacquer and is shown in Figure D. Note that this master, as all other masters that we shall later encounter, is a "male," i.e., the impressions protrude, also that it is a "negative," i.e., the reverse of the original recording. When we speak of moulds we speak of "females" where there are indentations. A mould is a positive because it is of the same shape as the original. The copper master is put on a centering wheel which permits the operator to punch a hole in the center of the master. (The plating operation covered the original hole). At the same time the gold is cleaned off by means of extremely fine abrasives to remove any adhering wax, lacquer, or loose particles of gold. The master is also cut to size and edge burrs removed. It is laughingly claimed by some that a conscientious operator can clean off a master so that nothing over 1500 cycles remains. Steps are being taken to make this cleaning process a chemical one.

Figure E shows the result of the next operation. The copper master has been given a nickel face. This nickel was deposited by plating in the usual manner. This nickel plating does not sensibly alter the shape of the impressions, although it must be noted that if these impressions originally made a perfect fit with the original recording, and the cleaning operation had not removed any metal, they would be increased by the amount of nickel deposited on them. This nickel is polished as before, mainly to remove any non-adherent nickel and is now called a nickel-faced master.

At this stage the ultimate use determines the path followed by our work. If only a few copies of the original are desired and we have a protection copy somewhere, our nickel-faced master is made into a stamper. This is done by the fairly simple process of chrome plating the nickel face. Figure F shows our stamper at this point without backing. The chrome is required to give the needed hardness and resistance against abrasion. We shall leave our stamper at this point and return to it later.

The other possibility we had prior to making a stamper out of our nickel-faced master was that we had a large demand for records. In this latter case we would need many stampers. In order to make this large number of stampers, we must first make a mould. The first step in the manufacture of a mould is to "passivate" our nickel-faced master. This is done by immersing it in a "separating" solution. This acts on the surface in such a manner that when a metal mould is deposited on this "passivated" surface by electroplating, it can be separated from the nickel-faced master. Figure G indicates the process at this point. Ordinarily any plating on the nickel-faced master would be adherent and thus destroy the shape of the groove as well as be of no value in getting a metal mould. After passivation, the work is nickel plated as indicated in Figure H and then the newly nickeled surface is copper plated to a thickness of 0.020" as indicated in Figure I. This mould and master are now separated. This is accomplished by placing in a lathe to cut away the overlapped edge, and by prying apart. The passivated surface between the two layers of nickel permit this separation. We have now made a mould or "positive" of the nickel-faced master. Figure J indicates a nickel-faced mould. The nickel-faced mould is the permanent mould of the original recording. For this reason it is kept in a vault except when in actual use. When it is needed for work, it is taken from the vault and by a series of steps that are an exact reversal of those which were required to form it, a nickel-faced master is made. These steps are:

1. Passivation.
2. Nickel plating.
3. Copper on the nickel to thickness of 0.020".
4. Separation.

As soon as a nickel-faced master is made, the mould is returned to the vault. From the nickel-faced master, made either from the copper master, or from the nickel-faced mould, as many nickle-faced moulds can be made as are required. From these moulds in turn more masters can be made. As can be seen we now have a means of sliding back and forth from master to mould and return. The amount of degradation of detail incurred in these transfers is very small. Satisfactory results are achieved after many "generations" of plates have been made. The nickel-faced masters that are eventually used as stampers are sometimes called "working masters."

If there is a large demand for a particular selection, many "working masters" are made by the process outlined immediately above. After separation from the moulds, they are cleaned and plated with chrome. The thickness of this chrome is in the neighborhood of 0.0001". After this chrome has been applied they are stampers. This is the same kind of a stamper we left a few "generations" back.

The stampers regardless of how formed are given uniform treatment. The working sides are polished to remove loose chrome or dirt. They are then glued with a thermoplastic glue to a steel backing plate. This is indicated in Figure K. This is the stamper that is placed in the record press.

Barring accidents or carelessness, a stamper should give 2000 or 3000 stampings. However, 700 to 800 records from one stamper is a fair average. This explains why so many stampers must be made for a popular recording.

The better recordings and transcriptions are made of vinylite which is the trade name for the plastic polyvinyl acetate. Its advantages are a low surface noise and the fact that the vinylite may be reused.

Ordinary records are made of a mixture of earths and synthetics. Limestone plays a large part in this mix-

(Continued on Page Ten)

The 1946 Winter I. R. E. Meeting

Summaries of Technical Papers, Alphabetically by Authors' Names, Continued from Last Month

By Ed Stolzenberger

No papers are available in preprint or reprint form nor is there any assurance that any of them will be published in the Proceedings of the I.R.E. and Waves and Electrons, although it is hoped that many of them will appear in their pages.

60. Microwave Converters.

C. F. Edwards
(Bell Telephone Laboratories, Inc., New York, N. Y.)

Microwave converters using point-contact silicon rectifiers as the nonlinear element are discussed with particular emphasis on the effect of the impedance-frequency characteristics of the input and output networks on the converter performance. Several converters which have been developed during recent years for use at wavelength between 3 and 30 centimeters are described. A balanced converter having uniform conversion efficiency over a frequency band 15 megacycles wide is described in detail, and experimental results are given which show that the performance is influenced by the input-network impedance at both the image frequency and frequencies in the second harmonic range.

20. Improved Cathode-Ray Tubes with Metal-Backed Luminescent Screens.

D. W. Epstein and L. Pensak
(RCA Laboratories, Princeton, N. J.)

Considerably improved cathode-ray tubes result from the application of a thin metallic layer on the beam side of the luminescent screen. Observations and measurements on such tubes show the advantages of increased light output, improved contrast, elimination of secondary emission difficulties, and, under appropriate conditions, the elimination of ion spot.

3. Some Technical Developments in Light-Wave Communications.

Commander J. M. Fluke and Lieutenant (j.-g.) N. E. Porter
(U. S. Navy, Bureau of Ships, Navy Department, Washington, D. C.)

The purpose of this paper is to present and describe some of the recent technical advances in methods and components utilized in light-wave communication devices. Reasons for exploitation of communication possibilities in the so-called light-wave portion of the spectrum are initially discussed, and some comparison is made with other communication methods. Included in this discussion, also, are the features of some of the new types of light-energy radiators, filter developments, converter tubes, highly sensitive receiving elements, and the associated electronic power supply and amplifying equipment.

31. A Medium-Power Triode for Frequencies Around 600 Megacycles.

S. Frankel, J. J. Glauber, and J. Wallenstein
(Federal Telecommunications Laboratories, Inc., New York, N. Y.)

A tube is described which was originally designed for pulse operation to deliver approximately 50 kilowatts peak power output at 600 megacycles with good efficiency.

Design considerations are discussed which include, as the most important factor, problems of transit time, peak emission, cooling, and circuit properties of the internal tube structure.

A detailed description of this tube structure is given which includes design considerations of the electrodes, operating conditions, and static characteristics. Uniformity of characteristics is also discussed.

Methods of testing and using the tube as an oscillator, amplifier, and frequency multiplier are described and the results obtained are given. These results include data and curves of power output versus frequency; efficiency versus frequency; power gain as an amplifier and multiplier; and life-test results.

76. The Role of Atmospheric Ducts in the Propagation of Short Radio Waves.

J. E. Freehafer
(Radiation Laboratory, Massachusetts Institute of Technology, Cambridge, Mass.)

Experience gained during the war has shown that strong fields, at frequencies greatly exceeding the penetration frequency of the ionosphere, are often observed at several times the horizon distance. Experimental and theoretical investigations in this country and in England indicate that these effects are associated with the presence of layers in the troposphere in which the vertical gradient of refractive index exceeds numerically the reciprocal of the earth's radius. Under these conditions, a duct is formed which for sufficiently high frequencies both reduces the rate at which the field is attenuated with range and also disturbs the normal height-gain effect.

56. A Spectrum Analyzer for Microwave Pulsed Oscillators.

F. J. Gaffney
(PIB Products Company, Brooklyn, N. Y.; formerly Radiation Laboratory, Massachusetts Institute of Technology, Cambridge, Mass.)

A spectrum analyzer is described which utilizes a sharply tuned receiver whose response frequency is swept across the frequency spectrum to be analyzed at a rate slow compared to the pulse recurrence rate. The receiver output pulses are displayed on the screen of a cathode-ray oscilloscope whose horizontal sweep is synchronized with the variation of receiver response frequency. The envelope of these pulses represents the Fourier transform of the pulsed oscillator output. The distortion produced by the finite bandwidth of the receiver is analyzed. Design details of the radio-frequency input plumbing are discussed.

86. Electrical Characteristics of Quartz-Crystal Units and Their Measurement.

W. D. George, M. C. Selby, and R. Scolnik
(National Bureau of Standards, Washington, D. C.)

An investigation of methods of accurately measuring the performance characteristics of two-terminal quartz-crystal units is presented. Relative merits and limitations of these methods are listed and forms of presentation of performance characteristics are indicated. Some observations of crystal-unit behavior, most useful to the radio-and-electronic engineer, are given. These may be interpreted and predicted on the basis of the performance characteristic curves suggested. It is believed that a practical approach is described whereby relatively simple measuring apparatus may be used in studying and standardizing those constants and characteristics that specify the quartz-crystal unit in itself apart from any external circuits with which it may be applied.

13. Television in the Ultra-High Frequencies.

Peter C. Goldmark
(Columbia Broadcasting System, New York, N. Y.)

The Columbia Broadcasting System ultra-high-frequency television system and results of recent tests will be described and considerations of color in television discussed. The four additional speakers who will deal in greater detail with the individual problems will be introduced.

32. Microwave Triodes Adapted to Modern Usage.

Everett M. Goodell
(Sylvania Electric Products, Inc. Emporium, Pa.)

A new series of planar-grid triodes has been developed which is adaptable both to pulse and continuous operation at microwave and lower frequencies. Special features incorporated into the mechanical design permit quick changes and adaptability to a wide variety of usage.

(Continued on Page Ten)

IRE

(Continued from Page Eight)

9. A New System of Angular Velocity-Modulation Employing Pulse Techniques.

James F. Gordon
(Bendix Radio Division, Baltimore, Md.)

A frequency-modulation system is described in which a crystal-controlled pulse triggers a multivibrator. This pulse establishes a reference time for the system. The asymmetry of the multivibrator cycle varies with modulation. Clipping the reference pulse and differentiating the intelligence pulse which is generated at the crossover point of the multivibrator cycle produces a source of time-modulated intelligence. These pulses are used to control the phase of a continuous-wave carrier.

66. Linear Servo Theory.

R. E. Graham
(Bell Telephone Laboratories, Inc., New York, N. Y.)

The servo system is presented as a feedback circuit. Typical components of electromechanical circuits are described in homogeneous terms by means of a conventional analogy. The nomenclature of frequency analysis is used to describe the servo circuit as a transmission system.

The problems of linear servo design are discussed in the language of electrical-circuit feedback theory. A simple logarithmic frequency plot is found adequate for most design considerations. Exact and approximate methods for calculating dynamic errors in follow-up systems are described, and a discussion is given of the interrelations between input signal, dynamic error, transient response, and noise vulnerability.

Linearization of motor-drive systems by use of local velocity feedback and pre-equalization of the input signal to reduce over-all error are described.

27. The Theory and Application of the Radar Beacon.

Captain R. D. Hultgren and L. B. Hallman, Jr.
(Watson Laboratories, Red Bank, N. J.)

Part I discusses the general theory underlying the operation of radar beacons. The various components of a typical beacon, such as the receiver, discriminator, modulator, coder, and transmitter, are discussed in some detail. System considerations such as factors governing choice of operating frequencies, required receiver sensitivity and transmitter power, choice of pulse duration, the cause and effect of delay in the beacon and type of coding, are discussed. Part II discusses the application of radar beacons to aircraft homing, landing, rendezvous, identification, and airport surveillance. Special types of radar beacon applications such as the Beacon Blind Approach System (BABS), sea rescue devices, and communication aids are discussed in some detail.

46. Airborne Equipment for Radar Bombing.

Major F. L. Holloway, Captain R. P. Burrows and J. E. Keto
(Radar Laboratory, Air Technical Service Command, Dayton, Ohio)

Major F. L. Holloway, Captain R. P. Burrows, and Mr. J. E. Keto. This paper describes some of the outstanding airborne radar equipments and systems developed during the war for the radar bombing operations of the Army Air Forces. Technical characteristics and requirements of such equipment are presented. Problems introduced by the technical and operational aspects of radar bombing are discussed, as well as the effect of such problems on the design of the subject equipment.

74. Tunable Receivers for Very High Frequencies.

G. E. Hulstede, J. M. Pettit, H. E. Overacker, K. Spangenberg, and R. R. Buss
(Radio Research Laboratory, Harvard University, Cambridge, Mass.)

Developments have greatly advanced receiver techniques in the direction of obtaining tunability, good sensitivity, and wide frequency coverage at increasing high frequencies. This paper describes techniques that have been employed in a line of receivers that give continuous coverage of 10,000 megacycles. The most advanced of these equipments have high image rejection even at microwave frequencies, have single-dial control, a sensitivity reasonably close to the theoretical ultimate, and are tunable over frequency ranges of approximately 2 to 1 or more.

70. Naval Warfare Communications Problems.

Commander J. O. Kinert
(U. S. Navy, Naval Operations, Navy Department, Washington, D. C.)

A brief review of problems encountered during the development and growth of amphibious assault techniques is given. How problems were met from point of view of electronic material with an evaluation of available types is discussed. Recommendation for future design is also given.

77. "3- and 9-cm Propagation Measurements in Low-Level Ocean Ducts."

M. Katzin and R. W. Bauchman
(Naval Research Laboratory, Washington, D. C.)

In order to check the effect on 3- and 9-cm transmissions of low-level ducts formed in oceanic air, one-way measurements between a ship and a shore station were made with antenna combinations of various heigths. The experimental setup and techniques are described. Meteorological measurements taken from both shore and ship are described, and the variations in duct height and strength discussed. Meteorological and radio measurements inland were made, and the effect of distance back from the shore on meteorological conditions and radio transmission are described. 3-cm radar observations were made during the latter part of the project, and the variation of echo amplitude with range of ship target was measured. Analysis of radio and radar measurements is given.

43. Metal-Lens Antennas (With Demonstration).

W. E. Kock
(Bell Telephone Laboratories, Inc., New York, N. Y.)

A new type of antenna is described which utilizes the optical properties of radio waves. It consists of a number of conducting plates of proper shape and spacing and is, in effect, a lens whose focusing action is due to the high-phase velocity of a wave passing between the plates. Its field of usefulness extends from the very short waves up to wavelengths of perhaps five meters or more. The paper discusses the properties of this antenna, methods of construction, and applications.

(Continued Next Month)

Manufacture of Records

(Continued from Page Seven)

ture. To these are sometimes added shellac. The usual name for this is "mud" and the amount placed in the press is called the "biscuit." Whatever its composition it should have certain qualities. These are:

1. It should form well with great attention to detail.
2. It should have strength.
3. It should have low surface noise.

In addition it generally has high abrasive qualities and quickly wears away the chrome faced stamper.

The pressing itself is accomplished somewhat in this manner for one-sided records. The "biscuit" is placed on the platen or lower face of the press. The operator lowers the upper part of the press that holds the stamper with the label on the centering pin. The stamper squeezes out the biscuit to the proper thickness and in so doing the record is made and labelled. Note should be made of the stamper in this operation. It is held in a fairly large metal housing through which steam and cold water pass through cyclically. The steam is to assist in making the "biscuit" flow easier and the cold water later is to return the stamper to normal temperature. The record is now finished by having the excess "biscuit," which has dripped out the sides and has hardened, trimmed off. For two-sided records, the same process is used except that two masters, top and bottom, are used.

from HOLLYWOOD . . . *By Norman Dewes*

FIRE . . . Caps . . . Studios . . . O. B. . . . Stenos. . . Passes . . . Letters . . . Faces . . . Quarters . . . KECA . . . Hams STUFF

WELL . . . guess we missed AGAIN last month . . . or WERE we . . . no answer . . . ANYWAY, what with getting the December AND the Yearbook copy out so close together and then such a LONG TIME between columns . . . and trying to start the New Year RIGHT . . . and RECUPERATING thencefrom . . . well, we just didn't MAKE it, thass all . . . hope that not having used any space last month, Stolzie will let us RUN OVER a bit THIS month, in order to catch up on all the stuff that has HAPPENED out here. . . .

★ NBC ★

NBC . . . chief topic of discussion and focal point of lunch-hour interest these days around Radio City are the NEW STUDIOS . . . construction is conveniently going on a few steps from the Artists' Entrance, and the workmen have built a DANDY elbow-high fence at the excavation's edge where during noon-hours nearly EVERYBODY can be found hanging over, watching and commenting upon the work of the steamshovels, bull-dozers and cement mixers . . . as some of you may recall, the NBC Building at Sunset 'n Vine was originally constructed over the site of one of Hollywood's earliest film studios, and during the digging of the pit for the basements, some of the old concrete piers of the by-gone movie studio were uncovered . . . they were very solid piers and the cranes and scoop-shovels had one HELLUVA time extracting them . . . we were joining the hangers-over one noon when one of the guys on the scoops got MAD at the stubborn concrete, after many futile attempts to dislodge same, accompanied by many sarcastic COMMENTS from the Observers' Gallery, and gave it one HELLUVA wallop with his bucket and the bucket got CAUGHT and the guy NEARLY jerked himself off into the pit, machine and ALL . . . it was SO exciting . . . on the NEXT attempt, he MADE it, however, and got a nice round of APPLAUSE from the audience . . . accompaning pic shows O. B. Hansen, NBC V.P. and the Chief Engineer talking it over with our Mr. Saxton, NBC West Coast Division Engineer, while in the b.g. can be seen the PIT we are talking about . . . O. B. was apparently out here, for it is an authentic Publicity photo, but WE didn't get to see him, as regretfully didn't MOST of the fellows . . . sometime we are going to set a TRAP for the guy and INSIST on him taking us all out to dinner at the Derby or someplace, so we can all GET ACQUAINTED . . . new building will really be FB, though, and greatly relieve the congestion in Engineering . . . believe we mentioned several times ago that Recording has dibs on most of the nether regions for a new Plant . . . when they get nicely ENSCONCED down there, they can no longer say that they haven't a PIT to HISS in, CAN they . . . War's end has become OFFICIAL at Radio City, with the dropping of the pass-flashing routine at the Artists' Entrance . . . they still have Police Officers on duty at the electronic door opener, but a smile will get you in now, whereas BEFORE they did everything but FRISK you . . . and iffen you didn't have yer PASS, it was just yer . . . TOUGH LUCK . . . we, and we're sure THEY too, will NEVER forget the day that Hans Conreid, one of our more WACKY actors, came floating in the door and was asked to see HIS pass . . . well, Hans was ALWAYS late for a rehearsal and in a bit of a HURRY, so he kept his pass badge pinned in a readily ACCESSIBLE but rather PECULIAR place, so that he could rush in and show it to the guard on the FLY, so to speak . . . it always used to UPSET and pretty well DISORGANIZE the bevy of Page Girls who were sitting outside, until they got USED to it . . . a couple, though, NEVER got used to it and would INVARIABLY let out a SCREAM . . . ank, ank, ank . . . ANOTHER day not long ago will ever remain a RED LETTER Day at NBC . . . for the Red men at least, whose faces were pretty RED when they read it . . . letter was sent to all NBC Engineers and Sound Men and was palpably an attempt of NBC to red themselves of the FEE MENACE . . . the type of paper we are using will not permit us to DISCUSS this HERE, and it DOES remind us of that catchy tune from oddly enough the musical "Good News" which goes ". . . the BEST things in Life are FEES . . ." or SOMETHING like that . . . all WE got to say is, "Three Cheers and a TIGER for the ABC!"

★ ABC ★

ABC . . . sensation this semester is the departure of OUR HELEN . . . Miss Wendt, better known as Denny's "Miss Blue," has WENT . . . Helen, our Engineering Secretary for three years or more, and before that with NBC and the Blue for seven or eight years, has strayed to fairer fields perhaps over at Foote, Cone and Belding agency . . . Miss Helen will be MISSED, for she was such a cheerful FOIL between US and the wrath of Mr. Denechaud . . . no one will EVER know how many logs, expense sheets and OTHER items of fiction she "edited," before RGD came their way . . . for which we say a fervent THANK YOUSE, and Bon Voyage! Miss W will remain in GOOD HANDS, however, for she is the new secretary of none OTHER than the Great Capstaff, than

Mr. O. B. Hanson, NBC Vice-President and Chief Engineer, confers with A. H. Saxton, NBC Western Division Engineer, on the site of the new NBC additional studios at Hollywood Radio City, while in Hollywood on a week's trip to inspect the project.

whom there is no THANER . . . "Cappy," an erstwhile NBC Studio man for quite an erst, is NOW as we've mentioned right UP THERE in the Radio Department of Foote Cone & B, and will TAKE CARE of Helen, we have no doubt . . . although knowing Cappy as WE DO, it is Helen whom had better take care . . . she will make a good "contact," huh fellows . . . and please mention OUR name when one of THOSE SHOWS come up . . . Miss Wendt is succeeded by Corinne, whose last name is Murphy and a LIKELY looking lass she is, too . . . she is rather INNOCENT looking, but from what we can gather, that is not the CASE . . . Corinne having just served thirty-two months as Yeoman 1st Class in the WAVES and before that with both NBC and ABC in Chi as, among other jobs, an Engineering Secretary TOO . . . while a Surf-girl, she was on active duty in Washington in the Office of Chief of Naval Operations, Communications Division, so it can safely be said that Corinne is HEP to radio men, DANG IT. She knows lots of the characters back East, including "Pop" Knight, Tom Gotee and Ed Stolzenberger, so should prove to be a FERTILE source of info, yahk, yahk . . . so we give her the traditional Hollywood greeting of "Welcome to Our Midst," kiddo, and watch yerself in the CLINCHES . . . While we're up on the Third Foor, we might mention also the new QUARTERS for the ABC Engineering Offices . . . the Palmer-Denechaud-Murphy suite is really LUSH PLUSH now . . . due to additional NEEDED ROOM, they have moved next door to a corner nook which is larger, brighter, etc. Room is tastefully furnished and finished in Pea-soup green, which may or may NOT have any significance . . . Boss Palmer is happy there, but Denny still keeps a full bottle of Bromo in his lower right-hand drawer . . . sez it's good for so MANY things . . . Mr. Denechaud, by the way, has been ELEVATED from Secretary to Vice-Chairman of the Los Angeles Chapter of the I.R.E. which is NICE and CONGRATS from yer loyal engineers . . . can't seem to dig up much of ANYTHING of a libelous nature on Mr. Palmer, but will keep trying . . . this column NEVER FAILS . . .

★ KECA ★

KECA . . . pretty hard to get anybody out at this joint to ADMIT anything, but have discovered that: Maintenance Super Eilers has managed to slow down to a fast trot these days, and has even found time to Simonize his racks . . . joint looks SPIC 'n SPAN and is perking along in fine shape, but leave us REMEMBER that SPAN spelled backwards is . . . and don't leave us TAKE any, especially WOULDN'T ones, huh fellows . . . (Sometimes I wish I could understand what all this stuff meant. Ed.) Ernie Sams out at the transmitter reports "All Quiet," and when queried as to what has happened recently, vouchsafed that "Nothing has, and we hope it DON'T . . ." It seems that, as at most transmitters, it's when things DO happen that there's H—— to pay, what with telegraphed reports to New York and all, so after exchanging a few quiet words with Ernie, we gently HUNG UP, not wishing to START anything . . . did glean that Chief Rex Bettis has been out gadding about the country making Field Tests on the rig and got caught in a windstorm near Pomona and the sand took all the paint off his Packard and etched up his windshield and it cost him a couple of 100 bucks to get it fixed . . . TE Miller has bought himself a house out near Loyola College, having given up EVER finding an apartment . . . house is on a little hill, so Bro. Miller can soak up some HIGHER LEARNING . . . Ernie is ALSO searching for a new nest, since where he is, he gets home from work about two-thirty ayem and the people upstairs GET UP around five and stomp around for a couple of hours and a man can't get any SLEEP . . . sez also that things are sure getting CROWDED out around the Plant . . . when he first came there a few years ago, he was out in the country practically, and now the Shack is dang near next door to a corner drugstore . . . that's the trouble with this Civilization . . . yuh just can't STOP it . . .

★ HAMS ★

HAMS . . . since the opening of the 10 meter band several months ago, Hollywood Hams have begun to come out of their shells along with the rest of the nation's amateur operators, and this writing finds quite a few of us on the air and active . . . believe that Bro. Thor La Croix is planning a NABET Amateur Network, with regular contacts between Chapters via the ham bands and monthly news items and announcements in the pages of the Journal . . . this to US seems like a VERY good idea, and should effect much closer relations within our organization, which is good for ANY organization . . . if you were operating before the war and have any equipment, how about GETTING WITH this, fellows . . . 10 meters is good TC at present during the morning hours, so if you hear "CQ NABET" on "10" or any of the other bands which will probably be opening up soon, hit the key or mike and check in . . . believe Thor is compiling a report of all active hams out this way, so won't duplicate his efforts, except to mention that Al Korb, NBC Master Control and W60SH (Onions, Spinash, Horseradish) has been working simply ALL OVER on ten, with about 250 watts and an 8JK rotary . . . DX includes Guam, Tinian, Tokyo, Argentina, Mexico City and some K6's, all on 'fone . . . Ralph Reid and Heffernan are also on, with pre-war rigs shipped out from NY, and La Croix, w6LN is on ten quite regularly. WE are on too, altho not so regularly, with w6TW, and, together with some of the other fellows have been on for some time with a 2 and ½ meter peeper . . . more ham news next month, and see the La Croix Report . . . and OYES .Carl Lorenz, "World Famous" w6PKA sez he'll challenge ANYBODY to DX, under ANY conditions, ANYTIME!!! Well . . .

★ GOSSIP ★

GOSSIP . . . some personality changes to report this tissue . . . did we say TISSUE . . . yes, it's ALL a tissue of lies, liES, LIES . . . it is NOT, but we don't mind, so long as nobody specifies the TYPE of tissue . . . (See what I mean? Ed.) Foist of all, we have Bob Callen back in our midst . . . Bob has returned to the FOLD, from a VERY active bit of service as a civilian employee with the U. S. Signal Corps . . . did we say fold . . . that implies sheep . . . wonder if THAT can be the reason why producers, when they come upon an engineer nearly ALWAYS say, "Oh, SHEEP!" . . . anyway, we were all set with a PROFILE on Bob, but since Stolzie has served notice of space cuts, will have to just stick to the BARE FACTS . . . seems that Bro. Callen had quite a TIME for himself in the war . . . left Recording in June of '42 for the Sig Corps lab at Ft. Monmouth, where he was put to installing radio gear in tanks . . . then worked with the O.W.I. in NY, helping to set up their 24-hour recording set-up there, then to the Division of War Research in New England, with Sorenson, former MTCE in Hlyd and Jacobs of San Fran to work on SONAR, anti-submarine warfare . . . sez Bill Williams, former Hlyd Blue SE in on same deal in San Diego . . . then to New London, Diego, Pearl Harbor, etc., working with detection gear for subs and in charge of a research barge on special project . . . Commander on these projects was John Knight of NBC NY. Bob was a member of NBC's original Recording Department along with Mort Smith, and they cut the first commercial recording, of "Information, Please" . . . before that, had his own set-up on the RKO lot out here, with NBC using their studios for over-flow . . . also recorded the originals of the Dempsey-Tunney "long count," which is REALLY going back, huh . . . we're glad to welcome Bob back, and at the same time tearfully bid adieu to McWhinney, who makes way for McCallen . . . c'est la guerre . . . Jim Cunningham, ABC SE and recently returned from the wars also, has LEFT again, to go with E.R.P.I. in Hollywood . . . guess routine at KECA and Studio "M" a bit too slow for Jim, after his exciting war service abroad, and we wish him LUCK! . . . Guy Glenn, recently with NBC as SE and released after vac relief, in at ABC for Cunningham, and GLAD to be back amongst us . . . we is glad TOO, kiddo . . . also back with the ABC'ers is Marvin "The Pipe" Jacobs, in after being out for a month or so, as replacement for Dick Schroeter, on leave-of-absence at Reno, Nev. . . . "Jake" wasn't away long enough to cool off and is spinning 'em again at KECA. Over on the OTHER web, don't believe we mentioned that Miv Adams is back as NBC Field Supervisor, after a VERY colorful hitch with the U. S. Marines . . . know DARN WELL that space will not permit recounting of all HIS exploits in this issue, so will have to carry Miv over 'till a future

Feedback from KGO

By Ken Martin

With the lifting of restrictions on amateur radio operations, several of the gang here at GO are warming up their rigs on the ultra highs and flexing their anticipation of the greenlight on 20-40-80. Jim Blanchet is knocking the cobwebs out of his W6BGU

HOLLYWOOD

date . . . Miv's return returns Joe Kay, who has been holding down the Field Department in Hlyd VERY ably in Miv's absence, to Studio-Field, and Joe is recently back from eastern tour with "The Voice" on Truth or Consequences . . . somebody guessed who "Mr. Hush" was and Joe had to come back home . . . Gene Durham, NBC SE has been assigned to the Field Shop, while we are in that Dep't, to assist Hal Platt, who can USE it, or rather HIM . . . we expected Bob Brooke, former NBC SE and JE (Journal Editor) back Feb. 15th but rumor has it that the Navy re-called him, reportedly to take part in the atomic bomb tests on battleships . . . Jimmy Brown, former Hlyd MCD man due back soon also, or mebbe the Navee reached for HIM too on the same deal . . . guess that about winds up the VITAL statistics to date . . . which leaves no room for GOSSIP, darn it all . . . had some very JUICY items, too . . . especially a VERY funny yarn about Prof. Art Brearley, NBC SE and a GOAT . . . guess the yarn will keep, even though the goat DIDN'T . . . be sure to catch page 272 of the February "Electronics" where it shows AN ENGINEER at the CONTROLS of KHJ's Mutual MCD in Hlyd . . . you must guess WHO he IS, and the only CLUE is that he's known as THE HAND . . . and we MUST tell, at the risk of being CUT OFF, about the fire in Mabel's apartment . . . it seems Mabel, who is a TIGHT SLEEPER, was snoozing peacefully recently when there is loud pounding on her door and voices screaming FIRE! GET UP! ETC! and it turns out that the top floor of the joint is in FLAMES . . . she dives out of bed amid smoke and cinders and grabs her most PRECIOUS possession, a bottle of Platine perfume worth $22.50 plus tax (don't ask how WE know, at a time like THIS . . .) and flees for the OUTSIDE . . . pretty soon the Firemen rush in with bells clanging, axes gleaming and hoses squirting, and extinguish the flames, after dragging everybody's things out and piling them in a heap on the lawn . . . sometime LATER Mabel goes back to what is LEFT of her nest and begins to search for a full bottle of 8 year old TONSIL liniment she remembers was HIDDEN on the top shelf in the closet . . . well, it AIN'T THERE, but sitting on the dresser is the bottle EMPTY . . . what Mabel SAID almost started ANOTHER fire . . . BCNU.

and will soon beam a strong signal to the Northwest. Henry Dunton is progressing to completion of his new 1KW W6CRO. Herb Kramer, W6ECW, has glommed onto some war surplus material and cleverly converted it into 2½ meter equipment. His wife, Berniece, has all ready relegated W6ECW activities to the basement, where Herb holds forth to his heart's consent. Dick Parks will probably iron the wrinkles out of his California KW and shatter the ether as soon as he can get in the groove after his long absence with ATC. A few others with only roseate dreams for a start may soon clutter the ether and will be reported as developed.

Myron Case is busily engaged in plans for lifting the face of the station's rectifier department via the mercury vapor route—bet it works, too!

People back east may find this squib a bit of incongruous but Gene Nickels, here in November is all ready boasting about the Victory Garden coming up on his newly acquired lot out in San Leandro. When asked why he termed it a victory garden—at this late stage—Gene wryly confessed that anything you get to grow in this California gumbo represents a hard won victory as far as he is concerned but do not be deceived by this grimness. Gene is a true Californian to whom you listen respectfully but with whom you dare not agree in his disparagement of California's shortcomings. Even during the rainy season, Gene is determinedly racing ahead with construction plans for a new home and is all wrapped up in blueprints, blues and invective over material shortages and costs involved in putting up his super-California bungalow.

Reports have sifted into the station that George Irwin has taken up out-of-town residence at Yosemite and that the first heavy snows of this season found him fully prepared with long-handled lingerie and storm galohses right on the scene. George is rumored favoring sponsorship of Irwin's St. Bernard Rescue Service a la Swiss Alps for the winter season at the Park—complete with XXX for benumbed wayfarers. That's the spirit, George! Personally, I find it hard to believe his alleged prowess at skiing and hereby challenge him to demonstrate his skill with the glorified bedslats.

Otis Hill, our most recent acquisition and an immigrant from Hawaii to these apparently inhospitable shores of the mainland, is diligently househunting out San Leandro way. You can guess again if you think that is an easy task with the present short-circuit in housing arrangements in this area. It is no longer a matter of renting—but one of buying and paying dearly in a sellers' market if one would have a roof over the head! Otis has been voted full membership status in NABET this past month. I hope to persuade our new watchmate to submit to a real old fashioned arm-twisting interview in the near future during which we'll try to extract some material for our Introducing section.

This reporter-sleuth has detected Myron Case secretly delving into a certain mysterious, small, yellow-backed book. Making a wild guess as to the contents—I wish I knew and practised everything in that little book and perhaps it is time again for me to read "How To Win Friends and Influence People." No Myron, nothing is sacred to this column!

MEET Myron D. Case—born in Sunnyvale, California, November 3, 1903. Myron received A.B. degree in Mechanical Engineering from Stanford University in 1925 and Engineer's degree in Electrical Engineering in 1926. He was employed as a meter tester by Southern California Edison Company in 1926 and 1927. Following his initial job, he then joined the Engineering Department of RCA Communications, Inc., in 1928 as a Shift Engineer at their transmitting station in Bolinas, California. Eventually he transferred to Marshall, California, in 1929, participating in Receiving Engineering at both Marshall and Pt. Reyes and the RCA Frequency Measuring Laboratory at Pt. Reyes from 1929 to 1934, then returning to Bolinas to work at the transmitters again as Shift Engineer from 1934 to 1937. With this ex-

cellent background of training and experience, Myron came to National Broadcasting Company in June, 1938, as Maintenance Engineer at KGO Transmitter in Oakland.

In August of 1942, Myron took leave of absence from KGO to go with Columbia University in work organized under the Office of Scientific Research and Development connected with the war effort, returning to his post here at KGO in October of 1944.

During his years of service here at KGO as Maintenance Engineer, Myron undertook many major improvements with good effect and the transmitter is really his baby and stands the gaff. Myron is an Associate Member of the Institute of Radio Engineers. He resides in San Leandro with his wife and small son.

A PLAIN STATEMENT OF RECORDING METHODS

FOREWORD: *Today, widespread confusion exists in the public mind regarding so-called "postwar" methods of recording and reproducing voices, music and other original sounds. Yet the straight facts are quite simple. As one of the leaders in the sound-recording industry, we have thoroughly explored these facts and weighed them in the balance. The results are contained in the statement below.*

Wm. C. Speed

President, AUDIO DEVICES, INC.

* * * *

THE public is beginning to examine, very carefully, some of the postwar dream-products that were breaking into print while World War II was still on.

Certain manufacturers with the good taste not to claim that their products were winning the war, and who therefore had little to talk about, resorted to beating the gun on "postwar planning."

The public was seriously led to believe, for example:

—That glass-and-plastic cars, streaking along express highways at 100 miles an hour, will make all pre-Pearl Harbor models as extinct as the Dodo.

—That full-color television, with 15-minute news broadcasts as standard equipment, will sweep newspapers and radio sets into the discard.

—That invisible electronic fish-fences will fence the big ones in.

—That futuristic pre-fabricated postwar homes, equipped with screenless screens, heatless light and remote-control base plugs, will be mounted on swivels and turn with the sun.

—That the automobile of the future will take wing from a wide place in the highway, and just as easily ford a rushing river.

Certain of the postwar products which thus burst into print can fill a definite public need or desire. Others, however interesting, are either without practical application and were publicized beyond their actual possibilities, or exist only in the fevered imaginations of artists and writers.

Generally speaking, most manufacturers are now aware that publicity of this kind leads only to confusion, and thus tends to tighten, not loosen, America's purse-strings. That the public, already fed up with shoddy wartime quality, is getting just as fed up with postwar gadgets too.

Newness alone is not enough. It's got to be better—better—BETTER.

That's when the purse-strings will loosen. That's when the public will buy.

* * * *

The American peacetime public does not hesitate to discard last year's car when next year's model comes out; junk the old coal-eating kitchen range for a sleek new streamlined wonder with automatic oven control; or jettison millions of ice-boxes to make room for electric refrigerators.

Something not only new but BETTER. That's what built this country and the American way of life.

A pre-war product with postwar improvements, yes.

But a postwar product that has not proved itself any place else than on paper—a loud and resounding *NO.*

* * * *

This brings us to an examination of the industry we represent: *High-fidelity sound and voice recording.*

First of all, we are not—nor do we aspire to be—one of the producers of popular or symphonic phonograph records.

That is not our field. Our place in the picture is more basic.

We make (1) instantaneous recording blanks (audiodiscs) on which voices, music and other sounds are recorded for immediate or later playback. (2) Master audiodiscs used for the original recording in the production of phonograph records.

In the great broadcasting stations from coast to coast; in the great motion picture studios; in the recording studios of phonograph record manufacturers; and in America's leading schools and colleges; our audiodiscs are predominantly used.

Thanks to this universal acceptance, we are the largest manufacturers of professional recording discs in the world.

So we feel it is our obligation and our privilege to place before the public the facts regarding the "sound-recording methods of the future."

* * * *

It is true, of course, that from early 1941 to V-J Day, all sound recording suffered to some extent; not only from wartime scarcities and restrictions but from lack of the best raw materials.

Our own supplies were severely curtailed. Our production of audiodiscs was limited to the Armed Forces, broadcasting stations and similar professional requirements. Manufacturers of recording machines were similarly restricted.

But the manufacturers of recording discs and machines, and the commercial record producers, have not been idle.

Thanks to improved types of disc recording and reproducing equipment, plus improvements in audiodisc manufacturing, it is now more convenient than ever to record, instantaneously, sound-gradations and frequencies whose fidelity is uncanny.

Records made by this method now reproduce original sounds so exactly that the *human ear cannot distinguish the recording from the original "live" studio performance.*

Record producers, too, have so improved their materials and technique that pressed records, often turned out by the millions, can now faithfully reproduce the original recordings.

And thanks to these and still other coming developments in audiodisc manufacture, *these seemingly uncanny results will soon be as easy to attain in an average school or home, as in a professional recording studio.*

So we say to every radio and phonograph manufacturer: *From now on, equip your sets with disc recording and reproducing units.*

For the recording industry will shortly bring to "amateur" recording the same fidelity now realized in the professional radio broadcasting industry.

FACT ABOUT THE SOUND-OF THE FUTURE:

Facts like these are in themselves significant. But listen to this:

We have already mentioned that the American public will go for something new, if—*and only if*—it is not merely new but BETTER.

So we have given the most painstaking fact-finding study to the so-called sound-recording methods of the future.

And we hereby report to the American public that *no other practical method of sound recording—tape, film or wire — can either record or reproduce sound, voice or music with anything like audiodisc fidelity.*

* * * *

Now let us fictitiously suppose for the moment that one of these new methods, upon investigation, *did* seem better than disc recording—which, we repeat, they definitely are not.

This new method could not come as a revolutionary overnight development, so far as the public is concerned. *It would have to come as an evolution taking years to accomplish.*

The public would require considerable time to become accustomed to the new method and learn how to use it. And despite the American public's willingness to buy "something new and better," the cost would be enormous:

1. The public now owns about 5 million disc phonographs, a total investment (at retail) of about $250,000,000.
2. The public now owns at least 200 million 12" classical disc records plus incalculable quantities of 10" popular discs, whose total dollar value is astronomical.
3. The public has also spent upwards of $10,000,000 on disc accessory equipment—needles, albums, racks and the like.
4. The public owns large security holdings and investments in manufacturers' disc recording equipment — matrices, pressing plates, machinery, motors, needles, and the many smaller manufacturing plants which support the whole great disc record and recording business as we now know it.
5. America's retail trades-people own over 400,000 disc juke boxes at an average cost of $300 each—an investment approaching $120,000,000 and pouring millions of nickels nightly into America's cash registers.

The public would gladly discard these millions of dollars' worth of disc records and equipment, if it were worth their while to do so.

—BUT THE FACT REMAINS THAT NO OTHER PRACTICAL METHOD OF SOUND RECORDING COMPARES WITH THE AUDIODISC METHOD IN CONVENIENCE, IN FIDELITY OR IN QUALITY.

We repeat: *The plain facts conclusively indicate that the "sound-recording methods of the future" you have heard so much about, are not only NOT "BETTER" but are not nearly as good.*

In recording, the audiodisc has the following advantages:

a. Easy cutting characteristics.
b. Positive thread-throw with no annoying static.
c. These qualities do not change, regardless of the age of the disc.

In playback, the audiodisc has the following advantages:

a. Brilliant high-frequency response.
b. No audible background-scratching, even after many playings.
c. No increase in surface noise from time of recording to playback or processing.

—AND FINALLY: These qualities will last as long as the recording is needed. There is no deterioration with the years.

Can any other "recording method of the future" lay even partial claim to any such advantages as these?

The facts give the answer: No.

* * * *

TO SUM UP: For the public's information, here are the basic points—each one of which indicates that the "sound-recording method of the future" has actually been here for years:

All of the several methods of sound recording and reproduction—disc, wire, tape and film—have their particular uses and limitations. A disc turntable and cutting arm, obviously, cannot be used in a plane. The other methods are adaptable for office reference or other uses when absolute fidelity is not a factor.

But the audiodisc type of recording is the method which is preeminent in three ways—true fidelity, ease of making pressed phonograph records, and convenience.

It is thus the method which will continue to bring the public delayed broadcasts and transcribed programs over the air.

It is the method that will continue to supply the original sound recordings from which phonograph records are produced by the hundreds of millions.

It is the method which will serve the increasing demands of schools and colleges, in dramatics, language and music instruction, speech correction and scores of other ways.

And finally, it is the method which will be used in countless homes.

From now on, in the postwar era, watch the disc recording industry grow.

It is the sound-recording method of the future—and it has been here all the time.

NOTE: *The above statement is published, in behalf of the recording industry, in newspapers and trade magazines throughout America. Reprints, singly or in quantity, are available to individuals and organizations within the industry. Proofs suitable for posting in retail store windows and in offices of jobbers or distributors will be furnished without charge. Write: Bryce Haynes, Vice President, Audio Devices, Inc., 444 Madison Avenue, New York 22, N. Y.*

From BALTIMORE . . . By William Hoos

THIS month we should have all three Baltimore stations represented in the Journal, thanks to Larry Taylor of WCBM, and Alex Beauchamp of WITH. That is if Alex can beat the deadline with his share of the copy. Our thanks to those two for their share in preparing the column.

Seems like the printer didn't do quite right by Editor Stolzie and Baltimore Chapter. If you'll all open your Yearbooks to page 127, you will see an ad at the top of the page offering best wishes from the home of the Star Spangled Banner, along with a lot of names. However, the printer clipped off the line, "Baltimore Chapter—NABET" from the bottom of the ad. Also, on this ad we left out the name of Bob Parks. However, his name had not been on the list supplied by our Chapter Secretary. We also might note that Freddie Himes' name was misspelled as Hi "N" es. That can't be blamed on anyone in particular so we'll put it down as West of you know where. Howsomever we think that Stolzie and Co. did a fine job on the Yearbook and extend our congratulations to him.

This Is WCBM—Baltimore

This being our initial contribution to the Journal, we wish to say hello to our fellow NABET members. We also think our primary contribution should constitute an introduction of the group at CBM.

First we'll try: A. E. (Bud) Eckels—Supervisor: An old timer, ham, ship operator and IRE Member; contributes flashy textbooks of this newfangled radio stuff, copyrighted in 1917 (first edition), to the Enoch Pratt Free Library. His quiet knowledge is more than highly realized and respected by all.

Then our transmitter councilman: A. G. (Al) Goldbach: "Muscles (?)" is well versed in radio lore, having lived it for the past decade plus. Can down more "cokes" in one shift than the entire crew in a week. Al is a ham, former ship operator and a newlywed.

Next you'll find: S. H. (Sam) Houston: Ham, experimenter, top-flight technician. Poor Mrs. H. is truly a radio widow. Sam is quite an aviator, having possessed a license for many years, and at one time, before the war, flew his own ship. Sam loves people but wouldn't tell them for the world.

The next is: R. T. (Dick) Kelland: Dick's a new acquisition at WCBM, having just completed a five year jaunt with our Uncle's Navy as one of his communications brains, at Annapolis, on the west coast and in Pacific areas. Prior to his Navy jaunt, he was one of WFBR's.

Followed by: F. J. (Frank) Matrangola. Coming to our installation from our Uncle's Army, Frank served in the ETO supervising engineering and maintenance of various AFRS installations. Although we've known him but a few weeks, his progressive attitude has quite impressed us.

Coming down the line alphabetically, but belonging among the first in knowledge, ability, etc., is: H. R. (Mac) McNally. Mac's knowledge could fill textbooks, then overflow to make the authors feel abashed. Mac is one of the few people in the world who has no enemies.

Following Mac comes: F. H. (Frank) Snyder. The man with the photographic memory. Frank is without question the most widely-read man on our engineering staff, besides having the longest service with the company. It has been rumored that Frank can read a passage today and then quote the passage word for word two or more years later.

Then finally comes your writer: L. H. (Larry) Taylor: I happen to be Councilman for Master Control but that's all I'll say, because if I praise myself I'll get the bird* and if I don't, I undermine my own ego.

*Of course, if you want to make it a turkey.

Note: I resent what Snyder says of me.

In closing, the entire group wishes to express its thanks to Clarence Allen for his admirable performance in our contract negotiations.

WFBR Notes

We have a new Vice-President-Treasurer here at WFBR. Mr. R. Trautfelter has taken over the work left by the resignation of Mr. Harold Batchelder. Mr. Batchelder had represented the company in negotiation of the original NABET contract with this station. Prior to his becoming Vice-President, Mr. Trautfelter had been associated with the company as a member of the Board of Directors.

Here's a welcome back from the armed forces to Bill Schuler, USA, who now holds down a desk in the Sales Department. Also to Bill Roche who rejoined the Announcing Staff after a hitch in the Army. This means a goodbye to Nick Campofreda who was Roche's replacement.

SE Bob Briele was a bachelor for about a week while his wife was away visiting relatives. On his days off from work that week he drove down into Virginia, and typically stopped in to see some of the radio stations in Richmond. Speaking of trips, Council Chairman Harry Boone attended the IRE convention in New York and spent some time with Messers Hiller and Powley. Harry's comment on the big town was, "Crowds, crowds, crowds." Incidentally, he again broke the front tooth off his plate, as he did when last in N. Y.

Our sick list has finally dwindled away to nothing. The last and latest who succumbed to the germs was TE Bob Sherrer who was home for several days. At the moment everyone is in comparatively good health.

We've added a new gadget at the WFBR studios. Late at night and on Sundays when the outside doors are locked, the only way a person could get into the studios was to ring the buzzer and wait until someone could be persuaded to go down about 25 steps to the back door. So we ran a couple of pairs from the locker room to the back door, and installed an intercom and an electric lock on the door. Now the announcers don't have to be disturbed when someone wants to get in, and we can monitor 20th Street when we wish a contact with the outer world.

WITH News

Bill Hoos was a little premature in reporting our contract being signed, last month. It seems there was a few things that had to be straightened out. All the difficulties have been taken care of now, to the satisfaction of NABET and the company, and I am happy to report the contract is signed and is retroactive to Jan. 5, 1946.

We elect Al Rhine (xmitter TE) the luckiest member of our staff. Al is taking his vacation down in Florida. Of course, there's nothing new about people taking their vacations in Florida during the winter months, but traveling by private yacht . . . well, none but the rich can afford. Al is taking a forty-five foot Elco cabin cruiser down through the inland water way. I told him he should be on the look-out for moonshiners while passing through the dismal swamps, they might mistake him for a Revenue agent. Al told me he wasn't going through the dismal swamps. He says, "there's two inland water ways. One via the dismal swamp and the other, you follow the Elizabeth River until you come to the mouth of a crocodile." I don't know which would be worse, be riddled by a moonshiner or shredded by a crocodile. We are all looking forward to Al's return, hoping he comes back full of the Florida sunshine, not the Carolina moonshine.

Just received word that Victor Gudice is laid up with the grippe. Get well soon, Vic. All the rest of the boys are well and kicking (mostly kicking).

An Ode to the Announcers

Announcers are funny blokes.
With all their spiel and silly jokes,
There's never a quiver when e'er they quote—
They're just reading what someone's wrote,

They bring you news that's far and wide—
Keeping you up to date is in the stride.
There's one thing that will kill their pride—
Just tell them, their mike just died.

Why praise the announcers—the dears,
It takes brains to be an engineer.
Anyone can read what someone's wrote—
Their only recourse is to quote.

— By Alex Beauchamp

CHICAGO CORN FROM A COB REPORTER

By K. A. Slobb

THE column this month will seriously feel the effects of amateur radio. In fact, we might say it will suffer from the "ham radio blues." I've been spending all month attempting to get on ten meters . . . finally got a Hallicrafters HT-9 transmitter . . . borrowed an SX-9 receiver from Harry Johnson and later a converted FB-7 from Vern Mills . . . so W9YMZ is finally on the air. I woke up this morning to the fact that a column should be written, so this is it.

We received a letter from Wally Downs, who used to be studio engineer here with ABC. He is working for a station up in Alaska, and he recounted the fact that he had managed to pan some gold. Platz says that would be quite a contract, with a provision that all gold panned during periods between meter readings would belong to the engineer, and I pointed out that in that case you wouldn't need a contract, since that was about the only radio job that ever panned out.

I understand the boys in field were griping about eating hot dogs and coffee at football games with no time to have a regular lunch, so NBC put in an order for a dozen tins of K rations. That takes care of the mobile unit for the time being.

I accidentally left Pete Cavanah out of the list of hams in last month's issue. His call is W9FKT. Jim Platz and Roger Parker are also on ten phone now.

Studio D has been finished now, and Bill Knight was first to use it with the Shaeffer show.

"Bud" Prather is back in the Maintenance Dept. after getting out of the Navy, and Bill Beeson has gone out to the WMAQ transmitter. I understand that Dave Kempkes is also coming back to work for NBC very shortly after several years as an Army officer.

Pretty slim pickings this month for news. Will try to have more next month. 73.

Hudson Chapter News

By Jim Carter

YES sir, at this writing, most of "The Old Gang" are back from visiting their Uncle and are happy, as are we, to find it so easy to pick up the threads of broadcasting for WOR.

All except Neil Spencer S.E. have put in an appearance lately, even Jim O'Connor M.C. was in to see us the other day. Still in the Navy but able to walk around as good as ever.

The big news right this moment comes to us via Press Release, that J. R. (Jack) Poppele, Chief Engineer of WOR, was elected Vice-President in Charge of Engineering of WOR at a meeting of the Board of Directors held January 28th, 1946. This IS good news and may I say on behalf of the members of NABET, Congratulations and Good Luck.

Put a notice on the Bulletin Board a few days back to the effect that I thought we would like to hear a few stories from the boys that were in the service, and would they be kind enough to let's hear from them. Under separate heading, we received one of the nicest accounts by Major Charles Kibling F.E. that could be written. I do hope we may have more, soon, from some of the rest of the fellows.

One shy little fellow wrote "Dear Jim—I don't think my personal experiences in the Service are important enough to warrant space in the Journal—Was in only a year! Thanks for thinking of me. Herb.—Herb Sutcliffe S.E. Pat Miller S.E. said, "Jim, The fellows don't want to hear what I did; it wasn't anything." Well right here, I want to say that the little bits that all you fellows did, kept the bombs from falling on my family and we still have our jobs because of your combined "Little Bits." Thanks, (Jim).

Fred Sperr S.E. now Rec. Eng. sent in a short and snappy answer. "Inducted Feb., 1942 at Camp Dix. Sent to Medical Replacement Training Center! Camp Lee, Va. After basic training and a stretch as Acting Corporal; was sent to newly opened Camp Pickett, Va., in June, 1942. Spent a couple of months there before being sent to O.C.S. at Carlisle Barracks, Pa. Commissioned 2nd Lt. in October and assigned to Richmond Medical Depot, Va., after month's course in supply at St. Louis Medical Depot; was sweating out a Captaincy in early 1945 when a duodenal ulcer caused my hospitalization and release from Army, June, 1945. (A very acceptable conclusion to events). Nothing exciting there—but you asked for it. Fred."

And from Bill Schlegel S.E. comes this account. "Was commissioned directly 2nd Lt. Sept., 1942, assigned to Electronic Training Group at Ft. Monmouth. After a month and a half of slight exposure to several Signal Corps Officer's Schools, was sent to newly activated Sig. Svc. Co. as Rdo. Eng.; became its Plant and Training Officer. The unit went overseas Jan., 1943. Landed in New Caledonia, South Pacific Area. There I became Radio Officer in Army Fixed Sta. WVJN. Oct., 1943, transferred to Guadalcanal, became Officer in Chg. of WVJG, a setup of several C.W. circuits, radio teletype and assorted teletype and carrier-current equipment. That was my job until Aug., 1945, at which time I was returned to the U. S. for separation. Reverted to inactive status Feb., 1946, with rank of Captain." (Many thanks, Bill.)

Well, Pappy Stolzenberger has said that he needs space for lots of new groups, so will wind up with some Song Titles as descriptive of Our Boys as submitted by the Gals in the Platter Library.

Herb. Sutcliffe—"*Daddy*"
Pete Saveskie—"*I Wanna Get Married*"
Ed. King—"*Welcome Home*"
Skippy Dreisbach—"*Little Man With a Candy Cigar*"
Jack Irish—"*I'm Flying High*"
Johnnie Cook—"*Smiles*"
Jim Carter—"*Beat Me Daddy Eight to the Bar*"
Bill Schlegel—"*Little Sir Echo*"
Bill Flynn—"*Personality*"
Lowell Frank—"*No Soup*"
Herman Berger—"*There'll Be Some Changes Made*"
Eric Herud—"*Anniversary Waltz*"
Ed. Boquest—"*Take Me Out to the Ball Game*"
Johnnie Garlinger—"*Happy In Love*"
Gene Clark—"*A Pretty Girl Is Like a Melody*"
Mac Benoit—"*My Heart Ought to Know*"
Al King—"*Baby Doll*"
Geo. Hogen—"*Who's Afraid of the Big Bad Wolf*"

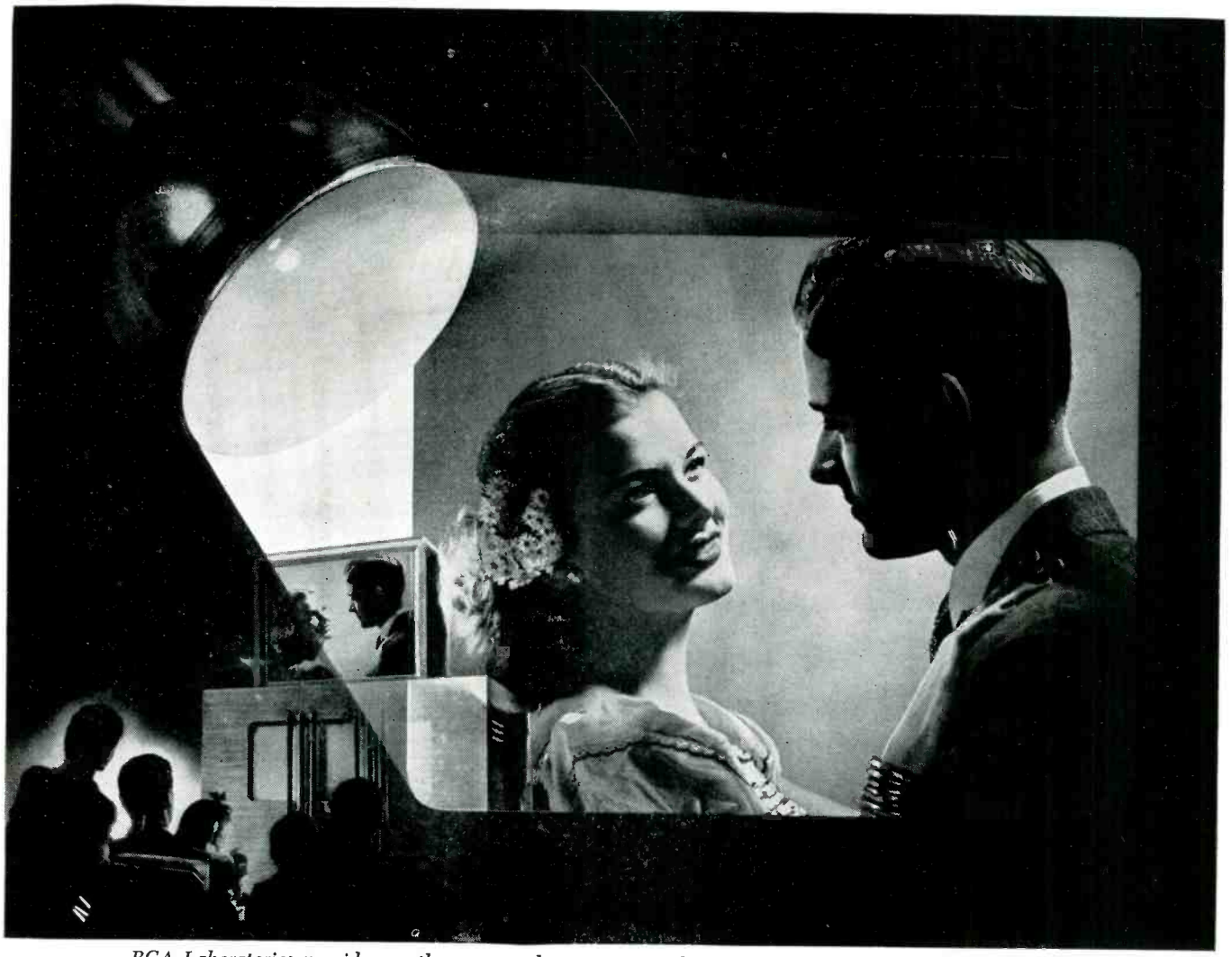
A little note on the bottom says, "I'm sorry, but these are the only ones we really know. It could be called the Hit Parade of WOR. Thanks to Judy, Alice and Arlene.

John Paul Jones S.E. and Frederick H. Sperr S.E. now on the hot Recording end of the P. L. Good luck in the Recording Room.

Bill Flynn S.E. now follows Williams to the WOR Carterett Location as Transmitter Engineer. Good luck and keep 'em "Hot."

Too bad there isn't a Mike located out on Bill Taylor's "Production Desk" when we play those Singing Com'ls so's Bill's Hot Drum and Trap Beats might be "Aired."—So-long for now . . . Jim.

General Electric engineers disclosed here today that they were experimenting before the strike with television relay equipment installed in a blimp to determine the practicability of the idea and to check on the possibility of increased relay range of a station at varying altitudes. The announcement was made to clarify a rumor circulating in the industry. . . . Results from the blimp experiments were not conclusive, but the engineers expect to continue relay tests when the strike is over.



RCA Laboratories provides another great achievement in television—the "mirror-backed" Kinescope, or picture tube.

New "searchlight brilliance" for home television!

Now, large screen television pictures are twice as bright—yes, *twice as bright* as ever before!

You can "count every eyelash" in the close-ups. You'll almost want to shake hands with the people on your television screen—so great is the illusion that they are actually in your living room.

This new sharpness and brilliance is achieved through the new RCA "mirror-backed" Kinescope, or picture tube, perfected at RCA Laboratories.

It has a metallic film—eight-millionths of an inch thick. This metallic film acts as a reflector, allowing electrons to pass through to the screen but preventing light rays from becoming lost through the back of the tube. Just as the reflector of a searchlight concentrates its beam—so does this metallic film reflector double the brilliance and clarity of detail in home television receivers.

Similar progress-making research at RCA Laboratories is being applied constantly to all RCA Victor products—assuring you that anything you buy bearing the RCA monogram is one of the finest instruments of its kind science has achieved.

. . .

Radio Corporation of America, RCA Building, Radio City, New York 20. Listen to The RCA Victor Show, Sundays, 4:30 P.M., Eastern Time, over the NBC Network.

RCA Victor home television receivers will be available in two types. One model will have a direct-viewing screen about 6 by 8 inches. The other type will be similar to the set shown above—with a screen about 15 by 20 inches. Both instruments are being readied for the public with all possible speed and should be available this year.

RCA **RADIO CORPORATION of AMERICA**

This Report Comes To You By Way Of San Francisco

By Jack Van Wart

FACES . . . OLD AND NEW . . . Dick PARKS back at the KGO XMTR after 3 years in the olive drab as a CAPT. in the Signal Corps . . . Bob WOODS returned to STUDIO GROUP (NBC) with 3 years of ARMY life behind. Incidentally BOB was in CAPT. PARKS' command in SAN DIEGO. . . . RALPH KENNEDY leaving KPO TRANSMITTER for a post in the NBC DEVELOPMENT GROUP, NEW YORK. Good luck RALPH . . . BILL MC AULAY took his old watch at KPO XMTR with a lot of tales of his 2½ years of NAVY DUTY.

JUST PLAIN SCUTTLEBUT . . . BRYAN "DUKE" FUHRMAN anticipating the month of MAY. The WOMAN IN QUESTION— . . . ETHEL BELL of NBC HLYD and formerly of NBC SAN FRAN. MARK DUNNIGAN "planning" also . . . QUESTIONS DEPT. . . . Who is CHARLES E. RYND??? ABC "CLOSED CIRCUIT" has it on one page that he is "DODGING THE BRASS" for STRIKE ACTIVITIES and two pages later they call him a VP and credit him a speech about Radio Jobs for Vets. . . . CONGRATS to STOLZE and gang for a swell YEARBOOK. . . .

ACTIVITIES . . . HARRY JACOBS spending all his spare time painting and scrubbing his "MERCURY" (sailboat). STEVENS putting in a sprinkler system in his new Walnut Creek home. . . . TOM WATSON working a swing shift. . . . CASSIDY butchering a squeeler. . . . BOB SHOVER worrying about the tables in "F." . . .

HAM RADIO . . . Here's a partial list of possible members of the proposed NABET NTWK . . . J. Alan O'Neil W6GIS . . . C. T. Stevens W6PS . . . Eddie Parkhurst W6IY . . . Jim Summers W6ADI . . . Max Maxwell W6NXC . . . RUSS BUTLER will be on the air as soon as he gets his license renewed. He's got a new rig just purchased from Techrad as War Surplus. He has 250 Watts on Phone and 350 Watts C.W. . . .

VISITORS . . . O. B. HANSON looking the jernt over . . . SID STROTZ on one of his frequent visits . . . VACATION PLANS YET . . . CLIFF ROTHERY plans to take the family and sell for a looksee around "OLD MAHIKO" . . . MAXWELL says he's going to plant enuf WATERMELLON on his 3¼ acres at NOVATO so that everyone around the plant will be able to have all they want. He claims that all that will be required will be to come and get em. . . . DUKE FUHRMAN is jockying for a spot that will coincide with a rifle match he plans to enter . . . YOURS TRULY goin to TEXAS (wife's home state) . . . TOM WATSON expecting to take the train back to DETROIT to pick up a shiny new MERCURY (automobile) . . . SALLE going househunting . . . ANDY MITCHELL will probably head for the "Biggest Little City in the World" (Reno) where they pave the streets with SILVER DOLLARS. (no family troubles) . . .

NEW TECHNIQUES . . . "DUKE" FUHRMAN (this guy's all over the jernt) has developed a method (he claims) for DENOISING faders. He hones the contacts to a slightly convex shape . . . RECORDING RM in a shambles with the arrival of the NEW gear . . . EARL SORENSON of the Maint. Dept. claims that the undue measured distortion in the ND46 amps with the recording heads as a load is probably due to the "ASSYMETRICAL IMPEDANCE AT 400 CPS AND REFLECTED PHASE SHIFT" . . . My My who'd a thunk it . . . TALL TALES DEPT. . . . MAXWELL tells about the time a friend of his took him to a farm to buy a watermellon. The props of the rancho were really something to be heard, Max says, as the papa and 4 sons were all HARE-LIPS and all YAKIN at the same time . . . Cassidy's most cherished assignment is the Bal Tabarin dance ork pickup. Back at the MCD one can hear giggling and chortling on the line when he tests through. Cass says they're photo and Cigarette gals. Vara strange, Cass doesn't smoke and his pictures appear exclusively in "SCOOP" (Local press club annual). Maybe SPEEDY can explain. (Speedy jockys the spots at the Bal).

GOOD NEWS DEPT. . . . The little Red and Blue contracts arrived and thanks go to the National Office. All we have to worra about now is the interpretation of same. I guess that will be in Part 2. . . . SURPRISES . . . one morning last month we were listening to the HUBBUB CLUB, a local woman's participation pgm. when the MC started throwing questions at a woman who said her name was MRS. MITCHELL. When he asked her where her husband was she answered OKLAHOMA. No one suspected that the hubby was none other than ANDY MITCHELL of the recording rm. . . .

* * *

Look for rapid advances in hearing aids for the deaf. Tiny batteries—no larger than a pencil—can now deliver extremely high voltages. And vacuum tubes the size of large peas have been developed. At least *some* aspects of the future will be in very small proportions.

* * *

One of the best arguments against drafting men over 35 years of age is that their life expectancy for enjoyment of veterans' reunions is relatively short!

* * *

Philadelphia is soon to have its own Radio City. A two million dollar edifice has been planned by WCAU, including a television mast 625 feet above the downtown street level.

DAYS OFF

HAROLD BRANDT and I went over to Akron on our day off some time ago. We wanted to get some pictures of the fellows at WHKK. They pay their NABET dues on the line and anyone who does that deserves a mention in the BEJ. They'll be getting it one of these days.

Well, we were out at their transmitter and someone gets to talking about days off. One fellow said he hadn't done anything but pull crabgrass all summer. Another fellow said painting his house had kept his nose to the grindstone since early last June. Then a quiet little fellow who hadn't said a word for more than an hour opens up and soon establishes the fact that he believes in monopolies as applied to the vocal cords. We would not think of embarrassing the fellow by quoting what he said. Instead, let's tell the story in the first person. That makes me the goat. I don't mind being the goat, but I can assure you of one thing; I have no intentions of eating tin cans for lunch!

I used to have lots of free time on my days off before my wife and I decided to purchase a happy little dwelling out on Marlowe Ave., Lakewood 7, O. I wasn't even aware that saws have teeth before we moved in. We had been living in our delightful little dream-house less than two weeks when my wife's ironing board falls apart.

"Dear," she says, "how about putting these two pieces back together?"

"Sure," says I, quicker than a woman decides to go downtown when she hears they are selling nylo nat half price. "I'll get the hammer and some nails. . . . They're in the basement. . . . I'll be back in a jiffy!"

I did some quick thinking while in the basement. I'll show the little old gal, thinks I. . . . Not all men are gifted when it comes to repairing things. Most men would have to send their wife's ironing board to a repair shop. . . . That costs money. . . . She doesn't realize how lucky she is . . . I"

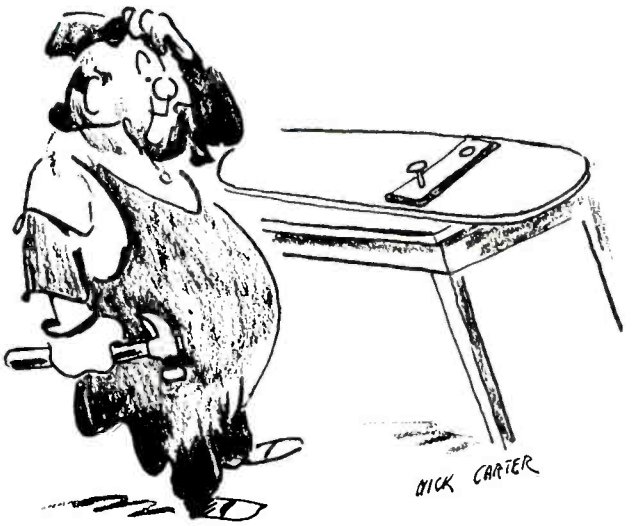
"Hurry up," she exclaims from the kitchen, "I have a cake to bake. . . . It's three-thirty now!"

I hurried up to the kitchen and she had the ironing-board all stretched out on the table. I took one quick look and decided to operate.

"Aren't those nails a little too long?" She shot at me when I began hammering.

"No," says I, "they're not . . . and just what do you know about nails?"

Ageton G. Sobbota at controls in WHK's Master Control Room. WHK Studios are located in Terminal Tower Building (14th floor). WHK is owned by The United Broadcasting Co.



"Nothing," she admitted.

Just like a womaan, I thought to myself. Always criticizing. She asks me to fix her ironing board and I consent without complaining . . . and what happens? She starts to nag before I have a chance to get started. . . . Someday I'll . . ."

"Dear," she cooed, "are you day dreaming?"

"Oh no. . . . No indeed," I explained, "I was just thinking how nice it would be if you had an electric mangle!"

"Oh goodie," she exclaimed, "I'll call Helen right now and tell her you are going to buy me one. . . . Won't she be surprised?"

"Hold this board," I said, giving a nail a sock on the nose that sank it out of sight. I socked another one home before saying: "There . . . it's finished!"

Well, she gives me a proud look as she takes hold of the ironing-board. Her eyes are big and innocent like and I can see love and respect and admiration and stuff like that sparkling from their depths. I got to feeling sorry that I had thought the things I did when she asked me about the size of nails I was using. I mentally made a vow that I'd be more careful of what I thought in the future. . . ."

"Gee," she exclaimed, "those nails must have been heavy. I can't lift it. . . . It wasn't this heavy before. . . ."

"Let me lift it," I said, "women weren't built for doing heavy . . . Gee, you're right . . . this thing weighs a ton!"

"Wait . . . put it down!" she says with disgust, "it's nailed to the table."

Then there was the time when I put the new drain-boards in the kitchen. I'd done a swell job and was almost finished. All I had to do was saw the board for the proper length. I put the board on the kitchen chair and the sawdust began to fly.

"This looks nice," she said, pointing at the sink's framework.

"Well," I answered, leaning the saw against the wall, "I'm not one to brag, but just the same I'll have to admit that there isn't a carpenter in town. . . ."

"Look!" she exclaimed.

I looked.

"You've sawed through the seat of my best chair. . . . Mother gave it to us for our wedding present . . . now . . . boo hoo. . . ."

"Pruitt," said Brandt when we were about 10 miles north of Akron on our way home, "do you believe that fellow actually sawed. . . ."

"Bang!" went something behind us.

"Harold," I stuttered, "the police are shooting at us!"

"We've got a flat," corrected Harold.

And there we stayed for three hours without a spare. That would be far too long to ask a reader of the Broadcast Engineers' Journal to sit out there on the cold, lonely road between Akron and Cleveland. That being the case, we'll bid you good-bye for the time being.

B. P.

hallicrafters *new Model* S-40

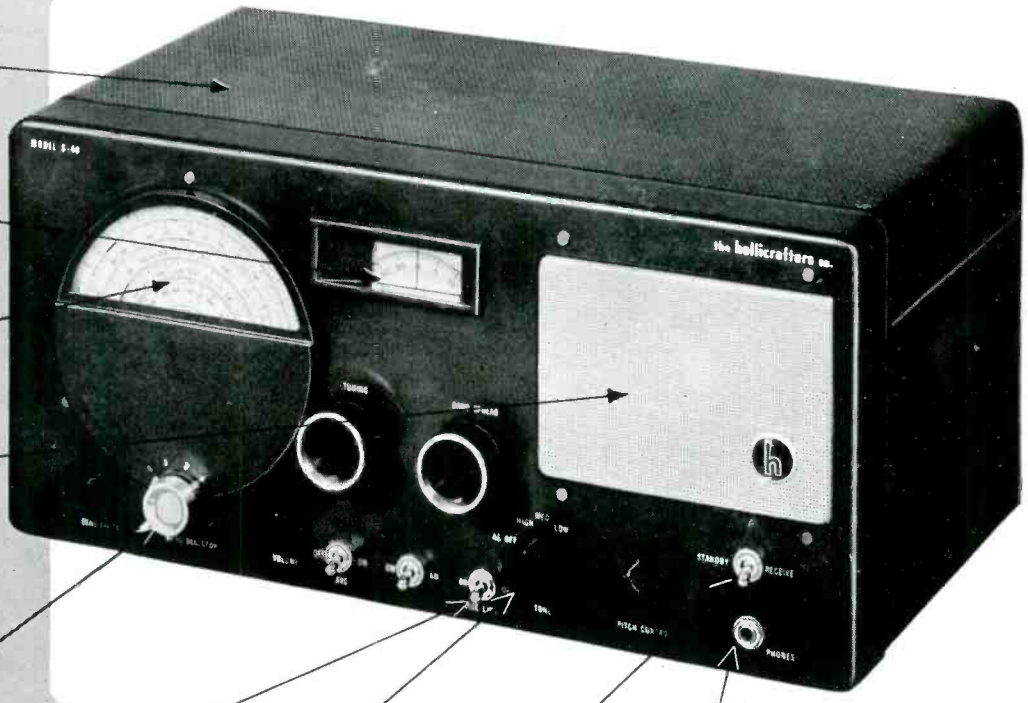
New beauty and perfect ventilation in the perforated steel top

Separate electrical bandspread with inertia flywheel tuning.

Tuning range from 540 kc to 42 Mc continuous in four bands

Self-contained, shock mounted, permanent magnet dynamic speaker

All controls logically grouped for easiest operation. Normal position for broadcast reception marked in red, making possible general use by whole family.



Automatic noise limiter

3-position tone control

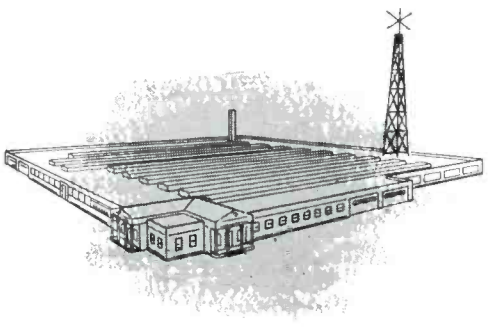
Standby receive switch

Phone jack

New design, new utility in a great new communications receiver . . .

(APPROXIMATELY) **$79.50**

Here is Hallicrafters new Model S-40. With this great communications receiver, handsomely designed, expertly engineered, Hallicrafters points the way to exciting new developments in amateur radio. Read those specifications . . . it's tailor-made for hams. Look at the sheer beauty of the S-40 . . . nothing like it to be seen in the communications field. Listen to the amazing performance . . . excels anything in its price class. See your local distributor about when you can get an S-40.



INSIDE STUFF: Beneath the sleek exterior of the S-40 is a beautifully engineered chassis. One stage of tuned radio frequency amplification, the S-40 uses a type 6SA7 tube as converter mixer for best signal to noise ratio. RF coils are of the permeability adjusted "micro-set" type identical with those used in the most expensive Hallicrafters receivers. The high frequency oscillator is temperature compensated for maximum stability.

From every angle the S-40 is an ideal receiver for all high frequency applications.

hallicrafters RADIO

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

Sole Hallicrafters Representatives in Canada: Rogers Majestic Limited, Toronto - Montreal

TELEVISION CABLE

Washington to New York

Event Was Forerunner of Regularly Scheduled Intercity Television, Starting in January Between Washington and New York, Says A. T. & T. Company

The Army-Navy football game in Philadelphia on December 1 was brought to New Yorkers by television over Bell System coaxial cable according to an announcement made by Keith S. McHugh, vice-president of the American Telephone and Telegraph Company.

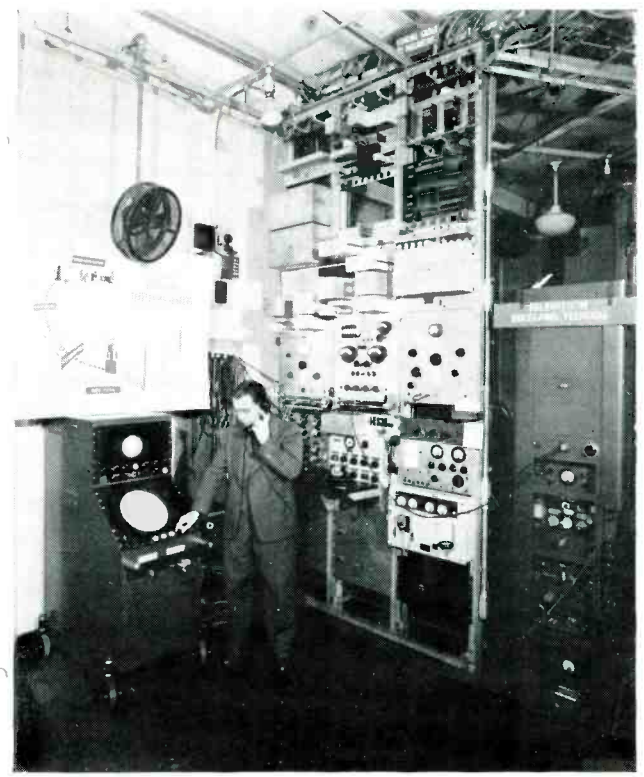
The National Broadcasting Company put the television reproduction of the game "on the air" in the New York metropolitan area. This was in addition to its regular network broadcast of the event from the Municipal Stadium in Philadelphia.

Telephone lines especially equalized for television transmission was used to link the NBC camera installation at the Municipal Stadium in Philadelphia with the coaxial cable in that city. In New York the television images are carried over similar telephone lines to the National Broadcasting Company's transmitter on the Empire State Building.

Describing the Army-Navy game transmission as "a preview of long distance television by cable," Mr. McHugh said this experiment was the forerunner of regularly scheduled intercity television which will begin early in January over a coaxial circuit between Washington and New York.

Plans for this experimental television use of the Washington-New York coaxial cable are being arranged by the Bell System together with representatives of the television broadcasters who expect to be early users of the facilities. These include L. W. Lowman, vice-president of the Columbia Broadcasting Company; L. F. Cramer, vice-president of the Allen B. DuMont Laboratories; and J. F. Royal, vice-president of the National Broadcasting Company.

The Washington-New York coaxial cable will be available to CBS, DuMont and NBC two nights a week each during an extended experimental period. Others interested in television transmission, including motion picture producers and theater operators, also have been offered use of the intercity television system during the experimental period, when they have facilities available.



TELEVISION RECEIVING TERMINAL

This is the equipment in the long distance headquarters of the American Telephone and Telegraph Company in New York where the television images of the Army-Navy football game, to be played in Philadelphia on December 1, will be received via the coaxial cable. From this terminal the television scenes will be sent on to the television broadcasting station of the National Broadcasting Company in the Empire State Building. Stephen Vitale of the Long Lines Department is adjusting a television receiver used in checking the performance of the intercity system.

SPRING, WOMEN AND RADIO

By Bert Pruitt

PEOPLE, as a rule, have never made it a practice to whisper their troubles in my ear. And it's a rare occasion when someone confides in me to the extent of disclosing his secrets. So imagine my surprise and embarrassment when an engineer came to me the other day and said: "Pruitt, I'm worried. The future looks extremely uncertain and conditions are gradually going from bad to worse. Women doing this, and women doing that! First we give them the right to vote and what happens? They start wearing long pants like men, and then they become radio engineers! It's enough to drive a man nuts. What's it all coming to anyway?"

I looked closely at the engineer and discovered many wrinkles fanning out across his face like windrows in a clover field. Poor fellow, thought I. His local board has reclassified him to 1A or he has failed to get that 'B' card he was after. One look was enough to see the fellow was plenty worried. Dark circles under his eyes lead one to suspect he hadn't been sleeping well at night.

"Pal," says I, "it's perfectly obvious that something more serious than female engineers has you worried. What's on your mind besides that 3½ per cent R.M.S.,—5 per cent peak raise we got in June of '43?"

"Well, Pruitt, it's like this. My wife and I were perfectly happy before these skirts began twisting knobs . . ."

"Say," I interrupted, "don't tell me you're chasing one of those female knob twisters?"

"No, I'm not, but my wife thinks I am!"

"She does? Well, how in the world could the dear thing think that?"

"She used to trust me but she doesn't anymore. These engineering females did it. They sit in the control rooms and powder themselves every five minutes. You'd think that they think they are queens ruling the British Empire . . . and that powder! You never smelled such stuff in your life. The odor gets in the air conditioning plant and it's soon all through the building. Our control rooms smell more like a Turkish Harem than a radio station . . . and that damned powder is sprinkled every place. You put your elbows on the table and what happens?"

"You go to sleep?"

"No! You pick up a scent that smells like a Tennessee 'coon dog after's he's tangled with a polecat. You turn a knob and you get it on your hands., You sit down and you

and you get it on your trousers! It's all over the place. Every time I go home my wife meets me at the front door and sniffs like someone with the hay fever. How'm I going to convince her that I'm picking that stuff up over there in that radio station minding my own business while running records like an ideal husband?"

"Well," I offered, "you could say . . ."

"And that isn't the half of it. She was so burned up she applied for a job as engineer over where I work . . . and she got it!"

"What's wrong with that . . . is she your boss?"

"She always has been but that isn't the point. She uses a special kind of lipstick. I'd never once seen any just like it until one of our announcers came in the control room the other day . . . and there was a big smear of lipstick on his cheek and it was exactly the same color as the lipstick my wife uses!"

* * *

In the early days of Guadalcanal fighting, Navy scout planes working with small PT boats wrecked several Jap warships with empty beer bottles. The scout planes, which carried no bombs, located Nip positions. After dark they attacked with hundreds of empty beer bottles. Wind whistling in the empty bottles sounded exactly like falling aerial bombs, and the Japs opened fire. Then, merely aiming toward the give-away Nip gun flashes, the torpedo boats moved in for a quick kill.

* * *

Science won the war for the Allies—with radar, jet propulsion, atomic bomb, and the like. But victory cost this country many years of normal progress in scientific research, according to Dr. A. A. DuBridge, retiring head of the Radiation Laboratory at Massachusetts Institute of Technology. Said Dr. DuBridge: "We developed radar and made it work. Other stations worked on jet propulsion, the atom bomb—and made them work. But these were all specific and limited objectives. Meanwhile, *general* basic research has suffered a set-back of many years."

* * *

"Dear," said the husband, "Let's have some fun tonight."

"All right," she replied. "And if you get home before I do, leave the hallway light on."

* * *

Speaking of unemployment, doctors claim that the average man has 12,000,000 brain cells.

Radar Contact With Moon

Bryce Haynes, Vice-President of Audio Devices (right) studies conditions under which H. A. Simpson, WOR-Mutual recording engineer, transcribes the epochal program featuring radar contact with the moon.

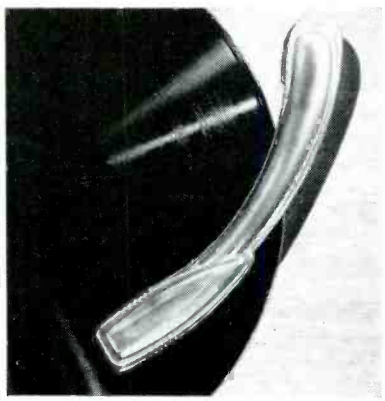
Radio program transcription added a new page to its history on the morning of January 27, when H. A. Simpson, Recording Engineer of WOR-MUTUAL, transcribed on an Audiodisc the program on which the U. S. Army Signal Corps at Belmar, N. J., repeated its radar contact with the moon. Bryce Haynes, Vice-President of Audio Devices, Inc., manufacturers of Audiodisc, was on hand to study the recording conditions under which the transcription was made.

Glider Pickup

Shure Brothers announces the development of the "Glider," their new Post-War Crystal Phonograph Pickup. It features two advanced engineering achievements: the Lever-Type Cartridge and the low-mass Tone Arm.

The Cartridge houses the lever-driven Crystal, which results in lower needle impedance and higher needle compliance. The lever is so designed that it gives greater shock immunity to the Crystal. The light aluminum Tone Arm is curved and is free from resonance. It has an adjustable swivel screw that prevents the needle from striking the turn-table if the arm is dropped.

The "Glider" uses no springs or counter-weights. It has a scientifically determined frequency response. The standard output



voltage is 1.6 volts. Another model will be available in the near future with a higher output voltage.

The "Glider" is ideally designed for easy replacement of old, heavy Pickups. It glides smoothly and easily over the record grooves, giving longer life to records and needles. The curved design of the "Glider" affords the optimum lateral approach to the grooves. It is this "Faithful Tracking" which results in clearer, fuller tone qualities.

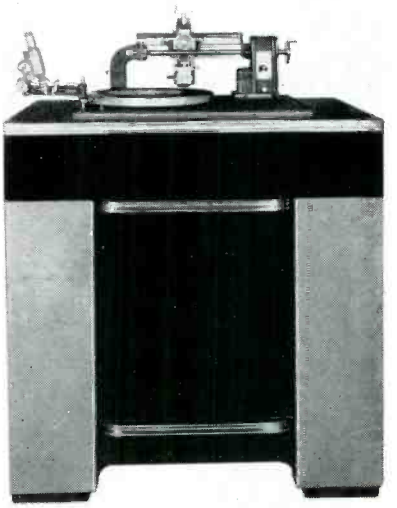
Presto 14-A Recording Turntable

The Presto 14-A represents a major advancement in the design of recording turntables, having all of the performance characteristics demanded by experienced engineers who make disc recordings for phonograph record and commercial transcription manufacturers, motion picture studios, broadcasting stations, universities and industrial firms.

Directly gear-driven at both 78.26 and 33.33 rpm by a synchronous motor, the playing time of recordings made on the 14-A corresponds to the original program time with split-second accuracy, the only deviation in speed being due to variations in power supply frequency which seldom exceed 0.1%. The pitch of reproduced musical tones will be found identical with that of the voice or instrument itself.

Speed regulation within a revolution is held constant by the combination of a heavy cast iron turntable, flexibly coupled discs, a precision gear train and powerful motor. Either speed is made available instantly by a slight turn of a hand wheel.

Exceptional reduction of mechanical vibration is made possible by the use of a filter



employing Prestoflex, a new damping material developed in the Presto laboratories and used exclusively in Presto cutting heads and turntables. In addition, vibration is isolated by mounting the motor, gear box and transmission shaft on a separate cast-iron base, an assembly weighing 160 pounds.

The cutting head mounting is designed for the use of either a vertical or lateral recording assembly.

The cutting head feed screw is directly gear-driven. Any one of five pitches may be selected by moving a convenient gear-shift lever. A single feedscrew permits cutting either outside-in or inside-out.

Doings in Denver

By George Pogue

HI-HO! Here we are scrambling about for a bit of news from the Denver Chapter. We hope that there will be, not the "Denver Chapter," but the "Rocky Mountain Chapter" by the time that this article is published.

Ham rigs is still the big topic of conversation with the gang around the station. Joe Turre is the newest addict, just getting his modulator rebuilt so that he can get going. Vern (Local boy makes good!) Andrews got a real write-up the other day in one of the local papers about the results of one night's hamming. Vern had contacted a Denverite in the Aleutians who told him how to contact his parents. Vern called the fellow's folks over to his shack and they talked to their son who has not been home for over three years.

Engineers who have once felt the lure of the mountains always seem to return to the Mile-high city. Blaire Dobbins who was a transmitter engineer at KOA is back in Denver and in radio after a year as a candy salesman; he is a transmitter engineer at station KLZ in Denver. Ray Green, last summer's relief at KOA transmitter, is an engineer at the studio and transmitter of KFEL in Denver. The last of KOA's engineers to return from the Services of Uncle Sam is Commander Glen Glasscock who is back at the studio of KOA as Control Room Engineer.

Joe Finch, Kenneth Raymond, Milt Hall, and Your Reporter are taking turns doing a bit of duty at the transmitter in order to cut down some of the overtime out there. To date, the most important job accomplished is a bit of fresh air on the drive out and back and catching up on a bit of bull throwing with the transmitter gang. The other night out there we thought we were seeing double and nary a drop to drink! It was only Joe Turre coming to work and bringing his twin brother along.

During this lovely, mild January weather, our aviation enthusiasts, Kenneth Cooper and Al McClellan, are getting in a lot of extra flying time. Al moved over to the night trick at the studio so that he could have more time for flying, while Cooper, who works graveyard at the transmitter, flies after he gets off work in the morning. Some days Kenny flies up to Greeley to see his family.

Over at KVOD the newest in pasttime is making Model Airplanes. The fellows started a shop at the studios but the enthusiasm grew so big that they finally decided to move the shop out to Chuck McElroy's, Mac and Joe Summers being in charge of the project,. They call it "McElroy and Summers Model Airplane Factory." Vince Corbett, meanwhile, has been burning the midnight oil overhauling the equipment at the studio of KVOD.

Well, this is the shortest month of the year as this article is being written. Do you suppose that's why this is the shortest article of the year?

Television Engineering News

By Jack Irving

Photo by Joe Conn

This Is ABC New York

By Gil McDonald

ARTHUR POPPELE announces the newest members of NABET are Clifford Paul, Ollie Fulton, Rudy Gebhart, Bob Daniels, Jim Davis, Joseph Petit, Harry Getting, Ray Kopcienski, Roland Paradis and Aaron Stephenson, whose first name we told you we would have by this issue.

One of the peculiar things about electing a studio councilman for television is that he is invariably transferred to field. First Courtney Snell and now Heino Rippo. There are some people who will contend, because of this circumstance, that the best men must be in the field. Any refutations of this theory will be carefully considered and printed by this department.

The question before the house now is whether the mobile unit will go to Washington in February. The last scheduled trip in January was called off at the last minute, the biggest reason being the President's address was not given in person to the combined House and Senate. Last minute is the correct term as far as Cliff Paul is concerned. He arrived with bag all packed and ready to go on Thursday morning. Cliff says his wife will never believe him now.

Joe Koehler, who reviews studio shows for Billboard, has at last discovered that the T. D.'s are responsible for the camera shots. It is rumored by some envious people that Protz can quote in its entirety one of Koehler's recent reviews.

Reminiscing with Protz in the office the other day, Harold See related this one from his days in audio field. Harold was sent to Trinity Church to do a Christmas service. About the middle of the devotions, Harold had some trouble with the amplifier which was set up in a loft behind a huge Christmas tree. Harold unscrewed a bulb nearby, put in his double socket, plugged in the soldering iron and was about ready to go to work when the sexton, in a mild voice, asked him to please be careful about putting out the bulb as it was supplying the light for the Star of Bethlehem. "How was I to know it was the Star of Bethlehem," complained See, "it was just a light to me."

Somebody it seems is always reading Tommy Smiley's telegrams. The doleful expression Tommy was wearing about Christmas time was caused by a wire which read, "Am stuck in Chicago stop Have a Happy New Year stop signed Snow White."

Most recent changes in television are Jack (Spike) Burrell and Stan Peck from field to studio T. D.'s; Ripp and Bill Waterbury to field. Belated congratulations are in order for Stan, Jack and Bill States, who have also been raised to this position of authority.

8-G is now being readied for a television studio. We understand there will be four orthicon cameras and five chains. This means the T. D.'s will have two more buttons to push which is still further reason for Billboard recognition of their talents.

For the past month George Neumann, Ed Hoffmeister and Charlie Townsend have been eulogizing the shaving lotion Ollie Fulton hides in 577. This is probably the reason 577 is still labeled restricted.

Have you heard the story about the man who staggered up to a bar and ordered a whiskey? The bartender poured one and the character with shaking hands spilled the contents on his vest. Ordering another, he did the same thing. On the third try he just made his lips, got the drink down and immediately spruced up. "Say," asked a friend standing nearby, "what are you doing these days?" The nervous wreck replied, "Same old thing—video controls."

Pappy Gronberg, we are told, is grooming his two-year-old son

BOB DOUGHERTY took a trip to Florida for a field job recently with one mike as his total equipment. That brings to mind the trip to Lakeland, Florida, that he took last winter to do a one minute sustaining pickup.

Jack Bourcier was rushed out on New Year's Eve to do a last minute deal from the Golden Theatre, and on getting out to the street, he couldn't get a cab, so he lugged the equipment over by hand. On the way, he lost his valuable gold wrist watch. Two days later he was presented with a new watch by the company to make up for his loss. We wonder how many other networks would give that much consideration to one of their men.

Merle Worster, fresh back from the wars, bought a new home in Jersey and at latest reports is building a new 1 KW fone rig (grid modulated he sez). With the low efficiency he will get he expects to use the power that is dissipated in heat, to heat the house.

John Norton was moved back to studio when Merle moved back to his old corner in Jake's emporium.

Bill Simpson back at his old stand following several weeks under the Doc's care. How about some news from the WJZ gang? 73. Gil.

to be a T. D. Howard built a small box with push buttons and red and green lights for the boy to practice on.

Aaron Stephenson is now working on video effects and is at present laboring over the kaleidoscope in which project he has the very best wishes of 5-F.

The boat-building fever is beginning to circulate about the office. George Butler has finished a pram for his daughter; Ra Davis is looking for a space large enough to build a Lightning; and Bob Clark is still in the gleam in the eye stage. In cooperation with Butler, your scribe will attempt a Lightning in George's garage.

Upon entering the steam room of the New York Athletic Club a few days ago, Frank McArdle, peering through the mists, said, "How did we get in St. Nick's arena? Is the main event on yet?"

The palatial quarters afforded the control equipment at St. Nick's undoubtedly accounted for the burglary attempt a few weeks ago. As the equipment, except for telephone and some cable, was at Madison Square Garden, nothing was taken. Stand by please, almost forgot—Carlos Clark's windbreaker, which is valued at $125, was stolen.

By a roundabout means, it has come to the attention of this department that even though the war is over, a draft card must be carried at all times. So any of you men patronizing the better bars after midnight had better have them. And for the benefit of dischargees, discharge papers are not acceptable.

Courtney Snell, who has an amazing constitution in some respects, finally succumbed and caught cold just like normal people when he had to stand in front of an open window on 42nd Street and televise the 82nd Airborne parade.

This we don't get: Our 5-E correspondent informs us that Lou West, who is playing records in 5-F, will soon be able to replace Smiley now on audio in studio.

Despite lack of war news and action films made by Army and Navy combat cameramen, the NBC Television Newsreel still ranks high among WNBT's metropolitan audience, we are informed. Free lance cameramen, using standard 35 mm. equipment, are covering such events as the Victory Parade, Winston Churchill's arrival in the U. S., and the landing of the Argentina with brides of the G. I.'s. These are some of the reasons for the popularity of Paul Alley's department. Of course, the highly decorative equipment in Alley's office makes his office popular, too.

Paul informs us that until such time as film units expand with regular staff cameramen, NBC will be able to cover only the most outstanding events. As many as five cameras and a dozen different locations are necessary to cover such events as the parade. A beat of five days over newsreel theaters is fast becoming commonplace. No, this is not a sponsored plug.

Before winding this up, we'd like to say hello to Bob Turner, Charlie Snyder and Bump Holley of WHAM in Rochester.

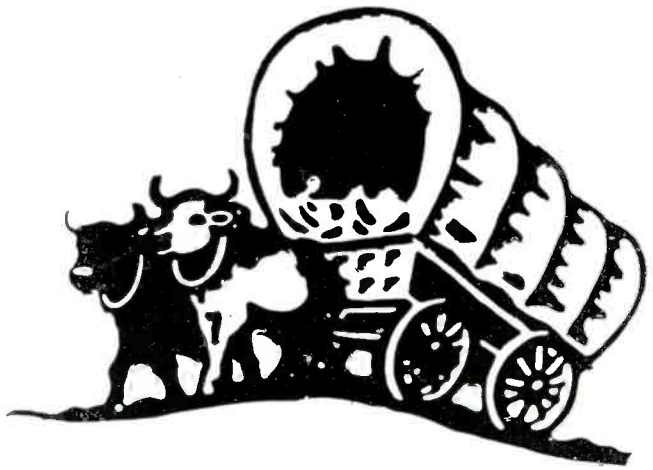
ENGINEERING CHAPTER NEWS

By E. B. Berglund

Audio-Video Facilities, Radio Facilities, Technical Services and Development Laboratory

IT'S good to see familiar faces back again as Uncle Sam is releasing some of our former colleagues. Ex-Commander Herman "Hank" Gurin is back from the U. S. Navy after a five year absence from NBC. While in the Navy, Hank assisted in the planning and erection of a new materials laboratory. Later he was in charge of special research and development projects at the Brooklyn Navy Yard. These projects were in connection with vibration shock analysis and acoustics. Hank is now a member of the Development Laboratory staff and is engaged in acoustical and studio design for broadcasting and television. He is now married and has a son two years old. Ex-Ltc. Comdr. W. R. "Bill" McMillin, Bureau of Aeronautics, Navy Dept., is with us again after seeing 42 months of service. While the nature of his work is confidential, we can disclose that Bill was a Navy Dept. representative at the RCA Labs. and acted as Technical Observer with Utility Squadron Six. In the latter capacity he covered the following areas—Cape May, N. J., Traverse City, Michigan, Clinton,

(Continued on Page Twenty-eight)

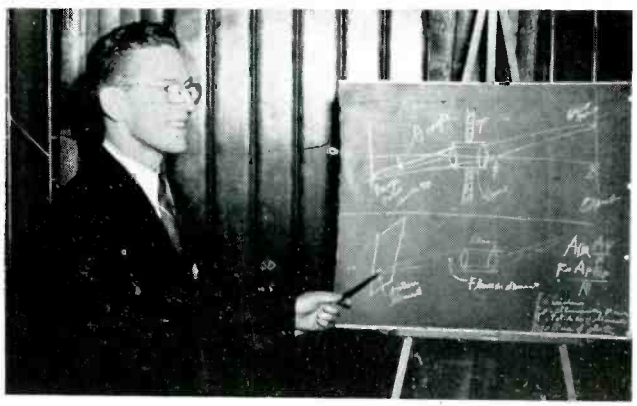


Omaha News By Bob Rudd

THINGS AND STUFF

We missed the boat in the last issue concerning the bags that the hunters around here brought back from their various expeditions. **Joe Herold** reports that he got his limit of ten pheasants but **Boy** did he have to work. Cover very heavy this year. **Roy Glanton** and **Bob Rudd** both had excellent results on their two day outing and came back with ten birds each. A brand new tire on the car was ruined though but the fun and relaxation was worth it. Nebraska and our neighboring state of South Dakota have the best pheasant shooting in the country and this writer has seen flocks of as many as fifty pheasants. It's quite a sight but one that isn't easily forgotten. We have no reports on any of the other boys but imagine that most of them were unable to get away.

Bill Kotera and **G. Flynn** are back from New York where they were attending the Television course at RCA. They report wonderful things coming. Chief Kotera is



WOW Photo by Mark McGowan.
Chief Kotera illustrates and explains Iconoscope illumination.

conducting a course and every class is well attended. His lectures are very well prepared, and his illustrations are clear and to the point. He uses the blackboard and chalk freely and leaves nothing to be guessed at. The entire engineering staff is attending Mr. Kotera's classes and all have received a great deal of benefit from them.

The WOW staff Christmas party was held at the Blackstone Hotel, December 22nd. Turkey and all the trimmings were served. President **John J. Gillin, Jr.**, received a fine lounging robe from a grateful staff.

VITAL STATIC

We missed getting our material in on time for the January issue so will take the liberty of giving both January and February statistics at this time.

Joe and **Lee Herold** celebrated their seventh wedding anniversary January 28th. **Joe** also completed sixteen years of service with WOW on that date. **Paul McDonald** had a birthday January 12th. **Beuford** and **Genevieve Eaves** celebrated their 13th wedding anniversary January 15th. Under **February** we find that: **Yours Truly** and **Waldon Sieh** both have birthdays. One of our dear brothers said concerning me, me that is: "Well, the fat boy is getting on." Ain't it the truth! **Al Maller** completes three years of service.

ALL OF US HERE HOPE THAT ALL OF YOU THERE, HAD A FINE CHRISTMAS AND THAT THE NEW YEAR BRINGS YOU THE FULFILLMENT OF YOUR EVERY WISH.

Engineering News

(Continued from Page Twenty-seven)

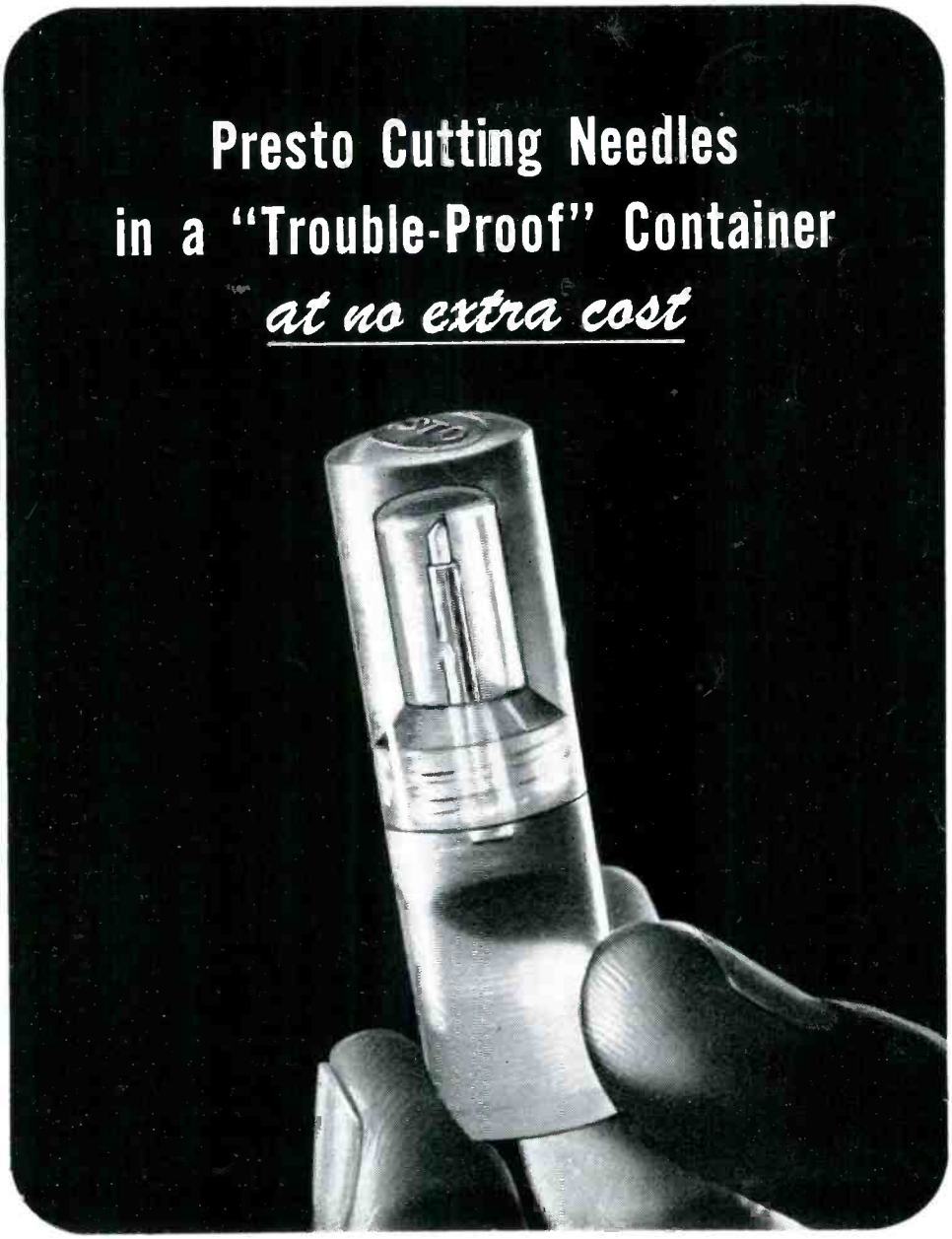
Okla., Monterey, Cal., and the Headquarters Training Task Force at Clinton, Oklahoma. Bill is back again with the RF group but found that he had been elevated to the 10th floor since the boys moved up from the 5th when more office space was needed. Ex-Ltc. Comdr. Leroy "Buster" Moffett, USNR, is now in the Development group after some 2½ years with Uncle Sam. Ex-Lieutenant Commander Bill Resides, USNR, is back with the A-V group after serving in Washington, D. C. We all hope that Bill will find a place to live and still be able to commute to the office. Welcome back boys!! With Allen Walsh now in the A-V group, we hope to report on some future Resides-Walsh feuds as of the good old days.

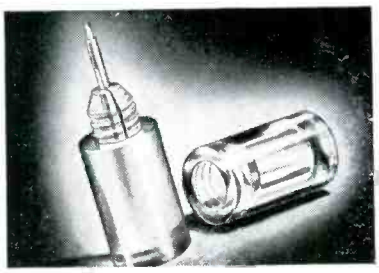
New faces around these days include Technicians Rudy Gebhart, John Schaller, and Bill Jackson in the Development Laboratory, all formerly of Sperry's. Another Technician, Joe Pettit, comes to NBC from the RCA Labs. at Rocky Point, Long Island. Stewart James, formerly 1st Lieutenant in the U. S. Marines, is a new member of the Technical Service group. Stew saw service in New Zealand, Iwo Jima, and Japan, during his four years with the Marines. He was born in Toronto, Canada, but decided to go South for his higher education and is a product of Alabama Polytech. He has had some eight years of design experience with several European firms before joining up with the Marines. Welcome to our midst, boys, and let us all get acquainted!!

The boys in the Engineering Chapter are all busy on those post-war plans which include broadcasting, FM, and television. We hope to see concrete results of all this thinking soon. Jerry Hastings has that distant gleam in his eyes as he goes over the new Hollywood Studio plans. Could it be skiing in the Rockies, Jerry? Frank Opsal recently celebrated his birthday, but found that the subway distance from Manhattan to Brooklyn is much longer when going via the Bronx. Now that it can be told, we all understand why Joe Kay was so mum about his reasons for coming to New York from out Hollywood way. Joe followed Jack Dempsey across the nation on the Truth and Consequences show, but didn't see him until after Jack's identity had been guessed as part of the T and C bag of tricks.

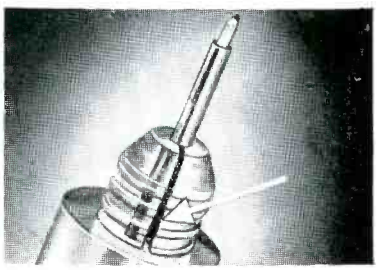
Bowling, bridge, and skiing seem to occupy most of the Engineers' spare time these days. We hope to report more on this later. Those of us who were fortunate enough to attend some of the meetings and banquet of the annual IRE Convention, came away much pleased. The meetings proved highly instructive to radio men. Exhibitions did a wonderful job of displaying post-war lines of equipment and information so shortly after the close of the war. So long until next month.

Presto Cutting Needles in a "Trouble-Proof" Container *at no extra cost*

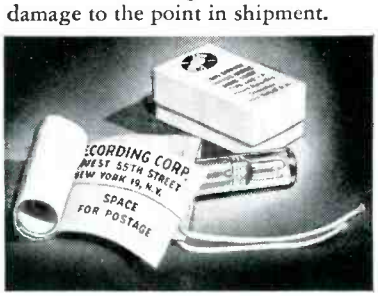




NEW! A transparent lucite container keeps Presto Cutting Needles *safe*. Nothing can harm the precision ground point and cutting edges.



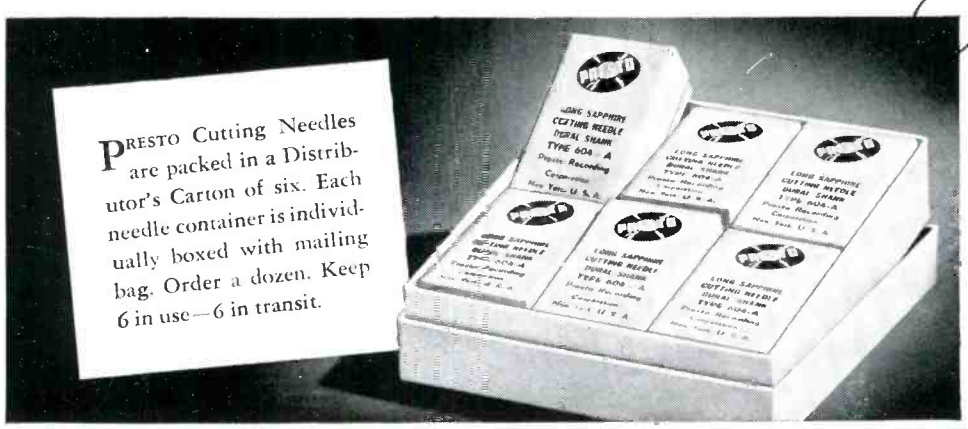
TIGHT! This ingenious chuck holds the needle *tight*—no chance of damage to the point in shipment.



EASY! Just slip used needles (safe in their containers) into this handy mailing bag and send them off to Presto for resharpening.

FOR YOUR CONVENIENCE! Presto Sapphire Recording Needles *now* come to you in a *new* package, designed for utmost needle protection in shipping and handling.

FREE! To Presto-equipped recording studios: a convenient rack holding six Presto Cutting Needles, with special "point-control" chart recording number of hours each needle is used.



PRESTO Cutting Needles are packed in a Distributor's Carton of six. Each needle container is individually boxed with mailing bag. Order a dozen. Keep 6 in use—6 in transit.

PRESTO

RECORDING CORPORATION

242 W. 55th St., New York 19, N.Y.

WALTER P. DOWNS, LTD., *in Canada*

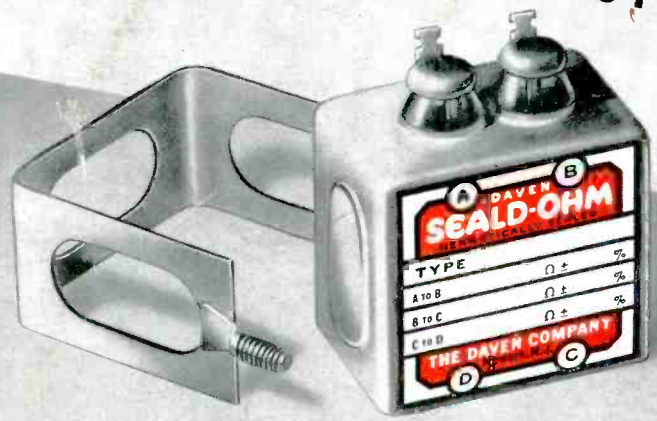
WORLD'S LARGEST MANUFACTURER OF INSTANTANEOUS SOUND RECORDING EQUIPMENT AND DISCS

Presenting the...

DAVEN

WIRE-WOUND
SEALD-OHM

HERMETICALLY-SEALED PRECISION RESISTOR



Totally unaffected by extremes of humidity and temperature, highly resistant to vibration and shock, with provision for rigid mounting . . . these were "specs" that could not be met by any resistor on the market. In response to a direct request, DAVEN, applying the know-how of over two decades of precision resistor engineering, carefully designed and built a new, completely hermetically-sealed resistor. DAVEN SEALD-OHMS squarely meet these specifications. This was proven by exhaustive tests conducted by a famous research laboratory.

SEALD-OHMS are ruggedly constructed throughout, with special attention given to combining vibration and shock resistance. Their physical design enables the combining of several circuits within a single unit. A unique mounting bracket arrangement adds to the broad adaptability of these resistors. SEALD-OHMS are intended for use in any equipment subjected to humidity and temperature extremes. They fully meet both Army and Navy Specifications. Typical applications include as secondary standards, resistor elements in bridge networks, in voltage divider circuits, in attenuation boxes, etc.

ELECTRICAL DATA

RESISTOR WINDINGS: Either spool or mica-card type, depending upon engineering requirements. Non-inductively wound and carefully aged to remove strain before final calibration.

RESISTANCE RANGE: Any desired value may be had; maximum 1,680,000 ohms depending upon type of resistance wire employed.

TEMPERATURE CHARACTERISTICS: Four types of resistance wire of different characteristics are available.

ACCURACY: May be had to tolerance as close as ±0.1%.

FREQUENCY CHARACTERISTICS: No appreciable effect over the audio range. This range may be exceeded to meet many other applications.

CIRCUIT COMBINATIONS: Resistors available with 2 terminals at one end or 2 terminals at two ends. A single four terminal unit is designed to take up to four separate spool-type resistors of different values and accuracies.

MECHANICAL DATA

SHIELDING: Drawn brass, completely hermetically-sealed. Thermal-shock tested for faulty seals before shipment. Treated to withstand 200 hours salt spray test (f-13 AWS Spec C75.16-1944).

TERMINALS: Electrical connections are brought out through fused glass seals which are soldered in the resistor shield.

MOUNTING: A specially designed steel bracket with spade lugs welded to the sides is supplied with each unit. Cut-outs on this bracket engage with embossings on the side of the brass shielding to enable firm mounting of the unit in a vertical, inverted or horizontal position.

DIMENSIONS: 1-9/16" wide, 1½" high, ⅞" deep. Add terminal height, 9/16" Studs on mounting bracket, 1-11/16" between centers.

For additional information, write to **THE DAVEN CO.,**
191 Central Avenue, Newark 4, New Jersey

DAVEN *pioneer maker of precision resistors*