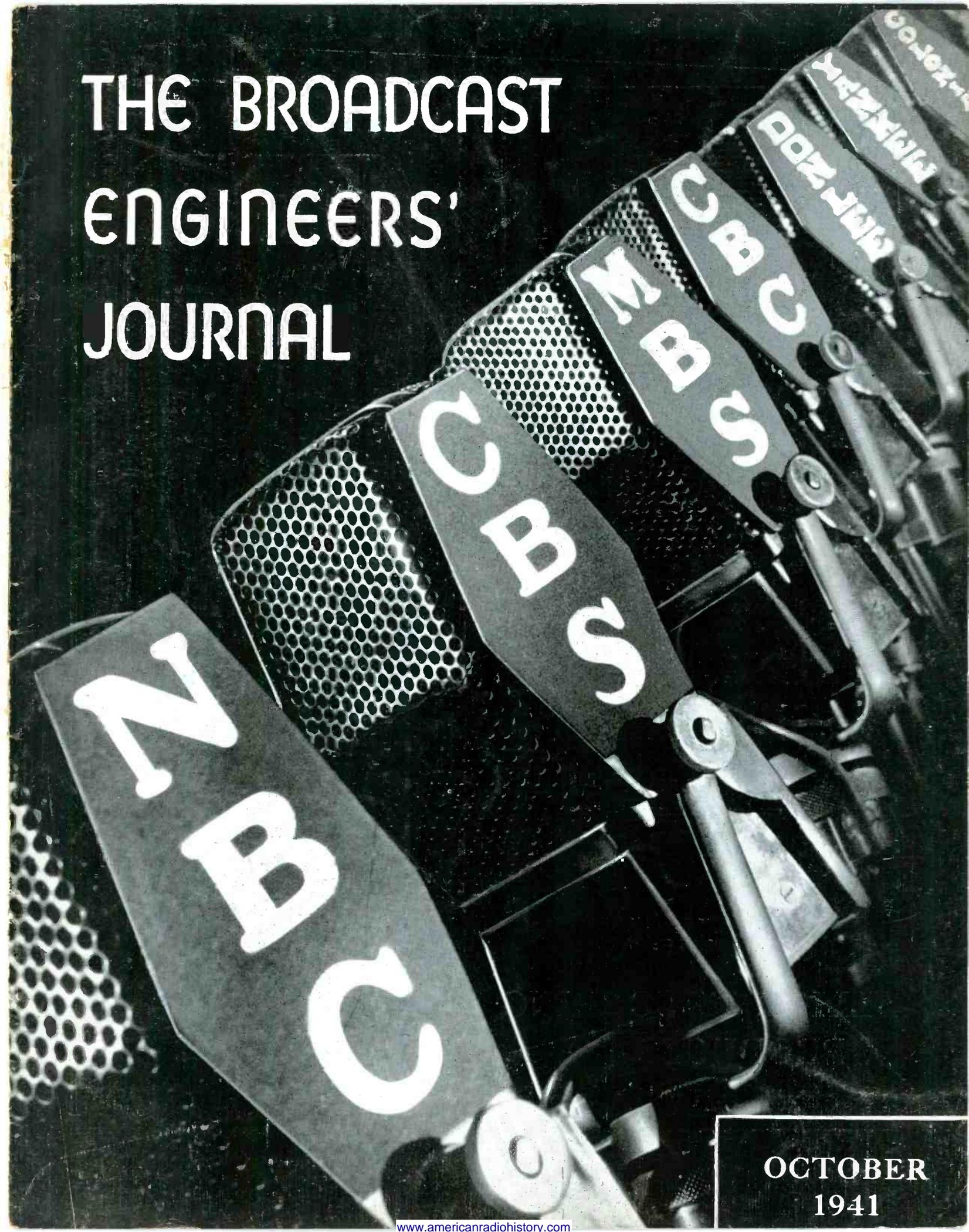


# THE BROADCAST ENGINEERS' JOURNAL



OCTOBER  
1941

*"...Rather  
than  
Quantity"*



Refinements in design and painstaking care in construction are reflected in satisfactory performance.

ALLIED recorders and recording blanks are frankly created for those who seek **\*QUALITY** rather than quantity.

*\* Based on the "records" of the country's leading recording engineers.*

## ALLIED RECORDING PRODUCTS CO.

21-09 43rd Avenue • Long Island City • New York

**SHOOTING ON DULL  
NOVEMBER DAYS?**



The *Master's* exclusive "low-light" scale makes correct exposure simple and certain!

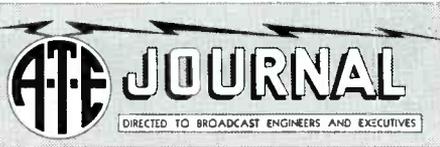
"Even on dull, mean days, my pictures are all correctly exposed — for my MASTER is so simple to use in low light — and it's so easy to read," is the remark so often heard from MASTER owners.

The explanation is two-fold. First . . . the MASTER employs a highly sensitive WESTON instrument which accurately measures the light the camera sees, even in extremely low light. Second . . . you can read the MASTER'S "low-light" scale . . . easily and accurately . . . under these adverse lighting conditions. That's because the scale is entirely free from congested numbers and markings. It's extremely long, with bold and widely spaced numbers which are always *easy to read*.

It's advantages like these, coupled with the dependability which has made WESTON the world's instrument leader, which give the MASTER unchallenged leadership in the photographic field. Get all the facts on WESTON Exposure Meters from your dealer; or write for descriptive literature. Weston Electrical Instrument Corporation, 649 Frelinghuysen Avenue, Newark, New Jersey.

**WESTON**  
*Exposure Meters*

formerly



ANNUAL PHOTOGRAPHIC ISSUE

Volume 8, No. 10



October, 1941

TABLE OF CONTENTS

	Page
Annual Photo Contest Results.....	2
Recent Advances in the Theory of the Photographic Process.....	3
The Business Side of Television, Part 2.....	6
Through the Finder.....	8
Cleveland Mobile Unit and News.....	9
Portable Sound Effects Equipment.....	10
Behind the Mike.....	11
Grip With Your Knees.....	12
Who's Who in Chicago.....	14
San Francisco News.....	15
Hollywood.....	16
On the Airialto with Tom Gootee.....	18

A.T.E. Publications, Inc.

TRUSTEES

E. Stolzenberger	G. E. Stewart	G. M. Sellar
F. R. Rojas		V. J. Duke

THE BROADCAST ENGINEERS' JOURNAL

Managing Editor.....	E. STOLZENBERGER
Coordinator.....	F. R. ROJAS
Director of Sales and Promotion.....	E. C. HORSTMAN
Press Photographer.....	JOE CONN
Staff Cartoonists.....	ED. MACCORNACK, ROSS PLAISTED
Circulation Manager.....	TED KRUSE
Staff Assistant.....	ARTHUR G. POPPELE
Treasurer.....	C. W. PHELAN
Assistant Treasurer.....	D. J. MOLONEY

ASSOCIATE EDITORS

Chicago.....	CON CONRAD
Cleveland.....	J. D. DISBROW
Denver.....	J. ROHRER
Engineering Chapter.....	R. A. ISBERG
Hollywood.....	RAY FERGUSON
KFI-KECA.....	H. M. McDONALD
Mutual Broadcasting.....	R. A. SCHLEGEL
New York.....	TED KRUSE
San Francisco.....	LEE KOLM
Washington.....	DORSON A. ULLMAN

The Broadcast Engineers' Journal is a privately printed monthly publication, issued by the Ass'n of Technical Employees Publications, Inc., a corporation of the State of New Jersey with office at 30 Rockefeller Plaza, N. Y. City. Address all communications to Editor's office: E. Stolzenberger, 116-03 91st Avenue, Richmond Hill, L. I., N. Y. Telephone Virginia 9-5553.

THE BROADCAST ENGINEERS' JOURNAL IS THE OFFICIAL PUBLICATION OF THE N.A.B.E.T.

Advertising rates and information supplied on request. Subscription, \$1.50 per year; \$3.00 for three years. Single copies, except Christmas Yearbook, 25c; Christmas Yearbook, 50c, subject to availability. All remittances in advance. Foreign: Add postage.

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

If your Recording Discs got confidential they might be saying,



Hey, Daddy!

You can have long-term economy PLUS better results from me if you'll but try

MASTER RECORDERS by SCULLY

But seriously, until recently the making of high quality recordings was a very closely guarded trade secret. In our 51 years of sound recording experience, the art of recording has emerged from the rule-of-thumb status to that of a very precise science. The cutting styli, recording disc, and cutting head have now reached such a degree of excellence that unless the recording machine itself is the finest available, the other improvements are greatly nullified and the resulting recording therefore does not represent the present limit of technical perfection. We humbly submit that the Scully Master Recorder utilizes every known engineering principle plus the finest materials and skilled labor to make our product unchallenged as the finest recording mechanism in the world.

Carefully examine a Scully—then complete the pleasurable experience by listening to a fine recording made on a Scully! You will profit by writing now for current prices, terms, and delivery dates.

SCULLY Machine Company 62 Walter Street Bridgeport, Conn. Telephone Bridgeport 5300

# Annual Photo Contest Results

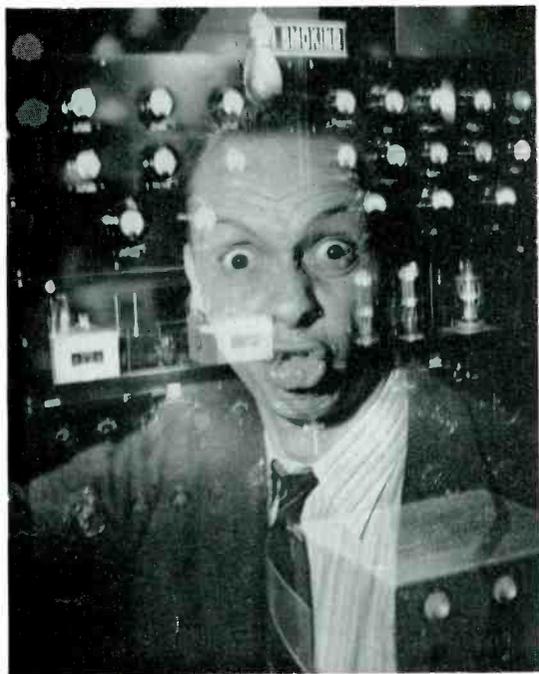
1300 feet above Fifth Avenue

First Prize! The winner is Vincent S. Barker, WNBT television transmitter engineer, with his entry entitled, "1300 Feet Above Fifth Avenue." Contax — F2 lens, 1/50 second at F8 with yellow filter, Dupont Superior film, 35 mm.



and below, the Second Prize winner, entitled, "Broadcast Technician's Nightmare", entered by Jimmy Lowe of KFOX. Rolleicord, Syperpan Supreme film, 1/25 second at F6.

Broadcast Technician's Nightmare



The Journal is pleased to announce the results of its annual photo contest on this page, and to thank the judges for their deliberations in awarding the prizes. By experience and background, Messrs. Henry Shore and Jerry Renneck proved themselves well qualified to act as judges.

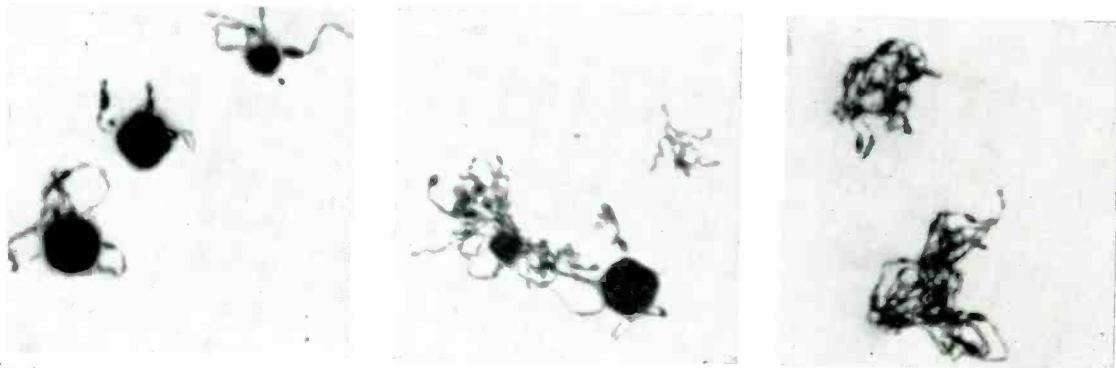
We wish further to thank all the participants for helping to make this one of the most successful contests ever run. Out of the many entries received the judges awarded first place to Vincent S. Barker for his shot of the workman on the Empire State Television tower. Jimmy Lowe of KFOX took second place with his trick shot, titled "Broadcast Technician's Nightmare". Honorable mentions go to R. R. Jensen, Chicago engineer, and to R. W. Clark, television engineer, for their fine entries.

— Joe Conn, *Press Photographer*





(Above) Fig. 3 — Filamentary structure of a silver grain (X40,000)



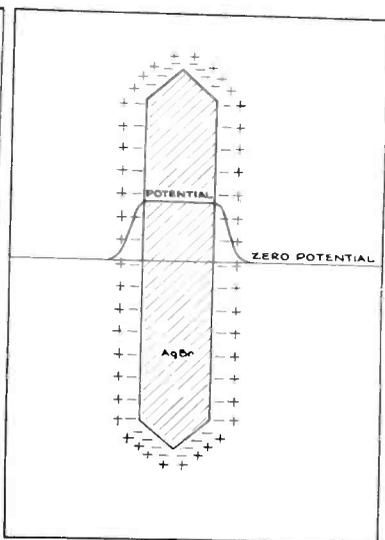
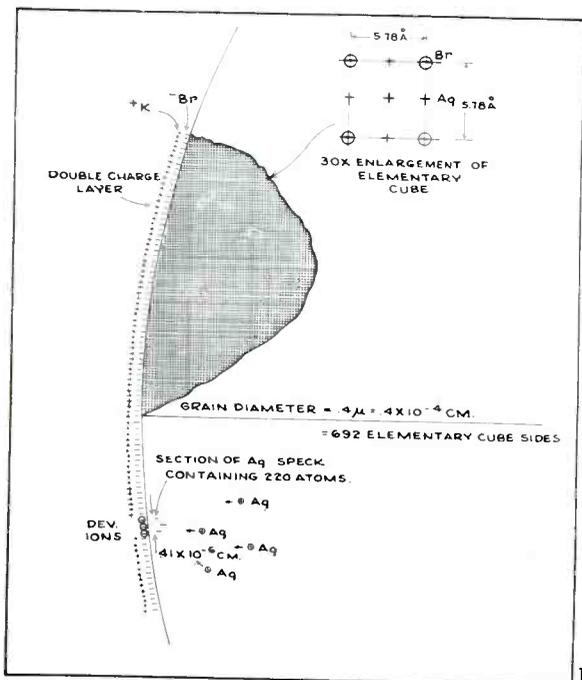
(Right) Fig. 4 — Stages of development in grains (X25,000)

doubt that the adsorption of gelatin to the silver bromide protects it from the action of the developer. This protection may be considered to be due to a negatively charged electric layer which surrounds the silver bromide grain formed with an excess of bromide, the function of the gelatin being to protect the charged layer. Dr. J. H. Webb depicts the exposed silver halide grain as a plate, as shown in Fig. 5 in which the charged condition around the grain is represented schematically. The surface of the silver bromide grain itself has an excess of bromide ions which give rise to a negatively charged surface. However, just outside this negative charge, a positive layer of potassium ions must be present to neutralize the negative charge. With-

out such a neutralizing layer of positive ions, it would be impossible for the surface of the silver bromide grain to be covered with negative bromine ions, since the amount of such a change in so small a region would give rise to exposure forces. A double charge layer, consisting of negative bromine ions on the grain and positive potassium ions in the gelatin just outside, may be considered to exist around the surface of each silver bromide grain. That the surface charge on the particles and surrounding charge layers do neutralize each other in the manner outlined is proved by the fact that the colloidal suspension does not possess a net charge of either sign, but is neutral as a whole.

It may be assumed that a grain, with its double charge layer, behaves toward outside charges and also toward charges located inside the grain as a neutral body. An electron placed inside such a double charged layer would experience no force nor, in the same way, would an electron placed outside such a double layer. However, there is a marked difference in potential between the inside and outside of the grain, and the total jump in this potential occurs in the region between the two charge layers. The potential gradient between these charge layers accordingly gives rise to a strong electrical force between the layers, and an electron placed between them would experience a force toward the outside. It is considered that the double charge layer acts in this way as an effective potential barrier to the entrance of an electron into the silver bromide grain of the emulsion and prevents the charged ions of the developer from attacking the grain.

However, if the grain contains a portion of the latent image, that is, a silver speck, it is assumed that development of a grain is initiated by the break in the double charge layer caused by the silver speck, permitting the negative developer ions to reach this silver speck. The latent image speck is viewed as an electrode penetrating into the grain. The tendency on the part of the developer ions to release electrons to the silver causes electrons to pass to the electrode and charge it negatively. This occurs if the electrons of the developer ions are situated in levels above the highest occupied energy levels of the silver metal. The penetration of this negative electrode into the silver bromide grain upsets the neutral electrical condition previously



(Above) Fig. 5  
Diagram of grain with protective double layer

(Left) Fig. 6  
Diagram of grain with latent image

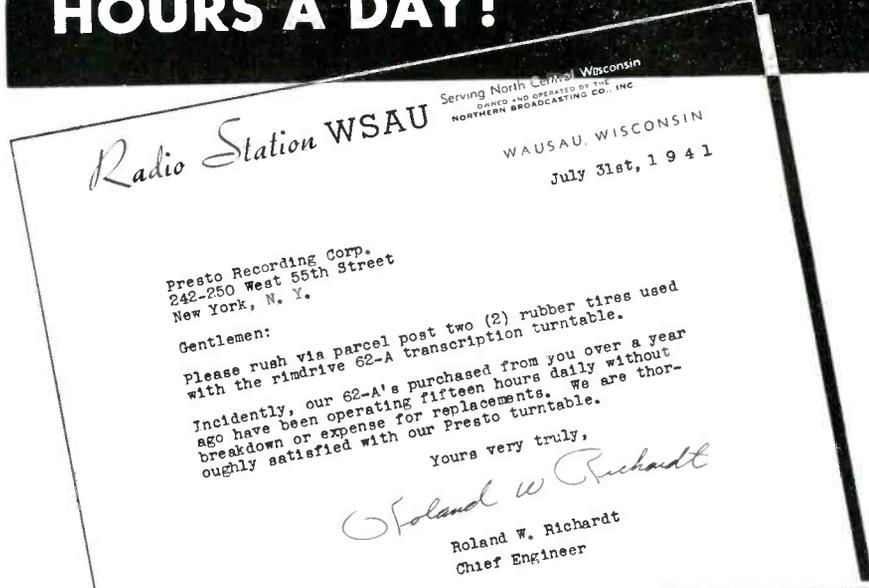
existing in the grain, and there arises an attractive force for the positively charged silver ions in the neighborhood of the latent image speck. Some loose positive silver ions always exist in the crystal lattice owing to temperature motion, and these diffuse to the speck under the attraction of the negative charge there and enlarge the silver speck. Thus, it is supposed that the original silver speck of the latent image commences to grow by this mechanism. As this proceeds, the protective double layer is more and more ruptured, and a rapidly increasing area of the silver halide grain is exposed to the attack of the developer. The reduction of the grain therefore proceeds at an ever-increasing rate, and the grain is very soon reduced throughout to metallic silver. In the initial stages of development only, is a silver bromide grain protected from a developer; after the barrier is once penetrated, it rapidly approaches the status of an unprotected grain, which, as pointed out, is developable very rapidly.

This is only a very preliminary sketch of the action of development. Undoubtedly, the adsorption of the developer to the developing grain plays some part in the reaction. It concentrates the developer ions at the point where they are required and undoubtedly also the actual reaction of the developer with the grain, and its behavior as a reducing substance is catalyzed by the silver of the latent image.

Our knowledge of the mechanism of development has been greatly assisted by the information as to the structure of the developed silver obtained by the use of the electron microscope. The grains of developed silver show little structure under the highest magnification of the ordinary microscope. It was obvious that they could not be compact masses of silver since their volume is much too great for their mass if the structure was compact, and it was generally thought that the grains had a spongy structure, somewhat similar to that of coke. The electron microscope enables photographs to be taken with equally good definition at magnifications about twenty times higher than those which are possible with the ordinary microscope, and when this instrument was applied to the photomicrography of developed silver, it was found that the silver had a most unexpected ribbon-like structure, so that the grains appear like masses of seaweed. This filamentary structure of developed silver is very surprising, and the fact that it is so unusual makes possible some deductions as to the formations of silver. Each single crystal turns into a filament

(Continued on Page Twenty)

# STILL GOING STRONG 15 HOURS A DAY!



● It takes a real transcription table to keep up with a busy radio station. WSAU found what they wanted in the Presto 62-A...5000 hours of trouble-free service, one simple, inexpensive tire renewal.

If you want a table that gives you a quick jerkless start, always coming up to speed in exactly 1/3 revolution . . . if you want a table so completely vibrationless you don't know it's running . . . if you want a "wow-free" table that runs 33 1/3 or 78 RPM. on the button . . . BUY PRESTO.

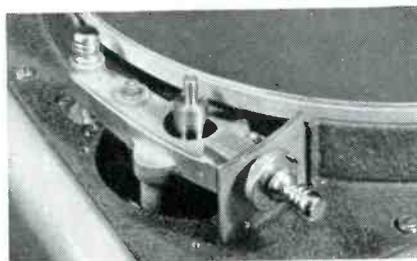
Once you see this Presto table in operation you'll know why an average of 15 radio stations a month are installing 1 to 3 Presto tables to replace their present equipment.

Presto tables give you the performance you've always wanted and they're ready for *immediate delivery*.

Write today for literature and the name of your nearest Presto distributor.



● Presto 62-A transcription table for lateral recordings, list price, \$385.00.



● Simple, foolproof Presto drive system—steel motor pulley drives against rubber tire on turntable rim, only 2 moving parts.



● Presto 16" dual speed turntable chassis only, list price, \$155.00.

**PRESTO**  
RECORDING CORP.  
242 WEST 55th ST. N. Y.

World's Largest Manufacturers of Instantaneous Sound Recording Equipment and Discs

In Other Cities, Phone . . . ATLANTA, Jack. 4372 • BOSTON, Bel. 4510  
CHICAGO, Har. 4240 • CLEVELAND, Me. 1565 • DALLAS, 37093 • DENVER,  
Ch. 4277 • DETROIT, Univ. 1-0180 • HOLLYWOOD, Hil. 9133 • KANSAS  
CITY, Vic. 4631 • MINNEAPOLIS, Atlantic 4216 • MONTREAL, Wel. 4218  
PHILADELPHIA, Penny. 0542 • ROCHESTER, Cul. 5548 • SAN FRANCISCO,  
Yo. 0231 • SEATTLE, Sen. 2560 • WASHINGTON, D. C., Shep. 4003

NBC

# Television Station WNBT RATES

EFFECTIVE JULY 1, 1941

TRANSMISSION RATE

### GROSS

- 6:00 PM to 11:00 PM Daily
- 8:00 AM to 12 Noon Daily
- 12 Noon to 6:00 PM Daily, exclusive of Saturday and Sunday
- 12 Noon to 6:00 PM Saturday and Sunday
- 11:00 PM to Sign Off Daily

	60 Min.	30 Min.	15 Min.
6:00 PM to 11:00 PM Daily	\$120.00	\$60.00	\$30.00
8:00 AM to 12 Noon Daily	60.00	30.00	15.00
12 Noon to 6:00 PM Daily, exclusive of Saturday and Sunday	60.00	30.00	15.00
12 Noon to 6:00 PM Saturday and Sunday	90.00	45.00	22.50
11:00 PM to Sign Off Daily	90.00	45.00	22.50

Rates for other units of time in exact proportion to corresponding one-hour rate. No periods less than 5 minutes sold except for Service Spots.

### SERVICE SPOTS (News, Weather, Time, Etc.)

- Evening (6:00 PM to Sign Off)—\$8.00 for maximum of 1 minute.
- Day (8:00 AM to 6:00 PM) —\$4.00 for maximum of 1 minute.

### TYPE OF FACILITIES (Based on time on the air to nearest 5 minutes.)

	60 Min.	30 Min.	15 Min.	10 Min.	5 Min.
Main Studio	\$150.00	\$90.00	\$60.00	\$53.00	\$45.00
Small Studio	75.00	45.00	30.00	26.00	22.00
Film Studio	75.00	45.00	30.00	26.00	22.00
Field-Pickups	75.00	(Minimum Charge—\$75.00)			

Rates for units of time longer than one hour in exact proportion to corresponding one-hour rate.

Service Spots—Facilities and Handling—\$5.00 per spot. (Must originate in small or film studio.)

### FACILITIES FURNISHED FOR ABOVE CHARGES

#### MAIN STUDIO

- Standard Equipment** —3 cameras; necessary audio facilities.
- Personnel** —complete engineering staff; production director and his aids.
- Rehearsal Time** —1 hour with cameras for each 15 minutes on the air. Rehearsal studio without cameras and personnel provided when necessary and available.
- Additional Rehearsal Time With Cameras** —Each 15 minutes or fraction thereof—\$12.50.
- Additional Equipment** —Turntable facilities for auxiliary sound—\$5.00 per unit. For additional cameras—charges will be announced when cameras are available.

#### SMALL STUDIO

- Standard Equipment** —1 camera—necessary audio facilities—turntable facilities for auxiliary sound.
- Personnel** —complete engineering staff; production director and his aids.
- Rehearsal Time** —1 hour with cameras for each 15 minutes on the air. Rehearsal studio without cameras and personnel provided when necessary and available.
- Additional Rehearsal Time With Cameras** —Each 15 minutes or fraction thereof—\$5.00.

#### FILM STUDIO

- Standard Equipment** —facilities to handle continuous shows—both 16mm. and 35mm. silent or sound film—slide and caption projectors—turntable facilities for auxiliary sound.
- Personnel** —complete engineering staff; production director and his aids.
- Rehearsal Time and Preview** —1 hour with equipment for each 15 minutes on the air.
- Additional Rehearsal Time** —Each 15 minutes or fraction thereof—\$5.00.

#### FIELD PICKUPS

- Standard Equipment** —2 cameras—2 microphone positions.
- Personnel** —complete engineering staff; production director and his aids.
- Wire-lines** —extra charge to be made based on point of origination.
- Additional Equipment** —additional microphone positions—\$5.00. For additional cameras—charges will be announced when cameras are available.

### MAIN AND SMALL STUDIO

All talent, announcers, effects men, musicians, and music and script rights—at NBC quoted production costs.

No charge for one setting available from NBC's current supply. (A setting shall consist of not more than seven 4' x 10' flats, and shall include the ordinary props and stage dressings on hand).

No charge on normal set-up and striking of sets. (If striking is required during show, add 10% to program facilities charge).

- Additional Charges:**
- (a) Special or additional sets constructed at the rate of \$30.00 per set, and they become the property of NBC. Any special sets constructed will be held for the duration of a contract and will be made available at no charge for subsequent use.
  - (b) Charges will be made to cover the rental or purchase of properties, costumes, and stage dressings not in stock.
  - (c) Charges will be made for all extra art work and construction work at NBC's quoted prices.

### FIELD PICKUP UNITS

All talent, props, musicians, rights, and miscellaneous items—at NBC quoted production costs.

# The Business Side of Television

By Noran E. Kersta

## II. Deriving a Television Rate Structure

Successful commercial television broadcasting calls for profitable operation for broadcasters as well as insurance of profitable investments for advertisers. Consequently, it is necessary to analyze the economic factors involved which have influence on the vital problems of the derivation of rate structures for the use of television facilities and personnel. Such analysis should also supply facts which may be used to sell the new medium at the rates chosen.

As encountered in pricing any commodity, the first natural question of the broadcaster when considering rates is—what will they pay?; and with the buyer the first question becomes—is it worth it? In this situation, of course, can be recognized the first theme of any economic situation. There are two main channels of consideration. The arguments of the buyer as against those of the seller in attempting to "get-together" on price. The successful price is the one which satisfies both parties to the extent that a business transaction can be made.

The natural objective of the broadcaster is to derive sufficient income to insure a profit on operations. However, it so happens that during early commercial television service it would be impractical to press rates of that order on the market. The services of television are not worth these "profit rates" in the beginning due to the relatively small number of consumers reached compared with "buys" in other advertising media.

The penalty which a broadcaster would face if he announced "profit rates" at the start would be that little or no time would be sold until the number of consumers reached, and the resultant sales per advertising dollar invested, justified these rates. To wait until such time as circulation justifies these full "profit rates" would retard television's progress due to the loss of income, however small, and of aid obtainable from the creative and inspired people of the advertising industry. Therefore, a television broadcaster does well to approach the rate problem from the advertiser's or buyer's point of view.

Considering the advertiser's point of view—on what basis will he buy, and by what system is he accustomed to buying the services of other advertising media? Charges are made for sound broadcasting based on the length of time a broadcaster's plant is used and the number of listeners in a station's coverage area. In the case of newspapers and magazines the rate structures are, in theory, comparable to those of sound broadcasting in that charges are made according to the amount of "space" used and the size of the "circulation" of the particular publication. Thus, it is logical, that if the advertising in-

PROGRAM FACILITIES RATE

PROGRAM PRODUCTION CHARGES

dustry has found that the equitable method of buying is in terms of the amount of use made of an advertising medium and the number of consumers reached by the medium, then these factors should also be reliable bases for television rates.

In choosing between media, however, other factors are considered by advertisers. Some of these are, the location and quality of a medium's circulation, and the potency of the "selling impact" which can be delivered by the particular medium. These dimensions of an advertising service must also be definitely woven into a television broadcaster's analysis of equitable rates to fully allow for certain unique aspects of television.

A later installment of this series will take up in detail certain of these "unique aspects" and show how television as a service to society and advertising, satisfies certain human and industrial needs, wants, and desires which have heretofore gone unanswered.

Let it be accepted here that other media were studied to determine the cost per thousand circulation and the relative efficiency of advertising dollars spent in other media. After these figures were established, the "selling impact" of television had to be compared with these media. This step was aided by reference to practically every psychological study that has been released on the relative merits of establishing messages via the eye and the ear alone and in combination. In addition to these studies new investigations were made on actual and practical television situations. These data, coupled with circulation figures and other factors established \$300 per hour as a rate which would make using WNBT, NBC Television Station in New York City, as efficient a buy as any other advertising medium.

As shown later, the final rate was set even lower than this figure. This was done to bear out the philosophy that television has to be developed as a medium of greater efficiency and capable of offering new opportunities, otherwise there could be little or no justification for its introduction to the public and industry as an entertainment and educational force, and as a business tool.

With the rough figure of \$300 per hour set, other conditions particular to television had to be considered. Experience showed it cost considerably more money to operate an elaborate three camera television studio as compared with a television film broadcasting studio, and again still a different expense is involved when field pickup equipment is required. This indicated the necessity of having different rates depending upon the facilities used by an advertiser.

In sound radio, rates for time are blanket charges covering studios, personnel, etc., with little or no variation depending on the size of the studio or amount of facilities involved. These variations however, can be absorbed in sound broadcasting without any disturbing consequences. However, in television the range in cost of operating various types of pick-up facilities is wide enough to warrant different rates for the different facilities.

In respect to the operation of the transmitter itself it

# NBC Television Station WNBT RATES

EFFECTIVE JULY 1, 1941

## COMMISSIONS AND DISCOUNTS

A 15% commission will be allowed on gross billings to recognized advertising agencies on:

- 1 Transmission charges.
- 2 Program facilities charges.
- 3 Program production charges.

(as such charges are classified on reverse side.)

## MISCELLANEOUS

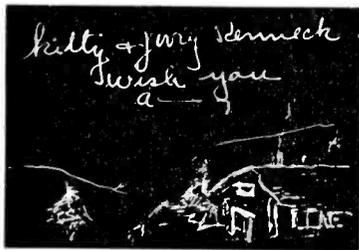
- 1 This rate card is only for the information of advertisers and is not to be regarded as an offer by the National Broadcasting Company.
- 2 No periods are sold in bulk for resale.
- 3 Advertisers cooperating in group broadcasts are required to make individual contracts with the National Broadcasting Company subject to card rates and regulations.
- 4 These facilities are available subject to prior contracts and commitments of the National Broadcasting Company.
- 5 Programs and the use thereof by others are subject to the policies and approval of the National Broadcasting Company.
- 6 No cash discounts. Bills due and payable when rendered.
- 7 Rates are subject to change without notice.

makes little difference whether its signal originates in a live talent or film studio, or from portable equipment in the field. The cost of its operation from minute to minute is the same. Therefore, the rate card shows a straight pro-rata \$120 an hour for "transmission". This makes up the first division of the rate card. It also shows one-half this base rate for day-time periods and three-quarters for Saturday and Sunday afternoon periods and between 11 P. M. and sign-off daily. These ratios were established from a study of audience availability during these periods, and they follow almost exactly these rate proportions during these times. In other words, a transmitter's primary function is to reach receivers; hence, its value to an advertiser and its general efficiency is dependent on the number of receivers which can be reached during various times of the day.

Going back once more to different facility charges, the second section (II) of the rate card shows the facility charge breakdown. It will be noticed that the half hour rates for each group of facilities are 60% of the hour rates, the 15 minute rates are 40% of the hour rates and so on down. In other words, the cost per minute of operation of these facilities is inversely proportional to the length of time they are used. This is established on the premise that there is just as much preparation and effort involved to get these various facilities prepared and fired up for a program which is to last five minutes or two hours.

Further, in the second section of the rate card the facilities

(Continued on Page Seventeen)



MERRY  
CHRISTMAS



# Through the Finder

By Jerry Renneck

(At the suggestion of many of its readers the Journal hereby inaugurates a new monthly feature, a photo question and answer column. Mr. Renneck has had a wide experience in all phases of photography for twenty years, and includes publicity and promotional as well as medical photography. He is now connected with a large photographic company in New York. He lectures upon photo subjects to clubs and classes. We hope that all our Journal readers will avail themselves of this Question and Answer service, and the Journal wishes Mr. Renneck good luck in his new column.—EDITOR.)

A sample of a hastily conceived Christmas card. The "illustration" was drawn with India ink on a piece of clear celluloid (an unexposed and cleared film), placed in position at the opening of the greeting mask and contact printed. The candle and holly is a sticker in red and white. It was commented upon with many remarks. Some, awful smart.

**T**HIS is the time of the year when we begin to think, photographically speaking, of Christmas cards. There is no better time than now to do this job, but we generally put it off until the 24th of December, and then we all rush madly down to the five and ten to buy those cards which have been left over by the earlier shoppers.

It's a safe bet to say that almost all of us have a snow scene that we thought was pretty good at the time of making, but that is as far as we have gotten with the business of making Xmas cards. Why not pull out those negatives and use them as the illustrations for your own cards?

There's nothing complicated about making them. Your dealer has, or will soon have, sets of greeting negatives to which can be added your own negatives to be printed by contact or by enlargement. Sets are already available, and consist of four different film masks which are suitable for holiday use. There also is a new paper known as the Greeting Card Special, which is particularly adapted for this purpose, and envelopes to match can be had at the same time. Most dealers will have these sets by the time this appears, and they are reasonably priced.

So much store is set by these "home made" cards that the Rockefeller Center Camera Club is planning to have an exhibit of them in conjunction with one of the monthly print shows. Get busy now and make the card that you were going to send out last year.

"I find," writes H. S., "that some of the negatives in a roll I recently got back from the finisher are almost transparent. I have tried printing from these negatives, but they are so thin, that even on a number five paper with a very short exposure, I cannot get a good print.

"However, when I hold them at a certain angle, they seem to have a positive image, and I should think that there would be some way of getting a print from them. The stuff seems to be there. Can you tell me what I can do to get prints?"

It would be a lot easier to tell you how to prevent the same thing in the future, but that would mean buying an exposure meter, and then we would have nothing to "cry" about again as far as underexposed negatives are concerned.

But it's too late to have the meter do these negatives any good now, so let's resort to chemistry to make your celluloids printable.

It's almost a certainty that your negatives were underexposed, as the rest of them on the roll were printable, and as they were developed at the same time, it would have

been impractical for the finisher to prolong the development of the poor negatives, even though this might have helped. Therefore to compensate for this underexposure, you will have to use an intensifier; a chemical or compound of chemicals which will act on the negative in such a manner as to make it denser and hence more printable.

Except for certain types of negatives, such as copies of charts, diagrams, etc., which are to be used for reproduction or lantern slides to achieve a greater degree of contrast, intensification is, at its best, makeshift, and a well exposed negative should always be tried for.

There are several intensifiers. Some come in prepared form or can be compounded by the worker. Some are direct intensifiers and others need redevelopment after a bleaching. Either one will do, but many workers prefer the bleach and redevelopment as being more controllable.

We will first consider the prepared form. There are several, but we have used on occasion the Victor intensifier which comes in a small tube. It is inexpensive and works very well with satisfactory results.

Before we begin the actual process of intensification, there are a few simple precautions which it would be wise to observe. First, the well fixed negative must be thoroughly washed and be free from stains or scum. It is best to harden the film in a bath made according to the following formula:

Water	16 ozs.
Formalin 40%	2 1/2 drams
Sod. Carbonate (Dess)	73 grains
Water to make	32 ozs.

After immersion in this bath for three minutes, rinse and place the film in a fresh acid-fixing bath for five minutes, after which it is washed thoroughly before subjecting it to any other chemical treatment.

The washed negative is then placed in the intensifying bath and the directions followed as given on the label of the tube. This intensifier is an old standby, and can be used without much danger of over-intensifying as all processes are carried on in a normally lighted room. A good degree of denseness can be obtained if the directions are followed, and a printable negative should result from this treatment.

For the person who would like to mix his own chemicals, there are other formulae that have stood the test of many years use which have been found to be reliable, and can be used over and over again. Most popular of these is the Chromium Intensifier. Simplicity is the keynote of this method, and almost guaranteed results. (This formula will be supplied upon receipt of a self-addressed and stamped envelope.)

We would be glad to hear from readers of this page regarding the type of material they desire to see each month. Questions will be answered in order of their importance or interest to other readers, and we will answer other questions by mail if accompanied by a self-addressed, stamped envelope. We sincerely hope that this new department of the Journal will be of value and interest to its readers. Cap your lens.

# New Mobile Unit at Cleveland

By J. D. Disbrow



WHEN Mobile Unit No. 5 of the Ford variety 1934 vintage finally refused to function further it was decided upon to replace said car with a modern type as completely flexible as possible and still maintain all the advantages and many uses the unit would be called upon to cover. Several different makes were investigated and prices received covering the completed job. A De Soto fluid drive finally proved to be the best buy and the salesman had the longest offer on the old "sled."

So a 1941 model was shipped from the factory stripped with the exception of the front seat, spare parts and standard equipment. Upon arrival in Cleveland the car was given a complete paint job with NBC colors of blue and aluminum, a full floor was installed level and as flush as possible over the steel frame of the car. Two large steel battery compartments were constructed and welded to the frame straddling the drive shaft. These are large enough to accommodate four heavy duty eight volt storage batteries and the compartments were placed in such a way so as to evenly distribute the weight and also allow easy removal of the batteries when not in use. Two trap doors were fitted into the floor over the batteries and the picture obtained was a full unobstructed floor.

Four cup type antenna insulators were installed in the roof, two on each side to be used for transmitters and receivers either UHF or intermediate. Several fixed and telescope antennae are available for selection according to the requirements of the job, and all have adaptor fittings for attaching to the roof insulators. The unit does not have any permanently installed equipment. This allows the car to be used for portable recording equipment, portable radio and audio equipment, transportation of pickup equipment, etc., with the greatest amount of available space.

The inside of the car is finished in gray imitation leather with a full front seat of genuine tan leather. The car equipment consists of heater and de-

frosters, broadcast type car radio receiver, large spot light, sun visors, etc. Fluid drive permits the car to be driven very slow, such as required in parades, with the least amount of engine noise. Safety equipment consists of a complete first aid kit, Lux No. 4 (CO-2) Fire Extinguisher and a brace of three eight-inch red flares such as used by bus and trucking companies.

## Cleveland News

FIFTEEN members of the Cleveland Engineering Staff reached their eleven-year mark with NBC on this October 15th. Over fifty percent of the

boys have seen military service in the Army, Navy or Marine Corps, and their average age is 41 years. Jess Francis CS is back from his vacation with a very interesting story of his trip through the Mammoth Cave in Kentucky. Organized tours are conducted through this great underground expanse covering eight miles, and it takes seven and one-half hours to make the trip. The greatest depth is 285 feet below the surface of the earth, and Jess reports that his portable radio worked perfectly. A hot lunch was served to the party at a point 200 feet down. Hugh Walker TE announces a baby

(Continued on Page Twenty)

## BLILEY CRYSTAL UNITS

*Engineered for Accurate Frequency Control*

LEFT: Type M03 temperature controlled unit specially designed for high frequencies.

CENTER: Type M02 unit is ruggedly built for portable and mobile transmitters; 2,000kc. to 30,000kc.

RIGHT: Type BC46T Precision Variable Air Gap Temperature controlled unit primarily for Broadcast frequencies. Approved by F. C. C.



BLILEY Crystal Units for frequencies from 20kc. to 30mc.—three of which are illustrated—conform to highest commercial standards of design and performance. Write for your copy of Catalog G-12 describing the complete line.

**BLILEY ELECTRIC COMPANY**  
UNION STATION BUILDING  
ERIE, PA.

# Portable Sound Effects Equipment

By Harry Saz

Sound Effects Chief, NBC, Hollywood

IT MIGHT be of interest to some of the Journal readers to know of the developments in portable equipment that the Sound Effects Department of NBC Hollywood has concocted. While some of the circuits and equipment used is not new by any means I am sure that the utilizations of them are new.

Messrs. Stanley Radom and Floyd Caton have been invaluable in the execution of these designs since to us it was an entirely new field. Stan has done most of the electrical designing while Floyd has taken the raw plans and designed cabinets for the equipment. Mr. Ed Ludes has also been of great assistance sitting in on conferences and meetings and giving helpful and valuable suggestions.

## OSCILLATOR

Early this year we were faced with the problem of designing and constructing a small, portable, variable battery operated oscillator for the Richfield Reporter Program to carry with them on a tour of the Northwest. Thru the years they have used an oscillator note that has been tuned to the same frequency as the closing note of the opening trumpet signature. The listening audience has grown attached to this note and the agency and client felt that it should be used at all times on the program.

We went into a huddle and came up with something that has been more than satisfactory to all concerned.

A variable frequency audio oscillator employing a Hartley

supply. Class "B" was employed to obtain low no-signal drain since the unit must stay on for 15 minutes at a time ready for instant cueing. Since there was no cathode, the grid return of the oscillator tube was used to keep "B" voltage away from the key and to prevent thumps. A meter and switch is mounted directly on the front panel to give battery readings with and without load conditions. The entire unit draws 5 milliamperes without signal and 11 when the full signal is on. A six inch permanent magnet speaker is mounted in the side of the unit. Physical dimensions are 12 $\frac{3}{8}$ " high, 9 $\frac{1}{2}$ " wide, 14 $\frac{1}{4}$ " long.

The front of the unit is divided and the lower part hinged. When this is opened all the necessary controls are exposed, the key being mounted on the hinged section. A screw-driver adjustment is on the front panel for frequency control. This is covered with a sliding metal face plate to prevent accidental change of the Richfield tone. An interlock switch is used with the action of the front panel. When the panel is down the switch is on, when closed it turns off all voltages.

The back of the unit may be taken off with a screw driver. Glued on the back is a working diagram of the unit and mounted on clips inside is a full complement of spare tubes.

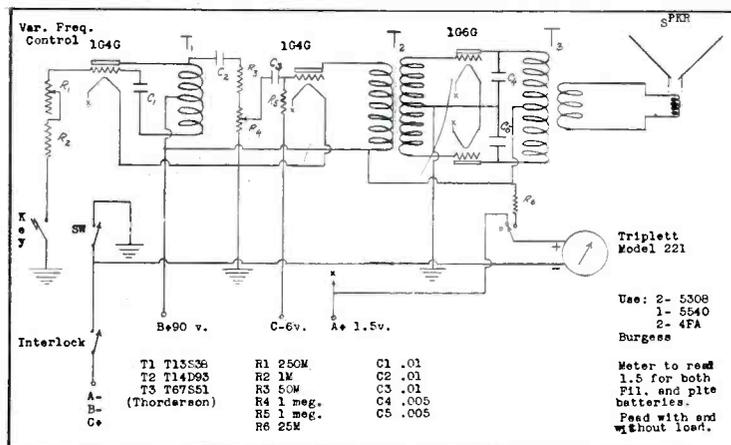
The whole unit is finished in leatherette—blue and yellow, these colors being the colors of the Richfield Oil Company.

## PORTABLE SOUND EFFECTS TURNTABLE

With the advent of service field shows a very grave turntable situation arose. Did we have to send our big heavy units on these out-of-town jobs, even if the record requirements were simple? Besides the cost, damage to the equipment was a very important factor.

Again the four of us went into a huddle and came up with something that we have been testing for six months and which has passed every test so far.

The set-up consists of three units. Unit No. 1 is the turntable unit which houses the motor, pick-up, amplifier and "C" batteries and control panel. This is a box 23 $\frac{5}{8}$ " long, 13 $\frac{3}{8}$ " high, 18 $\frac{3}{8}$ " wide, finished in red leatherette. The motor is an RCA double spring hand wound unit and will run about 8 minutes at 78 with 3 oz. needle pressure. It is variable in speed from 25 to 100 RPM and will play up to 16" discs. The amplifier consists of 4 tubes. In the first stage is a 1H4G which is resistance coupled to a second 1H4G which in turn is transformer coupled to push pull parallel 1J6G's (twin triodes). This delivers about 4 watts to the speaker unit.



Portable Oscillator

circuit was designed, with output of about one watt. Three 1.4 volt tubes were used, one 1G4G for oscillator, one 1G4G as driver, one 1G6G (twin triode) for push pull output. These tubes were chosen for low drain A requirements and because two small 45-volt B batteries provided ample plate

The pick-up is a standard 10" Astatic crystal.

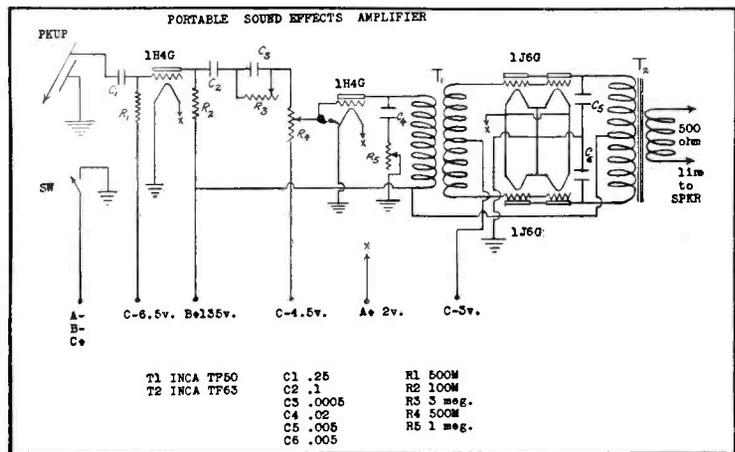
The control panel is on the front of the unit and consists of an "on" and "off" amplifier switch, a high and low tone control and a main gain.

Unit No. 2 is the battery box containing a Burgess "Power House" A battery and one super "B" battery. This unit is 17" high, 13<sup>5</sup>/<sub>8</sub>" wide, 13<sup>5</sup>/<sub>8</sub>" long, and is finished in red leatherette. A sliding tab resistor is used to cut down the three volt "Power House" battery to two volt filaments and also for voltage adjustments as the battery is subjected to extended service. The three super B batteries (two of them in the speaker unit) provide 135 volt plate supply. The current drain of the amplifier is very slight.

Unit No. 3 is the speaker unit containing a 12" permanent magnet speaker and two Super "B" batteries, which were put in this unit to distribute weight evenly. This is 28" high, 25<sup>1</sup>/<sub>2</sub>" long, 12<sup>1</sup>/<sub>8</sub>" wide, and is covered with blue leatherette.

The units are interconnected by cables with locking Amphenol plugs and are polarized, allowing only one method of connection.

The covers of the units are all removable, being fastened on with trunk hinges. All hardware is chrome plated. The



total weight of all three units is 170 lbs. Large handles are provided, two for the big units, for easy carrying.

Tests have been so successful that we contemplate making at least two more of them which may be interconnected, providing a triple, battery operated portable turntable.

This unit would provide a very satisfactory means of record reproduction if our AC supply was threatened or cut off for any reason. It can be ready for service in a few minutes time.

## Behind the Mike

By Con Conrad

**G**ORDON STRANG, NBC Engineering Department, has been assigned to work on the construction at the new NBC plant in San Francisco. Other New York engineers there are T. H. Phelan and Joseph Arnone.

Walter Phillips, WGN, Chicago, is spending the second vacation of this year, this time he is taking in the sights in Cuba. "Stand-by, señoritas."

Harry Maule, WMAQ NBC, Chicago, underwent a successful tonsilectomy at Elmhurst, Illinois, hospital.

David Foote is the new chief at WOLF, Syracuse, succeeding Laurence Reilly who has joined the staff of WSPR, Springfield.

J. H. Kadlee, former broadcast engineer in and about Chicago, has deserted the field of broadcast. He is now with the FBI at Bismark, N. D.

R. B. Sturgis, NBC, Chicago. While vacationing in the East, Sturgis cracked up in his Oldsmobile. He promptly acquired a new Buick and continued his vacation.

W. E. Ragsdale, formerly with NBC, Chicago, and now with the Cutler Hammer Co., paid his old pals a visit while conducting some business in Chicago recently.

James V. Simms, formerly a double duty man, "announcer and engineer" at KROD, El Paso, is now serving with the RAF operating radiolocators.

Joe Conn, NBC, New York, spent several weeks batching, while his pretty radio actress wife, Lenore Kingston Conn, travelled to the west coast. She stopped off in Chicago to see some of her friends at NBC.

W. C. (Bill) Marsh, WMC, Memphis, with his very

attractive wife, visited the boys at NBC, Chicago. Bill had to hurry back to Memphis to help in some new construction.

Walter Rudak, a newcomer to the engineering field, has joined the staff of CKLW, Windsor, Ont.

John Willson, engineer at WNAX, Yankton, S. D., announces for the fourth time that he is a proud pappy, this time it is a boy.

Paul Prokes, WGN, Chicago, is a new addition to the staff at the FM transmitter.

T. G. Bombaugh, NBC WENR, Chicago, made it third in the present series of three, as he announced the arrival of a baby girl.

Jimmy Johnson, formerly of WBTM, Danville, Va., resigned and is joining the staff of WTAR, Norfolk.

A. J. Schroeder, NBC WMAQ, Chicago, one of the leading golfers at NBC. Schroeder won a golf bag as his prize in a tournament at the Glendale C. C. near Chicago recently.

Myron Earl, WGN, Chicago, spending a month vacationing on the west coast.

A. J. Forgach, WENR NBC, Chicago, spending his vacation duck hunting in southern Illinois, and at the same time getting in some target practice.

Russ Rennaker, representative of ABTU in Chicago, working on a new agreement for the boys at CBS.

George P. Foster, engineer and former part owner at KENO, Las Vegas, Nev., has been added to the staff of KFAC, Los Angeles.

H. R. Rawson, NBC WMAQ, Chicago, writes from Biloxi, Miss., that the weather is fine and the place is perfect for vacationing this time of year.

Vincent E. Clayton, of the engineering staff at KSL,

(Continued on Page Nineteen)

# Grip With Your Knees

By C. M. Rossetti

**W**ITH a hint of approaching Fall in the air these days, the urge to ride horseback is awakened in many a lover of the "Sport of Kings." Once again is experienced the desire to ride at full gallop with the wind beating against your face, to be in perfect rhythm with your mount as you feel the movement of his muscles straining against your legs—to know again the exhilaration of riding horseback. To know how to ride is to enjoy the thrill of horseback riding and for this reason, for the benefit of all riding enthusiasts, will be presented a few essentials on the art of riding.

There are several types of riders of horseback, that is to say, we have the first group who go out for a canter in the park to last, supposedly, for the duration of an hour but who continue to return to the stables because of a misunderstanding they have with their horse who insists on returning at a run each time the stables loom in view. The second group consists of those who go out for a ride and enjoy the hike back home—their horse waiting at the stable to greet them when they finally arrive. The third type is the rider who has a thorough understanding with his horse and on friendly terms, for they both go out together and return together,

both the happier for the exercise—that horse deserves a lump of sugar. It is this latter type of rider which will develop as a result of having followed our suggestions.

To know the joy of riding you must know how to be seated correctly, how to hold the reins, and what to do with your legs, all this after you have mounted your horse. Therefore, since mounting your horse is the obvious first step we shall begin at this point. It is proper always to approach your horse from the left—you see even a horse is particular about proper etiquette. Hold the reins in your right hand, gripping the pommel of the saddle and exerting enough pressure on the reins to keep the horse from moving forward but not enough to make it back. Place your left hand on neck (the horse's, not yours). Now you are ready to mount, if you haven't changed your mind by this time. Place your left foot well forward in the stirrup, those thighgrips your foot keeps slipping out of as you ride, and gently spring upward and swing the right leg over the horse to place your right foot in the right stirrup. Avoid exerting too much spring or you'll find yourself gliding in mid-air and landing clear over on to the right side of the horse. All this movement should be done with the greatest of calm, quiet, and gentleness—as a horse is very sensitive and nervous and does not understand rough handling. Besides if you want a gentle ride you must act gentle for a horse can just as soon give you a rough ride—so be gentle—be nice.

Now that you are seated on a horse, which feels so high and so wide, you wonder why you ever started this business of riding and if you will ever get back alive and what to do with your riding habit now that you bought it, etc., etc., you are ready for your next important instructions. Your weight should be in the center of the saddle—don't lean over for horses have a bad habit of throwing their heads at intervals and your eye would not relish meeting with the hard skull of the animal. Don't try to hold yourself up by the reins for this time the horse would not like your pulling away at his mouth and he would soon complain by getting stubborn and try to take the reins away from you. Your legs should hang naturally at the sides of the horse and RELAX!! You're not a jockey at a race track so don't pull your heels up so far back. Keep toes out with your heels down so that when you look down at your foot your toe is hidden by your knee. Grip the horse with your knees with just enough pressure to avoid stiffness but keep a feeling of contact with the horse beneath you. Keep elbows in at your sides, no air space should be under your knees, back straight, head erect, backs of hands vertical with slight feel maintained on one rein (snaffle rein it is called) and curb rein loose but ready in case of need should the horse decide to leave you. Hold snaffle rein under

## WE'RE LOOKING AHEAD

In these times of national emergency our first efforts are devoted to our country's cause.

But we're not forgetting our customers and friends. We've geared ourselves to "business as usual" in addition to other commitments.

A foresighted policy has enabled us to serve you in the same efficient manner as heretofore. You'll find our stock complete and prices right — as usual.

## TERMINAL RADIO CORP.

68 WEST 45th STREET  
80 CORTLANDT STREET  
« NEW YORK CITY »

Phone for Both Stores: VA nderbilt 6 - 3030

little fingers, curb rein between little and index finger, thumb underneath (if this sounds complicated hold all reins in one hand and keep other free to brush away obstacles as you ride).

Here you are seated atop a horse, who is eager to get started and waiting for your signal to go. What do you do? Kick him in the ribs with your heels? That's no way to establish friendly relations with your horse. No, slacken your hold on the reins, lean forward slightly shifting pressure of your body and moving reins to right or left depending on direction you wish to go and at the same time pressing your heels gently into the sides of the horse and you're off for a ride along the bridle path. As your horse is walking keep your hands still as constant moving of reins confuses and makes the horse nervous—relax, keep your feet still and avoid flapping them up and down.

After a five or ten minute walk you are ready to trot your horse and you begin to post. In posting, lean forward slightly, maintaining a balance over the knees at all times, grip firmly with your knees and now manage to rise out of your saddle as horse's body is thrust upward and come down in saddle when horse's feet strike the ground. It is not necessary to rise too far out of the saddle but just enough to avoid bouncing—but the important thing is get together with the horse or you will eat many a meal off the mantel-piece in days to come. Always be alert, when trotting, to the changing gait of your horse and above all keep your hands still for the slightest movement upward of your hand at times will indicate to your horse that you have had enough of this baby stuff and are now ready to canter (a slow run which can easily develop into a gallop) and if you are not prepared for this change you will be flying through the air with the greatest of ease.

In cantering, we have a rolling motion and you simply sit back in the saddle (don't leave it as in posting) and go with the motions of the horse. Do not canter for long stretches—be considerate of the horse. Canter slowly, keep relaxed, handle reins more gently. Never canter or trot as you approach the stables as you might find yourself with a runaway horse all of a sudden.

So now you have had your little ride and by this time have probably decided Paul Revere had nothing on you. You lean over and pat your horse on the neck, starting out with "Nice work, Gayboy" and ending in a panic-stricken voice with "Whoa boy, Whoa!" as your horse started to trot in answer to the pull on the rein as you leaned over.

Before you dismount we should tell you how to stop a horse, unless you would care to do it Western Style a la Gary Cooper and dismount at a run. You make a horse come to a stop by sitting back in your saddle and pulling back on the reins—your horse may not at first agree with you and will be stubborn and still keep going but by your being firm and causing the muscles of your arms to become sufficiently sore he will finally see it your way and will stop. You dis-

mount as you mounted by holding your reins in one hand, gripping the pommel of the saddle, placing left hand on horse's neck and exerting enough pressure on your left stirrup and bringing your right leg back over the horse. Oh, yes, you dismount on the left side of the horse same as you got on him.

As you walk away from your horse try not to collapse. Your legs are the same ones you had when you started even though they will feel a little strange as you try to use them. Your horse is enjoying the scene as he looks your way but don't mind that—he's entitled to a laugh after the beating he just took from you. You can make up with him by bribing him with a lump of sugar.

So now that you have begun with the fundamentals of equitation, it won't be long before you will become a seasoned rider for it is evident you love horses or you would not have taken the trouble to start taking this kind of punishment. Soon you will be recounting your "horse stories" or experiences while riding and you will thrill at the sight of a saddled horse ready to be ridden, you will grow to love and understand horses, and above all to delight in indulging in this splendid physical exercise which brings health and happiness and teaches courage, self-control, and determination. Good horsemanship, however, comes from much riding and practice but these few suggestions will speed you on to happier days on the bridle path.

## CAPPS\*

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

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

*Imitated but not equalled*

FRANK L. CAPPS

244 W. 49th STREET NEW YORK CITY

Telephone Circle 6-5285

\*Reg. U. S. Pat. Off.

# Who's Who in Chicago

(The Seventh of a Series)

By Tom Gootee



Charles M. Butler

THE motivating reasons that send young radio operators to sea are many and various, but probably the most common is the desire to travel. Thus, Charles M. Butler—now one of Chicago's veteran studio engineers—set out on his radio career some twenty years ago. But during the intervening years he did almost everything but travel around and "see the world"—although he had a fair share of ship operating.

He was born August 7, 1904, and received an education through High School at Hyde Park, Massachusetts. He first became interested in amateur radio when he was but fifteen years old. After a year of tinkering, he received his First Grade Amateur License in June of 1920, and set up operations under the call: 1-AZI, later changed to 1-BBI, with a home-made spark coil transmitter, and the usual crystal and loose coupler receiver. He also operated the High School

experimental station: 1-OO, working the Boston Naval Station: NAD, some eight miles distant.

Intrigued by the mysteries of wireless, Charlie studied for his Commercial ticket at nights with the Mass. Radio and Telegraph School, while still attending High School during the days. He received his First Grade License in June of 1921, when he was only sixteen years old. Then followed a year of local amateur operation—while he completed his schooling—and finally, late the next spring, he forsook the ways of a land-lubber and signed with R.C.A. in Boston for ship operating.

He took his first commercial job aboard the collier *S. S. Penobscot*, out of Boston for Norfolk, when he was not quite eighteen years old. Seeing life at sea from under grimy coal shutes was not very romantic, coupled with the added plagues of perpetual coal dust sifting, roaches, and bed bugs. But Charlie stuck to his post for two full trips, before looking for a better berth.

Jobs were plentiful then, and he soon signed aboard the *S. S. Italia*, whose name was later changed to the *Sucarseco*. The ship ran between Baltimore and Tampa, with cargos of lumber and guano, and Charlie stayed aboard for eight months—really his first "big time" job at sea.

He recalls that he was quite anxious to please the Old Man on his first trip, and Charlie carefully copied all of the weather reports that NAA sent out—for all coastal regions, including the code: 00253—of which there were several thousand words. His first report—consisting of several typewritten sheets of paper, describing the weather for the entire country, and most of North America, plus the code—was handed the Captain. Almost immediately there was an explosion as the Old Man demanded: "What the hell is this?" Charlie carefully explained it was the weather report. And after that he only copied what was necessary—seldom more than a few words.

His next job was aboard the *S. S. Rayo*, a Standard Oil tanker running between Baton Rouge, Tampico, and ports in Texas. It was a unique shipping arrangement, as the Tanker *Rayo* towed

a Barge astern all of the time! The Barge *Socony 92* patiently followed the *Rayo* from port to port. A few months before Charlie joined the *Rayo*, the Barge had broken loose in a high gale, and to circumvent another similar disaster (it took two weeks to find the Barge) the Standard Oil Company installed a half-kilowatt transmitter on board the Barge, with another operator. So Charlie had ready company within calling distance—a few hundred feet astern of the *Rayo*.

The close proximity of the Barge almost caused a disaster when the two vessels were tied up at a Baton Rouge dock. The operator on the Barge had gone ashore and inadvertently left his receiver switched on. Charlie—not aware of such a situation—started up his spark transmitter and tried to contact New Orleans, but without result. After several minutes of futile calling, he happened to look out across at the Barge. The radio shack was afire, and only quick thinking with a fire extinguisher by the startled crew members prevented an explosion which would probably still be echoing back and forth across the Mississippi River. All of the *Rayo's* questionable half-kilowatt of power had gone steaming across to the receiver aboard the Barge, and combustion was the result.

A few weeks later aboard the *Rayo*, Charlie performed his first job of ship steering. One summery afternoon in the Gulf, he happened to be loafing in the wheel-house when the Second Mate—who had relieved the Quartermaster—asked Charlie if he knew how to steer. Without waiting for an answer he dashed down to the chart-room, leaving Operator Butler very much alone at the wheel. Charlie swallowed hard, grasped the wheel firmly in his hands, and watched the compass. He remembered vaguely the rudiments of compass-boxing, so when the needle started to move he tried to catch up with it by turning the wheel in the direction the compass was moving. Within a few catastrophic seconds there was an impending calamity. The Second Mate came tearing up on the Bridge, hit his head on the bulk-

(Continued on Page Twenty)

**Super DAVOHM**  
wire wound  
**PRECISION  
RESISTORS**



Recommended for use in exacting equipment where accuracy, stability and dependability over long periods of time are of prime importance.

Accuracies from  $\pm 1\%$  to  $\pm 0.1\%$  available

Prices and literature upon request

**THE DAVEN COMPANY**  
158 SUMMIT STREET • NEWARK, N. J.

# San Francisco News

By Lee Kolm

**N**OTES ON THE CUFF: Putting aside his extensive miniature train layout, Red Sanders, FE, has taken up a new hobby, the building of furniture. After the purchase of a most complete woodworking set he started on the construction of bedroom furniture and from what he says we can expect a most modernistic design . . . Harry Jacobs, SE, is having considerable success with the developing of his own 16mm movies. Recent examples of his reversal of positive film show that here is a way to cut movie costs and still turn out good pictures . . . Both cash prizes and ribbons were received by Cliff Rothery, SE, for his exhibits at the recent San Mateo County Fair. Shortly Cliff will be giving lectures before garden clubs and he plans to use his fine Kodachrome movies to illustrate the talks . . . George MacElwain, FE, reports his vacation was spent around home because of his wife's entrance in several recent golf competitions . . . Charlie Kilgore, CS, George Greaves, FS, and Senator Thomas Q. Watson, SE, will act as hosts in SF Chapter's hospitality room at the St. Francis Hotel during the convention. Three better hosts would be difficult to find, so we'll be talking of the Sunday nite at the St. Francis for some time to come . . . To be sure of having a complete photographic history of the new son, Harold Platt, SE, started snapping flash pictures of the boy within an hour of birth. Harold now has elaborate plans for a scenario movie of his new son's life . . . An ideal vacation was disclosed upon Ernest Jefferson's return from southern California. A friend provided a yacht with captain and cook, and in beautiful weather Jeff and his wife lounged on deck or took an occasional swim just to while away three weeks . . . Back on the job again is "Deep Sea" George Dewing, SE, after a short layoff for his health. Good to hear him again recalling his experiences on the run to Hawaii . . . Dan Williams, FE, reports his hobby of machine work has been seriously affected by the metal shortages . . . Eddie Parkhurst, ME, underestimated the picture possibilities of the Denver region and found it necessary to purchase three additional rolls of Kodachrome to the four purchased before leaving here . . . Recently the boys recorded Guy Cassidy, SE, during one of his discussions on national politics. When the record was played back for him he thought for a few minutes that a national forum had stolen his arguments . . . With so many celebrities appearing at the building site for special programs, Warren Andresen, SE, has been very busy lately. As official photographer, Andy has been exposing nearly 300 feet of film a week. With construction so far along he will soon have to use photofloods for details of the work in the building . . . Merle Peterson, studio vacation relief, is now enjoying a three weeks vacation in the Pacific Northwest before joining the Navy. Merle will work in naval intelligence under Don Thompson, formerly of NBC SF in charge of west coast special events . . . With his reporting for sea duty, Ed Callahan, ex SE, moved his family to the Hawaiian Islands to join the family of Buddy Sugg, ex CS.

Ed is radio officer on the *Minneapolis* and we understand Bud is radio officer on the *California* . . . Andy Mitchell, SE, vacations on a southern California dude ranch. He should return with some excellent shots of western ranch life preserved on Kodachrome . . . With maps scattered over his desk, Bev Palmer, CS, is debating just where he'll spend his Fall vacation. Actually his Fall vacation is his Saturday and Sunday off every other week . . . Oscar Berg, ME, astounded the boys the other day when he declared he had a little daughter, a recent arrival. It later developed George Greaves' daughter was spending a week with the Bergs . . . With legal difficulties cleared, Jim Summers, CS, should have his new home under construction by the time this appears in print. Speculation has become so widespread regarding his possible marriage that Wilkies Cigar Stand is now quoting odds for the benefit of the boys who care to lay it on the line . . . The many highlights of Lee Kolm's vacation included a complete tour of NBC Hollywood under the guidance of Mr Saxton, a visit to Grand Canyon, Zion National Park, Yosemite National Park, and a tour of Death Valley where the temperature was 115. A record of the trip was made on Kodachrome.

## G. H. Q. for R

If you make Terminal your General Headquarters for radio parts and equipment you'll find relief from headaches resulting from unfilled orders.

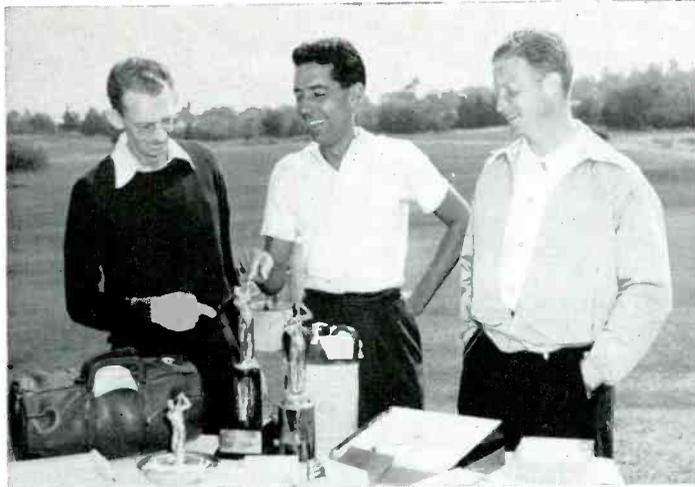
Here's an outfit that meets even the most exacting requirements. Efficient service, quality merchandise, complete stock and friendly relationship are our stock and trade.

That's why radio engineers like to buy here.

## TERMINAL RADIO CORP.

68 WEST 45th STREET  
80 CORTLANDT STREET  
« NEW YORK CITY »

Phone for Both Stores: VA nderbilt 6 - 5050



Don DeWolf, Operations Supervisor; Bob Brooke, Engineer, and John Wald, Richfield News Reporter, looking over trophies at the last NBCAA golf tournament



Mort Smith, Listening Post Engineer; Joy Storm, Special Events, and Martin T. Bishop, Interpreter

## Hollywood . . .

By Ray Ferguson

Hello, Gang!

**T**HE big noise coming from San Fernando Valley the other day was Mort Smith installing amplifiers and all kinds of equipment at the new Listening Post of NBC. Driving out Ventura Boulevard we soon saw the three poles pointing skyward and in between supporting a very business like maze of antenna systems. Mort's smile of greeting welcomed us in. Because he was so busy we did not want to bother Mort with a lot of questions about his plant. However, soon we hope to have a more detailed account of what is going on there with a better description of it all. At any rate, he has an impressive layout. Mort says everything in the Orient comes in with a beautiful signal as the result of the intricate spread of antenna systems and an ideal location. Mort's Listening Post can also turn keen ears on Moscow and the rest of Europe with no trouble at all. Soon the last bit of work will be done and we hope he will let the rest of us in on what makes the wheels go 'round there.

Harry Saz, Sound Effects Chief, handed us some interesting material about equipment and design. We pass it along

with a lot of thanks to Harry for holding his own in the way of news from his department.

A few weeks ago, Hollywood saw a great cloud of dust heading this way! When the dust had settled who should step forth but Bill Williams to join up with our Studio Group. Bill drove from Denver where he had spent six years with NBC there. Talking later with him, Bill said he had a heck of a time finding a house. Finally settling down in Atwater, near Glendale, and five miles from the studio. Ardella thinks it's fine. Patricia Claire, four, and Maryland Gene, seven, have already been to the beach just as tickled as two happy kids can be. Bill expects his portable ten meter job soon. Says he will take advantage of the first "short skip" to Denver to work his old gang.

Another new member arrived almost in the same breath with Bill Williams. From Chicago to Hollywood was not much of a jump so Jim Thornbury decided to do it. Now he is in Recording here and doing a swell job right off the bat!

By this time our boss, A. H. Saxton, has returned from his vacation of putting the finishing touches on his new home in Westwood Village. Hope we can drop by, Sax, and have a look see soon.

Karl Lorenz spent a lot of hours with Mort working on our Listening Post's antenna systems. Bob Brooke's summer tan is as deep and dark as ever. Del Mar has seen a lot of Bob this year during the racing season broadcasts. Man . . . that mileage! Uuum! Frank Figgins, Maintenance Supervisor, is now in mass production with his camera. Has a new enlarger. Takes anything from sea level to thirty thousand feet. Charlie Norman had to be literally pushed out of the studio to get him started on his vacation. He just had that

**Prompt, Intelligent Service on Any  
Radio Part, Receiver, or Problem**

**TECHNICAL EQUIPMENT COMPANY**

Telephone:  
WOrth 2-1895

135 Liberty Street  
New York, N. Y.



Part of the Listening Post's antenna system

old nose to that grindstone so conscientiously . . . Charlie was so surprised, still thinking he had ten days to go, it wasn't until someone shouted git the h— outen here that he snatched his fishing pole down out of the attic and fled for the mountains. Eddie Miller dashed by the other evening with an arm loaded with rebroadcast records. Earl Sorrenson, Maintenance, not so long ago became the extra proud pappa of twins! Life has at long last begun for Johnny Morris, Maintenance. Johnny has just turned sweet forty. He barges around like a mountain goat, anyhow; leaving behind a trail of smoke from his pipe that must be forty, too. John is elated over the fact that now, having spent his third year in California, it makes him a full fledged citizen. Don Schuech, Studio, has left for further studies at California. R. Beardsley Graham and C. Westley Turner, Television/Studio, are in New York now, having transferred there from Hollywood. What the heck are their first names? Never did find out while the boys were here. Bert Capstaff and family on vacation. Bert's getting in shape for the return of the Bob Hope show. Al Korb, Maintenance, put so much alum in his back yard swimming pool everybody got puckered! Ralph Denechaud, Master Control, has started a landscaping project. "Denny" is doing a new Panzer movement while in the middle of a Blitz with h's lawnmower. Steve Hobart, Master Control Supervisor, passed through the lounge the other day. Steve looked quite prosperous with a shine and a new five-cent cigar. Alice Tyler, our boss's secretary, is right in there with her lovely summer clothes. At the last general meeting everyone was very pleased to welcome the KFI men into NABET! It makes us proud KFI men elected to join the NABET of their own choice.

While at the general meeting, Joe Kay, Secretary Treasurer, nearly blew his brains out attempting to get in touch with George Maher, our National Secretary Treasurer, in Chicago. Joe kept long distance toll busy for an hour calling all the Mahers in Chicago. Finally reached the right

building only the janitor was too sleepy at two-thirty a.m. to wake George. How come no telephone, George old boy?

Believe us . . . we all were thrilled looking at the new cover on the August issue of our Journal! The cover's idea is splendid and exceedingly well done. Packs professional flavor. Gives it a lift and brighter quality for the future.

Murdo MacKenzie, ace engineer of the Kraft and Jack Benny shows, couldn't corner busy Frank Figgins, Maintenance Supervisor, long enough to see about getting his appendix yanked on a maintenance bench, so instead went to the Hollywood Hospital. Mac came through it fine. Is now convalescing. Missed by everyone, and we'll all be glad to see Mac back at the studio on the job soon.

## The Business Side of Television

(Continued from Page Seven)

furnished under each of the classifications is clearly defined. This is for the purpose of eliminating any misunderstandings and to prohibit any unjust demands for extra facilities not contemplated under the rates presented.

The third section of the rate card called "Program Production Charges" covers certain stipulations and costs laid down in regard to props, sets, and extra work involved in production.

Section four and five, "Commissions and Discounts" and "Miscellaneous" contains general policies with which the entire rate card must be considered.

One other item which may be of interest is the general design and layout of the rate card and its typography. The general layout and style and its maroon and buff color scheme is carried out throughout all other television promotion pieces and releases. It is the presently used identifying NBC television style.

All the theory and mechanics associated with a rate card could be for naught if its reception by advertisers met with problems. Hence, it is gratifying to say that after ten weeks of exercising this rate card to the extent of ten signed contracts, it has been found all-inclusive, practical and decidedly acceptable by our clients.

**PATERSON:**  
79 Bridge Street

**NEW BRUNSWICK:**  
54 Albany Street

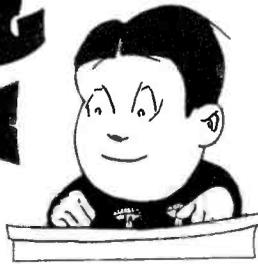
**AARON LIPPMAN & CO.**

246 Central Avenue

Newark, N. J.

Leading Radio Equipment Distributor of New Jersey  
Prompt Service at No Extra Cost

# RIDING GAIN



# ON THE AIRIALTO WITH TONGOOTÉE

**I**N ADDITION to the many successful and legitimate claims made to the *Are You a Missing Heir* Program, there is another—slightly tainted—side of the story, proving (probably) that Hope Springs Eternal. For instance, ever since the program debuted in 1939, a woman in Buffalo, New York, has written the same hopeful postcards week after week, claiming that *she* is one of the beneficiaries of an estate broadcast on a previous week; so far, she has claimed to be heir to more than 100 different estates, all of course with different names. Only Hope could have prompted the letter received by the program recently, which said: "I was born in 1901 and feel a premonition that I am a missing heir. It is always in my mind because at night when I go to bed I cannot sleep for thinking about it." Then there is another type of letter, from the insistent individual who has already spent his imagined inheritance; he says, "I will give you one full week to answer me when this letter gets to your office, so that you will have plenty of time to search for my fortune somewhere."

Now that Pathe News plans to film astrological headlines, look for a radio program to bob up, featuring a star-reader forecasting tomorrow's headlines.

Hal Peary—the *Great Gildersleeve*—can credit at least part of his success to his own distinctive, throaty laugh—known as the "Gildersleeve Giggle." Once a part of Fibber McGee and Molly's Show, the laugh is now a trademark introduction to his own show. And of all the fan mail Peary gets on the laugh, the one he remembers best is the time a listener sent him a can of kitchen cleanser with instructions to "clean up that dirty laugh of yours."

## RABSONS

*your headquarters for—*

**SPORTS:** Equipment and clothing for every active sport.

**RECORDS:** A complete stock always. Send for free party list.

**PHOTOGRAPHY:** Complete equipment—Salesmen who **know** photography.

**RADIOS:** 1941 FM and Television sets.

Ask about our "Budgetized" Plan

111 West 52nd Street, New York

Circle 7-0070

Worth remembering was Sheila Barrett's parody on "My Sister and I"—first delivered on *Penthouse Party* a few weeks ago. Her version: "My sponsor and I . . . but we don't talk about that. In fact, we don't even speak."

When WSM's *Grand Ole Opry* first went on the air fifteen years ago, it boasted of two people and a steam whistle in its cast. Additions since then have swelled the cast to 65—with the same old steam whistle.

Audrey Totter—currently in the cast of *Road of Life*—keeps busy in her spare time as an amateur taxidermist.

No need for alarm if, after listening to radio's *Vic and Sade*, Dad starts calling Junior by such handles as: "Union Suit," "Tooth Enamel" or "Ink Stain." Such terms are heard almost every day when Vic addresses his son, Rush, by almost any name but Rush. Among others of his favorite appellations are: "Egg Crate," "Paper Weight," "Stove Poker," "Hat Band," "Tongue Clamp," and "Axe Handle." Nothing derogatory intended—just assorted words. This strange practice of one of his script characters actually dates back to the youth of Author Paul Rhymer; when the Senior Rhymer used such endearing tags in addressing his young son.

When Percy Faith—*Carnation Contented* conductor—first started in radio, he was the piano-playing member of a comedy team called Faith and Hope (no Charity). The team lasted a year during which time Faith spoke only once—when Hope suddenly left the studio during a broadcast and the panic-stricken pianist stood up and yelled "Come back! Come back!"

Only the biggest and most important football games are being included in NBC's fall coverage of the fall grid games this year, following a policy inaugurated two years ago. The games to be broadcast are not selected until a week previous, in order to put only the crucial and most interesting matches on the air. Fort Pearson handles the mike for stations on the Red; Bill Stern does the description for the Blue.

Harlan Ware says that in 21 months of authoring *The Bartons*, his typewriter has ground out some 6,160 pages of script with 1,540,000 words or the equivalent of 15 or 16 full-size novels.

Although H. V. Kaltenborn's business is relaying and analyzing the news, he secretly considers his claim to fame, if any, to the fact that he originated the Quiz Program. Back in the 1920's when he was a newspaperman with the Brooklyn Eagle, he sold radio the idea of a Current Events quiz program—based on the daily news. After that it wasn't long until he became a Current Events Lecturer with CBS, a natural outlet for his many talents. His technique of personalizing the news resulted from years of newspaper experience, and much lecture commentating. His background—plus the fact he speaks and reads several languages, and spent much of his life abroad—all gave him an edge in ferreting out the facts behind the news.

NBC Engineer George Maher, who used to ride gain on Mary Ann Mercer's sustaining pickups from the Chez Paree in Chicago, was elated some weeks ago when he found she had been signed as vocalist on College Humor—the Brown and Williamson show he helps put on the air each Tuesday night, over the NBC-Red network. Miss Mercer has long given George credit for helping her to overcome a nervous



Mary Ann Mercer

feeling when first approaching the mike for a broadcast. "A few words from George and my nervousness seems to disappear," Miss Mercer said. "Of course, I'm not really microphone conscious—it used to be just a nervous feeling upon first approaching the mike."

Back in the Good Old Days: Jimmy Dorsey was a coal miner in Shenandoah, Penna. Paul Whiteman and Abe Lyman were Chicago cab-drivers. Dinah Shore led her high-school's cheer leading squad. Graham McNamee was a meat salesman. Jack Costello was a bellhop. Nelson Eddy was a telephone operator. And Bill Stern was a theatre usher.

Ten Years Ago in Broadcasting. Television in 1931 was making a valiant but almost futile effort toward success—with elaborate and complicated scanning-disc receivers—of so many moving parts they generally shook all over, like a reaping

machine with palsy. Out in Denver, KLZ put on the first "real, live rattlesnake" program, in which two such snakes shook their respective rattles for the edification of Colorado listeners. Farther west, on the Pacific coast, the Pierce Brothers, Cal and Al, were wowing radio fans with an impromptu Happy-Go-Lucky Hour over KFRC; the basic idea for Al Pierce's Gang program, a decade later.

Twenty Years Ago in Radio. Two new stations on the broadcast band were licensed by the Department of Commerce this month in 1921: WDY, in Roselle Park, New Jersey, owned by the newly-formed R.C.A.—and boasting of a new 100-watt GE transmitter. And WBZ in Springfield, Mass., was first licensed on 360 variable meters with a Westinghouse Arc Transmitter. Also in October of 1921 the famous WQK communications station went into operation at St. James, New York, on 16 and 485 meters—using one of the huge Alexanderson Alternators, which effectively ripped up the ether along the eastern seaboard for many months thereafter.

## Behind the Mike

(Continued from Page Eleven)

Salt Lake City, is another of those bursting the vest buttons. This month his addition is a boy.

D. E. Howser, NBC WMAQ, Chicago, spent his vacation in the north woods after the elusive Muskie.

Robert E. Lee has joined the staff of CBS in the short wave division. Bob comes with plenty of experience for this field, having been associated with the South American Gulf Oil Co. in charge of radio communication. Prior to that he was radio advisor to the Ministry of War of Colombia.

Joe Turner, WGN, Chicago, vacationing from his duties and getting set for the heavy winter schedule ahead.

G. Maher, NBC, Chicago, vacationed at his farm near Wynn, Ark. He spent his time getting the farm ready for that day when as George says, "I can quit radio."

Gene Brautigam, former engineer with WTCN, has assumed new duties with WLOL, Minneapolis.

Walt Varnum, WLS, Chicago, up and fulfilled our prediction of last month. He is married now.

## Courmettes & Gaul OPTICIANS

55 West 49th Street  
R. C. A. Building, New York  
Main Floor

EYE EXAMINATIONS

Prescriptions Filled . . . Prompt Repair Work

# Advances in Photo Theory

(Continued from Page Five)

of silver, which is much longer than the diameter of the crystal, so that it is evident that filamentary silver must be ejected from the crystal when development occurs. A series of pictures showing the stages of development of grains are very instructive. The grains were deliberately selected to be very small and the photographs show clearly the ejection of the ribbons of silver and their growth from the grains until the whole grain has been converted into a spongy mass of silver filaments. It seems to be clear, therefore, that the old idea that the grains dissolved in the developer and then silver was precipitated and coagulated around the exposed crystalline grains is quite incorrect. Instead, we have to imagine that the developer reacts with the exposed silver bromide grain and from it forces filaments of silver arising presu-

ably from the silver silver-bromide interface. As more silver is produced, new spots in the grain become the sources of development until the whole grain is converted into silver.

There are many obscure points which still require elucidation in the theory of the photographic process, but rapid progress has been made recently, and the fundamentals of the process by which pictures are made is beginning to be understood.

## Cleveland News

(Continued from Page Nine)

boy born Saturday, September 6th, weighing eight pounds and six ounces, the score is now two boys and three

girls. Congratulations, Hugh. Football got under way Saturday, September 27th, with a double pickup at Ohio State in Columbus. Three minutes before the "go ahead" the amplifier on the commercial pickup had to get temperamental and caused a few seconds of scurry. After all these years of lugging that spare up and down these stadiums it finally got a chance to do its stuff. Fort Pearson came in from Chicago for the Red Network pickup with a breast plate contraption designed to keep the 88-A mike under his nose. We understand the manufacturing credit goes to Royston of Chicago, and it worked very well. McMahon CS running through considerable yards of very nice color in 8 mm taken while on vacation. C C Russell, Station Engineer, holding fire drill with the Brecksville Fire Department and inquiring about a keg of "suds" for the boys. Never knew they used that stuff for putting out fires, it's an idea.

## Who's Who in Chicago

(Continued from Page Fourteen)

head as he entered the wheel-house—and woke up the Captain, who was asleep below decks for the afternoon. The Second Mate grabbed the wheel from Pilot Butler, and then for the first time Charlie noticed the Barge off the port beam—blowing its whistle in raging blasts. The ship *Rayo* was steaming around in a narrow circle—as a result of Pilot Butler's efforts—and the Barge was following with some confusion and difficulty.

After that incident the crew patiently taught young Charles how to steer the ship—and in time he became proficient, and often stood a relief watch. He confesses he enjoyed that work better than he did radio operating.

He shipped aboard the *Rayo* until the fall of 1923, and in October signed on the S. S. *Shreveport*—another oil tanker.

Aboard the *Shreveport* Charlie made several trips to San Pedro. On one of the trips—due to the crew being short-handed—he stood a night sailor's watch on ship. And he received a night-watchman's pay, as well as his own operator's compensation. But there was one catch in the arrangement: Charlie had to sleep *sometime*. He bought an alarm clock, went to bed (unofficially) about ten o'clock every night while they were in port at San Pedro, then got up at six to waken the cook. Then he went back to bed and got up at seven to awaken

the First Mate. In short, while the average fellow was doing dumb things in college, young Charles was doing them at sea—and getting paid for it. But luck was with him. Nothing ever happened the nights he was asleep, when he should have been standing deck watch. But this is not particularly surprising, since nothing has ever happened in San Pedro to anyone's knowledge.

Finally Charlie despaired of acquiring a sea future in radio, and turned to broadcasting. A year after he left the tanker, the *Shreveport* blew up off the Virginia Capes when the oil tanks exploded. But by that time Charlie was firmly established in New England.

His first land job was with WCTS in Worcester, Massachusetts. It was a 100 watt station, consisting of one studio and a transmitter room. The call was later changed to WTAG, and the station was one of the ten original stations on the first NBC Red Network. Charlie remained there for four years which was quite an accomplishment for him—after radio operating at sea.

In the fall of 1928 he went to NBC in New York, and worked there in the old studios at 711 Fifth Avenue for about seven months. While there employed he handled the old "Collier's Hour" on Sunday night, the Walter Damrosch Music Hour, and Rudy Vallee's program when Rudy was advertising some kind of pills.

Late in the spring of 1929 there was a sudden demand for sound and radio technicians for "sound" movies, and Charlie left NBC to join Paramount News as a sound man working with a newsreel cameraman out of Atlanta, Georgia. It was a twenty-four hour job, but nothing ever happened of great importance—and Charlie soon began to long for broadcasting work again.

Finally, in May of 1930, he rejoined NBC in Washington, and spent a very short but enjoyable five months there—before being transferred to Chicago, where he has since remained.

During the last eleven years Charlie has worked in the studios at Chicago, and has finally found his niche in radio broadcasting. He handled the old "Clara, Lou and Em" Show for over four years, rode gain on the Breakfast Club for the first five years of its existence, and guided the "Guiding Light" for almost five years.

He met his wife in 1932—when she was acting on some of the programs Charlie handled—and the Butlers now have two children, a boy and a girl. They, together with his hobby of photography and pipe-collecting, keep Charles pretty busy—when he isn't working for NBC. And he hasn't seen the sea for fifteen years—although he still has hopes of some day owning his own palatial, sea-going yacht. Just how or when this event is going to happen causes Charles Butler some meditation. But anyway it's nice to think about!

**Both  
FM and AM  
IN ONE U.H.F.  
COMMUNICATIONS  
RECEIVER**



**Hallicrafters Model S-27**, a general coverage U.H.F. Communications Receiver incorporating both FM. and AM. reception, Covers 3 bands; 28 to 46 mc; 45 to 84 mc; 81 to 145 mc; Switch changing from FM to AM reception. Controls are: RF gain Control, Band switch, Antenna Trimmer. IF selectivity control and power switch. Volume control. Pitch control. Tone Control. S-meter adjustment. AVC on-off switch. Send-receive switch. Phone jack. Amplitude of frequency modulation switch. 15 tubes. 110 volt 50-60 cycle AC. Model S-27, with tubes, \$195. Model S-27B. Covers from 36 to 165 mc. \$195.

USED BY 33 GOVERNMENTS SOLD IN 89 COUNTRIES

**the hallicrafters co.**  
CHICAGO, U. S. A.

## BUSINESS IS BETTER THAN USUAL AT SUN RADIO!

But this is no excuse for us to sit down on the job. We're still ever grateful for your thoughtfulness in calling upon us when times weren't so good and we're also mindful of the fact that when all the shouting and shooting is over we will be looking eagerly to you for your patronage. Now, with restrictions, allotments, priorities and shortages paramount around us we have endeavored to provide and maintain a steady stream of supplies to our customers. Our factory suppliers have co-operated beautifully and at this writing we are proud to say we have on hand the greatest stock of radio parts and equipment ever in our history. This, to a great extent, enables us to offer immediate delivery on a majority of your requirements.

### WE STOCK THESE NATIONALLY-KNOWN PRODUCTS

AMPHENOL	AEROVOX	ASTATIC
B & W	AUDAK	BLILEY
BUD	BRUSH	BURGESS
	CARDWELL	
CENTRALAB	CINAUDAGRAPH	
	CORNELL-DUBILIER	
EBY	ECHOPHONE	EIMAC
	GAMMATRON	
G.E.		GUARDIAN
	HALLICRAFTERS	
HAMMARLUND		HICKOK
	HYTRON	JACKSON
I.R.C.	JENSEN	JONES
JOHNSON	KENYON	MEISSNER
MALLORY	MILLEN	NATIONAL
MILLER	OHMITE	R.M.E.
PAR-METAL	R.C.A.	SPEED-X
SHURE	STANCOR	TAYLOR
SUPREME	THORDARSON	U.T.C.
TRIPLETT	WESTON	

*and many, many others!*

#### WE SOLICIT YOUR INQUIRIES

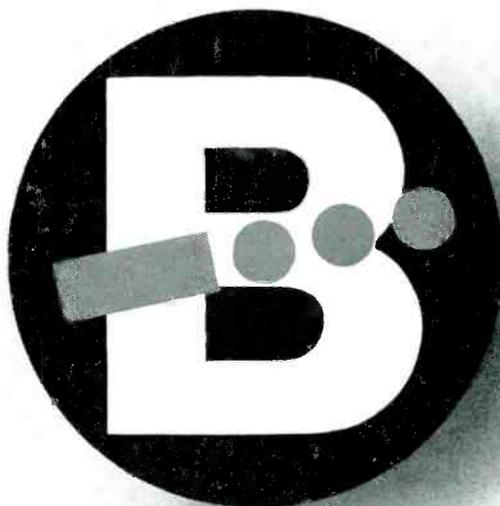
Write us for complete particulars and prices on any equipment in which you are interested. Our stock of goods is so vast we probably can pick it right off the shelf. **SUN SERVICE** is a service that satisfies!

Mail Orders and Phone Orders Filled Promptly  
Call BARCLAY 7-1840 for Immediate Service  
New York's Oldest Complete Radio Organization

★ **SUN RADIO CO.** ★  
★ 212 FULTON ST. ★  
★ NEW YORK, N. Y. ★

OPEN DAILY — 8:30 A. M. to 7:00 P. M.

"B"—in type and radio code—is the symbol of RCA's "Beat the Promise" Campaign



# Symbol of a Pledge



**"Beat the Promise"—RCA's Pledge to Uncle Sam—highlights a campaign to speed National Defense!**

Signed by thousands of members of the RCA family, the pledge shown here symbolizes a determination not merely to meet delivery of radio equipment to the Government, but whenever possible to *Beat the Promise* by completing equipment *even sooner* than the commitments specify!

**I PLEDGE MYSELF**

**to do all in my power not only to fulfill all the obligations we have undertaken to meet the requirements of our Country's national defense program, but wherever possible to**  
**BEAT THE PROMISE.**

The patriotic spirit behind "Beat the Promise" has been translated into *action*. With traditional RCA cooperation, everyone is helping to speed production and cut down waste. Many delivery dates already have been beaten... and there will be no let-down in the months ahead!



## Radio Corporation of America

RADIO CITY, N. Y.

RCA Manufacturing Co., Inc. Radiomarine Corp. of America RCA Laboratories National Broadcasting Company, Inc.  
R. C. A. Communications, Inc. RCA Institutes, Inc.