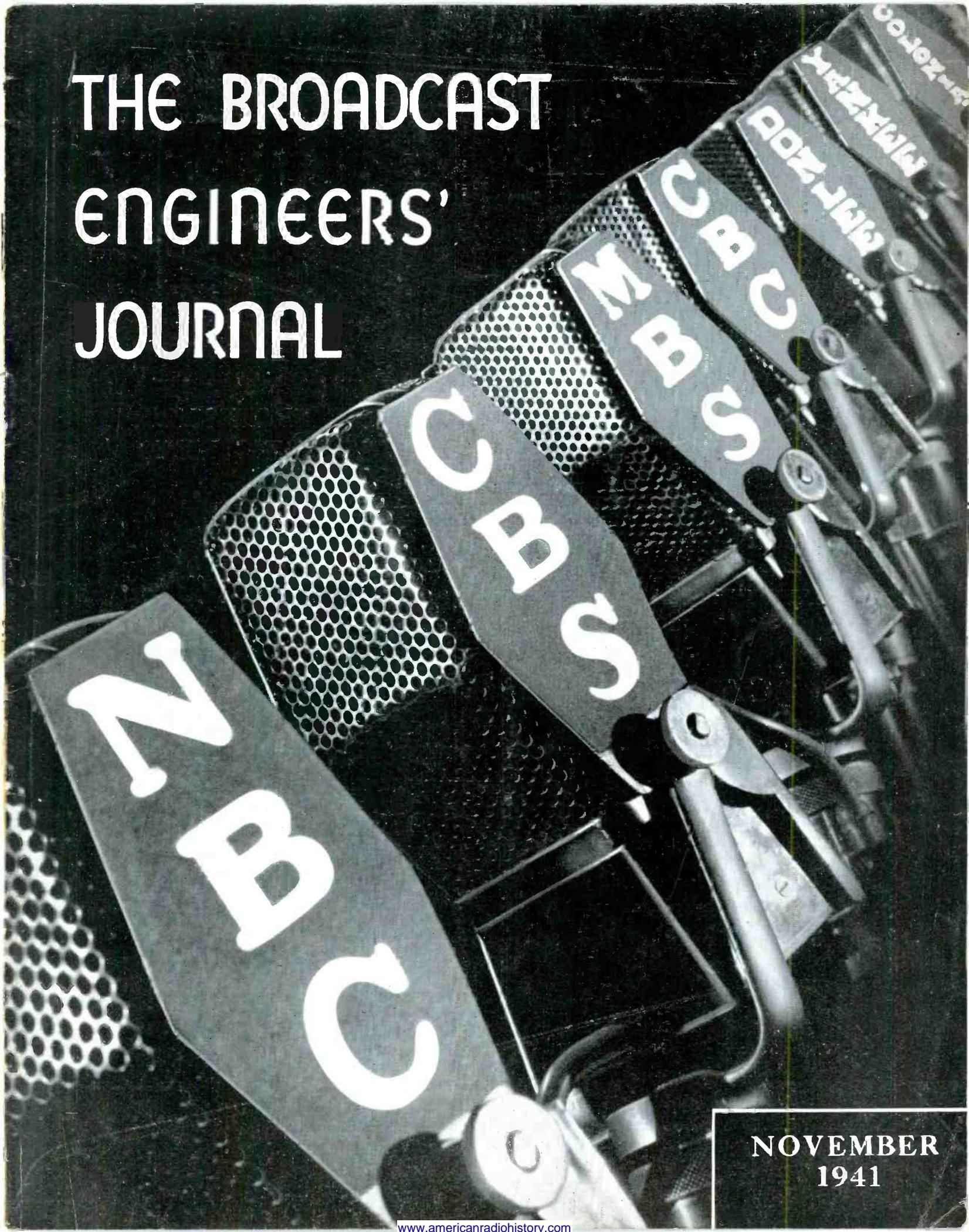


THE BROADCAST ENGINEERS' JOURNAL

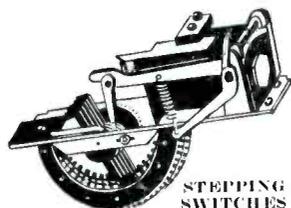


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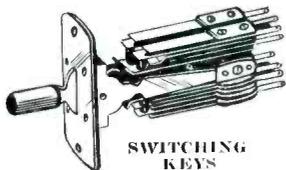
CONTROL APPARATUS by AUTOMATIC ELECTRIC



RELAYS



STEPPING SWITCHES



SWITCHING KEYS

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

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

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

American Automatic Electric
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1033 West Van Buren Street
Chicago, Ill.

AUTOMATIC ELECTRIC

TELEPHONE, COMMUNICATION, AND SIGNALLING EQUIPMENT

CAPPS*

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

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Imitated but not equalled

FRANK L. CAPPS

244 W. 49th STREET NEW YORK CITY

Telephone Circle 6-5285

*Reg. U. S. Pat. Off.

We Don't Want to Crow About

SCULLY MASTER RECORDERS

But the pinch of Defense Priorities has aroused many to the importance of Quality in their present and future Recording Equipment.

**IN THE PROFESSIONAL
RECORDING FIELD**

This
Symbol



Represents the
Most Superb

**DESIGN, MATERIALS,
and CRAFTSMANSHIP**

Known to the Professional Recording World,
and Assures You a MAXIMUM of

**DEPENDABILITY,
PRECISION, and
PERMANENCE**

*Provide for Scully Master Recorders
in Your 1942 Budget*

**SCULLY
Machine Company**

62 Walter Street

Bridgeport, Conn.

Telephone Bridgeport 5300

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"...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



Mr. A. E. Nelson, Manager of KPO-NBC-KGO, extends greetings and welcome to Mr. David Sarnoff at the official dinner of the National Association of Broadcast Engineers and Technicians



George Mardikian supervises serving of dinner at Omar Khayyam's, world famous for fine foods, at the official dinner of the San Francisco convention of NABET

NABET Annual Convention at San Francisco

*Dinner at Omar Khayyam's, tendered the NABET Convention by A. E. Nelson,
Manager of the NBC San Francisco office*

- | | | | | |
|--|---|---|--|---|
| 1 George Dewing | 9 Jim Summers | 15 Cliff Rothery
San Francisco Chap-
ter Chairman | 24 George Irwin | 32 Harold Brandt
Cleveland Chapter
Chairman |
| 2 Joe Baker | 10 Bev Palmer | 16 Tom Phelan | 25 Ken Owen | 33 George Greaves |
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| 7 Ed Parkhurst | | 21 John McDonnell | 30 Tom Watson | 38 Dan Williams |
| 8 Vernon Duke
Engineering Chapter
Chairman | | 22 Frank Barron | 31 Curtis Peck | |
| | | 23 Ed Stolzenberger
Journal Editor | | |





KPO-NBC-KGO greets O. B. Hanson, NBC Vice-President and Chief Engineer, on his arrival in San Francisco. Shown above are (1) O. B. Hanson (2) A. E. Nelson, Manager KPO-NBC-KGO San Francisco (3) E. C. Horstman, President of NABET, and (4) J. H. Brown, Vice-President of NABET

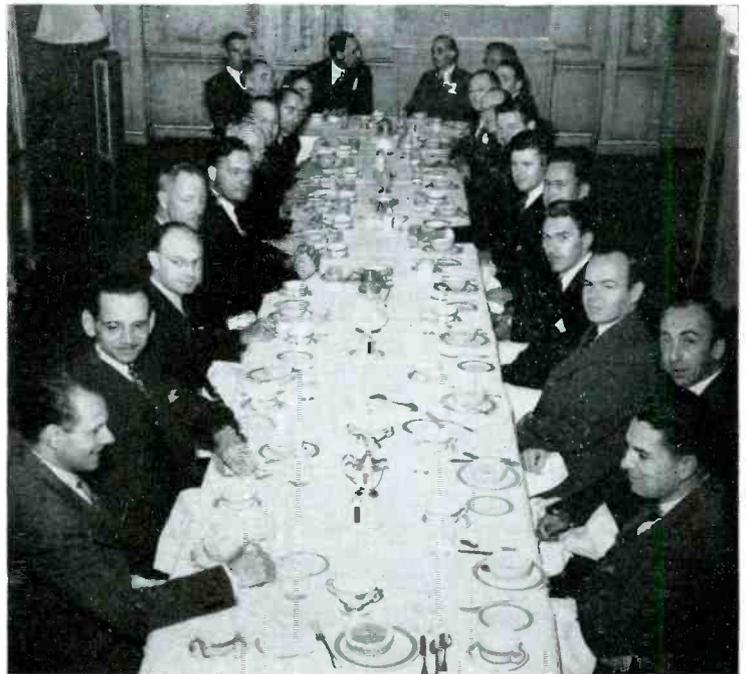
(Right) KPO-NBC-KGO greets O. B. Hanson with breakfast at Clift Hotel in San Francisco. Shown at head of table are (1) E. C. Horstman and (2) O. B. Hanson

San Francisco — The Perfect Host

The National Association of Broadcast Engineers and Technicians 1941 Annual Convention will long remember the sincere hospitality tendered them by the membership of the San Francisco NABET Chapter, and by Al Nelson, genial manager of the NBC-San Francisco office, and Curtis Peck, Engineer-in-Charge. Pages of praise could not fully express the Convention's gratitude and appreciation for their fine reception and stay in San Francisco.

ED. STOLZENBERGER,
Ass't National Secretary-Treasurer.

(Below) Curtis Peck, engineer in charge of KPO-NBC-KGO in San Francisco; A. E. Nelson, manager of KPO-NBC-KGO, and Cliff Rothery, chairman of the NABET San Francisco Chapter



(Below) Newly re-elected President of NABET, E. C. Horstman, Manager A. E. Nelson, KPO-NBC-KGO in San Francisco, and retiring Vice-President G. M. Sellar



The Business Side of Television

By Noran E. Kersta

Part III. Some Selling Arguments for Television Advertising

TELEVISION is the only medium which affords advertisers the opportunity of having their best salesmen and most effective combination of selling ideas presented right in the home. In this use television departs from the normal concept of an advertising medium. It really amounts to a consumer visit or a sales call.

One of the first questions which must be answered for a prospective client is: "What has television to offer as compared with other media?"

First, television has sound—just as in both sound radio and motion pictures. Second, television adds sight and motion to sound as in only sound motion pictures. However, here television leaves all other communication and advertising media.

Television adds the all important factor of spontaneity or immediacy or the quality of taking its audience to a scene of instantaneous action. No other medium can take you to the finish line of a track meet or to the ringside at a fight; or put you in the front ranks of a crowd watching a parade; or right before the speaker at the rostrum of a

national political convention many, many miles away. This factor of spontaneity is all important. Therein lies television's uniqueness. It is the only medium that captures true suspense.

Why is it that every year millions of people flock to all kinds of events? It must be because people want to experience the feeling of suspense; and because they want to be at the scene of action when things happen and to witness the unexpected turn of events.

These factors of immediacy and suspense are also typified in other types of television programs such as in studio productions. Here we have found that the informality and intimacy of action in the studio can be projected to homes to glue the family circle to their television receivers by the hour.

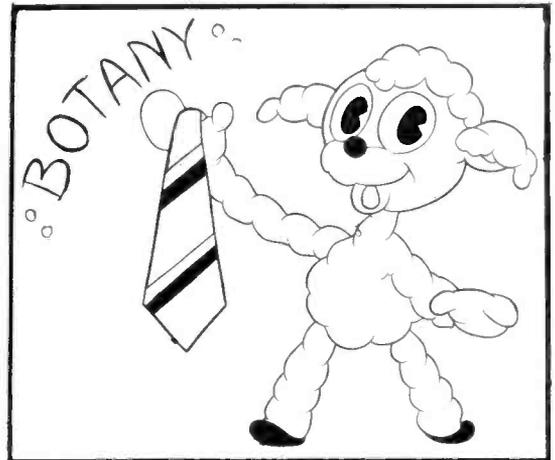
These factors of suspense and spontaneity put the elements of life itself into things. And, these are the factors that television motivates. These are the factors that television broadcasters and advertisers must learn to stage, evaluate, and exploit. These thoughts differentiate television from other media, and

form the first description of what television is and can do.

Progressing to a more specific analysis of television as an advertising medium, the following evidence is very strong for the effectiveness of television advertising

What do the psychologists tell us about the channels of learning with which we, as human beings, are equipped? We are told that between 80 and 90% of all that we have learned we have learned through our eyes; and the remainder through our sense of hearing and the other senses. The ratio, thus, between the senses of sight and hearing is roughly 9 to 1. Of course by "sight" is not meant just the printed word or still pictures, but the actual witnessing of real actions, objects, and events. May we then conclude that television, in adding sight and life to sound radio, enhances its selling impact and effectiveness by at least nine times?

Over the past three or four years a great number of advertisers have been



The Botany Woolly Lamb featured in the Botany Worsted Mills daily weather service on station WNBT using animated motion picture film

asked for their judgment of the added selling impact of television compared with sound radio. Their estimates of this added impact ran from 4 to 20 with an average somewhere around 10. This closely substantiates the ratio of 9 to 1 laid down by the psychologists.

Of more significance to the practical advertiser are the results of a merchandising effectiveness survey conducted in the New York market by an advertising agency after producing a series of ten television programs over a period of ten weeks. During this period the agency presented for one of its clients a group of copy points on this television series, which paralleled the same group of copy points presented by other media. The survey was conducted by

See by **TELEVISION** here!
N.B.C. **WNBT**
50-56 MEGACYCLES
CHANNEL No. 1

ADAM HATS

Sports Parade

WRESTLING MATCHES

DIRECT FROM RIDGEWOOD GROVE

Every Tuesday Night 9:30 P.M.

Sponsored by the **WORLD'S LARGEST RETAILER OF MEN'S HATS**

An example of merchandising used on television. Adam Hat Stores, Inc., distributed a number of these posters to each public place equipped with television in the New York area. Posters were also sent to some 800 Adam Hat outlets in the area calling attention to the television broadcasts

selecting a random number of television receiver families out of the 4,000 in the area at that time who they presumed had been reached by their sales messages over television; and a comparable group of families who they presumed had been exposed to their other media campaigns during the same period. The questionnaire started off with simple questions and progressed more and more to complicated aspects of the various sales messages. In this way the various consumers were quizzed on their entire store of information about the particular advertisers' products. Naturally, television was never mentioned during the interview nor was the name of the advertiser or his products. The results of this independent survey showed that the effectiveness of television selling was something between 10 and 11 times greater than all the other media used by the advertiser combined.

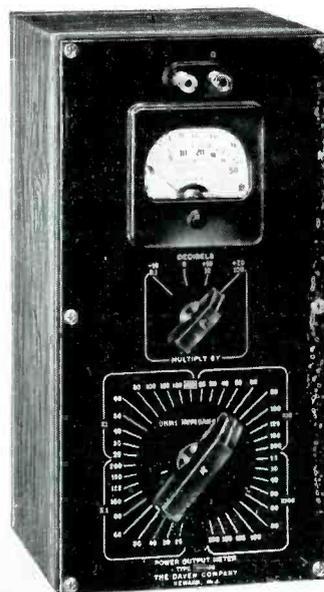
This is one more source of figures which substantiates the rough 9 to 1 ratio. These three arguments form the nucleus of reasoning to evaluate television among the other media.

Television commands 100% active attention from its audience as against a given percentage of passive attention received by many other media. Out of a given potential audience television will obtain a higher actual audience than sound programs because television, having sight, sound, motion, and immediacy, has more appeal than sound alone, and because there are fewer simultaneous television programs on the air to split the audience.

It was believed some time back that early television efforts would have more enthusiastic audiences not available at present in sound broadcasting nor available at a later date for television. A few years ago surveys found very enthusiastic audiences for television. Our latest surveys have indicated that even with the oldest veterans of the audience this enthusiasm is not diminishing. It is increasing.

In this same trend of thought, it was believed that the novelty appeal of the early television programs would reap a flush of publicity and tie-ins for the advertiser. Records of television publicity show that television becomes a greater and greater news and human interest issue as time goes on. Each month finds more and more attention for television. Any novelty value must certainly be giving way to solid human interest and worthwhile news value.

Another intriguing consideration is
(Continued on Page Nine)



TYPE OP-182



TYPE OP-961

DAVEN OUTPUT POWER METERS

for Accurate Measurement of Power and Impedance

OP-182

Convenient meter reading is provided in this compact, space-saving OP-182 Output Power Meter. It is admirably suited for many power and impedance measurements, such as determining actual power delivered by an audio system to a given load, characteristic impedance or load variation effect on an A.C. source.

Terminal impedance remains essentially resistive over the audio frequency range of 30 to 10,000 cps. Impedance from 2.5 to 20,000 ohms in 40 convenient steps are available.

The indicating meter is calibrated from 0 to 50 mw., and from 0 to 17 db. Zero level at 1 mw. Four ranges of full scale readings from 5 mw. to 5 watts, and from -10 to +37 db. are provided by the meter multiplier. Accuracy within 5% at midscale.

The DAVEN catalog lists the most complete line of precision attenuators in the world: "Ladder", "T" type, "Balanced H" and Potentiometer networks—both variable and fixed types—employed extensively in control positions of high quality program distribution systems and as laboratory standards of attenuation.

Special heavy duty type switches, both for program switching and industrial applications are available.

SUPER-DAVOHM resistors are precision type, wire-wound units from 1% to 0.1% accuracy.

More than 80 laboratory test equipment models are incorporated in this catalog.

OP-961

A rugged handy Output Power Meter for accurate measurements of audio signal systems having a maximum power output up to 50 watts. Highly recommended for measurements of characteristic impedance, load variation effects, transmission line equalization, insertion losses, filters, transformers, radio receiver outputs, and others.

Reliable readings of power and impedance from 2.5 to 20,000 ohms are guaranteed by a meter multiplier network of constant impedance, in combination with a carefully designed impedance changing network that remains essentially resistive throughout virtually the entire audio range.

Power ranges cover from 0.1 mw. to 50 watts in steps of 0.1 mw. Indicating meter is calibrated from 0 to 50 mw., and from 0 to 17 db., with a 1 mw. zero level. A 20-step multiplier extends the meter power reading from 0.1x to 1,000x scale value, and the db. reading in steps of 2 db., from -10 to +30 db., with full scale at +47 db. Accurate within 2% at midscale.

THE DAVEN COMPANY
158 SUMMIT STREET • NEWARK, NEW JERSEY

Introduction to a New Journal Feature: Off the Record

By Tom Gootee

MUSIC and entertainment via recordings is no longer a case of makeshift, erratic and distorted reproductions. With a sudden change of attitude a few years ago, the general public became acutely interested in records and transcriptions—and today it is a major American industry.

Ten years ago record releases were few and far between—with concert and classical recordings seldom appearing. Today as many as fifteen or twenty new records are issued by each of the five Major Labels every week—and most of the companies are far behind in filling current orders. Naturally the increased demand—within the past six or seven years—has made for a higher quality of reproduction, greater care in balancing orchestras, and other technical improvements.

But here we are only interested in the reproduction of records, the playing of the finished product—and not in the manufacturing process. The selection of a well-balanced library is important, as well as the care and treatment of such a collection.

Looking for an authority on recorded music—of both classical and popular nature—an intensive search led to William E. Lawrence, head of the Record and Transcription Department of NBC's Central Division. There he is in charge of an extensive library of over 10,000 records, and well over 2,000 transcriptions. "Bill" has listened to and worked with so many records during his lifetime, that he is virtually a walking catalogue of recordings.

But more about Bill later.

Transcriptions or Records?

First of all, we might as well clear up the uncertainty of difference (to the uninitiated) between a record and a transcription.

A record is a record. You can buy hundreds or thousands of them from your neighborhood music shop or dealer. They are either ten or twelve inches in diameter—and all are played on a phonograph turntable operating at a speed of 78 revolution per minute.

A transcription, however, is not made for public consumption. Primarily they are manufactured for radio stations, requiring high-fidelity musical reproduction. Transcriptions—in reality, special recordings—are generally played on a much slower revolving turntable: at a speed of only 33 1/3 r.p.m. This requires less physical space on the disc for each selection; therefore as many as four, five or six selections can be separately recorded on each side.

Popular Records

"Popular records have made a terrific comeback," says Bill, glancing over the huge release sheets of popular dance music he receives almost every other day. "Ten years ago the quality was very poor, and the dance music hardly fit to listen to. But modern changes in recording methods have changed all that. Now 'platters' are selling more briskly than ever before in the nation's history."

What caused this comeback?

"It's hard to say," Bill opines. "For one thing, radio broadcasting had a lot to do with it. People heard their

favorite orchestras on the air, then dashed out to buy a recording of some particular tune by that particular band which struck their fancy. Generally they find the record, because almost every new tune is being recorded—often by several different orchestras—and, strangely enough, being sold!"

And thus the transient popular tunes—too often forgotten by tomorrow—are continually being reproduced over and over by home phonographs throughout the nation.

"But a rather strange situation has developed," says Bill. "And it is quite possible that within a year concert and classical music will outsell popular dance recordings!"

That all reverts back to the last time you heard some dance band playing a jazzed-up version of some classical composition. "We may complain about hearing the old masters murdered and remurdered—but the record companies won't complain." Why? "Because a swing version of some classic work too often leads to an interest in the older and more serious form of the music," explains Bill.

Concert and Classical Recordings

The record companies make no secret of their desire to furnish good newly recorded interpretations of the classics, generally because such records sell for more money than popular dance music.

"Let's take a practical example," says Bill. "Freddie Martin's recent recording of Tschaikowsky's Piano Concerto is strictly a dance record, and sells for 35 cents. But the great and sudden popularity of this record alone has caused such an interest in the Victor \$5 classical album of Tschaikowsky's works that the company cannot keep up with orders!"

But it doesn't stop there. Chances are, the new classical listener will be won over to other fine classical recordings—and sooner or later finds himself more interested in that form of record than in the dance recording.

"Classical music," explains Bill, "is always currently popular by virtue of its own greatness. Such records are never out of date, as are most popular dance records."

"And the best basis for statement of the popularity of concert and classical records is the fact that there are almost as many new recordings of this type of music issued every month as there are of popular dance music. There may even come a time when the classics outsell all of the popular music combined."

New recordings of these older works are necessary, because too often the original master-die was made years ago—when the fine degree of modern technical craftsmanship was unknown.

Building a library of good classical recordings is no easy job for the tyro, and requires some deft calculations—particularly with a budget. Bill Lawrence has some suggestions to offer such a beginner in the concert and classical field which may well serve as a guide for the more advanced record collector.

"Begin with representative orchestral works of long-famous composers," suggests Bill. "Start with Brahms, Bach, Wagner or Tschaikowsky. Then, every so often,

(Continued on Page Twenty)

OFF THE RECORD WITH BILL LAWRENCE

As the man said (Gootee) here I is. Before I begin I suppose it is only fair to tell all you gathered peoples that in many respects (recordingly speaking, of course) I am a most peculiar gent. When I listen to a record I don't care a whit about the conductor of the orchestra, be he Mitropoulos or Tommy Dorsey. Further, I care nothing about "what the composer or arranger had in mind" when he put the notes on the manuscript paper. The most important that I have as a listener, and I should be a cross-section of all listeners in this job, is what comes out of the loud speaker. If the finished product sounds good to me, then I call it a good job and I am happy. Swing bands, symphony orchestras, opera singers and jive chirpers all attempt, when you get right down to it, to put something on that record that will be good listening to the largest group of persons possible. I like Tommy Dorsey's brand of swing, generally, but I am not one of those blissful folks that run out and buy every record he cuts as soon as the wax cools—just because he did it. Same goes with the long-haired kids, Stokowski, Toscanini, etc. After hearing literally millions of records I'm sure that the qualities I look for in a record are pretty much the same as yours even though I may have some fancy, technical term to describe it. You'll all just have to forgive me for that—call it my occupational disease. It's rather difficult, after working around these eccentric technical men, to call anything by its right name. For instance, to them, an ordinary phonograph record is a "78" because it revolves at a speed of 78 revolutions per minute. Middle "C" on the piano to these gents is "256 cycles", and they never call a record loud or soft . . . it's always "high level" or "low level," so you can readily see why this business of radio is mysterious. It's that way to us, too.

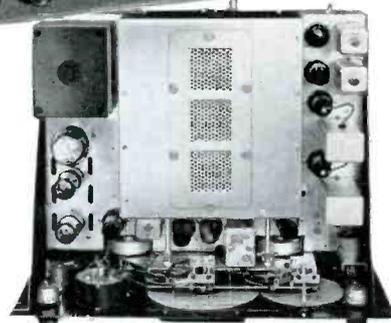
The various distances the different instruments are placed from the recording microphone is called the "balance" of the band and is a very important part of the recording engineer's work. For instance, take a theoretical group of four musicians—three trumpets and one violin. (Glad it's only theoretical!) If the three trumpets were placed directly in front of the microphone and the violinist about ten feet back of them and they made a record I would defy anyone to hear the violin playing even though he is scraping like mad. In a set-up like this the trumpets would be placed further back and the fiddle much closer so that the overall "balance" would record all the instruments equally.

Let's go back (way back, remember?) to where I said that the things I look for in a record are just about what every record listener is after. In other words, if you like what I like everybody will be happy. Here goes:

Joltin' Joe Di Maggio
Nickel Serenade

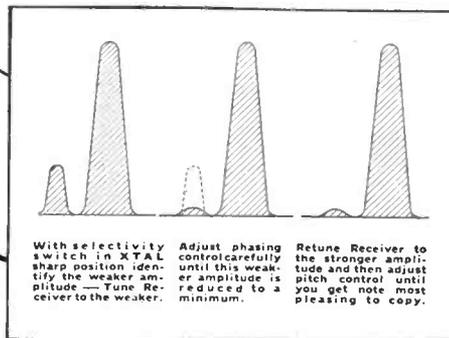
Les Brown Orchestra
Okeh 6377

Okeh records have featured a lot of nice "room noise" which is a sort of room echo found in an acoustically live studio and really sounds big here—remember those old Jack Hylton and Ray Noble records made in England—that's
(Continued on Page Twenty)



Try a Hallicrafters Super Skyrider Model SX-28 and know the difference!

—in operation, performance and stability. This 15 tube, 6 band communications receiver delivers dependable results even under adverse operating conditions. Covers 550 kc. to 42 mc. The controls are arranged to give effortless tuning.



See the Super Skyrider Model SX-28 at your Hallicrafters distributors today.

the hallicrafters co.

CHICAGO, U. S. A.

USED BY 33 GOVERNMENTS • SOLD IN 89 COUNTRIES

Behind the Mike

By Con Conrad

NEW Staff. WRRN, Warren, Ohio. Chief Engineer James F. Raney formerly of WFMJ, Youngstown, Ohio. Duke Rosenberg from WJW, and James Barnhart from WGTC, Greenville, N. C.

A. J. Pote and Bill Feruzzi, both of WMEX, Boston, covered the New England Army maneuvers for their station.

George Reynolds and Aaron Shelton, Engineers of WSM, Nashville, Tenn., have been covering the Army maneuvers down South this Fall.

J. A. Slausser, KOA, Denver Station Engineer, being called to active duty, upped the rank of R. D. Carrier to Station Engineer, and R. C. Thompson to the post as Assistant Station Engineer.

Tom Watson, CKGB, Timmins, Ont., has moved to a new position at CKVD, Val D'Ore, Que.

Edward Dayton to WSSR, Stamford, Conn., from WICC, Bridgeport, Conn.

Swaps in order: Douglas Russel, former KLZ, Denver, to WKY, Oklahoma City, and Willis F. Johnson from WKY to KLZ.

W. C. Prather, NBC, Chicago, latest addition to the NBC Engineering Staff, deserted the rank of benedicts by marrying a home town gal (Buffalo).

Howard Fuller, WTAG, Worcester, Mass., can no longer lay claim to the rank of benedicts either as he up and married Harriet Ricker, of Shrewsbury, Mass.

Bruce Mayo has been appointed Chief Engineer of WGTC, Greenville, N. C.

Robert Kinney has joined the staff of WKBN, Youngs-

town, Ohio. Ditto Tom Price. They will now work under Bernard T. Wilkens.

Hazel Weaver is one of the few Fems that has qualified as a Radio Operator. She holds down a regular tour at KIUL, Garden City, Kans.

Bob Armstrong, new to radio, has joined the staff of KGNC, Amarillo, Texas.

Joe Alusic, NBC, Chicago, expects a visit from the stork in the Spring.

James Strong, former NBC, New York, and Ex-Mackay Radio, and Ex-Navy Department, Washington, D. C., is now with the State Department Staff in London.

Dean V. McLaughlin is now with KODL, The Dalles, Ore. He is formerly of KHG, Spokane.

E. C. Horstman, NBC, Chicago. He is the President of NABET and Mr. Schnepfer, big wig of NABET, to San Francisco for Annual NABET Convention.

T. K. Abernethy and B. F. Spencer have both been added to the staff of WRAL, Raleigh, N. C.

Pate McAtee, formerly of KITE, Kansas City, has joined the staff of WFPG, Atlantic City.

Ernie Mott, has joined the Transmitter Staff of CKGB, Timmins, Ont.

Joe Wofford, former WROL, Knoxville, Tenn., is now with the FCC Office in Boston, Mass.

O. B. Hanson, NBC Engineering Vice-President, to San Francisco to discuss Engineering problems with NABET Convention.

Dr. P. C. Goldmark, Chief Television Engineer at CBS in Chicago, to present a paper before the I.R.E. on color television.

NBC Celebrates Fifteenth Anniversary

These are some of the jovial scenes from the New York contingent which celebrated at the Waldorf-Astoria. From left to right: (Top) Graham McNamee and Ray Forrest; Al Protzman, Nick Kersta, Dick Pickard; Pres. Niles Trammell and Frank Mullen; Messrs. Horn, Milne, and McElrath. (Center) Costello, Bosler, Moloney, Clark, Christopher, Waddell, Lane, Luedeke, DeSomov; Hank Shore and Ghisalbert; Monfort, See, Gronberg, Thompson. (Bottom) Monfort, Forrest, and Folkerts; Don Whittemore at the controls.

Staff Photos



Business Side of Television

(Continued from Page Five)

the problem of trying to buy some of the evening hours on the sound networks. Many of them are sold out and optioned for years. Television offers possibilities to accommodate these demands. It will afford more diversified radio services to the public during the peak hours of audience availability. On the other hand, if the advertiser already has one of the more popular evening hours in sound broadcasting, he should certainly be concerned about protecting the size of his present audience by capturing the ever-growing television audience during these hours or other hours.

As television progresses, if this course is not pursued, and if television bears out its indicated potency, there may be a reshuffling of the leaders among the advertisers. Further, television time is going to be scarcer than time on sound broadcasting. For instance, there will not be 23 television stations in the New York area as there are sound stations today. There may be a total of only four television stations.

The early user of television establishes for himself a place of recognition and prestige with the public and the industry. We have but to recall the early sound programs and consider the number of times the names of the products and of the advertisers were linked with these shows on through the years. The value of these mentions and the attention they receive will be very impressive.

Every business interested in a future owes part of its present to that future. On this premise there is no dissenting opinion on the part of the leading organizations in the radio industry that the future of radio is television broadcasting. This opinion has been backed up by millions of dollars of investments by these companies in television. These companies have their equity in present-day sound broadcasting; however, they do not view television as a competitor of sound broadcasting because television includes sound broadcasting. Television is sound plus sight broadcasting.

The NBC, as one of the organizations with a large equity in the future of radio, is very mindful and appreciative of the patronage and confidence of many leading advertisers; and it is anxious and feels a strong obligation to offer all opportunity and everything possible to these advertisers in this new service of NBC, television advertising.

A main purpose of the NBC is to make its record clear with advertisers. Sight, sound, motion, and immediacy—the four principal services of sales are combined in this most dramatic sales service. NBC has this service and sincerely recommends that advertisers take part in the building of this new sales tool which has as much equity for advertisers as for broadcasters.

Most of the thought up to now has dealt mainly with the broad philosophies of television and little with its efficiency as an advertising investment. However, considerable evidence can be furnished that certain present-day accepted and successful advertising media with nowhere near the selling impact of television are proud of rates per thousand circulation that are multiples of television's cost per thousand circulation. An investment in television time is often talked about in terms of experience and future security value, but properly used and guided television can stand on its own as a limited but extremely efficient advertising investment today.

In discussing a new service for so-

ciety during these times, it is impossible to divorce thinking from the war and defense activities of this country. However, advertisers have an opportunity of serving the government and the people of this country in their efforts to keep certain "pilot industries" going and developing during these times in order that the tremendous amounts of labor and production facilities which will be available after the war can be absorbed by the full expansion of these "pilot industries." Television is spoken of as a "number one pilot industry."

Sound radio has proved itself thus far as the most efficient method of spanning the space between advertisers and consumers. Now, with the climaxes of sight, motion, and immediacy added to the present success story of radio, and coupled with the guidance of conscientious advertisers and creative showmen; the full form and utility of television broadcasters will flourish. There have been hundreds of millions of dollars of outstanding radio entertainment presented over the years, but all of this entertainment and appeal has been invisible to the audience.

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.



Illustration of the super-position

Television Gives Double Service

TELEVISION engineering solved a long-standing problem on November 4th. The problem of being able to see two different programs at the same time.

The Adam Hat Sports Parade was sponsoring its usual telecast of professional wrestling from Ebbets Field in Brooklyn and wished to bring the viewers the results of the New York City Mayoralty race. Both these events were very close and exciting, so it was desired not to interrupt the wrestling even for a short time (as is done in sound broadcasting).

The engineers were able to meet these requirements by superimposing the wrestling picture with that of a blackboard showing the constantly changing figures of the election. The figures appeared at the top of the wrestling picture and so did not in any way interfere with the action of the wrestling match.

To do this they had to operate two highly complex television units in almost absolute synchronism. Had one system been as much as eight millionths of a second out of step with the other the trick could not have been done. To the engineers the feat consisted of tying two synchronizing generators together—one operating in Brooklyn miles distant from the other operating in Radio City. The generator in Brooklyn controlled the picture of the wrestling while that in Radio City controlled the picture of the blackboard. The synchronizing generators are the complicated mechanisms that keep the electron beams in the television cameras and home receiver in step as they trace out 15,750 scanning lines per second. Hence, if these two generators were not in step with each other the two pictures would not coincide.

This new technical development was used for the first time to fade in the running box-score of the mayoralty race at the top of the wrestling picture at intervals. Thus while wrestling continued on the larger part of the television screen, televiewers read the latest

totals on the election in the upper portion.

This development has been perfected over a period of months and makes possible a switch from Radio City's television studios to the mobile unit without either a blank screen for a second or two or an unstable image in the receiver. It also makes it possible to superimpose the sponsor's message on an image or to show the station's call letters without interrupting a boxing match, football game or other remote television pick up.—Joe Conn.

N. Y. Engineering News

By R. A. Isberg

The new New York studios, 6A and 6B, are completed and are in operation. These new studios are unusual in design and are somewhat like Hollywood's in that the programs originate on a stage and the audience is seated in theater fashion. It is planned that the acoustical and architectural design will be described in a future issue of the Journal.

The D.C. to A.C. conversion of Radio City power and lighting circuits is nearly completed. The E. J. Electric Company, electrical contractors, entertained Messers Rackey, Hastings, Berglund, Nolan, and Maloney at "Hellsapoppin'" and at Leon and Eddie's.

The three new Chicago studios are completed and the equipment has been practically all installed. Bev Fredendall has been in charge of the work.

Seibert's new FM room for W51NY is completed at Empire State and awaits the 10 kw final. At present, W2XWG keeps NBC programs on the FM channel with a 1 kw carrier. Staff at Empire include: Buzalski, Barker, Fricker, Sweeney, Wade, Miller, and Isberg.

Miss Primont, Mr. Hanson's secretary, is reported to have started a new Engineering service. She will provide escorts to specifications—male or female. Don't crowd, boys.

The Radio Facilities group keep busy with their antenna arrays and field strength measurements. Plans are going ahead for the Washington television station. Duttera, Fitch, and McMillan have recently purchased homes.

Lou Hathaway, formerly of the Development group, is now at Crufts Laboratory, Harvard University.

Dick Pickard, Lt. USN, has been on flight duty at Miami but is now stationed at Washington.

Trevarthin, formerly of Audio Maintenance, is now assigned to Video Maintenance. Graham and Turner, formerly of Hollywood, are assigned to Mainten-

ance and Telemobile Units, respectively. Duke and Folkerts both have articles in the current RCA Review.

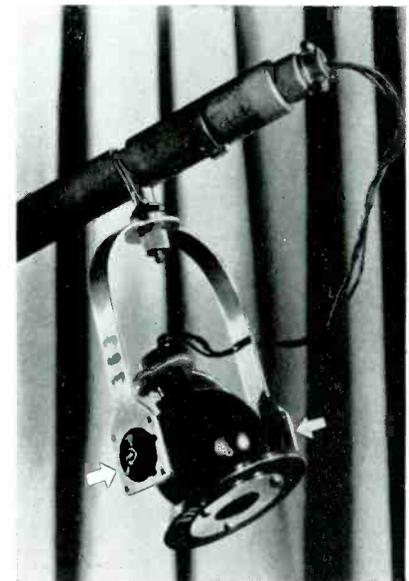
Johnny Knight, Lt. USN, is Officer in Charge, U. S. Navy Underwater Sound Laboratory. Both Pickard and Knight were formerly at Empire State.

The Burns vs. Townsend "Pamela" Feud, which was started by my mixing the weights of their respective offspring, still waxes hot. To clear me of further responsibility, Townsend's Pamela weighed 8 pounds 3 ounces and the Burns' Pamela weighed 6 pounds 10 ounces. However, the latest report is that Burns' Pamela has cut a tooth and Townsend's has not. New dads include: Fraser, a boy; Burrell, a girl, and Hastings, a boy. New husbands are Graham and Gronberg.

Shockproof Suspension

In motion picture work the microphone must oftentimes be moved very rapidly. To accomplish this, it is usually mounted on the end of a large boom which can be easily controlled and moved to any desired position quickly. This action must be accomplished without any mechanical noise or shock reaching the microphone. Such disturbances would spoil the recording and result in expensive retakes. To isolate their microphones from such conditions, Audio Productions of Long Island City, New York, mount these instruments on standard Lord Shear Type Plate Form Mountings indicated by the arrows in the illustration below. These Bonded Rubber Mountings effectively absorb all vibration and shock and, in addition, provide an electrically insulated support for the mike.

These mountings made by the Lord Manufacturing Company, Erie, Pa., are widely used in supporting broadcast and recording microphones.



Radiomen in the Selective Service

THERE are undoubtedly many readers of *The Broadcast Engineers' Journal* who, faced with call for a spell of training by Uncle Sam, wonder whether they will be able to obtain assignment to radio work—assuming that to be their preference. The answer appears to be in the affirmative, according to information gleaned from U. S. Army sources.

At an initial interview after induction, the selectee is given an opportunity to indicate the type of service he prefers, although this carries less weight than does his past training and experience. The attempt is always to assign him to the branch of the service for which his past experience best qualifies him. If this and his expressed preference jibe then the chances for obtaining his desire are excellent. If they do not coincide it is highly probable that experience will win out unless it happens that the need for men in his preferred service is greater than that in the service for which he is best qualified.

Assuming that a technical radio man or a ham is assigned to the Signal Corps, the first step will be to interview him in great detail and to put him through a series of aptitude and other tests to determine the particular branch of Signal Corps work for which he is best suited. If he is an experienced radio man he will almost certainly be assigned to radio training—unless by chance he has had more extensive experience with wire telephone circuits or some other form of signal or communications service.

Once he has been definitely assigned to radio service he will spend his first three months in the Radio School of the Signal Corps Replacement Training Center at Fort Monmouth, N. J. Of this time approximately one-third will be spent in learning to be a soldier, the balance in actual radio training. The early part of this training is devoted almost entirely to code practice because the ability to read code is a highly important, fundamental requirement for every Signal Corps radio man. This code training will bring speed up to a minimum of 7 w.p.m. From this point on the code practice is interspersed with class sessions in procedure and technical matters, and with actual field



Uncle Sam's Own Ham Station — First Lieut. P. W. Simms, Officer in Charge, at the mike of one of the two completely equipped operating positions of W20EC, Army owned ham station. Hallcrafters equipment, left to right is: HT-7 Frequency Standard, HT-5 speech amplifier, SX-28 communications receiver and HT-4 transmitter (in console cabinet at right of operator).

operation to provide practical experience with typical Army equipment.

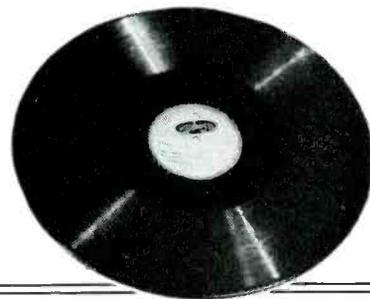
At the termination of the 3-month training period, trainees are immediately assigned to active field duty. At this stage of the game they are not specialists in any one phase of radio work, but they have added to their original qualifications a general, fundamental knowledge. Seasoning and specialized training

will be obtained in the actual work to which they are assigned.

The school, which is turning out radio men at a rate of over 3,000 per year, consists of 6 large "classrooms" each accommodating 120 men at one time. Five of these are devoted to code training at graduated speeds. The sixth room is for technical classes. For field

(Continued on Page Sixteen)

AT LAST A GOOD PAPER BASE RECORDING BLANK



MANY recording engineers have rejected the idea of using paper base discs for recording. You may feel that way about them, too. But we think you may change your mind when you see the new, improved Presto Monogram Disc. We sent samples of this disc to a few stations in July. In every case they started to use them immediately in quantity.

They are not as smooth as our glass or recoated aluminum discs and we don't recommend them for reproducing delayed broadcasts, but they're ideal for reference record-

ings. They're lightweight, easy to file, safe to handle or mail anywhere and the price is 40% less than our standard discs.

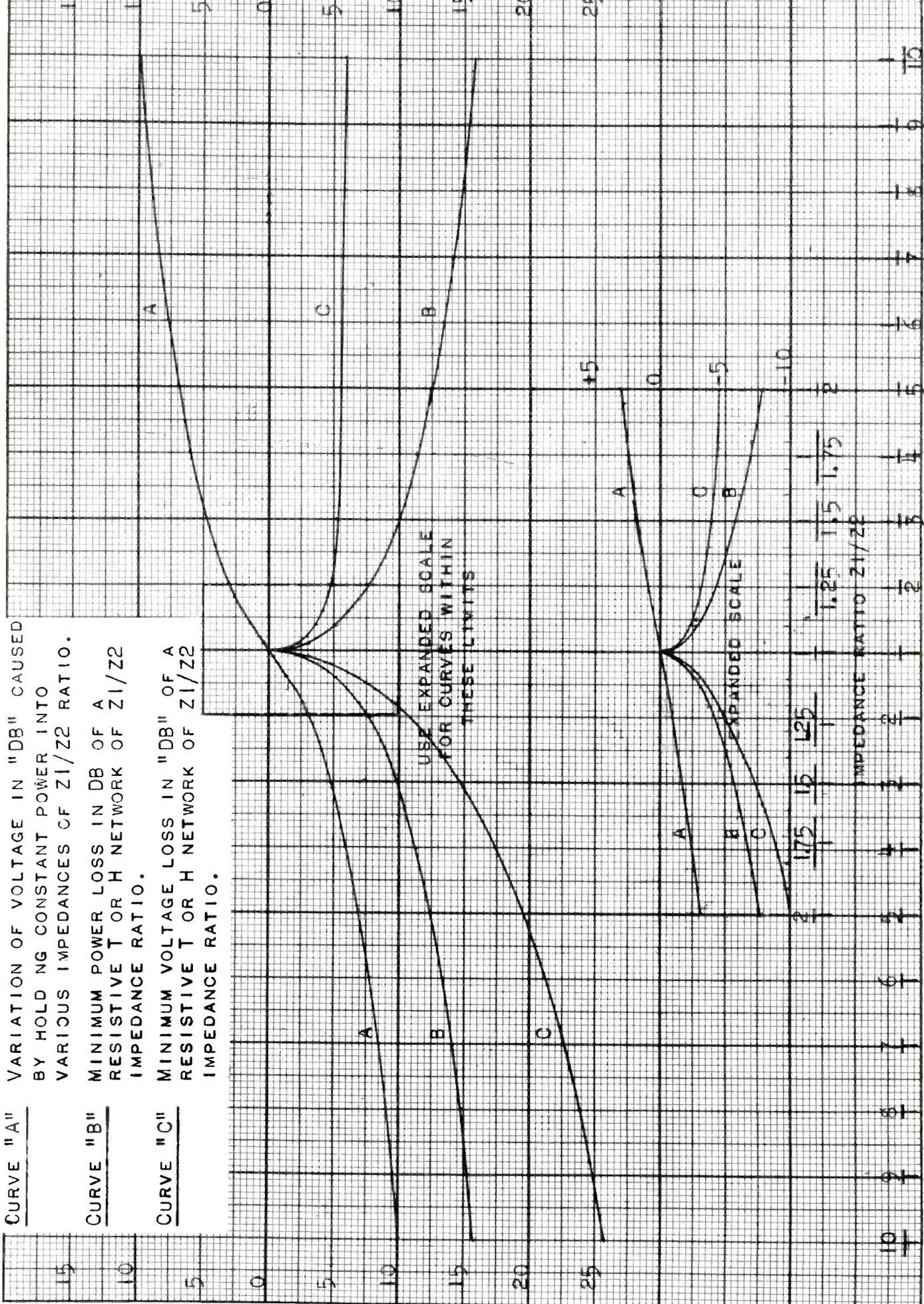
The base of the Monogram disc is cardboard—the flattest, smoothest stock obtainable. The coating material is exactly the same as our highest grade discs. They cut with the same needle pressure and angle. Surface noise is nil.

The Monogram disc is made in all sizes up to 16". It's worth knowing about. Order a sample carton of 10 from your distributor today.

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



Voltage Loss of Resistive Networks of Unequal Input and Output Impedances

BY

Paul J. Moore, Transmission Engineer, NBC Chicago, and B. F. Fredendall, NBC Audio Facilities Group

[FOREWORD: It is realized that the term, "Voltage DB", is incorrectly used in this article since the Decibel is a unit of the ratio of two powers. If the impedances of the circuits under consideration are ignored, the power ratio is unknown, hence the term Decibel cannot be correctly used. In another article the need of a logarithmic voltage standard will be discussed. As no such term is now used, the term "Voltage DB", is written in quotation marks to emphasize incorrect usage of the term.]

WITH the increasing use of bridging amplifiers or circuits it becomes more frequently necessary to design pads of unequal input and output impedance of a given "Voltage DB" loss, expressed in terms of voltage rather than power. As most tables or curves of pad design are based on power attenuation, expressed in DB, some means of rapidly converting this DB loss in power to "Voltage DB" loss in voltage is desired. Without this, it is necessary to compute the power loss in DB which the desired output voltage and impedance will produce, using the formula:

$$\text{Loss in DB} = 10 \log_{10} \frac{E_1^2 Z_2}{E_2^2 Z_1} \quad (1)$$

and design a pad of that power loss. The voltage loss of a given pad, expressed in "Voltage DB" will be equal to the power loss when the input and output impedances are equal, and greater than the power loss when the input impedance is greater than the output impedance and less than the power loss when the input impedance is less than the output impedance.

As an aid in constructing some twenty odd unequal impedance pads on a voltage loss basis, the accompanying curves were plotted. The time saved by using these curves more than offset that spent in plotting them. Three curves are used, labeled A, B and C (see facing page—Ed.).

Curve A is the voltage ratio, expressed in "Voltage DB", produced by holding a constant power into various impedances of Z_1/Z_2 ratio. For example, one milliwatt into 600 ohms will be considered. Letting 600 ohms be Z_1 , what is the voltage difference, expressed in "Voltage DB", which the same power would produce across 1800 ohms? Calling 1800 ohms Z_2 , the impedance ratio is 600/1800 or 1/3. Referring to curve A, an impedance ratio of 1/3 is plus 4.75 approximately. Thus with constant power input, the voltage across 1800 ohms is 4.75 "Voltage DB" higher than the voltage across 600 ohms. This curve may also be used to find the voltage loss or gain in "Voltage DB", of a coil or transformer of Z_1/Z_2 ratio, neglecting the power loss or inefficiency of the coil or transformer. Since voltage difference in "Voltage DB" is expressed by the formula:

$$\text{Voltage difference in "Voltage DB"} = 20 \log_{10} \frac{E_1}{E_2} \quad (2)$$

and since E_1/E_2 is proportional to $\sqrt{Z_1/Z_2}$, then:

$$\text{Voltage difference in "Voltage DB"} = 20 \log_{10} \sqrt{Z_1/Z_2} \quad (3)$$

simplifying:

$$\text{Voltage difference in "Voltage DB"} = 10 \log_{10} Z_1/Z_2 \quad (4)$$

from which Curve A is plotted.

Curve B is the minimum power loss in DB of a resistive network of Z_1/Z_2 ratio. As the heading implies, this is the minimum power loss possible in a pad of Z_1/Z_2 ratio. If this loss is greater than desired, impedance match-

ing must be accomplished by the use of a coil or a properly designed reactive network, which causes no attenuation in the band of frequencies to be transmitted. This curve is plotted from the formula:

$$\text{Loss in DB} = 8.86 \text{ Cosh } -1 \sqrt{Z_1/Z_2} \quad (5)$$

The factor 8.86 is inserted to translate the loss in Nepers to DB. The Neperian system of logarithms is used in basic pad and filter design as it simplifies calculations involving capacitive and inductive reactance.

The following examples illustrate the use of the curves:

Example 1: Desired, a pad having an input impedance of 600 ohms, an output impedance of 150 ohms and a voltage loss of 15 "Voltage DB". The desired pad should first be checked to see if this is a possible condition. 600/150 is a 4/1 impedance ratio and on the minimum voltage loss curve C, it is found that the minimum voltage loss of a 4/1 ratio is 17.5 "Voltage DB". Thus the desired pad is an impossible condition since 15 "Voltage DB" loss is less than the minimum possible and it is necessary to either increase the loss 2.5 "Voltage DB" or reduce the impedance ratio to 3.2/1.

Example 2: A pad of 600/150 ohm ratio and a voltage loss of 35 "Voltage DB" is desired. It is found that this is a possible combination from Curve C at the 4/1 impedance

(Continued on Page Seventeen)

CANNON PLUGS and RECEPTACLES Now Stocked in New York

We have been appointed distributors of Cannon sound plugs and receptacles and now carry a complete stock of this equipment.

The Cannon Electric Development Company, Los Angeles, Cal., wishes to assure fulfillment of their customers' requirements in these uncertain times. Here is additional evidence of Terminal's record of regular and reliable delivery of essential radio materials in the face of trying conditions.

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San Francisco News

By Lee Kolm

IT'S INTERESTING TO NOTE THAT . . . the SF gang has recovered from the busy week spent in entertaining the National Council of the NABET. The boys on the morning watch were the hardest hit, for it was with difficulty that they kept their eyes open the many "mornings after" . . . at the open house Sunday night, the Sir Francis Drake Hotel held under one roof the largest collection of card sharps ever gathered in the city. With some urging, Al Powley, of Washington, finally got Dick Parks, KGO, to teach him a few card tricks. Many shared in the financial harvest when the Powley trick deck failed to work successfully. Those who shared in the payoff were Gordon Strang, the "black jack twins," Guy Cassidy and Joe Arnone; Eddie Parkhurst, ME, and Bob Schuetz. Many others of the SF gang kibitzed and otherwise attempted to break up the Horstman to Powley signal system . . . at Carlos Restaurant the best received speech was the brief welcome offered by Harold Platt, SE, and newcomer to SF. Ernest Jefferson, SE, pulled no punches when he described several of Sellars visits to Yokohama. The boys expected to hear a brilliant rebuttal from Sellars, but he

(Upper Left)
Cliff Rothery,
Ed Stolzenberger,
and Pres. Ed
Horstman discuss
the Journal.



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OVERDUE BOOK NOTICE

Your library card indicates that you have a book (or books) out overtime. Books are due on the last date stamped on slip on page opposite back cover. Two week books may be renewed once.
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One week books and magazines are not renewable.

OVERDUE CHARGES: Five cents a day on one week books, current magazines and books marked "Not Renewable". Two cents a day on all other books and magazines.

PLEASE RETURN OVERDUE BOOKS

Living for two

Mechanics' Institute
Mechanics' Mercantile Library
JOHN H. WOOD, Secretary
57 Post Street, San Francisco

did not elaborate on the stories previously heard in the control room, titled "My Oriental Adventures" by E. E. Jefferson and Guy Cassidy . . . During a discussion of Journal activities, Ed Stoltzenberger mistook Bob Barnes, KPO, for a waiter and asked to be served coffee. To Ed's chagrin Bob pulled up a chair and joined the discussion . . . at Omar Kyayhams, Chef George Mardikian outdid any previous dinner and served a super-colossal collection of sumptuous food. Manager Al Nelson hosted the party and took particular pains to see that everyone had plenty of good things to eat. The only thing

THE SAN FRANCISCO NABET CHAPTER DINNER TENDERED THE NATIONAL CONVENTION

1 Mort Brewer, 2 Ed Poage, 3 Bob Barnes, 4 Ed Parkhurst, 5 Don Hall, 6 Bill McCauley, 7 Guy Cassidy, 8 Alan O'Neil, 9 Lee Kolm, 10 Bev Palmer, 11 Ernest Jefferson, 12 Oscar Berg, 13 Andy Mitchell, 14 Harold Platt, 15 George Dewing, 16 George McElwain, 17 George Greaves, 18 Frank Barron, 19 Russell Thompson, Denver Chapter Chairman; 20 Harold Brandt, Cleveland Chapter Chairman; 21 Vernon J. Duke, Engineering Chapter Chairman; 22 Jim Brown, Hollywood Chapter Chairman and Vice-President of NABET; 23 Ed Stolzenberger, Ass't National Sec'y and Journal Mogul; 24 Cliff Rothery, San Francisco Chapter Chairman; 25 Ed Horstman, President of NABET; 26 Al Powley, Washington Chapter Chairman; 27 Jerry Sellar, New York Chapter Chairman and retiring Vice-President; 28 Jim Summers (not quite in the picture).

Photos by Warren Andresen



lacking was Senator Thomas Q. Watson's recital of the abdication speech . . . Jim Summers, CS, was married in October to the attractive Miss Peggy Ziegenhirt, of Oakland. Jim went into the marriage problem fully and after much discussion with the boys he decided his marriage would be different. His study of marriage started in the library (see cut) . . . Harry Jacobs, SE, has decided to take the leap and will be married some time in March to Miss Cynthia Richardson, of Berkeley . . . Andy Mitchell, SE, is one of the better ice skaters in the SF group. Even has his own special figure skates . . . the "Trade Winds," Joe Bakers, KPO, yacht is now in winter anchorage at Palo Alto, but Joe plans to take occasional week-end trips in the Bay . . . altho we hate to brag, Henry Dunton, KGO, had the good luck to hook a thirty-five pound striped bass off Martinez. With George Dewing, SE, planning to organize a Bay fishing expedition, we should be able to report still better catches . . . John McDonnell, Kenneth Owen, and Harold Platt, the new studio engineers, are vacationing this month. Harold has the only definite plans that is to visit relatives in southern California and show off the new son . . . Eddie Parkhurst, ME, is now reversing his movie film, buying bulk film and slitting it to 8mm size . . . the recent masonry job completed by Frank Barron, SE, was of such high quality his neighbors asked him to do similiar jobs for them. Necessity forced Frank into the brick laying work, for his porch roof was falling and no local contractors would take the comparative small job of rebuilding the supporting pillars while there was so much defense work available . . . the person who to all appearances enjoyed the two NABET banquets most, was portly Mort Brewer, genial KPO engineer. In fact he was a photographer's MODEL following the dinner at Omar's . . . Alan O'Neil's art photos are again installed in the Reference Recording Room. Story goes that Al Powley, of Washington, hung the studies in his room at the Drake.

Cleveland News

By J. D. Disbrow

TWELVE members of the Cleveland Chapter of NABET were present at a meeting held October 17 in the Flemish Room of Hotel Hollenden. After a very tasty dinner the business meeting got under way and a general discussion followed on suggestions and items to be taken up at the national meeting in San Francisco.

The broadcast committee of the Civilian Defense Organization of Cleveland held a meeting in Studio "D" on October 17. The organization chart was setup and assignments to the numerous sub-committees were made. Representatives from all local broadcast stations were present as well as men from the telephone and telegraph companies, power companies, amateurs and the local radio inspector. A round robin method of coordination was discussed and setup as a means of general coverage from one or more sources to all transmitters. A second and third method was also formed to meet situations that might arise. It is planned to hold rehearsals in the very near future utilizing the facilities at hand to better acquaint the personnel with the actual operation of the system. The power companies are working out substitute power arrangements and submitting costs for two portable gasoline or Diesel driven power plants of 50 KW each.

The last man to return from vacation was Harold Brandt whose vacation ended just in time for him to leave for the Coast and the national meeting. Art Butler is on the hunt again this Fall, returning with several woodcock which tasted

very good according to C. C. Russell who was fortunate enough to get some.

The launching of the U.S.S. Cleveland in the New York Ship Building Yards at Camden, New Jersey, was one of the high spots of the month. The pickup fed the studio as a mike line—the studio creating the musical portion of the show.

Washington News

By Bill Chew

DON H. CASTLE, of Rackey's group, E Del' Era and "Curley" Jordan, of New York Construction, put in a couple of busy months revamping our two transcription studios. The booths have been equipped with RCA 77-C T. T. The first of September the boys here got their first taste in a long time of playing ET's, etc. The different results obtained from an ET, 33 1-3, Ortho Coustic, have been an education. Mr. Johnson, engineer in charge, who has flatly refused to supply Aspirin, says his budget couldn't stand such a strain.

NOTES

L. A. McClelland and A. T. Powley (SE), have been kept busy following the President on out-of-town jaunts.

Nick J. Close, Recording, is the proud "Pappy" of a daughter. Congratulations, Nick.

John F. Stetson, (Maint.), has been commissioned an Ensign in the U. S. Navy and at this writing is awaiting his orders to report for duty.

Local Man Turns Farmer

Clarence A. Allen (SE), is leading a "back to the Good

(Continued on Page Nineteen)



**SUN
DELIVERS
the
GOODS!**

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Through thick and thin, despite shortages, restrictions and priorities we have amassed the greatest stock of radio materials ever in our history. We've geared and girded ourselves with supplies and parts of all types to provide our customers with as good a service as is humanly possible under present adverse conditions. And, if by chance you should desire some article which we do not normally carry in stock, we shall bend every effort to secure it for you in the shortest possible time. Our prime stock in trade is — to deliver the goods to you **WHEN YOU WANT IT!**

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Through the Finder

By Jerry Renneck

KEEP it simple," he said to me when I asked for suggestions as to the subject for this month's discussion.

"He," was a member of the camera club, and we had been talking about how complicated some of us make photography. It's fine to be well versed in the differences between density and Gamma; it's swell to know how to read a densitometer and make a gray scale and plot a curve, but can you make a good picture?

Some fellows go to a lot of trouble to make a gray scale and then pick out the wrong gray to use as a basis for comparison. After the print is made you generally hear something like this: "Isn't this a swell average print? Gee, it's wonderful how I got this," and a voice in the background softly says, "I'll say it's wonderful that you got a print . . . at all."

And honestly, it is a wonder how the print came into being. After all the fussing and testing, I should think it would be time to clean up and go to bed. I'll guarantee that some of those beautiful prints and pictures that you admire so much, were made with the least amount of trouble. I know

that to be so, because I have seen master photographers put a negative in the enlarger, focus the lens, stop it down, choose the paper and make the exposure. Yes, Junior, with as little fuss as that. No exposure meters, no gray scalers, no densitometers, and maybe one test strip. The only instrument that may be used will be a timer so that the result can be duplicated.

Think of the money you could spend on film and paper if you had not bought that gadget that tells you what the humidity of the paper is so that you can compensate in the exposure for the log of the position of Orion on June tenth, nineteen hundred and seventy-four. After you have figured out how to use the darn thing, (the guy who sold it to you said to read the instructions) you found that you had made better prints without it. As a matter of fact, you haven't made a good print since you started using it, but boy it sure makes an impression on Cousin Gertrude who comes to watch you "develop". Believe me, I have two or three such gadgets, each purporting to be better than the other, and if I thought Britain could use it as a "secret weapon," I'd send them along. (They're still in the original packages.)

Now we come to a different department. Any of you experimentally minded fellows better take a walk. This ain't for youse! This is for the guy who wants to make a print and

(Continued on Page Seventeen)

Hams in Selective Service

(Continued from Page Eleven)

training there are the great open spaces and wooded areas of this Training Center.

Many licensed hams find their way to this school, and the Army believes in encouraging their continued ham activities. A ham station de luxe has been established in one of the radio school buildings. This includes two complete transmitter and receiver set-ups utilizing the most modern ham apparatus including identical 450-watt transmitters (Hallicrafters, Model HT-4), capable of band-switch operation on any band from 10 to 160 meters. There are 10- and 20-meter rotary beams on a 65-foot pole near the "shack" and in an open area some hundreds of feet distant there are three 70-foot poles on which are strung doublets for all bands from 20 to 160 meters, inclusive. These are connected to the station by seven $\frac{3}{8}$ " concentric lines which run underground a good part of the way and are constantly maintained under 50 pounds (dry-air) internal pressure.

This station, W20EC, is strictly amateur in every sense of the word, although using Army-owned equipment. It is licensed in the name of the officer in charge, 1st Lieut. P. W. Simms (W9DTF and W2KWH). Its principal use is in handling messages, via amateur relay, between trainees and their homes. Several hundred such messages are handled monthly for the

800 enrolled men. Any trainee who possesses a ham ticket is encouraged to operate the equipment for either general contacts, message handling or relay work. In addition there is a full-time operator, Tech. Sgt. A. L. Foster (K7BAQ, W7BAQ and W2OCX), who does much of the message handling and is responsible for maintenance of the equipment.

The selectee cannot obtain assignment to radio work solely as a matter of personal choice. But if his desire is backed up with previous radio experience, either amateur or professional, the chances strongly favor such assignment.

It is of incidental interest to hams who have deferred classifications or are exempt from service that the establishment of a ham station by the Army at this time provides just one more tangible indication that ham radio will remain a definitely going institution "for the duration"—at least so far as the Army itself is able to see ahead.

Buy Now to Insure Delivery by Christmas

Despite rising prices, present indications point to a record breaking demand for Christmas gifts and purchases which may see the demand far exceed the supply. Under such circumstances, SUN RADIO CO., 212 Fulton Street, New York City's oldest complete radio organization, suggests that the wise buyer will do his purchasing NOW while

prices are low and luxury articles are still available.

In this category, SUN RADIO CO. has amassed the greatest stock of goods ever in its history,—all the latest receivers, including radio-phonograph combinations, frequency modulation and television radios. Featured amongst its displays are such well-known brands as R. C. A., Philco, Stromberg-Carlson, Emerson, Ansley, Pilot, Motorola and others.

In its record department, SUN RADIO CO. carries a tremendous selection of all standard classical recordings, including operettas, symphonies and concertos by the world's outstanding artists on Victor and Columbia records. In addition, those addicted to a preference for the latest swing, boogie-woogie or rhumba styles will find a complete line of the popular-priced Decca, Bluebird, Okeh and Vocalion records in stock.

Engineers interested in amateur radio will be glad to know that SUN RADIO maintains a vast stock of the latest communications receivers, including the popular Hallicrafters, Hammarlund, National, RME and Howard models.

For those interested in exceptionally fine quality home reception, SUN RADIO invites readers to its specially-built SOUND STUDIOS located adjacent to its premises at 210 Fulton Street, where a wide variety of high fidelity amplifiers, tuners and allied equipment is displayed and demonstrated. The store and studio are open daily to the public from 8:30 A. M. to 7 P. M. including Saturday.

Through the Finder

(Continued from Page Sixteen)

get some fun out of his hobby. Suppose we take a look at the chemicals in my darkroom.

We find D 76 for the ordinary run of films, and some 777 for the very small gauge stuff. Some D 72 is used when contrast is the essence of the job, but most of the time it is used for the Kodabromide paper you will find in the cabinet. There is also some Brovina paper there but that was a gift from the manufacturer. (Promoted samples.) However, there is, for this last mentioned paper, some W 5, which is the developer recommended for it. It might be well to impress on you that when a manufacturer of sensitized materials recommends a certain formula for development, he does not care if you buy it ready made or compound it yourself. All he cares about is that you use his *formula*, for in doing so, you will get the most out of the paper or the film. You see, the developers have been compounded to the formula of the emulsion and those formulae will always yield better results than if another is used but not recommended; there will always be a suggestion for an alternate so that you can vary the results with the same paper. Those boys know what they are talking about. They should. Have you ever seen the inside of a photo supply plant? Talk about revelations!

Let's get along to films. One of the saddest things to hear, is someone asking the girl behind the film counter what kind of film to use. "... yeah, I've been using that super double pan, but it's lousey. I can't get the results that I want." Many times I feel like saying, "Look Bub, why don't you just hang yourself. It's lots easier." The guy's just looking for more trouble. He simply can't understand that the film is not at fault, but that he was not familiar with it. It's really a good film (if it is a standard make), and if he would learn to use it, he would soon be getting such beautiful negatives that he'd be ashamed to look a different kind in the roll.

I hear another voice. That's right, Chum, there is a use for commercial pan, but do you know how to use it? And furthermore, can you put it into your folding camera or your Super B? Quiet Sonny! We're talking to people who want to make pictures, not Einsteins who think they can revolutionize photography. Go 'way and invent sumpin'!

It would be a safe bet to make on who has sold more green filters to fit cameras than any one else. Yep... me! Not because I've wanted to, but because when a dope comes into a store and insists on having something I've sold it to him. After all, you can't wear yourself out trying *not* to sell something. Yuh gotta save strength to do selling. Well, filters are pretty and a bagful may keep little Clarissa from going haywire on a rainy day. "Buy 'em for the kids," I say. But seriously, after the sale would be rung up, and the customer asked what he wanted a green filter for, he'd usually answer by saying that he didn't know but so and so said it was a good filter to have. Isn't that silly?

He probably felt that if he didn't have the pretty green filter he was loosing out in the pursuit of happiness. Well, it was always another buck or two on the register, so what the heck. Frankly, two well chosen filters are all the average person needs. A yellow which should be the best you can buy, and it should be the Wratten K2 or one equally as good, and the other an orange (Wratten G) or very light red. Do you know that for Plus X film pack, no correction is given for the green? In the Winter, when the skies are not so brilliant, use the yellow for normal correction, and in the Summer, the red or orange should be used to hold back the blue more completely. Whatever you do, don't buy a cheap filter. They

will ruin the definition of your lens regardless how good a lens it is.

Personality and "get ahead" courses tell you to take inventory of yourself, but let's you and I take inventory of our equipment and darkroom. I'll be willing to bet that there is stuff that you are sorry you bought; that you haven't used since you brought it home and that you'd take eleven cents on the dollar for if you could find a sucker for it. No kidding though, the simpler you keep your photography, the more fun you'll get out of it, and better pictures you'll be getting, or I'm way off the beam. Look how popular modern design furniture has become! Why? Well, that's simple... it's simple!

Next month we'll tell you how to fix up an elementary darkroom, or any thing else that you might want to know about. Let's hear from you. Cap your lens.

Voltage Loss of Resistive Networks (Continued from Page Thirteen)

ratio intersection. However, from Curve A it is noted that the voltage loss of a pad of 4/1 impedance ratio is 6 "Voltage DB" greater than the power loss. As 35 "Voltage DB" loss is desired, a power loss of 29 DB is required. From existing tables, a 600 ohm input, 2400 ohm output, 29 DB pad is designed.

Example 3: A 600 ohm input, 2400 ohm output, 15 "Voltage DB" loss pad is desired. The impedance ratio of Z_1/Z_2 is 600/2400 or 1/4. From Curve C it is noted that the minimum voltage loss is 5.5 DB. When the output impedance is greater than the input impedance, the voltage loss in "Voltage DB" is less than the power loss in DB. From Curve A at 1/4 impedance ratio, this difference is found to be plus 6 "Voltage DB". Hence a power loss pad of 15 DB plus 6 DB or 21 DB is designed to fulfill the requirements.

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RIDING GAIN



ON THE AIRALTO WITH TONGOOTEE

ALUMINUM is not the only metal destined to become quite precious during the coming months of the National Emergency. Gold and silver are plentiful compared to the acute shortages of tungsten, chromite, mercury, mica, quartz crystals, and zinc. All of these—and other rare metals—are necessary industrial raw products, without which the United States cannot build armaments, ships and planes, a two-ocean navy, and an unlimited air force. Even the radio communications of the future stand in peril by the severe shortage of certain metals.

Chromite—used in the manufacture of chromium—comes from Turkey; only a year's supply is now on hand, should the sea lanes to that country be cut off. Tungsten is imported from China, reaching this country by way of the treacherous Burma Road and Singapore; present stocks of this metal are dangerously low—and future radio tube production may be severely curtailed. Stocks of mica now on hand will last only a few months, and new Western Hemisphere sources of supply are being frantically investigated. With domestic outputs of mercury at record heights,

only a few months supply is on hand—should production be suddenly stopped. All of these are important factors in the manufacture of radio equipment, parts and tubes—and thus the mounting cost price of radio apparatus is explained.

“How high shall be the mike?” is the problem on The Great Gildersleeve show, when five-foot-ten Hal Peary and six-foot-three Jim Bannon, announcer, work the same microphone.

It looks as if radio announcers will still be called announcers, Richard Stark's efforts to the contrary notwithstanding. Some months ago Stark offered a reward of \$25 to anyone who might suggest a substitute word for “announcer.” The results of his campaign were something over 600 replies containing about 250 different substitutions. Most popular names given were: airmaster, host, and mikemaster. Other favorites included: proclaimer, introducer, radioator, loquator, ether waver, air custodian, voculator, and chronicler. On the lighter side were: scripteaser, glorified barker, smoothsayer, gabman, and orator. But after poring over the suggestion for many hours, *announcer* Stark concluded that none of them “rang the bell.” So now the contest is over—without appreciable results.

After comedian Ed East had casually remarked on the air that he had almost arrived late for his “Breakfast in Bedlam” program due to a faulty alarm clock, he received over two dozen clocks from some of his fans in assorted shapes, sizes and ring tones.

While Frequency-Modulation broadcasting is still limited to a small number of cities, the recent increases in sales of FM receivers would seem to indicate that the general public is becoming aware of the advantages of this kind of radio service. It is reported that more FM receiving sets have been sold in the past three months than in the entire preceding period since frequency modulation was first publicized. This is undoubtedly due to the fact that the first low-priced radio sets capable of receiving FM have finally been introduced. It is believed that the availability of low-priced FM receivers will give the same stimulus to frequency modulation that the famous “Baby Grand” sets of 1930 provided for standard broadcasting.

Once upon a time a Mutual radio engineer was assigned to The Shadow program. After the first hair-raiser, he sighed and said: “Don't know how I'll be able to go on; it's too hard on the adrenalin!” This season that same engineer sits at the controls of The Shadow program. He is Pat Miller and his adrenalin is still okay—even after five years of weekly hair-raisers on the same show.

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When Helen Lewis, actress heard regularly on CBS show "Are You a Missing Heir", was asked what her second choice to acting would be she chose radio engineering. "The man in the control room," she explained, "is the Svengali. If I can't be Trilby, then I'll be the person who makes Trilby tick!"



Helen Lewis

contains at least one suggestion for a "consequence" that is startling enough to cause the "Truth and Consequences" conductor to doubt his very eyesight. The other day, for example, one letter-writer suggested that a man be chosen from the studio audience to impersonate a certain dictator. The "consequence" would then be topped off by a barrage of vegetables supplied by Edwards and thrown by the rest of the audience!

* * *

Shakespeare never knew about radio broadcasting—never even dreamed about wireless. Yet he did make these remarks:

"Ah, stand by."—Anthony and Cleopatra.

"Take up some other station."—Coriolanus.

"And my dial goes not true."—

All's Well That Ends Well.

"His lecture will be done ere you have tuned."—

The Taming of the Shrew.

"'Tis no matter how it be in tune, so it makes noise enough."—As You Like It.

"And those musicians that shall play for you, hang in the air a thousand leagues from hence."—

Henry IV.

* * *

By request, John Barrymore now brings his lunch with him to the Rudy Vallee show rehearsals. It seems that every time he went out for lunch, he generally stayed several hours—too often forgetting to return.

* * *

Ten Years Ago in Broadcasting: A few of the top name dance orchestras on the late network nemos were: Paul Whiteman, Ted Weems, Jack Denny, B. A. Rolfe (for Lucky Strike), and Noble Sissle. Sissle's orchestra was considered the "hottest" band on the air—because the descriptive word "swing" not having been thought of for such music.

* * *

Twenty Years Ago in Radio: Three new broadcast stations were licensed this month in 1921: The Detroit News station WBL, in Detroit; Arno A. Kluge's KQL, in Los Angeles; and the famed old WJX, De Forest Telephone

and Telegraph Station, in New York. All of these stations, once pioneers on the 360 meter wave-length, have since passed into obscurity—and their calls almost forgotten.

WASHINGTON NEWS

(Continued from Page Fifteen)

Earth" move movement by purchasing a 117-acre farm way out "yonder" in Loudon County, Va.

Dorson Ullman, Jr., (Contl. Supvr.), who has been vieing with Lindbergh and others for flying honors, has soloed. Hope he can "KEEP 'EM FLYING."

Gallopin' Tractor Eludes Engr., or "The Wild Ride of Wally English"

While Wally English (XMTR), was manicuring the lawn at WRC's XMTR recently, the power mower threw Wally for a row of cheap bungalows and careened madly down the field with English plowing "Wheezily" in pursuit. After eluding our hero for some minutes, the mower finally gave up and Wally, thoroughly winded, continued his work.

S. E. Newman, (WRC XMTR), had round robin talks with Joe Rohrer, of Denver, and Ichorst, of Chicago, on 20 meters. Where are the Hollywood Hams these days?

Some of the Recent Vacationers

Mrs. Kenneth "Patty" Birgfeld, Sweetheart of Engineering, to Miami. R. L. Terrell, Control Supervisor, and family to Rehoboth Beach. K. B. Williams, Field Supervisor, to the Poconoes. D. H. Cooper, Operations Supervisor, and your humble servant, bass fishing in Southern Virginia. Cooper caught them, I merely fished. Bob Chapman, of WRC XMTR, to Texas and California. C. A. Allen, SE, to his Virginia farm. John Hogan (SE), to Florida.

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Off the Record

(Continued from Page Seven)

real "room noise"? Probably nobody remembers the hero of this wax (remember that World Series?), but here he is set down permanently by Duke alumnus Les Brown. Nickel Serenade: The juke box special again with Betty in the pipe department.

As We Walk Into the Sunset Sonny Dunham Orchestra
Memories of You Bluebird 11289

Nice pleasant vocal work by Ray Kellogg with solid stuff furnished by this young west coast maestro. Memories of You: Slick trumpet work.

American Fantasy Victor Symphony Orch. Victor 36409

This is an arrangement by Victor Herbert of some long-loved American airs, and when you see this composer's name on the label you know it's good, and this is. RCA-Victor have a "seller" here. Symphony orchestra conducted by Charles O'Connell who edits the popular "Victor Book of the Symphony" and "Victor Book of the Opera."

Roumanian Rhapsody No. 1

Chicago Symphony Orchestra Columbia Set X-203

This famous music written by Enescos around Roumanian folk tunes has been done a great deal better by the Minneapolis Symphony Orchestra under Ormandy on Victor 1701 and 1702. This lacks the sparkle I believe it should have. Gypsies whirling and twirling to beat the-hand-sort-of stuff. I think Victor has beat the Chicago Symphony band on this one.

Violin Concerto by Alban Berg Columbia Set M-465
Cleveland Orchestra & Louis Krasner

Just so Columbia records don't go away mad I wish to say, personally, that here is something great. Although this is modern music (composed: 1935) and written in the style of Berg's teacher, Schonberg, Krasner's treatment is almost classical and Rodzinski's baton work leaves nothing to be desired. This work was dedicated by the composer to Louis Krasner, so it should be good out of gratitude.

You Were Meant for Me Claude Thornhill Orchestra
Paradise Columbia 36298

Two "oldies" receive 1945 treatment by the best new band in the business. The effects employed by these boys is phenomenal. At times they use six clarinets in unison, sometimes putting a flute with five clarrys, producing some werry, werry unusual pieces of listening.

Concerto No. 3 for Piano and Orchestra
by Beethoven Victor M-801

Jose Iturbi and Rochester Philharmonic Orch.

We made the fiddle students sit up a moment ago, so now let's take care of the 88'ers. Just as though Victor was eavesdropping they came through on this album. Iturbi fills a double role in this set; soloist and conductor of this fine young orchestra usually lead by Dr. Howard Hanson. This is Beethoven and Iturbi at their best.

Eli, Eli Tommy Dorsey Orchestra Victor 27597

Now we take care of the trumpet players department. (See how versatile we are here?) Professor Ziggy Elman on valves to give us this old Hebrew chant. Mr. Dorsey politely takes the background on his horn to let the professor show us how. Mr. Tschaikowsky (Moscow branch) allows his old favorite, None But the Lonely Heart to be our trombone lesson job for today.

Had enough, folks? Don't all shout at once, I'm going. But I'll be back next month with lots more popular records and for the people who refuse to cut their hairs (I'm one of those, too) a nice batch for them, too. See ya.

Introduction to Off the Record

(Continued from Page Six)

obtain the work of a modern composer whose work you enjoy, such as: Stravinsky, Sibelius, Prokofieff, Harris, Korngold, or others. Among these you will find some of the best recorded orchestral music.

"After that, obtain a number of operatic recordings, as well as the works of outstanding vocalists and instrumentalists. A few good operatic composers would be: Verdi, Puccini, Victor Herbert, and others. Then, every so often, intersperse all of the above recordings with occasional overtures, outstanding choral groups, and the like.

"The total number of records you buy will, of course, depend on your budget—and without that, the sky's the limit!"

Care and Feeding of Records

Recordings of any size or type must be handled carefully. They don't bounce very well.

Ordinary dust is the next problem; and storage of records is important. Bill Lawrence suggests: "Since the main idea is to keep the records clean of dust, and upright, the best means of storing records is to keep them in albums of some sort—and then keep the album in a dust-proof box or cabinet. Dust is a natural enemy of records, and can do a lot of damage."

Next in order, is the needle pressure on the record by the pick-up or tone arm of your phonograph. The weight of the needle and arm at the point it touches the recording should never exceed two ounces. And the lighter the weight, the better! This is very important—since a heavy needle pressure can soon ruin a good recording, by cutting deeply into the grooves with continued playing. The bad quality of your phonograph—often wrongly blamed on poor tube or records—may be due to a too heavy pressure of the needle. Two ounces is the limit weight.

The best needle? Bill wisely avoids this subject as much as possible. Most phonograph users have their pet ideas about needles—and it is difficult to predict for someone else. But since you are interested in getting the highest fidelity possible, with the longest record wear (not needle wear), the following suggestions may be useful.

"I personally prefer any kind of fibre needle," Bill advises. "And a good ordinary steel needle is next in my choice. Radio stations or commercial users of records will, of course, want to use a platinum point with their higher-grade turntable and equipment. But for the average home user, I'd recommend a fibre needle."

"Off The Record"

As we have shown, there are so many new record releases every month, it is virtually impossible to hear and buy all of the new popular or classical recordings issued by the five Major Labels. Every week finds new tunes, new arrangements of old music, new singers, new orchestras, and the like.

With this in mind, it is our aim to present a regular monthly symposium: a cogent digest of the best current record releases, in both the popular and classical fields of endeavor.

Bill Lawrence has kindly consented to author this special monthly column for the Journal, and we hope that it will be well received by both commercial and home users of phonograph records.

Watch for the title: "Off The Record"—the key to the month's best bets in musical recorded entertainment.



"...This is the Voice of Freedom!"

Out of the night's dark secrecy, "somewhere in Europe" an illegal radio speaks. Those who listen risk the concentration camp. Those who broadcast face torture and the headman's axe... A FREE RADIO, the birthright of Americans, is *high treason* under European dictatorship.

For dictators know well that they cannot long withstand the power of *uncensored* news, freely transmitted and freely received!

The National Broadcasting Company is proud to have played its part in keeping *American radio free*... proud to have abided since the beginning of broadcasting by the spirit and the letter of that "Freedom of Speech" which is written into the American Bill of Rights.

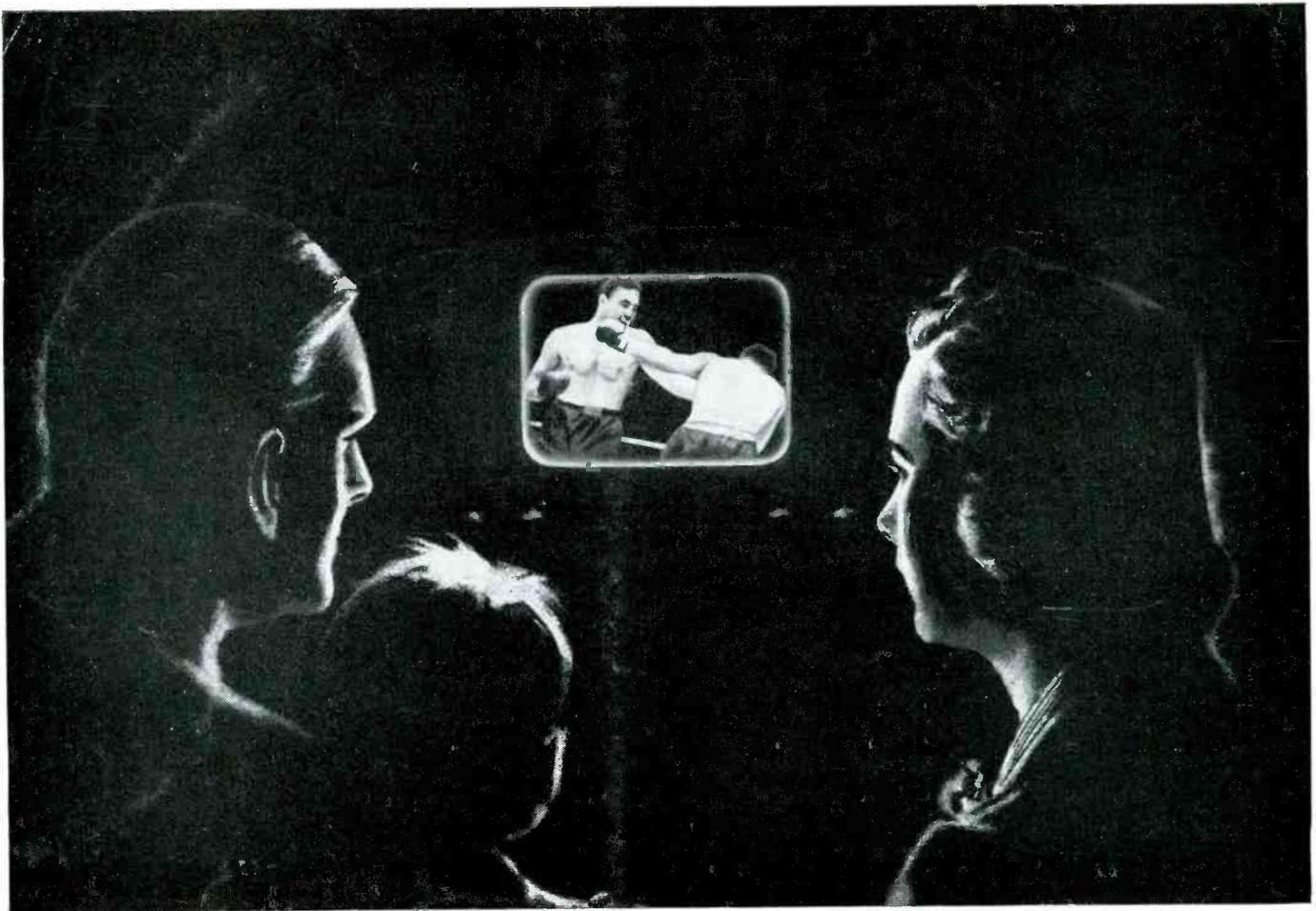
Exponents of opposing views in every field

of thought and action have had equal access to the facilities of NBC. They have been free to present those views to Americans... and Americans have remained free to listen to what they chose. No American political party, no religious denomination, no economic group has ever found the gates of the American system of broadcasting barred against them. For 15 years, NBC has operated "in the public interest, convenience and necessity..."

Freedom of Radio—like Freedom of the Press—is *today* more vital than ever. The National Broadcasting Company, like all Americans everywhere, will continue to guard that freedom jealously—will continue to serve America as *only* a Free Radio can serve it!

NATIONAL BROADCASTING COMPANY

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Thanks to Radio Research
Thousands now Look as they Listen!

On the New York air, these nights at 8:30 o'clock, it's television curtain time. It is estimated that 5,000 television receivers—all front-row seats—are lined up, mostly in homes and public places, to see the shows—the matinees and evening performances—15 hours of entertainment a week from the NBC studio stage and from fields of sport.

Study of statistics gathered by the NBC pioneer television station WNBT, which began commercial programs July 1, reveals that the video audience in the Metropolitan area already numbers about 18,000 in the afternoon and 30,000 in the

evening. On the average, more than 55% of the sets are turned on in the daytime and 80% at night. Seeing by radio is as simple as listening, as far as the receiver manipulation is concerned.

The programs range from fashion shows to prize fights, from spelling bees to a Wild West rodeo, from baseball to travelogues, and from football to illustrated news; while songsters, dancers, magicians, dramatists and bands add to the variety. That people can sit sixty miles away and look in on Madison Square Garden to watch the rodeo. To see a bucking bronco throw its cowboy

rider across the wavelengths is one of the wonders of this age.

Electronic research in RCA Laboratories has put the television shows into space. Electronics—that science which makes miraculous use of infinitesimal bits of electricity—is continuing radio's advance across the threshold of the "Television Age."

The main gateway through which television has emerged to become a service to the public is RCA Laboratories. It is from this magic realm that new wonders in radio sightseeing will come to give this and future generations new and dramatic visions.



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