

JOURNAL



JULY

Recording Issue

1940



The Ancient Greek hears Users speak . . . and this is what they say:

“ORTHACOUSTIC

is the truest recorded sound we've ever heard!”

A demonstration will quickly convince you that Orthacoustic is the truest recorded sound you've ever heard! That's why so many users of transcriptions are adopting these sensational new recordings that reproduce *true sound!*

Transcribed programs that sound like Live Studio Broadcasts! Now you can have them — with the revolutionary new RCA-NBC Orthacoustic Transcriptions.

Developed by RCA and NBC engineers, these Orthacoustic Transcriptions make programs *live*—literally! They reproduce every sound with unmatched fidelity. Voices sound eager, inspired, alive! Music is heard in all its brilliant color.

Let us demonstrate the superiority of Orthacoustic Transcriptions by direct comparison with the ordinary kind. You will

notice that over-resonance, ear-ting, needle-hiss, “wows” and “muffles”—all are gone.

Get in touch with us today! It will be your first move toward transcribed programs with a Live Talent touch!

RCA-NBC Orthacoustic Transcriptions give you these advantages

- 1 New High Fidelity Reproduction Quality.
- 2 Elimination of distortion.
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NATIONAL BROADCASTING CO. A Radio Corporation of America Service
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- “complete absence of surface noise”
- “clarity exceptionally good”
- “a distinct improvement in quality”
- “an advancement in transcription recording”
- “another major improvement in NBC THESAURUS library service”
- “improved quality with less surface noise”
- “ORTHACOUSTIC records greatly increase the quality, brilliance and naturalness of tone”
- “considerable improvement in quality—lifelike tone”
- “results have been excellent and come up to all expectations”
- “absolutely no distortion”
- “considerably above anything we have ever heard before”

The New  

ORTHACOUSTIC TRANSCRIPTIONS

—the truest recorded sound you've ever heard!

ATE Publications, Inc.

TABLE OF CONTENTS

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B. F. FREDENDALL	G. M. SELLAR
R. A. ISBERG	G. E. STEWART
H. E. MEYER	E. STOLZENBERGER
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Volume 7

Issue 7

Lateral Disc Recording	page 3
Instantaneous Recording	8
Recording of Man	9
Recordings	12
Photo Micrograph	16
Improved Automatic Equalizer	18
Chapter News	21

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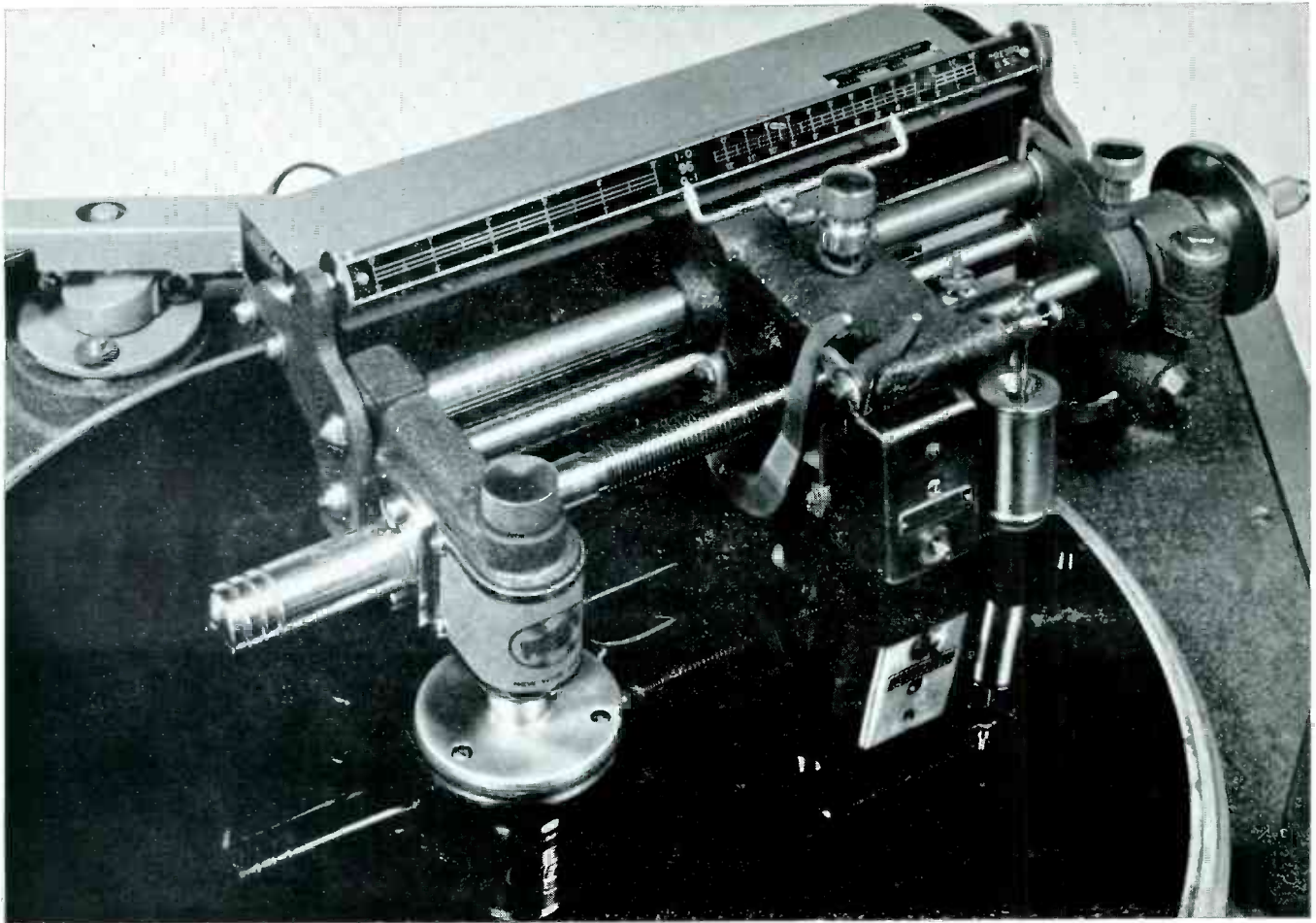
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LATERAL DISC RECORDING

by Beverly F. Fredendall, Audio and Video Facilities Group

PART I—THEORY

SOUND recording began about the year 1877 but, only since the introduction of the instantaneous play back lacquer coated disc, has there been a wide-spread demand for knowledge of the recording process. Although there are two general methods of disc recording, i. e. vertical cut and lateral cut, only the latter will be described since it is more widely used, and is the system of recording used by the NBC and RCA. This text outlines briefly the general theory of recording and, more specifically, the steps required to place a system into standard operation or to check the performance of an existing installation.

It is necessary to understand the basic theory of lateral recording before outlining in detail the various steps required to put that theory into practice. Accordingly this text is divided into two parts; Theory and Practice. Under Theory the subject is discussed according to the natural classifications of electrical, mechanical, electro-mechanical, and equalization; under Practice a description of the electrical and optical tests used in determining the required recording characteristic is given. Emphasis is placed upon the need for clear differentiation in considering voltage, current, power, mechanical amplitude, and optical width while performing the necessary steps in lining up a recording system.

GENERAL

There are two general methods of lateral disc recording; namely, embossing and engraving.

In the method of embossing the inclined recording stylus, or needle, presses with continuous uniform force against the surface of the record, depressing and permanently deforming its surface without puncturing it. The resultant groove is an indentation of the record material which the playback needle must follow. In engraving, the recording needle, set almost at right angles to the record surface, cuts a chip or thread from the soft material, just as a machinist's lathe cuts a chip from the work revolving under the cutting tool.

Record materials vary considerably but fall into three broad classifications, namely, wax, lacquer, and film. Wax is the softest of the three, is generally used for making "processed" records but is not suitable for instantaneous playback. Being soft it offers less of a load to the cutting head than lacquer.

The term "lacquer" is used here to designate all those mixtures, applied to a structural base, having about the same degree of density or firmness. Manufacturing formulas are a secret but usually contain nitro-cellulose as a basic ingredient plus resins, oils, lacquers, glycerine, paint products, and some volatile solvent. The much used term "acetate" is not correct since most of the manufacturers supplying "acetate" records do not use a cellulose acetate base. The mixture is applied on a supporting base of aluminum or cardboard, aluminum being used exclusively for the higher quality recordings.

Film is frequently used for embossed lateral recording in the form of a continuous belt. A sufficient amount of film may be loaded into a long time recorder so that a 24 hour recording may be placed on one loop of film. So far it is mainly used for such recording service as plane to ground communication, where intelligence rather than quality is primary, but it may be used for quality reproduction by increasing the speed of film travel. The film used in the above process should not be confused with a mechanical-optical film method which will only be mentioned here. It employs a long narrow film coated on one side with a layer of opaque material which passes under the cutting needle. When vertical modulation is placed on a "V" shaped needle it cuts through the opaque surface revealing the transparent base material and leaving a variable area optical as well as a vertical mechanical sound track. The optical pattern is used in reproduction by passing the film in front of a photo-electric cell.

ELECTRICAL

The fidelity of the electrical circuits should be approximately equal to the standards of other broadcast amplifying equipment, that is, flat within one db in the frequency band required. In present day recording this may be taken as extending from 30 to 10,000

cycles per second. In taking measurements of the electrical amplifying equipment proper, nominal input and output terminations should be maintained. In the case of the final power amplifier whose output impedance is, for example, 15 ohms, this means that the temporary load for this amplifier should be a 15 ohm pure resistance termination during this part of the electrical test. See Fig (3).

MECHANICAL

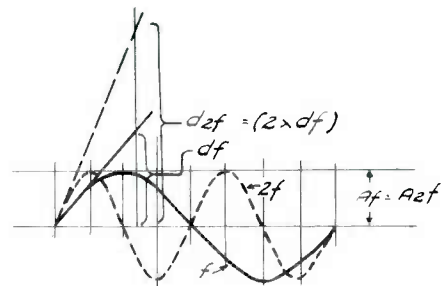
The most interesting and fundamental part of recording — its mechanics—is the part where the greatest confusion exists with regard to standards and to the underlying factors involved in the determination of those standards.

A—Constant Amplitude

An understanding of the terms "constant amplitude" and "constant velocity" as applied to a modulated groove is essential. Fig. 1 shows two frequencies of CONSTANT AMPLITUDE whose frequency difference is one octave, i. e. one is twice the frequency of the other. It is important to note that for constant amplitude recording the maximum slope of the wave is proportional to frequency. Thus the distance $d2f$, which is proportional to the slope of the higher frequency, is exactly twice the value of df of the lower frequency. Similarly, for higher frequencies, the slope is proportionately greater. Velocity if stylus travel and slope of resultant groove are related — one is the cause and the other the effect. The maximum lateral velocity of a cutting needle is attained as it crosses the center of the groove, i. e., zero axis, and at this point the slope is obviously greatest. It is useful to note in passing that a constant amplitude characteristic is essentially that of a crystal type cutter.

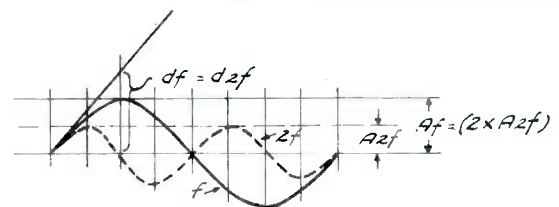
B—Constant Velocity

Fig. 2 shows two frequencies of CONSTANT VELOCITY or slope whose frequency difference is one octave. In constant velocity recording the slope of the wave at the zero axis is constant for constant power output, i. e. for a "flat" condition, and the amplitude of the wave is inversely proportional to frequency. Thus, the height



CONSTANT AMPLITUDE
(VARIABLE VELOCITY & SLOPE)
FIG. 1

NOTE:—
SINE WAVES INDICATE
PATH OF NEEDLES ON
RECORD.



CONSTANT VELOCITY
(VARIABLE AMPLITUDE)
FIG. 2

LATERAL DISC RECORDING

A_2f of the higher frequency is just half the height A_1f of the lower frequency, but it should be especially noted that the slope at the zero axis is the same. Similarly for higher frequencies, the amplitude is proportionately less for the same power output. The constant velocity characteristic is essentially that of the electromagnetic cutter.

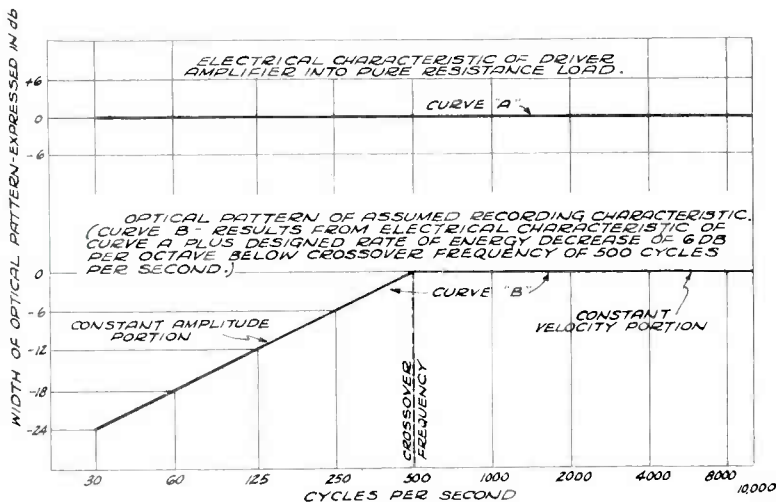
In order to understand some further mechanical considerations, consider a perfectly efficient, magnetic type, electro-mechanical transducer, otherwise known as a cutterhead, which would engrave all frequencies without loss. Such a "constant velocity" head would oscillate with large amplitude at low frequencies and small amplitude at high frequencies. A 5,000 cps wave would have twice the amplitude of a 10,000 cps wave. In a band from 30 to 10,000 cycles per second there are $8\frac{1}{4}$ octaves and thus, for a given amplitude at 10,000 cycles, the amplitude at 30 cycles would be 2 raised to the $8\frac{1}{4}$ power, or 320 times greater. Current practice allows approximately 0.0016 inch amplitude modulation at 500 cycles per second. If the perfectly efficient magnetic cutter were used there would be 0.00008 inch amplitude at 10,000 cps, 0.0016 inch at 500 cps, and 0.025 inch at 30 cycles. Allowing 0.005 inch groove width, as in current practice, and modulation space on either side of the groove equal to expected peak amplitude at 30 cps, there would be 0.005 inch groove plus 2×0.025 inch modulation or a total equal to 0.055 inch for center to center spacing of grooves. Note that the modulation space would have to be ten times wider than the groove. A 16 inch diameter disc allows about $4\frac{1}{4}$ inch usable space before being limited by slow cutting speeds, or $4.25/0.055 = 77$ grooves. At $33\frac{1}{3}$ rpm this is only $77/33.3 = 2.3$ minutes playing time. This would be a severe limitation of playing time and obviously some modification of said efficient electro-magnetic cutter would be necessary.

Unfortunately, the necessary modifications of the above described efficient "constant velocity" cutting system have not been standardized. There are several schools of thought with regard to standards. One school calls for a constant mechanical amplitude on the record for any frequency from the top down to the lowest frequency. Another school of thought calls for a constant velocity system above a given frequency and a constant amplitude below that same frequency. Thus, progressing down the frequency scale, from the highest frequency down to a given frequency the amplitude would linearly increase and below the given frequency the amplitude would be held constant. The point in the frequency scale where the two meet has been called the "cross-over point." See Fig. (3).

In selecting the cross-over point there are two limitations to consider. If too low a frequency is chosen the amplitude of the low frequencies becomes too great to allow closely spaced grooves for a fifteen minute recording on one disc. If a high frequency cross-over is chosen, the resulting modulated groove at high frequencies contains a wave front so steep that the physical slope of the cutting needle, which has a fixed clearance angle would have trouble in cutting it. Of secondary importance, the power of the amplifier driving the magnetic cutter would of necessity have to be greater due to the choice of the higher cross-over frequency. This latter reason is more of an economic than a mechanical one but is a consideration in any practical system.

The term "constant amplitude", considering the record itself, should not be confused with the value of the electrical voltage, current or power in the electrical circuits of the recording channel. These may or may not follow—depending upon the type and design of the cutterhead and amplifier driving system.

Figure 3



With the present method of constant rpm disc recording there is an important variable which cannot be overlooked—that of variable cutting speed due to variable radius. When recording from outside to inside, for example, any single frequency would have a continuously diminishing wave-length, resulting in a steeper or greater wave slope, and for this frequency there would be a critical cutting radius where the slope of the wave would reach the maximum limit value, i. e. both cutting and reproducing would be practically impossible at a higher level. Progressing to a very slow cutting speed (resulting from a smaller cutting radius) the given frequency, forced and held to its maximum cutting slope, would result in a gradually lower value of amplitude as the cutting speed decreases, even though the power to the channel is held constant. The limiting process begins at the highest frequency and passes on to each succeeding lower frequency as the cutting speed is reduced.

As a result of the two basic considerations, first, that of limiting the maximum amplitude of modulation (at low frequencies) in order to secure closely spaced grooves thus providing a greater length of recording time, and second, limiting the maximum slope of the wave at high frequencies, present day practice calls for spiral grooves of from 96 to 140 lines per inch at both $33\frac{1}{3}$ and 78 rpm usually in an outside-in direction.

ELECTRO-MECHANICAL

When the mechanical limitations are realized and the standard recording characteristic has been decided, it is possible to correlate the electrical amplifiers and the design of the cutterhead to produce the desired modulation pattern.

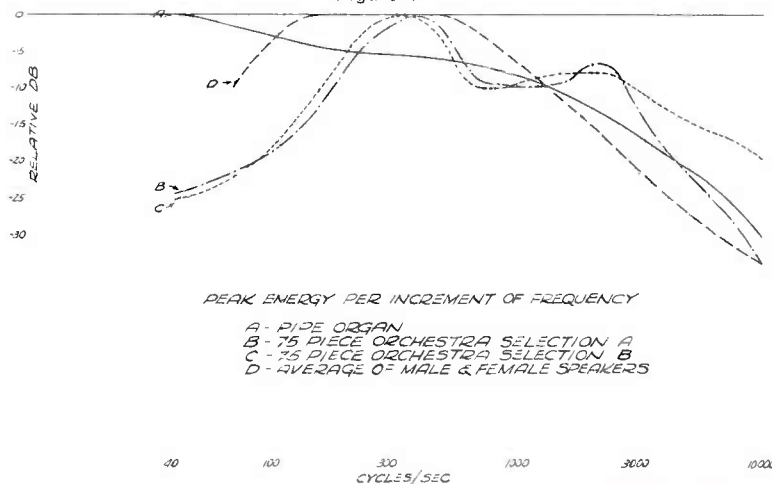
The most commonly used cutters are of the electro-magnetic type although crystal cutters have been used recently to some extent. A CRYSTAL CUTTER following a "flat" amplifier, results in a CONSTANT AMPLITUDE recording due to the fact that the crystal displacement or distance of motion is proportional to voltage and not to frequency, excluding resonance conditions. In this case, if an assumed recording characteristic is desired, as follows; constant amplitude below a cross-over frequency of 500 cycles and a constant velocity above this frequency, the crystal cutter requires a filter to decrease gradually the amplitude of all frequencies above 500 cycles per second. Similarly if an "efficient" electro-magnetic cutter were used following a "flat" amplifier, a constant velocity recording will result as described previously. To produce a standard characteristic the perfectly efficient electro-magnetic cutter would require a filter to decrease gradually the amplitude below 500 cycles.

The term "perfectly efficient" electro-magnetic cutter has been used to simplify the explanation of how electro-magnetic cutters work. Such a cutter cannot actually be realized. In practice it is easier to obtain the constant amplitude characteristic at the low end by taking advantage of the natural change in impedance of an electro-magnetic cutter toward the low end. It is therefore possible to design a cutterhead having the required characteristic on the low end with the proper cross-over point.

The proper taper on the low end is obtained partly by electrical mismatch. For example, the nominal 15 ohm cutterhead is designed to operate from a 15 ohm output amplifier. At all frequencies where the source and load are equal, a maximum power transfer is thus obtained, (not necessarily maximum undistorted power) but at wide impedance variations the transferred power to the load is greatly decreased. In practice the impedance of the electro-magnetic cutterhead is 15 ohms at one frequency only, rising above the nominal value at high frequencies, and dropping to as low as one ohm at low frequencies.

A simple explanation of how this produces a decrease in armature amplitude at the low frequency end follows: If we assume a 15 ohm amplifier output impedance and a frequency at which the cutter-

Figure 4



LATERAL DISC RECORDING

head is 15 ohms, the total EMF in a constant impedance output electrical circuit is divided, for example, into (15+15) 30 parts, 15 of which appear across the cutterhead, or $15/30 = 0.5$ of the EMF. At a low frequency where the cutterhead is only one ohm we may assume the same EMF as being divided into (15+1) 16 parts, 1 of which appears across the cutterhead terminals, or $1/16 = 0.0625$ of the EMF. The ratio between these two load voltages at the two frequencies is $0.0625/0.5 = 0.125$ or 18 db less voltage is delivered at the lower frequency. A 10 ohm resistor is used in series with the cutterhead to increase this loss by about 2 db and to keep a more nearly constant optimum load impedance on the amplifier at all frequencies.

SPECIAL EQUALIZATION

In addition to the two basic considerations of maximum amplitude and maximum slope of the recorded groove, there are other factors which enter into the choice of a standard recording characteristic. One of these factors is the signal to noise ratio of the recording. The distribution of noise is mainly at the extreme high known as scratch or surface noise, mainly caused by dust particles, and at the extreme low frequency end known as rumble or mechanical noise caused by the recording machine gears and driving system. Special equalization may be used to increase the signal to noise ratio and thus obtain better overall performance of the recording system.

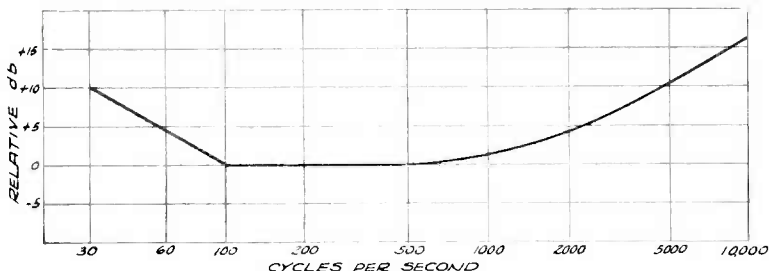
Accordingly, a system of pre-emphasis and de-compensation called ORTHACOUSTIC has been evolved, which increases the recorded level of a portion of the low frequency spectrum, and of all the frequencies above the cross-over point. This Orthacoustic system is based upon a frequency-energy analysis of speech and music which indicates that the low and high frequency parts of the audio spectrum normally contain a lower energy level than the broad middle portion lying between 150 to 500 cycles per second. See Fig. (4).

The importance of this discovery is the evidence that both the low end and the high end of the frequency spectrum can be increased in amplitude on a recording without danger, at the low frequency end, of over-cutting and without danger of too steep a wave front for cutting and playback tracking at the high end. This possibility derives from the aforementioned fact that the energy content of sounds in nature at both the high and low ends was normally substantially less than in the significant middle portion. In other words, it is not, as heretofore was considered necessary, to provide for a flat system at the high and low ends since it would rarely ever be required under normal conditions — organ music being the most important single exception. To preclude possibility of over-cutting at low frequencies due to organ music, or as a general precaution, the maximum level allowed to pass through the recording system is limited by a special type of automatic audio gain control device, such as is done to prevent overmodulation at broadcast stations. For the electrical characteristic of Orthacoustic as applied to the recording channel see Fig. 5.

PART II PRACTICE

To set up and adjust a recording system according to a pre-conceived standard characteristic, it is important to know of and distinguish between two methods of measurement, both of which are used in obtaining the final recording characteristic. The first method is the electrical response, or amplitude vs frequency characteristic of the amplifier system which is used ahead of the cutterhead. The second method is that of optical measurement of the record itself by means of the light pattern reflected from its grooves. This latter measurement is important in checking the performance of the entire recording system and serves to indicate that it has been adjusted correctly and that the proper characteristic is actually being cut on the record.

Figure 5



IDEAL ELECTRICAL CHARACTERISTIC OF ORTHACOUSTIC AS APPLIED IN RECORDING

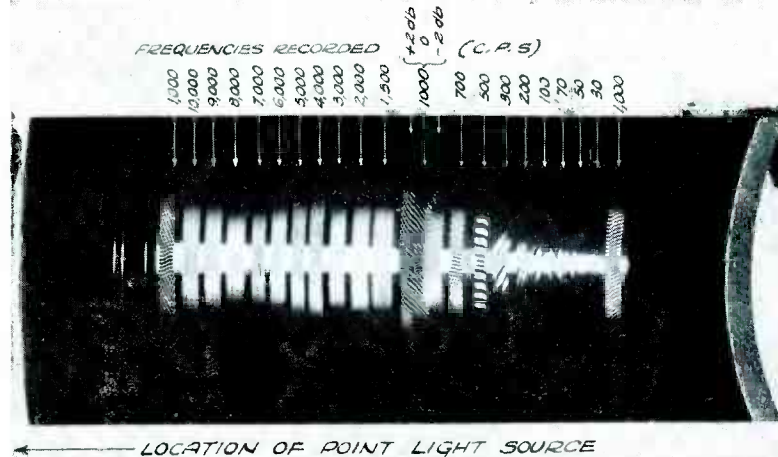


Figure 6

ELECTRICAL TESTS

By substituting a pure resistance termination for the cutterhead, the frequency characteristic of the cutter driver amplifier at normal operating levels can be measured. This test should indicate a flat ± 1 db response from 30 to 10,000 cps for an assumed standard of constant velocity above 500 cps and constant amplitude below 500 cps.

OPTICAL TESTS

The optical measurement of actual cutter operation is accomplished by making a test record at 78 rpm. Tone should be supplied to the input of the channel at constant program level for each selected frequency between 10,000 and 30 cps recorded; for example 10 seconds of tone and 5 seconds spacing with no modulation. The 1,000 cycle reference frequency should be recorded at three levels in one continuous band; (a) 2 db below normal input level, (b) normal level, and (c) 2 db above normal level. This will help in identifying the reference frequency and in being able to interpret the variations in amplitude of the optical pattern in terms of db. The high frequency end of the spectrum should be recorded on the outside of the disc. In addition to the regular tones, 1,000 cycles at normal level should be recorded as the first and last frequencies of the tone run. See Fig. 6.

The interpretation of the optical pattern thus produced may be arrived at as follows: Direct illumination per method in Fig. 7 is quite important; diffused light is particularly troublesome. The line of sight should be perpendicular to the record, directly over the observed spot as determined by an image of the eye found by reflection from the uncut portion of the surface. The light source should be somewhat removed from the record, at least 8 ft., and as close to the plane of the record (approx 2 ft.) as will give a brilliant pattern. With this set-up there will be two patterns, one on each side of the center of the record, one TOWARD the light source and one AWAY from the light source. See Fig. 8. Use the pattern lying toward the light source.

There are other ways of illuminating and observing the optical pattern. For example, the pattern lying on the side of the record AWAY from the light source could be used but movement of the observer's eye seems to cause a greater pattern change. There seems to be less than 1 db observation error between the near and far patterns and although an average of the two would be more accurate the "near" pattern contains less errors of eye placement and seems to check other measurements closely. A small area light source of high brightness is best, as the small area produces a sharply defined image. In practice the record may be placed on a low table with the light source to the left, slightly above the level of the record. With the eye at as great a distance from the record as practical and perpendicular to the spot of measurement, use a pair of dividers to measure the width of the reflected light pattern for each frequency. The desirable condition is a characteristic based on a cross-over frequency of 500 cycles per second, which is determined when each of the three 1,000 cycle per second bands which are at normal input level have approximately equal widths and all those frequencies from 500 cycles to 10,000 cycles are within 2 db of this measured width. Without resorting to physical measurement, visual observation will show whether this is true by comparing the widths of each frequency band with the 1,000 cycle bands.

The frequencies below 500 cycles should taper off materially. The 250 cycle band should be half the 500 to 10,000 cycle band widths. Similarly a 125 cycle width should be half the 250 cycle value or one quarter of the 500 cycle value. Since these low frequency band widths are difficult to measure accurately by an op-

METHOD OF LIGHT PATTERN OBSERVATION FOR LATERAL CUT DISC RECORDING.

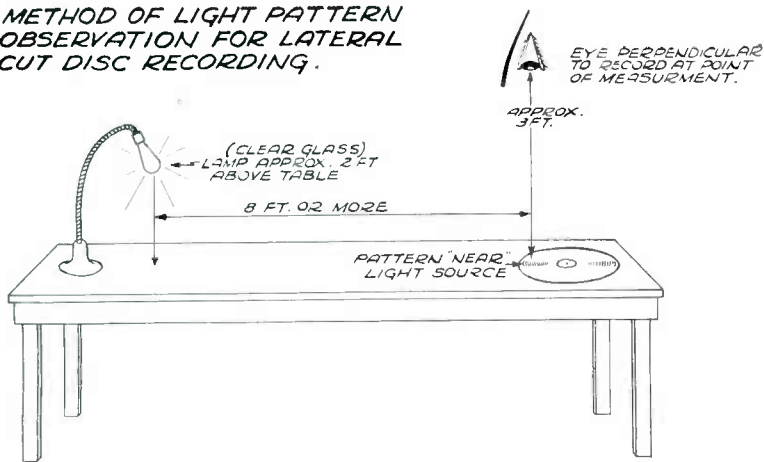


Figure 7

LATERAL DISC RECORDING

tical method, they may be verified by playing them back electrically through a completely flat pickup head and amplifying system. Such a system may be obtained by using the MI-4856 playback head connected to 700 ohms or more load. Make certain all equalizers are disconnected and play back only the low frequency end. The resulting electrical energy of this constant amplitude portion should be reproduced with a taper of 6 db per octave. The higher frequencies cannot be measured successfully with this head due to the mechanical resonance composed of cutterhead plus record material, which, with lacquer coated records, appears to be around 6,000 cycles per second, thus giving a false interpretation of the record. The high frequency end of the spectrum should only be interpreted by physical measurement of the light pattern widths. After each frequency is measured with the dividers to the nearest hundredth of an inch, the characteristic may be translated into an electrical relationship expressed in db by using the relation that the width of each frequency band is proportional to the voltage which that band would produce in a perfect electro-magnetic playback head. For example, with two frequencies on the record, one of which was twice as wide as the other, the wider band would be 6 db higher in level than the second band, etc. Use the middle normal level 1,000 cycle tone as a reference value and compare all others to this by expressing each measured width in relation to the 1,000 cycle width as a fraction. The resulting figure then represents the voltage which would be generated at one frequency as compared to the 1,000 cycle voltage. This voltage ratio may be expressed in db by using the VOLTAGE column of a db table.

The resulting figures should be plotted and compared with the theoretical characteristic showing a downward slope of 6 db per octave below 500 cycles and a flat characteristic above 500 cycles. At present, a tolerance of 2 db from theoretical is permissible. If the cutter power amplifier and head do not fall within these limits under actual operating conditions equalization is necessary. The proper equalizer for each head must then be designed and installed, preferably ahead of or following the cutter driving amplifier. It is possible to locate equalization within this power amplifier, but in such case means should be provided to remove this equalization when electrical tests are made to determine if this amplifier itself has a normally "flat" electrical characteristic.

Figure 8



LOCATION OF POINT LIGHT SOURCE

R C A Convention

At what is believed to be the first convention of its kind, upward of 200 of the country's leading parts wholesalers heard the RCA Manufacturing Company's top executives present a well-rounded program for the distribution of RCA products through parts jobber channels.

Announcement of an RCA Franchise plan for a selected number of parts distributors was made by L. W. Teegarden, Manager of Tube and Equipment Sales, which will embrace the merchandising of RCA's comprehensive line of test equipment, power tubes, receiving tubes, amateur equipment, replacement parts, associated products, and also announced a group of new products to the parts jobbers. Those include a dramatic presentation of a complete amateur television transmitting and receiving system, with the new RCA amateur Iconoscope listing at \$24.50 as its nucleus. It was pointed out that this amateur television system, which was developed in collaboration with The American Radio Relay League, opens up many new sales opportunities for parts and amateur equipment jobbers, among amateurs, experimenters and in schools and laboratories. The complete system may be assembled with tubes, parts and other equipment now on the market, all of which are sold by parts and amateur equipment jobbers.

The new test equipment soon to be introduced includes a Junior Volt Ohmst; a new deluxe tube tester; and a Chanalyst Ultra High Frequency converter for the Chanalyst instrument now on the market, which will make it possible to apply the "signal tracing" method of servicing to the higher frequencies. Developed in accordance with RCA's previously announced "Minimized Obsolescence" plan, the new Chanalyst Converter extends the range of the popular Chanalyst to 60 megacycles. The extended range makes it possible to check facsimile, television and frequency modulation circuits.

Also announced was a combination of RCA's popular amateur receiver Model AR-77 and an extended range loudspeaker, at a suggested list price under \$160, that provides the finest possible domestic and foreign reception with matchless tone quality.

The Dynamic Demonstrator set-up which was utilized with marked success in a nation-wide series of RCA service lectures is now being made available to parts distributors as a selling aid which is expected to attract considerable interest among service men and amateur experimenter groups.

One of the most highly regarded merchandising aids announced was the preparation of a new and comprehensive Ham Guide. This is a 48-page volume crammed with highly technical information for amateurs and other experimenters on the construction of transmitters, tube theory, and transmitter design—all utilizing RCA tubes.

Stork "Ham"

CHICAGO—"Mr. Ellis, I've just presented you with a fine baby daughter."

That gladsome news, voiced by a woman in Chicago, echoed down a hospital corridor 7,000 miles long to the waiting ears of William Ellis located in the Philippines. The anxious father was "tied in" for the bedside report from the lips of his wife just 35 minutes after his new daughter arrived in Henrotin Hospital, Chicago, by dint of an amateur radio phone hookup arranged by M. H. Eichorst, Chicago amateur wireless operator.

Eichorst whose amateur call letters are W9RUK, arranged the "stork-cast" when he learned that Mrs. Ellis, the wife of a fellow amateur operator, was expecting the arrival of her child while in Chicago, far, far from her home in Manila.

SCHENECTADY

by Paul Adanti

On Sunday, May 19th, Horton Mosher SE and Tommy Martin of the announcing staff had the unusual privilege of visiting the home of Emily Dickinson, America's foremost woman poet, at Amherst, Massachusetts. From this point they fed Ted Malone's "Pilgrimage in Poetry" show to the coast to coast Blue Network.

Hort took several pictures while at "The Evergreens". Included in some of the photographs were pictures of Madame Martha Dickinson Bianchi, only living niece of the poetess who died in 1886, as well as pictures of Mr. Malone in action.

It was a very pleasant assignment, and both boys are hoping Ted's pilgrimage carries him within our area for a return engagement.

Ray Strong SE and Ken Durkee SE went to Montpelier, Vermont last May to cover the Republican Convention for the Blue. When they arrived, they found all the local hostels crammed with delegates, and so they settled down in a tourist camp a la "It Happened One Night". The broadcast was from the Municipal Auditorium, which, according to Ray, should have been named "The Hall of Echoes".

Howard Wheeler is one of the Chapter's better photographers. He has a knack of getting that "different" angle on his subjects that transform them from plain photos to works of art. Witness Howard's latest effort titled "Frigid Element". We won't attempt to describe the picture . . . perhaps we can get Howard to make a copy for the Journal. Anyway, out of a field of thirty eight, with one first prize and two honorable mentions as awards, he carried off one of the honorable mentions.

The Ever-Hopeful Trout Anglers Society (comprising Narkon, Mosher, Strong and your correspondent) had a visitor a couple of weeks ago in Harry Hiller of the New York Chapter. Harry, it seems, had walked into Master Control with a new-fangled fisherman's barometer. When Narkon saw it, he immediately got trout fever, so although the predicted showers for that day segued into a cold, steady rain, Pete got us out of bed and inveigled us into accompanying Harry and himself to the place where he had allegedly caught "a million trout" — all too small.

After miles of driving, the last two of which were over a dubious pair of ruts, we arrived at the stream. It was a beauty and we lost no time in unlimbering our tackle. All day long we pulled browns and brookies out of that stream . . . all of them six and three-quarters inches long, just one-quarter of an inch under the New York State limit. Finally, as the darkness settled over our drenched-thru figures, there came the cry of "FISH" from Harry. Your correspondent, who was perched rather precariously on a big rock in the middle of the stream, almost toppled into the water at the unexpected sound. When we recovered our equilibrium we made our way over to where Harry was playing the monster. He landed him and we were almost as proud as though we had caught it ourselves. That ended the day's fishing, and as we bade goodbye to Harry, we had to admit that it took a New York Chapterite to show Narkon and us how to really kill trout. P. S. The monster Narkon and us how to really kill trout. P. S. The monster measured eight and one-half inches.

Sylvio Caranchini, former SE at WGY and now in the Recording Department in New York was presented with a daughter on April 14th. Pappy Syl came bursting into the studios waving cigars and



popping vest buttons. When we calmed him down sufficiently, we learned that the little moppet was named Linda Joyce and that she weighed 6 lb. 14 oz. Mrs. Caranchini and the baby, who are pictured above, apparently are thriving. We are quite happy about the whole thing . . . congratulations!

Hollywood VWOA Activities

By H. M. McDonald

The initial VWOA smoker held June 7th at the Clark Hotel was a huge success, about 60 "vets" attending. The affair started with refreshments, renewing old acquaintances and making new ones, followed by entertainment and dinner.

Hal Styles acted as master of ceremonies and did an excellent job. Brief addresses were delivered by Dr. Lee DeForest, Fred M. Sammis, P. G. B. Morris, and Dick Stoddard. Many others related stories of humorous incidents in their radio careers. The door prize was a five spot, and there were cash prizes for correct answers in the quiz contest, which went over big.

Some of those present have been in radio since 1905 and a large percentage since World War days. Those present best known to NBC men were: Dick Stoddard, A. H. Saxton, Frank Figgins, Mort Smith, Curtis Mason, Lyman Packard, Harold Christensen, H. M. McDonald, Dave Kennedy, Bill Beltz, T. M. Gardner, Harry Austin, A. E. Jackson, Les Bowman, Leo Shepard, Bill Comyns, and Leroy Bremmer

The affair broke up at midnight, with many requests for "another get-together, soon."

Just received the May news bulletin of the Los Angeles-Hollywood Chapter of the Veteran Wireless Operators Association. It's small but chock full of news, including a nice article about our recent ATE dance. The organization is growing by leaps and bounds and we note that already 14 branches of radio are represented in the membership. Great plans are being made, one to broadcast dramatized outstanding events in the lives of members, Coast to Coast and sponsored 'tis hoped. Should be a success, with all the "names" and material in this Chapter. A smoker is scheduled for the near future and it'll be a dinger.

Instantaneous Recording

W. L. Lyndon, Sales Engineer, RCAM

IT IS hard to become reconciled to the fact that recording can be associated with the art of broadcasting. Nevertheless, it has gradually expanded over the period of the last few years to the extent that today in many broadcasting stations it is an activity of major importance.

The sponsor of an air show pays out his good money for talent and time, and after it is all over he usually has nothing to show for it but a bill, and possibly a copy of a script which does not have the same impetus as a good record of the exact program as it was produced in the studio.

Many stations cannot conveniently set up their local schedules to broadcast network programs at the time they are available, so a recording is made and broadcast at a more convenient time. Instantaneous recording is also playing an important part in the selling of programs to prospective sponsors. The show can be recorded at the time most suitable to the studio schedule and reproduced later at the studio or in the sponsor's sanctum at the opportune moment.

TYPE 72-C RECORDER

The RCA Manufacturing Company manufactures two types of equipment suitable for work of this nature. The Type 72-C Recorder is a unit that can be used in conjunction with the standard RCA Type 70 series of turntables. This device provides recording facilities with the minimum outlay of equipment. The 72-C is complete with float stabilizer, hand groove spiralling device, and a flexible adjustment of cutting depth and recording stylus angle. The M1-4887 High Fidelity Recording Head may be used to advantage with this recording mechanism and there is also available an outside-in feed screw for those who desire such a device. (Photo shows 72-C mounted on a 70-C turntable.

TYPE 73-A DE LUXE RECORDER

For radio stations desiring to go into the recording business on a more de luxe basis, the RCA Manufacturing Company has designed the Type 73-A High Fidelity Recorder. This unit is a precision device which will meet the more exacting requirements of this art. It consists of a heavy cast base designed so that it can be mounted in the cut of a table or bench of the user's own liking. The equipment is shipped mounted on two skids which permit it to be set on top of a table for temporary work.

It is equipped with a two motor drive. Both motors rim drive the turntable platter through rubber-tired pulleys which are disengaged whenever the power supply is turned "off", thus preventing "flats." This arrangement of motors provides high torque, excellent regulation and low slippage.

The equipment can be operated at either 33 1/3 or 78 rpm and is capable of cutting up to a maximum of 154 lines per inch. An ingenious arrangement is provided which permits instantaneous adjustment of cutting lines per inch, as well as "inside-out" and

"outside-in" feed. The number of lines per inch may be increased or decreased during the recording operation. Associated with the feed screw is a series of timing scales which permit taking advantage of the maximum diameter of the record for the playing time involved.

Careful consideration has been paid to keeping the slippage to a minimum and the rim pulley drive provides a slippage well under one per cent. The motor board is shock mounted to prevent building rumble or vibrations being transmitted to the recorder. The speed variation or 'wow' content is less than .5 of 1 per cent.

The turntable platter is sufficiently large to accommodate blanks up to 17/4 in diameter. It is equipped with one driving pin. The pin is held up by a spring which permits it to be sunk into the platter. With this arrangement any type of blank can be used. A removable rubber platter mat is used which can be conveniently taken off for cleaning.

The feed screw is mounted in an assembly that is rigidly braced. A hand groove spiralling control is located on the unit which permits spiralling grooves even while the feed screw is in operation.

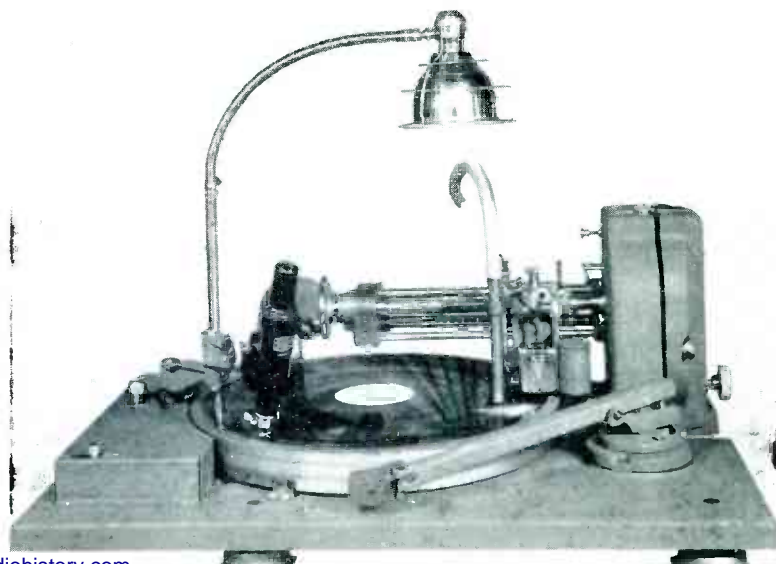
The high fidelity recorder head M1-4887 is furnished as part of the equipment. The head is a precision instrument and is suitable for recording to 10 kc. It has an input impedance of 15 ohms. This head is mounted in an assembly that permits ready adjustment of cutting depth and recording stylus angle.

A unique dropping mechanism is employed which permits operation with one hand. This mechanism is equipped with a cam which slowly lowers the recorder head to the recording disc. On this carriage is also mounted an oil type float stabilizer insuring uniform recording. Although a suction pump is not furnished as standard equipment, a nozzle is assembled on the carriage so that such a device can be conveniently added. The high grade microscope with a groove illuminating lamp is mounted on the motor board and is arranged on a swinging arm so that it can be swung back out of the way. A shielded lamp on a swivel stand is mounted over the motor board providing illumination over the whole recording mechanism. The accompanying photograph shows the front view of the 73-A De Luxe Recorder. The tonearm shown is supplied as an accessory and is complete with compensation, and its output impedance is 250 ohms.

Other accessories available for use with recorders are: 1. Automatic Equalizer. This can be adjusted for various amounts of automatic, as well as several different fixed equalizations. 2. Fixed "Orthacoustic" equalizer.

RCA 73A Deluxe Recorder with M14887 High Fidelity Recording Head

RCA Type 72C Recorder attachment mounted on 70-C Turntable



The Recordings of Man

by Edwin Stolzenberger, NYME

MOST persons are inclined to think of a technical subject in terms of its present state of development, and "Recording" is no exception.

Recording is a basic urge of Man's, thru which his successors may learn that he too was on this Earth and wiggled for a few brief years.

This paper is concerned with Recording in the broader sense; it deals with the Recording of Time, Sight, Sound, and the Written Word, and offers a brief chronological survey of the technical advances that resulted from Man's efforts to record the various events of his life,—from the chiseling of Hieroglyphics in stone, to the ultra-modern Orthacoustic system of recording sound.

THE WRITTEN WORD

To the Egyptians of about 3500 B. C., which is the date of the earliest surviving hieroglyphics, written speech presumably was so marvelous that it seemed necessarily of Divine Origin. 3000 years later, 500 B. C., the Greeks referred to the Egyptian monumental writing as Hieroglyphics, which is Greek for "Sacred Carvings."

The records and recordings of Man down thru the ages constitute the history of Man, and on this basis, the term "pre-historic" infers the pre-literary period. The eolithic period, (earliest Stone Age—about 250,000 B. C.) left no deliberate records of its activities, but artifacts uncovered by archaeologists have been identified with that period. The paleolithic period, (later Stone Age—about 50,000 B. C.) has left us not only its artifacts, but engravings on animal bones and early paintings which have been traced to that period; this period is therefore known as the threshold of history.

The picture writing on implements and cave walls of the middle and later paleolithic periods are called pictograms, and developed in three stages. First, a given symbol was used to designate a given object; second, the symbolism was extended to indicate less tangible things or notions; third, the introduction of sound-writing, when a given symbol was used to indicate a human voice sound. Sound-writing, in turn, evolved in four stages. First, a given symbol was used to indicate an entire word—as in Chinese even to this day!—second, a symbol was used to indicate a syllable or phonetic part of a word; third, a symbol was used for each sound of the voice; fourth, a complete set of symbols was arranged for all voice sounds,—the first trend toward an alphabet.

It may be of general interest to note that Crete, Egypt, Mesopotamia, China, and Central America are recognized to have independently been centers of the origin of writing. The Phoenicians in 1000 B. C. are credited with the first known true "alphabet", which was influenced by their contact with Egypt and Babylon. This marks the transition of the Written Word from an Art to a Science.

PAPYRUS—THE GREAT ADVANCE. Prior to the discovery of the use of the prolific reed plant papyrus, and its general use by the Egyptians in 2400 B. C., the carvings, paintings, and writings had been recorded on stone, animal bone, and the artifacts of the

period.

The greatly expanded use of the written word, due to papyrus, was a step toward improved general education. However, Egypt maintained a monopoly on the production of papyrus at the expense of creditor nations, one of which, the Kingdom of Pergamum under Eumenes II, made a concerted effort to find a substitute. They were successful, and in 190 B. C., Parchment was invented—made from the skins of sheep, ewes, and lambs.

Modern paper was first made by the Chinese from silk in 200 B. C.; Egypt in 600 A. D., and the Arabs in 750 A. D., made paper from cotton; 1250 A. D. saw the introduction of linen paper, when Spain substituted flax for cotton in the production of paper.

It is interesting to note the relative permanency of some of the methods of recording. We know that many of the hieroglyphics in stone have survived fire, water, and the elements for many thousands of years—(but can you visualize the cutting stylus!) Papyrus and paper are preserved best in dry climates, and even then in time they become so dried out and delicate that they cannot be unrolled or handled; they are susceptible to complete destruction by fire, and considerable damage by submersion.

Printing, or the art of duplicating the written word by mechanical means, was first known to China as early as 50 B. C., when printing from blocks and clay tablets was practiced. The next great stride was Guttenberg's invention of printing with movable type in 1438, followed by the first book to use the invention in 1450. The ingenious advances since that time may be witnessed by visiting your local newspaper publishing plant, and are beyond the scope of this paper.

The first patent for an American typewriter was granted in 1829; the improvement and perfection of typewriters have occurred at a rapid pace to this day. The printing press and typewriter have accounted for great strides in the advance in general education and the spread of knowledge.

THE RECORDING OF TIME

In both Egypt and Mexico, Man is known to have had a solar system of chronologically recording time, as far back as 4241 B. C. Their system contained a 365 day year, composed of 12 months of 30 days each, and 5 feast days. The injection of the 7 day week as a subdivision of the month occurred some time later, and is credited to prior Hebrew religious practice. The first improvement on this system took place in 238 B. C., when the Egyptians inaugurated the quadrennial leap year. The next great advance in the solar calendar occurred in 1582 A. D., when Pope Gregory recognized the then accumulated error of eleven days, and provided against future error thru the innovation of declaring centennial years as leap years only if they were divisible by 400. The eleventh day error was corrected at that time, and our solar calendar has stood to this day without further correction.

The Roman Empire did not adopt the solar calendar until Julius Caesar introduced it in the year 46 B. C., and they did not come to

continued on page 11

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The Recordings of Man

from page 9

use the planetary week until the second century A. D.

In 750 B. C., the Greeks are known to have used a lunar calendar based on the phases of the moon, but its known inaccuracies prevented its general acceptance, and it finally gave way to the solar calendar.

To record the time of day, the sundial was utilized in Rhodesia in 100 B. C., and is believed to be of Semitic origin. The exact age of the water-clock is unknown, but is of Egyptian origin, and was introduced into Rome in 159 B. C. The first pendulum and escapement clock appeared about 980 A. D. The rapid advance in the mechanical clock and the present synchronous electric clocks are more generally known, and will not be covered here.

THE RECORDING OF SIGHT

To Niepce and Daguerre goes the credit for the first camera image and practical photography, achieved respectively in 1827 and 1839, to mark the first success of Man's desire to record what he could see. Some of us are inclined to regard color photography as rather recent, but to Ducos du Haroun is due the credit for, in 1869, clearly foreshadowing the three methods which include all that has yet been done in color photography. 1872 appears to be the earliest recorded date of successful motion picture work, credited to Thomas Edison. Photography in its three branches—still, motion, and color, have all come a long way since their respective inception, each a milestone in Man's effort to record for posterity everything he saw, thought, sensed, wrote, or heard.

Modern Television had its start in 1880, when numerous scientists were attempting to transmit pictures by electrical means. In 1884, Paul Nipkow invented the mechanical scanning disc which fell into discard due to its limited picture-detail. 1900 saw the introduction of the cathode ray tube to television reception, and in 1933, Zworykin invented the "Iconoscope," an electrical picture pickup tube which replaced the scanning disc at the pickup point. About this same time, Farnsworth announced his "Image Dissector," also an electrical picture pickup tube. In 1939, Television as a large scale public service made its appearance in America, and will undoubtedly become the greatest medium for the advance of education and human understanding that Man has yet devised.

THE RECORDING OF SOUND

Heinrich Hertz' observation of electric waves in 1885, and De Forest's work with vacuum tubes in 1912, led to the electrical transmission of sound thru space—which became public service broadcasting in America in 1921.

Man's first successful recording of sound is credited to Edison in 1877. By acoustical means, he caused his voice to operate a diaphragm-attached needle which rode on a cylindrical form of tin-foil. The vibrating needle indented the foil in accordance with the applied sound waves—the origin of "vertical" recording. The year 1897 saw the first use of wax as a recording agent, and the introduction of the disc type of record. The advent of radio and its microphone brought with it the electrical means of causing the recording stylus to vibrate, which marked the Great Advance in sound recording.

However, Man's effort to record his voice also pushed on in other directions, resulting in the magnetic recording of sound on steel tape, the interesting divergence from vertical to lateral modulation of the recording groove, and the photographic process of applying sound modulation to film by two distinct methods—variable track width at a constant density, and the inverse, variable density and a constant track width; both methods have replaced the synchronized sound disc in modern "movie" making.

The desire for an inexpensive instantaneous recording system ushered in the use of the aluminum disc, with its well known surface noise and poor wearing quality. The quest was on, and 1934 saw the widespread use of the lacquer disc with its greatly reduced surface noise. Today, the application of the Orthacoustic system of recording has practically wiped surface noise from the lacquer disc.

Man's efforts have been well rewarded!

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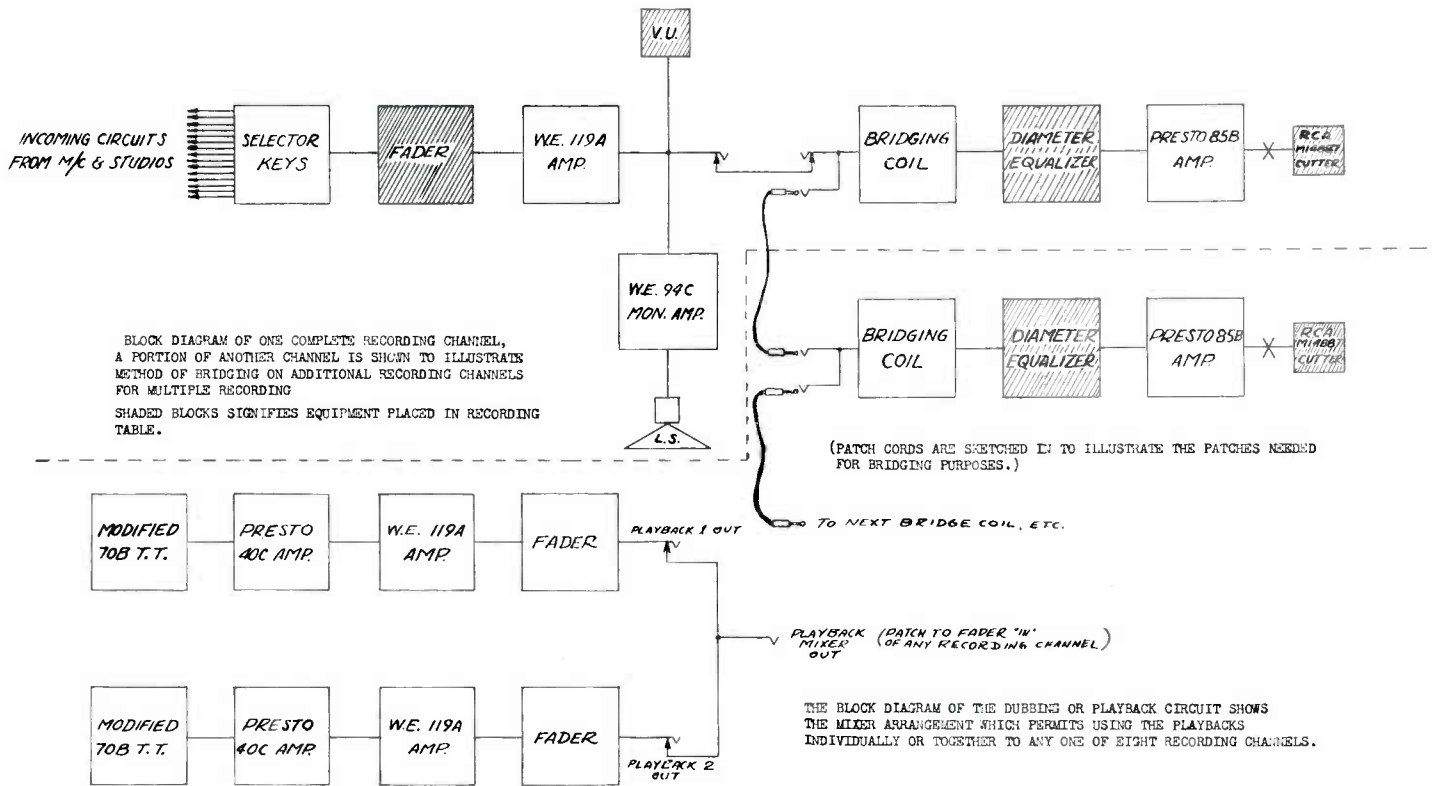
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RECORDING

WOR

by R. A. Schlegel

THE WOR Recording Service is the outgrowth of experiments carried out as a self defense medium. Over four years ago WOR artists and orchestras would bring in recordings made on aluminum discs to show how badly the artists and orchestras sounded on the air. Obviously a high fidelity transmitter and speech input equipment couldn't make even a bad artist sound as poorly as those records.

In self defense therefor, Ray Lyon, who was then in charge of technical development in WOR, undertook the task of developing a recording system to produce some recordings to offset those aluminum platters. Hundreds of records were made experimentally over a period of several months and a recording system was evolved that was so much better than average that artists began clamoring for recordings.

Originally these recordings were presented to the artists but obviously this practice became expensive. As recordings came more and more into use in radio broadcasting the WOR management recognized their value for auditioning programs, talent etc. Lyon persuaded the station to appropriate a sufficient sum of money to set up a small recording department. Four machines were installed together with amplifiers, monitors etc.

A rate card was prepared for commercial scale of recording service. The demand soon became great enough that WOR was able to add two more machines. About this time, RCA Manufacturing Company developed a cutter especially designed for recording on lacquer coated discs. We were fortunate in obtaining one of these cutters for trial and after exhaustive tests we were convinced that it would do all that was claimed for it with the result that WOR ordered four of the MI4887 cutting heads.

With the expansion of the recording business it was felt that our existing system, which permitted recording only three separate programs at any one time, was insufficient to handle the work which we were called upon to produce.

With the purchase of the new cutters it was desirable that we should re-design the recording room in its entirety, basing the new design around the new cutting heads and the type of recording that we were expected to do in the future. Flexibility was of prime importance as the requirements of a broadcasting station and a commercial recording company differ widely. It was believed that eight individual recording channels so designed it would permit the simultaneous recording of eight different fifteen minute programs or four different half hour shows or eight simultaneous cuts of one fifteen minute show would be sufficient. We believe

that the present arrangement permits maximum flexibility.

Usually a recording channel consists of two machines and associated equipment. When recording a half hour program with this arrangement, one of the two machines is always left idle. In our design this is overcome. It is possible to start a second program on the table that was used to cut the first half of the show merely by transferring the input circuit of that table, this is done without interrupting the table cutting part of the first program.

Control of each recording channel is localized at the particular table in use, channel fader, VU meter, cutter key and equalization switch are all mounted on a sloping panel on the front of each table. With proper patching, it is also possible to make any one



of the eight tables the control point. This is especially convenient when eight simultaneous cuts are being made as one key will control the relays on all eight cutters so that it is possible for one operator to open and close eight cutting circuits in one operation. A cutter dropping device is now under consideration so that all cutters will be dropped into cutting position in one operation. The photograph does not show the control panel as this unit was under construction at the time the picture was taken. A Yalex rotary switch is mounted on the control panel for selecting several degrees of diameter or 'pre-emphasis' equalization. Setting the switch on the position for 78 rpm recording removes all equalization from the circuit and substitutes a pad of 5 db less attenuation than

that of the equalizer as one can record about 5 db more level at 78 rpm than at 33 rpm. A separate key switch is also provided to reduce the recording level by four db so that in cutting masters one is able to put maximum level on the master to be processed and four db less on the safety thereby providing insurance against a cutover on both masters. This pad is also used when cutting reference or 'air-checks' for agency use where the playback pickup may not be in the best of condition. It has been our experience that the RCA and W. E. playback pickups can reproduce considerably more level without the stylus being thrown out of the groove on heavy peaks of level than most other types. A poorly balanced or improperly pivoted playback arm will not track properly when playing a record that has plenty of level recorded on it. It is for this reason that the pad is inserted in the circuit when recording air checks.

Eight modified Presto 8A recording machines are in use at WOR. These machines have a special three to one ratio ratchet spiraling attachment on the feed screw, a special self clamping lever on the 78-33 rpm drive switching mechanism so that when the rubber drive wheels are engaged the motor switch is thrown on at the same time. In order to stop the machine the lever is put in the neutral position which disengages the driving wheel and turns off the power to the motor making it impossible for anyone to leave a machine 'locked' and causing a drive wheel to have a 'flat'. The machine base and turntable are built of heavy cast iron to insure stable operation. Each turntable is mounted in a separate wooden table as shown so that no shocks or vibration caused by removing discs or setting up an adjacent machine would affect the one in use. A PL is mounted in every other table, these tones terminate in master control where they are patched directly to the studio or remote pickup point giving instant and continuous communication with the recording engineer.

All cutting is started at the outside but in place of a suction system we have found the Audiodisc Chipchaser to work very satisfactorily. Several instances of the chip or thread piling up occurred but this was traced to an improperly ground sapphire stylus which would not throw the chip properly.

All machines are serviced daily, tone is recorded on all machines to check for possible wows or off speed operation, noise tests are made each day on all sapphires in use. We believe that these precautions are one of the contributing factors in turning out consistently good recordings day in and day out.

The present recording staff is composed of Ray Lyon, Supervisor; R. A. Schlegel, L. R. Tower and J. J. O'Connor. Several of the studio engineers assist when the going gets too heavy for the regular staff to handle.

New York

by G. E. Stewart

FEW departments can boast of such phenomenal growth in commercial importance and prestige as the Radio Recording Division of NBC has experienced. A brief history of its growth is of particular interest.

Recording in New York was a function of the Development group prior to 1934 when it was added to the already burdensome assignments of the Maintenance Department. The recording log was started in July, 1935, thus segregating the entries from the Maintenance log. In October of the same year one man was regularly assigned to recording and in November two men were assigned and recording became a separate group but still reported to the Maintenance supervisors. Prior to April, 1935, all recording was done on aluminum but by January, 1936, acetate was used exclusively. Commercial recording began in December, 1935. The department has grown steadily until it is now staffed by eight engineers, three clerks and two playback men, and on January 1st, 1940 became an entirely separate group.

Fig. 1 shows a view of the New York recording room as it is seen through the "fish bowl" window. On the right hand side of the room are six 6D, two 8A, and two 1A recording units. At the rear of the room are racks containing a high fidelity radio receiver, equalizers, test oscillator, dubbing amplifiers, playback amplifiers, pads and jack fields. Twenty channels are available from the Transmission department, fourteen of which regularly carry Red and Blue networks, split red and blue networks, WEA and WJZ local, two international channels, and six spare trunks which can be patched to studios and other points from Transmission. Behind the racks are three dubbing tables mounted in the same type table as the regular recording units. On the right hand side of the room are four Scully recording machines for cutting masters on acetate or wax.

A loud speaker and a volume indicator are mounted above

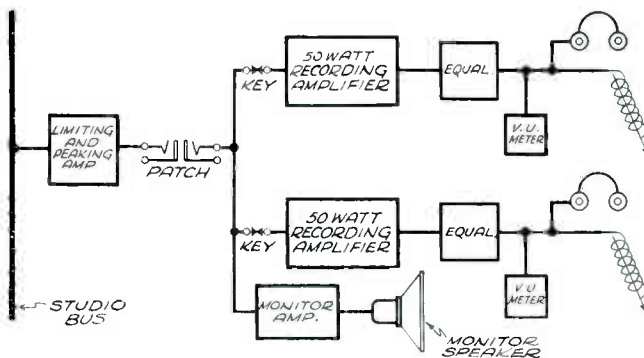
each recorder. Spare lead screws and the auxiliary drive pulleys for speed change are conveniently hung on a rack under the V. U. meter.

The chip is removed by means of a central vacuum system. A 3½ hp motor is used to drive the turbine which produces a vacuum of five inches of mercury. Valves and hose connections appear above each recorder. Mechanical chip chasers are used with the portable equipment.

In the middle of the room is a large table, the sides of which provides storage space for a day's supply of blanks, envelopes,



label cement, and a file for the day's recorded output. Four telephones, one on each corner of the table, and five incoming lines keep the boys on their toes. The telephones can be switched diagonally across the table, two lines being on the engineering department system, two on the house, and one on the program department. Two PL's are also available on jacks located near the recorders. These lines can be patched to studio control rooms or outside pickup points from Transmission.



Four RCA 70B playback turntables are installed in an adjoining room and normally feed two office monitoring channels. The turntables can also be used for dubbing purposes.

In addition to the regular studio facilities, one complete recording channel is built into carrying cases for portable use. Duplicate amplifiers, two recording units and RCA 64B Monitoring speakers are provided. One hundred master blanks can be carried in special cases. The equipment is capable of cutting either wax or acetate and can be completely set up on location in about an hour's time. Two standard portable recorders are also available for less exacting requirements.

Hollywood

by Bob Brooke

The Journal asks for a story on Hollywood Recording and for an Engineering Journal we should have all the precise technical details and lots of blueprints. All of which we haven't because Hollywood Recording is in the midst of a complete rebuilding program. So we'll have to leave technical details and pictures of the NEW equipment till another issue and concentrate rather on the unique place Recording holds in the Hollywood sun and explain a bit about what happens and what has happened with Recording in the City of the Stars.

First we might say that until a few short months ago all Hollywood NBC recording, amounting to several thousand dollars worth a month, was done by some ten to fifteen outside recording companies fed from our control room by program line or Air Checked from the two local NBC stations. Furthermore, the original recording equipment installed in Radio City was simply for reference file use and not to compete with established Air Check concerns or compete with their prices. It was not until the formation of a

Transcription Division sales office in Hollywood and the start of delayed broadcasts to the Coast Blue network that things began to warm up and engineering as usual had no alternative but to fill the recording orders by hook or crook regardless of extremely limited personnel and equipment. Suffice it to say that with an active sales organization and excellent product, recording output doubled monthly to the tune of hundreds of hours of engineering overtime and heroic deeds in maintaining equipment while still trying to build an entirely new department in a brand new building.

Altho NBC Hollywood has been equipped for recording only a relatively few months, the extravagant use of instantaneous recordings for rehearsal and broadcast checks started with NBC shows in Hollywood long before Air Check services came into being. The picture studios have used instantaneous playbacks to check their sound production ever since the beginning of Talkies. Until the development of acetate recording the studios made extra wax discs and played these back. Some of the first NBC shows from the RKO lot were checked in this way. Later a company tried to sell airchecks recorded on sixteen inch aluminum discs. This same company sold some of the first acetates made from their aluminum discs dipped in commercial lacquer to Al Jolson and Rudy Vallee on their first shows. Since that time Hollywood has become one of the leading producers of acetate equipment and acetate recordings with the result that prices have always been low and a great deal of competition evident. The big shows have taken advantage of these prices for years and most of them record not only their Eastern and Western Broadcasts but many of their rehearsals and auditions. Yes, in some ways Hollywood could be called the Recording Capitol of the Nation as well as the Film Capitol. At engineering meetings in Hollywood you hear little discussion of wire or radio transmission because the end of a picture sound man's rainbow is a piece of celluloid in a little tin box.

In any event, the NBC recording room now does 95% of all work originating in the NBC studios as well as the tremendous load of duplicate recordings for Delayed Broadcast to the Blue network. To cope with this load and the problems resulting a specialist in recording was hired and four men transferred to Recording from the studio group. In addition, plans were laid and equipment ordered for an adequate enlargement of mechanical facilities. Two studios were equipped with Orthacoustic playback turntables and necessary cueing and control equipment. We might add here that all playbacks are the responsibility of the Recording group. They make the records, cue them for switches, and run the turntables for rebroadcast to the network. And few errors have there been.

Aside from the strictly acetate business the Radio Recording Division also sells commercial RCAV transcription services thru either wax recording by line from NBC to Hollywood RCA-Victor or recording first on acetate in the NBC recording room and then sending the acetate thru the processing plant at RCAV. Several hundred musical numbers, spot announcements, commercial transcriptions are made from NBC Hollywood each month.

The expansion of facilities in the recording room includes the tripling of floor space by absorption of the old Field Department shop and storeroom; installation of 8A feed mechanisms in place of the 6D type as originally supplied; installation of two professional

Scully lathes; installation of a triple NBC dubbing or re-recording table; installation of additional speech equipment, monitors, control equipment etc. to supply the added turntables.

To conclude and not to brag much. The boys are making some of the finest recordings ever heard out here and are doing it consistently to maintain a tremendous schedule of Blue network rebroadcasts and many all day sessions of commercial transcription programs from the studios. Their new equipment should be in by the time this reaches you. So don't forget to ask about the ET room when you visit us on your vacation this summer.

CHICAGO

by V. D. Mills

RECORDING equipment was first installed in the Chicago office of the NBC more than four years ago. The equipment consisted of two Presto turntables operated by automatic switching equipment and cut the records from inside out. The machines were designed to start operating when the local channel switching took place. The personnel used during this period consisted of any studio engineer who had no assignment at the moment. This soon proved unsatisfactory and the responsibility for the operation was assigned to a group of four or five men who cut about one hundred and fifty to two hundred records per month.

Two turn-tables were soon found to be insufficient so another recording channel was added and all of the associated amplifiers were moved out of the recording room to the generator room. The original recording room is still used and consists of about half of a twelve by twenty room shared with the control room switching relay cabinets.



The present recording equipment consists of four Presto turntables cutting the records from outside in with suction chip pickup and RCA high fidelity cutting heads. The air pump is located in the ventilation room with considerable connecting pipe and the chip disposal tanks are beneath the recording room floor with a trap door for servicing. The control panel located on the wall between the recording tables contains the speaker volume controls, switches for changing the recording characteristic from orthacoustic to non-orthacoustic, and four selector switches, one for each table. The selector switches contain twelve positions so that any studio or program bus may be selected at will. One position is provided for recording off the office monitor so that off the air recordings may be made from any of the local stations. One play back machine is provided for checking the records made and for dubbing copies.

Approximately 1100 to 1200 records are cut per month, the number of blanks used having doubled within the last three or four months.

The present personnel used in the recording room is V. D. Mills, R. B. Whitnah, A. L. Hockin and M. F. Royston, with J. A. Thornbury filling in for vacation relief.



Hollywood Recording Room—Mort Smith, in charge of Hollywood Recording, looking over a "Take." Note manometer for measuring vacuum behind Mort, also vacuum control ring at right end of vacuum equipment housing. These feed mechanisms being replaced by Presto 8A as this goes to press.

Washington

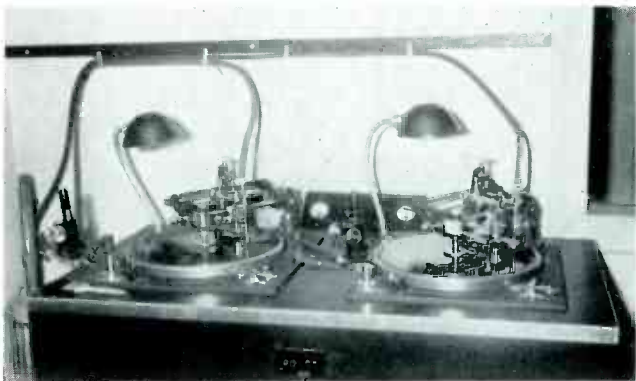
by A. R. McGonegal

THE recording installation planned for the Washington office of NBC will consist of four complete amplifier channels and recording machines. Two of these, equipped with Presto recorders, have been in use for more than six months. The other two, to be equipped with Scully machines, have been on order for some time and will probably be delivered in July or early in August.

All the amplifiers and relays of this installation are located in the Main Equipment Room; while the two recorders now in operation, and the switching and patching facilities associated with them, have been installed in the Master Control Room.

Each recording channel consists of an ND-45 AAGC amplifier, fed from a set of the regular channel relays on the Master Control Board. The output of this amplifier feeds an ND-46 power amplifier thru relays which enable any ND-45 to be used in combination with any ND-46. The output of the ND-46 is normalised to one of the recording machine cutters. Filters and relays built into the ND-45's permit instantaneous switching from regular to orthacoustic recording.

The two machines installed at present are Presto 8-A's, equipped with RCA high-fidelity cutting heads and crossover filters. Cutting is all done outside-in at 120 lines per inch. Chip removal is cared for by suction nozzles mounted on the cutting head carriage and supplied by a turbine in the Main Equipment Room, the thread being deposited in water in a metal can located in the suction line. Spencer microscopes, volume indicators and individual shaded lights are mounted on each machine. Two large metal cabinets



are provided for storage of blanks and completed records.

Also available for use are two standard RCA 72-A recording attachments, mounted on 70-B turntables and fed thru ND-18 AAGC amplifiers and NA-2 power amplifiers. These are equipped for inside-out, regular recording only; and have been used only for stand-by service since the Presto machines were installed.

Master records are being cut at present for several commercial accounts, the processing being done in New York. In addition to this, considerable recording is being done for delayed broadcast on WRC and WMAL. Reference recording and auditions add enough work to take up the better part of four men's time. Under the guidance of Mr. A. E. Johnson, Engineer-in-charge, the quality of work these men are turning out is second to none.

New Terminal Amplifier

A new 8 to 10 watt amplifier designed especially to meet modern public address requirements has been announced by the Terminal Radio Corporation of New York City.

The Terminal T-8 amplifier has two high impedance input channels for microphone and record player, with complete mixing and "fading" features of higher priced amplifiers. Because of its compactness, eye-appeal and exceptionally low price (\$13.50, less tubes), the Terminal T-8 amplifier is proving itself a profitable P. A. investment.

A new catalog describing the T-8 and other amplifiers may be obtained by writing to the Terminal Radio Corporation, 68 West 45th Street, New York City.

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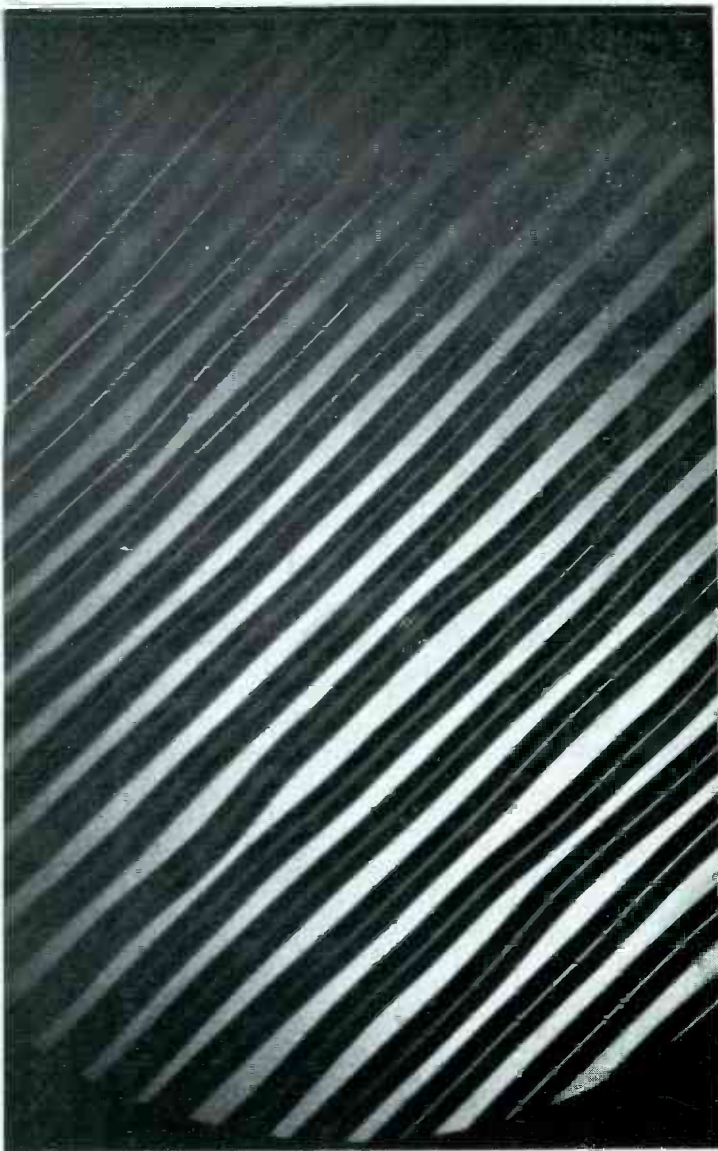
FRANK L. CAPPS, whose connection with the sound recording industry covers fifty years of continual activity, supervises the manufacture of all our points. This, in conjunction with our PATENTED CUTTING EDGE (demanded by 90% of good studios) guarantees a needle that is as good as it is humanly possible to make.

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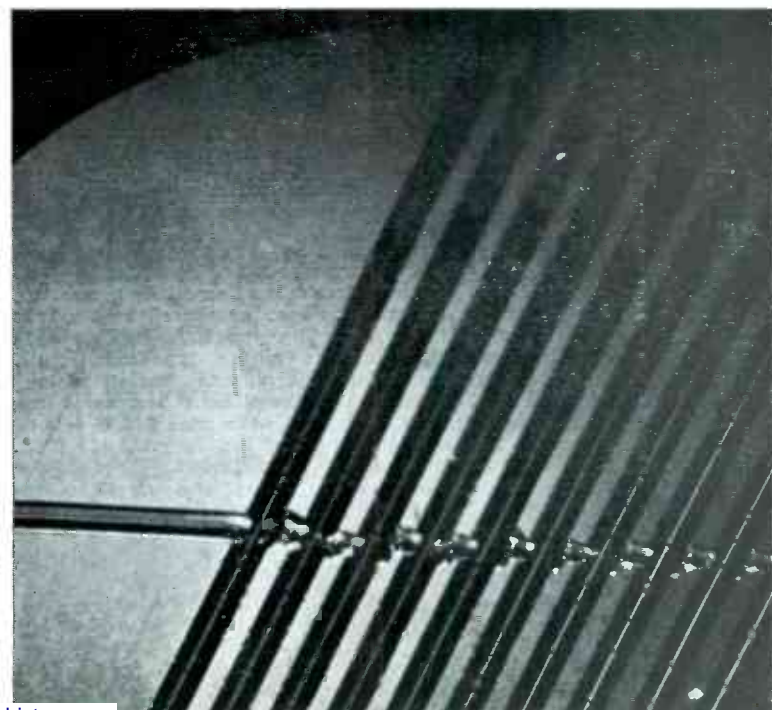
Lint particles removed from wiping cloth by sharp groove edges of freshly cut acetate.

Photo Micrographs

Excessive wear and reticulation of material. Standard Thesaurus Class "B." Note: Scoring of grooves and removal of High frequencies.



Scratch on freshly cut acetate caused by playback head pushed into and beyond starting groove. Light pressure.



Unique Portable Communications Receiver

Receiving equipment which strikes an entirely new note in portable outfits was exhibited by Hallicrafters at the June trade show in the form of their new Model S-29 "Sky Traveler". Because it combines the features of a really worthwhile communications receiver with those of the popular 3-in-1 portable BCL sets it is destined to find wide application among all types of listeners—broadcast, short-wave, ham and experimental, not to mention a variety of commercial and professional uses. It is one job that will serve equally well ashore, afloat, or in the air.

The "Sky Traveler" operates from any of three power sources—A. C. lines, D. C. lines, or its self-contained batteries. It should, however, not be classed with the conventional BCL portables which are now enjoying such a vogue because while it will serve all of the purposes of such receivers, it goes far beyond this. Its tuning range, for instance, extends from 542 kc. to 30.5 mc. with sensitivity of better than 2 microvolts throughout this range; it includes an r. f. stage on all ranges, electrical bandspreading, built-in collapsible rod antenna as well as connections for both doublet and "L" antennas, automatic noise limiter, beat-frequency oscillator, a. v. c. off switch for c. w. reception, phone jack (in addition to its built-in speaker), r. f. gain control, high gain antenna coupling circuit, complete shielding provided by aluminum case, neon pilot lamp, etc., etc.

Nine 1.4 volt tubes including 1 r. f. and 2 i. f. stages account for its high sensitivity and wide flexibility. Overall dimensions are 7" high, 8½" wide and 13¼" deep. The aluminum case is rounded at all corners and finished in black crackle. The weight, including the self-contained batteries (which provide operating life of 100 hours) is 18 pounds.

In addition to its wide variety of primary applications for mobile, marine and air operations, this little receiver should find wide incidental use as a highly sensitive noise interference locator; and what ham does not have mysterious noise sources which he would like to ferret out and eliminate.

While intended primarily for use as a portable, the list of features mentioned above enables it to serve in-between times as a highly effective unit for fixed operation, either as main or secondary equipment in the shack or living room.

. . .

RCAM--Harrison Announces New Tubes

The 117N7-GT is a multi-unit tube containing a half-wave rectifier and a beam power amplifier in the same envelope (T-9). It is intended primarily for use in portable battery/a-c/d-c receivers. The power amplifier unit delivers 1.2 watts with 100 volts on plate and screen. The heater is designed for operation directly across a 117-volt power-supply line.

The 827-R is a new air-cooled radiator type of a-h-f transmitting beam power amplifier. It has a maximum plate dissipation rating of 800 watts in class C telegraph service, and is particularly suitable for use in frequency-modulation and television transmitters.

The 827-R has several unique design features which include multiple-ribbon filament leads, two multiple-ribbon grid leads to minimize the effect of lead inductance, and an entrant metal header. The header serves not only as a low-inductance terminal for the screen but facilitates isolation of the input and output circuits. As a result, neutralization is usually unnecessary except at the very high frequencies.



DESIGNED TO GOVERNMENT SPECIFICATIONS

- A few fundamentals of the new SUPER SKYRIDER are six bands covering 540kc to 43mc—two stages of preselection—high fidelity, push pull audio—band pass audio filter—a new and highly efficient crystal filter circuit—an additional and completely effective noise limiter—cadmium plated steel chassis—standard relay rack panel ⅛ inch thick—machine tool, gray wrinkle, well ventilated steel cabinet.

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USED BY 33 GOVERNMENTS
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Fig. 8—Close-up of Feed Mechanism with New Type Equalizer attached

The Improved Automatic Equalizer For Disc Recording

by George J. Saliba
Chief Engineer, Presto Recording Corporation

AUTOMATIC equalization has been in use now for the past two years, and it has received a very favorable reception from recording engineers. As would be natural with any new development, commercial use and field tests have brought out faults and criticisms that have been instrumental in the improvement of the design of the apparatus.

The automatic recording equalizer* described here compensates continuously for the variation in frequency response with changing groove radius and at the same time is entirely automatic in operation. The use of the automatic equalizer makes the frequency response of a transcription the same from beginning to end.

In 33 1/3 rpm recording there is a noticeable progressive attenuation of high frequencies as the groove radius decreases because of the varying linear speed of the needle point. To compensate for this attenuation there must be a corresponding increase in the high frequency response of the amplifier used to feed the cutting head. One method of changing the amplifier response involves the use of a resonant equalizer, while the other form involves the use of a high pass filter to attenuate the low frequencies.

*Patent pending

In disc recording, as it is known today, the speed of the turntable is constant and the radius at which the needle point works is variable. Therefore the velocity of the needle point is directly proportional to the radius of the disc. The smaller the radius the lower the velocity. The wavelength of a sound wave is inversely proportional to the frequency. The higher the frequency the shorter the wavelength. Therefore it is obvious, if the wavelength becomes shorter, the radius of curvature of the groove becomes smaller and the reproduction of the higher frequencies becomes increasingly difficult.

Since the amplitude of a given frequency is the same at the inside of a disc as it is on the outside, the slope of the curve therefore is much steeper at the inside. Tracking therefore would be difficult. On the basis of this reasoning some engineers contend that the use of low pass filters would be more satisfactory than the use of resonance equalizers. The latter increase the amplitude and therefore the slope is increased with danger of poor tracking

and subsequent distortion. In the case of low pass filters the amplitude of high frequencies is left alone while the amplitude of the low frequencies is reduced. Thus the tracking problem is no greater than before. As a matter of fact better tracking of bass notes is possible with less danger of jumping grooves due to heavy bass passages. All the foregoing is very true and would be ideal except for one defect; the signal to noise ratio is decreased due to the reduction of the amplitude and such a condition certainly cannot be tolerated in modern broadcasting.

The demand for noiseless disc recording has been so great that it became imperative that only resonant equalizers be used in order to put as high a level on the disc as possible so as to increase the signal to noise ratio. This demand has been so great that the past several years has seen the advent of extremely low needle impedance reproducers that can track steep wave fronts without distortion. This does not necessarily mean that all high frequencies can be reproduced without difficulty. Frequencies of 10,000 cycles are readily reproduced but above that the wavelength becomes so small that the size of the needle point becomes a factor and there is a practical minimum to which jewel points can be ground. Nevertheless for all practical conceptions of high fidelity, the upper limit of 10,000 cycles is ample.

The type of equalizer which is most commonly used consists of a capacitor and a reactor tuned to resonance at the frequency at which equalization is desired. If such a network is placed in shunt with a line, voltage will be built up appreciably at resonance. The circuit for such an equalizer is shown in fig. 1. The rheostat controls the slope of the curve. With all the resistance in, very little or no equalization takes place; when the resistance is all out, maximum equalization takes place. In using such an equalizer manually for an inside-out recording, the equalization is set for the maximum amount, and as the cutting head moves to the outside of the disc, the equalization is reduced by increasing the resistance of the rheostat. To compensate for the increase in volume due to the reduction of equalization the volume control is manually operated in order to insure a more or less uniform level on the disc. The disadvantages of such a method are very obvious. The operator's full time is needed to make one recording, and more important the judgment of the operator determines the finished result.

The automatic equalizer was developed to free the operator

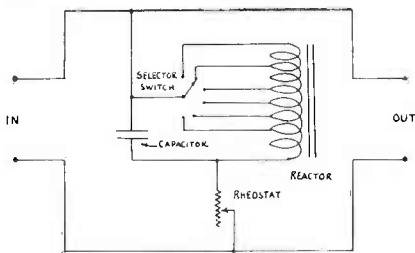


Fig. 1—Resonant Equalizer

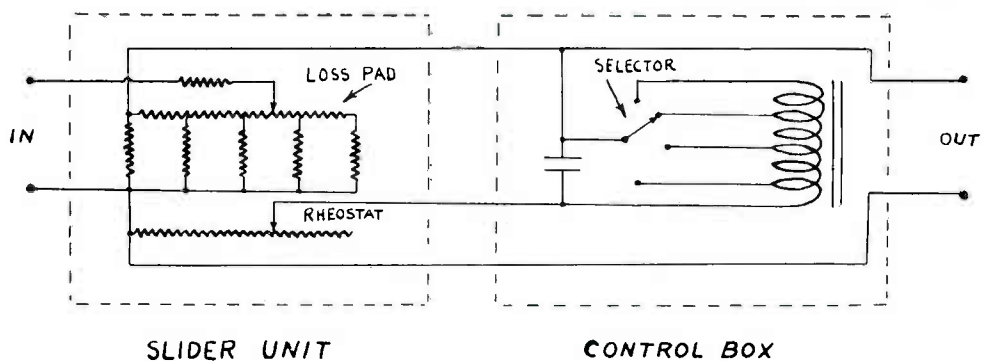


Fig. 2—Simplified Schematic of Automatic Equalizer

for other work and to give consistent uniform results at all times. Fig. 2 shows the schematic of the automatic equalizer. In its original form a constant impedance "T" network was used for the loss pad. This type was chosen because no insertion loss was introduced into the circuit. Difficulty was experienced in getting a smooth uniform travel of the slider because four slider arms were necessary, three for the "T" pad and one for the rheostat. The bridged "T" network was then substituted for the "T" thus reducing the slider arms to three. Friction was considerably reduced and the slider unit with cover removed is shown in fig. 3. The two slider arms are for the bridged "T" network and the other side of the unit carries the rheostat slider. The latest model improved slider unit is shown in fig. 4. The bridged "T" has now been replaced with a ladder type network requiring only one arm for the network and one arm for the rheostat. The ladder type of network introduces a small insertion loss but this disadvantage is more than offset by the reduced friction of the slider arms and also by the fact that more spring pressure can be used on the contact points thus reducing the danger of dirty and noisy contacts. The whole unit is built around a sturdy rectangular casting so that perfect alignment is maintained at all times.

The automatic equalizer comes in two parts—a control box and a slider unit. The control box, shown in the background of fig. 5 contains the reactor, capacitor and the control for selecting different resonant frequencies as desired. It also contains the throw-over switch for use with two slider units for double turntable use. The slider unit mounts at the rear of the feed mechanism and the contact arms are coupled directly to the cutting head casting. One set of contacts of the slider unit control the slope of the equalizer curve while the other set is the variable loss pad which compensates for the increase in volume. As the cutting head is fed across the face of the disc from the inside to the outside the contact arm of the slope control and loss pad are moved together. It is thus apparent that the proper amount of equalization with the proper volume is obtained at whatever diameter recording is taking place. Proper equalization and volume are always obtained regardless of whether the feed is from inside to the outside or vice versa, and the operator can start at any point on the disc with assurance that the equalizer is adjusted.

Fig. 6 shows the curves of the insertion loss of the equalizer (equal to the amount of equalization) and the loss pad. The abscissa represents the different diameters of the disc and the points along the abscissa represents the different contact points of the slider unit. At the inside of the disc the insertion loss is at a maximum while the loss of the pad is at a minimum. As the recording head travels towards the outside of the disc the equalization is decreased and therefore the insertion loss is decreased and the volume rises. But as pointed out above, since the arm of the loss pad is coupled directly to the slider arm of the rheostat the loss is increased the same amount the insertion loss is decreasing and the final result is a straight line. Since the insertion loss is decreasing at $\frac{1}{4}$ db rate the pad is inserting the loss at the same rate. The windings for this pad and also for the rheostat are held to an accuracy of 0.1 of 1% to insure accurate results.

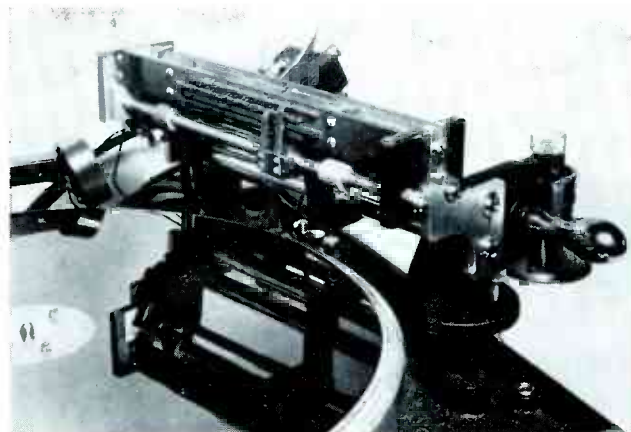


Fig. 3—Old Type Equalizer with cover removed

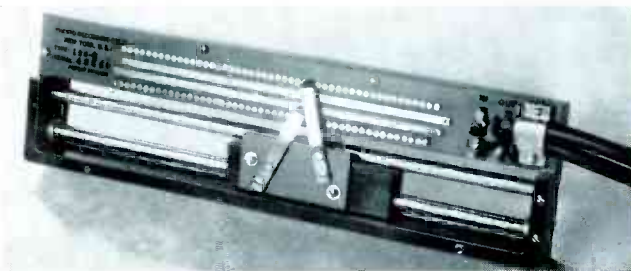


Fig. 4—New Type Equalizer with cover removed



Fig. 5—Automatic Equalizer with Control Box

Recording Pioneer

by Ed Stolzenberger

We believe that our ATE Journal's Recording Issue would be incomplete without a brief biographical sketch of John J. Scully, the man behind the Scully Machine Company of Bridgeport, Connecticut, makers of the superb recording machine bearing the Scully name.

Like most successful business men, Mr. Scully's ambition was evident in his early life, when through his love for music, he mastered the piano. His interest in music, and foresight of the potentialities of recorded music, soon caused him to become engaged in the phonograph business, and for fourteen years he was in charge of the Columbia Phonograph Laboratories. Mr. Scully's interest in recording has also left its mark on the Dictaphone machine, and it is interesting to note that there have been no radical improvements in this device since his design of 1908.

The Western Electric Company used Scully machines for demonstrating electrical recording that resulted in enormous commercial contracts with Victor and Columbia; at the time, Western Electric was the only other manufacturer of recording machines for sound-on-disc talking pictures. Practically all moving picture studios in Fort Lee, Long Island City, and Hollywood used his recording machines.

Mr. Scully's son, Lawrence J. Scully, has been associated with him for eight years. Upon questioning, Mr. Scully stated that the advent of popular priced recording machines has stimulated a desire among serious workers for a precision recording machine such as his, and he proudly boasts that the finest product of commercial record makers and broadcasting studios are made on Scully machines.

Again, there is no substitute for experience — he has been making professional recording machines exclusively for nineteen years, and today, the fine recording machine bearing the Scully name is known and used throughout the world.

* * *

FOTO-FANS

Watch for our NEW

Photographic Issue

Out October

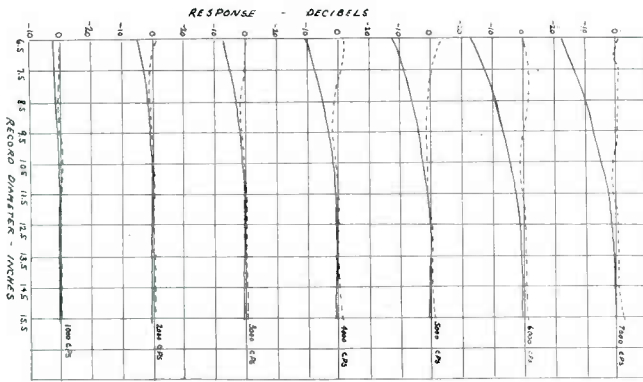


Fig. 6—Insertion Loss of Equalizer

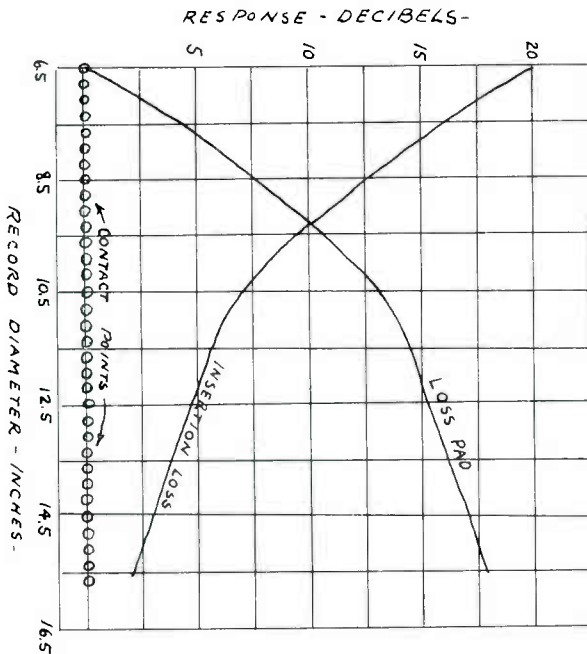


Fig. 7—Playback curves at different frequencies before and after equalization with the unit. Dotted curves are of playback with equalizer in during recording.

Fig. 7 shows the playback curves at different frequencies before and after equalization with this unit. The solid lines show the loss that is present before equalization, and the dotted lines show the response when the automatic equalizer is used.

The equalizer is made for use at low levels and is made to work into a 500 ohm line. In the use of this instrument it should be remembered that one of the prime requisites is a high-quality cutting head capable of at least 8000 cycle response to take a moderate amount of equalization.

CHAPTER NEWS

Chicago

by Ray Bierman

Platz and Bierman are now president and vice-president, respectively, of a corporation. The York Radio Club, Inc. of Elmhurst, Illinois (the year's outstanding contender for A. R. R. L. field day honors) recently filed papers with the Illinois Secretary of State to that effect. President Platz, elated over his new office, will probably have letter heads printed soon. Incidentally, the club's 2 kw, 110 volt A. C. mobile unit will be on hand to make the field day operations 100% independent of commercial supplies. Two rebuilt Dodge generators are mounted in synchronism on an old Model "A" chassis as prime mover. The gang plan to take a cabin in one of the nearby forest preserves where the tall timber will support the antennae for some history making field day contacts. Read about us in the forthcoming issues of QST, Radio, Electronics, I. R. E. Proceedings, General Radio Experimenter, Ladies Home Journal, Variety, Police Gazette, and the ATE Journal.

Charlie Corliss' Radio Club had their gas driven motor generator stolen out of the club house the other night. No clues, but a busted window. Any similarity between their generator and that of the Y. R. C. is purely accidental! To bad fellows, hope you get it back by field day.

Five of the field gang took the mobile unit to Indianapolis for the speedway race. They were Limberg, Harold Royston, Devleig, Pierce, and Wild Bill Cummings. After the race it was necessary for Cummings and Devleig to take the mobile unit to the Methodist Hospital for another broadcast. Wild Bill drove all the way down town on the wrong side of the street escorted by a motorcycle squad of Indianapolis' finest.

We were pleased to hear the NBC Symphony from the S. S. Brazil in the Caribbean the other day. Although we didn't hear the announcer say so, we can just bet that Jon Larsen was enjoying himself immensely. Nice trip you've got mapped out for yourself Jon. Sorry that the F. C. C. has barred foreign DX or we might have hoped to talk to you in case you visited any S. A. hams.

Latest gag pulled by Harold (I'm a Yankee Doodle Dandy) Jackson is this one. Harold carried a large sign with him to several of his dramatic shows. The sign read, "Don't hug the microphone. The engineer isn't busy after the show." Don't know, but we think that Jack is "that way" about Kooch Nahien, "heavy" on the Jack Armstrong show.

Since Mills has been on vacation, Jimmy (oh you Guatemala!) Thornbury has been busier in the recording room than a one armed vaudeville plate juggler. James keeps five records on the tables and six in the air all day long.

Now that Webster has gone to Estes Park on his vacation we think he'll be getting first hand info on those forest rangers that they talk about on the farm and home pgm every Friday.

It seems that the nearer Harold Jackson gets his rotary beam completed the more the FCC clamps down on the hams. It's a race to see who wins, looks like.

Butler has been put on the hymns of all churches pgm. Says it's the first time he's heard a hymn since he was a little boy who passed the plate in Sunday school.

Chicago

by Fred Shidel

I regretfully report the passing of the father of L. L. Washburn, S. E., at Indianapolis, June 9th.

Albert Schroeder, WMAQ, T. E., drove to Cleveland to witness a part of the play in the National Opera.

The Harold Roystons are vacationing at Pistackee Bay in Wisconsin just a short drive out of Chicago. They have entertained several of the boys at their cottage.

The Lincolnshire Country Club near Creet, Illinois, has been chosen for the scene of the annual NBCCA Outing on June 19th. The outing will be open to NBC staff and contract personnel as well as employees. The affair promises to be a swell outing and everyone should be there.

Charles Kocher is working vacation relief at WMAQ transmitter. Paul Clark is or should I say was the engineering hope on the NBCCA Baseball team.

Lloyd Hockin spent the first week of his vacation in Upper Michigan trying the fishing—the balance of the vacation is being devoted to a paint job on the family home in Elmhurst.

"Ab" Abfalter returned from vacation trip to New York and Washington.

Ralph Brooks says, "To Mexico for his vacation."

Night Supervisor of Announcers, Gene Rouse, returned from a "fishing" vacation in Upper Michigan—Gene says the fish didn't know he was there.

Production Man Tom Hargis is busily preparing for a vacation of fishing in Northern Minnesota.

Hollywood

by Bob Brooke

Six weeks winter . . . Unusual Summer business . . . vacations . . . New Men . . . MISC . . .

SUN . . . Our first item is always sun but this month it will have to be about the lack of it . . . Winter arrived about the first of May and we haven't had any sun to speak of in more than six weeks . . . We've all lost our December to April tan and those not fortunate enough for desert visits are pale as ghosts . . . Yes sir, the weather has been down in the sixties until a few days ago when the sun began popping out around noon . . . Looks like it'll be July 4th before it decides to come out for good . . . All of you sweltering in the East better plan to come out and cool off . . . Hollywood engineers can't work up any enthusiasm for vacations in this kind of weather and are frantically trying to change vacations to later in the summer . . . However, coastal coolness has not affected high temperatures down on the desert as Imperial has reported 122 in the shade . . . Yes, we like to be different just to keep us out of a rut, and after all we can look back on a warm and marvelous legitimate winter . . .

MISC . . . Master Control sez, "Gee, it's nice to discover a supplementary station fed the wrong network wasn't taking the service anyway!" . . . The Brown Derbys have installed television receivers for the interest of their many show business customers . . . No wonder we see so many of our producers, announcers, and publicity men eating at the Derby and the Tropics . . . They all have press cards that entitle the bearer to fifty percent discount . . . They eat at the classy joints for less than we pay at the Bowling Alley or Carpenters Drive In . . . Joe Kay drove up to see how the view from his new lot was at night and found the property a haven for Hollywood hills necking parties . . . Joe hastily put up a no parking sign in case one of 'em ran over the side of the hill and sued him for damages as owner of the property . . . Ice doing the Hollywood Park race broadcasts each Saturday and is still on the positive side of the betting ledger . . . Bert Capstaff did the Kay Kyser programs from Catalina Island this year . . . Miv Adams, field supervisor, installed the field gear for the first show and stayed to handle the Morse order wire and assist Cappy . . . Brooke was second man when Adams went on his vacation . . . Cappy and yours truly should write a Journal story on the trips but the best parts couldn't be mentioned and the broadcast technically was really a routine affair as easy to set up and handle as a studio show . . . Two ND-10's with inputs tied together per Chicago and complete booth, PA controls, talkback system, and 4175 monitoring speaker made the job a cinch but nonetheless interesting . . . The last show was marked by a special standby on the Morse circuit for news of the arrival of a new baby at George Duning's home . . . George is assistant director and arranger for Kay Kyser . . . Jake O'Kelly is in Master Control for the summer vacation schedule . . . One of the boys from the Guide Staff gave a cocktail party before leaving for France as American ambulance driver.

NEW MEN . . . Art Brierley and "Rick" Reikberg are with us as vacation relief men . . . Both are from former KEHE that became out blue outlet KECA when purchased from Hearst by KFI . . . Art was chief operator at KEHE . . . Both have been working on a temporary basis at KFI-KECA helping in the rebuilding of KEHE's old plant for use by KFI-KECA . . . Both are grand fellows and we are glad to have 'em with us . . . Art incidentally writes and announces his own photographic radio Club over KFI weekly . . . Art's club has several thousand members and he enhances the air program with trips, salon showings, etc. . . Since Art arrived we have noticed a tremendous increase in photographic talk in the lounge and much use of cameras . . . Welcome Art and Rick . . .

GOSSIP . . . Jake O'Kelly and Harry Saz remembered the old

American Indian trick of putting a dead fish in the ground with each kernel of corn to be planted . . . Both are gardeners and fishermen . . . After a recent deep sea fishing trip the boys came home with all the extra fish they could find . . . BUT they forgot to unload them from the back of their car . . . A day and a half in a hot garage did the trick . . . The fish were very dead when they finally put smell and two together . . . Jake sez he wasn't that close to being gassed in France . . . Also wants to know if anybody has a fish deodorizer for a car.

STUDIO . . . Sax to NY division engineer's meeting later than usual . . . Sometime in late July or August . . . Alice Tyler had interesting flying trip to SF . . . Stopped in SF studio on Sunday morning to say hello . . . reports all chipper and looking fine . . . Alice pretty busy with outside activity these days . . . In addition to her rose garden in Pasadena, she teaches a Sunday School class and has a Girl Scout troop . . . Don DeWolf great and planning another trailer camping vacation at Yosemite with the wife and little De's . . . Charley Norman and Eddy Miller still



After Trout . . . Eddy Miller and Charley Norman pause on trail to Dollar Lake (9,700 Ft.) opening day of trout season. Mt. San Gorgoio in background. (Two hours and a half from NBC Hollywood)

making weekly trips to the higher elevation lakes for trout . . . They are taking Carl Lorenz next week . . . Hope to work a little middle off him with their four hour hike beyond the end of the automobile road . . .

DENVER

by Joe Rohrer

Vacation time being with us again we hope any of you visiting Denver will drop in at NBC and allow us to extend western hospitality. We enjoy meeting you and operate a small scale chamber of commerce with suggestions as to what points of interest might fit into your trip to Colorado. At least a couple of weeks may well be spent in the state.

Studio and Transmitter vacation relief men are the same as last year. George Anderson at the transmitter, and Vern Andrews at the studio. Vern was married to Audrey Blake of the office staff on May 1, 1940. This means W9ZEA off the air for indefinite period.

Glasscock made use of his vacation to attend ARRL Board meeting at Hartford, representing the Rocky Mountain district. Stops were made at Chicago and New York enroute. At New York visits were made with KOA alumni Duke and Isberg. Neal, W9LNB, kept schedule with Glenn operating WIAW.

The Mile High Radio Association staged a hidden transmitter hunt with McClellan and Neal participating. They were the last to arrive and their commercial prestige took a beating. Immediately new equipment such as uni-directional loops, converters, and accurate (?) compasses were procured. Everything was set for another try Sunday June 9. The FCC decided upon no further amateur portable operation a day or so before. Result—loves labor lost. Might add that Mac failed to qualify with a commercial field strength indicator on another occasion. I wouldn't fool around these hams, Mac. Think of your reputation.

The best story of the month comes hot off the wires. Sunday, June 9, a thunderbolt hit the KOA tower. Nelson and Thompson were on duty. Nelson reports that the antenna loading coil appeared

to have been scrambled and twisted out of shape, and the antenna ammeter burned up in spite of heavy shorting switch closed across thermocouple. While Nels was making this inspection the telephone cable failed. I was listening at home. Minutes after the program was cut Thompson was heard in a nervous voice "This is KOA Denver. We continue by transcription." Worn out transcriptions from the studio are sent out for test purposes and Russ continued to wear them out for the next hour and twenty minutes, with the announcement in between "This is KOA Denver. We continue by transcription." You know, after the first hour he began to sound pretty good. Couple of times he got the same record on twice due no doubt to getting excited about changing the needle. Russ beamed as he told us the story a day later. "And," he went on, "all reports indicate I sounded just as good as when I called CQ on W9QKW. (Russ used to even announce dance names back when—Ed.)

The mobile unit with KDRA on 2758 kc. went into action on the above occasion manned by Glasscock. Set up was at Aurora telephone exchange as rehearsed during March snowstorm. Glenn beat all the records by making complete setup in slightly over one hour. Cable still out at this writing three days later. Radio emergency circuit was not required as open wire line cut in for program use.

The transmitter boys subscribe to the Denver Post. When collector comes around man on duty digs up a buck and the rest pay him. Thompson paid man who comes around for this month and was repaid by 341 Colorado sales tax tokens.

Mev Adams of Hollywood paid us a visit returning to Hollywood after cross continent vacation trip.

Personal congratulations to Stolzenberger and Isberg. The new Journal setup seems sensible and we'll redouble our efforts at this end to keep the ball rolling.

New York

by Ted Kruse

We have received many complaints in the past about the few personals in the column. Well boys, with a little cooperation this space will be filled with general nonsense. We will be glad to include all political speeches and master mind thoughts. Just send them in.

Speaking of master minds, the following was received by "The Hen" De Somov: "Lord and Master, While visiting local zoo, sacred white monkey from Kandy suddenly went into a trance and proclaimed 'Mischa-Missoula-Flush', I understand message (Machine Macht Koo-Koo) and will do as requested by simian." (signed) gge eht.

Overheard Bill Glasscock saying he is off to Realfoot Lake in Tennessee on his vacation to do a little fishing.

Henry Meyer SE, did a series of programs entitled, Gallant American Women. Each week the program glorified some type of woman such as, Women in Politics, Women as Leaders, etc. At the conclusion of the series Henry received the following letter from Jane Ashman, the writer of the script, "You will be interested to hear that you were the subject of discussion at a woman's club the other day. It was the meeting of the Women's Press Club of New York, when they awarded our show a certificate of merit. Amelia Unnitz accepted for NBC and Phil Cohen for the Office of Education. In his acceptance speech he said that the most important person in radio; the one we all try to please is the engineer. Then he went on to tell how one day you were muttering to yourself, 'Next week they'll prove that George Washington was a woman.' And how the ladies laughed! They loved it."

Ward, Doc Dickson and Lueddeke have just returned from vacation. Dickson and Ward did some fishing around Lake Placid and Lueddeke took a trip south. A. T. Williams has taken a year's leave of absence in order to enter the Army Air Service. Bill Pooler and Les Miles are now on vacation. Both men have been out sick, Les with a dislocated spine and Bill with a broken ankle. Here's hoping they get well enough to enjoy some of their vacation.

Al Weiss and Jon Larson were the lucky boys picked to accompany Toscanini on his South American trip. Al and Jon will visit Rio De Janiero, Sao Paulo, Montevideo and Buenos Aires. We expect some swell yarns from the boys on their return.

The current NY State Legislature is considering the regulation of installment buying to protect the public interest.

Washington DC Circuit Court of Appeals on March 4 declared the practice of medicine a trade, not a profession, and directed the American Medical Association to stand trial on monopoly charges under the Sherman Anti-Trust Act; all brought about because Group Health, Inc., doctors were reportedly prevented from practicing in Washington hospitals.

NY State Legislature planning to collect income tax from 500 pilots flying commercial planes over the State Lines.

Recent British war order: "... Members of Women's Auxiliary Territorial Service will show their pink forms whenever called upon to do so."

New York recently elected Mr. Harry Hiller its Night Studio Councilman; Engineering chose Mr. James Russel DeBaun its Secretary-Treasurer.

W. R. Brown has agreed to write up the elaborate PA switching system at the NY World's Fair especially for the Journal; should prove very interesting.

The recording room continues to be a bee hive of activity. Under the efficient supervision of G. E. Stewart the department has steadily grown until it now boasts of a staff of seven engineers and five men assigned to playbacks and filing. The engineers include Nick Close, Jack Holmes, Silvio Caranchini, George Anderson, Al Saunders, Fred Frutchev, and Vic Trevola. (Try saying Vic Trevola very fast. He is sometimes called needle scratch). The playback men are Rolo Hagard, Harold Ritchie, Richard Dunn, Clifford Dunn, and Jerry Trubler.

The FCC Television frequency assignments have just been announced. NBC has been assigned Channel 1 (50-56 mc.) for New York, Washington NBC is assigned Channel 2 (60-66 mc.), and Chicago NBC gets Channel 5 (84-90 mc.) RCA has been assigned Channel 5 for experimental broadcasting in Camden. In addition to other assignments throughout the country CBS has been assigned Channel 2 in New York, DuMont Channel 4 (78-84 mc.), and Bamberger (WOR) Channel 6 (96-102 mc.).

WOR

by R. A. Schlegal

FOR SALE: All types of twenty meter rotary beam antennas. Apply any twenty meter DX hound for details. Wonder how it feels to hear AC4YN calling CQ and not be allowed to call him?

Recent WOR softball game scheduled with WMCA nearly turned into a washout because of rain. WMCA won with a score of 8 to 7.

House orchestra standby during a European news broadcast start their fill with "Taint Necessarily So".

The A. T. E. welcomes A. D. Massey, formerly with Eastern Airlines as radio maintenance and prior to that with WMCA in New York. Massey hails from Parkersburg, Virginia suh! Any time Alfred Wallenstein runs short on cornet players for the Little Symphony he can call on Massey to substitute.

The Ham Chatter column of Radio News for July gives Tom Gootee a swell plug on his stories appearing in the JOURNAL. Tom should submit some of his stories to them.

Jimmy O'Connor did some practice bait casting with his new rod and reel. Lacking a suitable weight, Jimmy used a beer can opener. His first cast backlashed with the result that the sharp point of the opener came within a fraction of an inch of hitting his eye. That's his story and it looks as though he's stuck with it... But that ain't the way I heard it!

The vacation schedule is under full sail... Don Hale and Ed Scatterday making excellent use of their three weeks by taking a cruise to Mexican and South American ports... Charlie Thropp back from his vacation, several days of it were spent at the N. Y. World's Fair and the rest in buying grass seed and garden implements for his new home... Jim Shannon spent part of his vacation trying to book passage to Bermuda... Neil Spencer back from the Adirondack and Lake Ontario region where he spent his time fishing and trying to keep warm... Pat Miller now on vacation and when last seen was trying to get his car out of Westchester... Joe Craig going down to the old home town in Charlestown, West Virginia for his vacash. Joe hasn't any definite plans but will do plenty of loafing.

Occasionally Berger comes in with a nifty. Herman is quite a fisherman, spending a considerable part of his time at the fishing piers of Long Branch, New Jersey. On one of these fishing trips he lost his good rigging while casting. Hank put on a makeshift tackle and continued fishing. After several casts he pulled in a rigging that some one else had lost. This he did three times, each time pulling in a lost rigging. Berger figured it was his lucky day and continued fishing and soon had what he thought was a good strike. Imagine his amazement on pulling in the fish to find that it was not on the line he was using but on the rigging he had lost earlier in the day. The tackle he was using had snagged the one he had lost. This story will put Berger's name on the eligibility list of the Burlington Liars Club.

Washington

by A. R. McGonegal

Work on WRC's new directional array is progressing nicely. Foundation piles for both towers have been driven, concrete footings have been poured for the east tower and transmission line, and the forms are being constructed for the northwest tower footings. By the time this is printed, steel should be going up on both towers. W. S. Duttera, of Radio Facilities, is in charge of the work, commuting by air between New York and Washington. Incidentally, WRC transmitter engineers have a nice collection of petrified wood, taken from the tower footing excavations.

Blueprints for WMAL's new transmitter have been completed. An RCA 5-DX transmitter is to be installed, together with a four-tower directional array. Transmitter room, office, shop, lounge, kitchenette and garage are to be provided and all except the garage will be air-conditioned.

The June moon that hangs so low over the Potomac these days is finally getting in its work on the program staff. Two weddings on the same day, June 8th. Bryson Nash, announcer, and Esther Jenkins, Legal Department; and Don Gardiner, announcer, and Lila Free of Guest Relations, are the happy couples. George Wheeler of Production is rumored to be stepping off the deep end on June 27th.

Not much chance for romance in the Engineering staff, however. Only three bachelors left among twenty-six engineers, and these three intend to stay that way, if possible.

While on the general subject of vital statistics, Charles Barry, Night Manager, has been passing out the cigars. June 11th, an eight pound girl. Mamma is doing fine and Pop has almost recovered.

White Elephant Department:

Wally English is displaying his latest creation, a single large cabinet which contains a recording machine, a turntable, a TRF high-fidelity receiver, a 64-A loud speaker and storage space for a thousand records. "Takes up half the living room" remarked Wally proudly. Mrs. English' views on the subject have not been obtained as yet.

WRC notes

Barton Stahl very busy supervising construction on the new towers... Sammy Newman very blue since FCC order No. 72 came out... "No foreign contacts, no fun" says our leading ham. Harold Yates still accumulating machine tools... will have to enlarge his basement soon to accommodate them... Power tool Yates, they called him in them days... Wally English has abandoned sound movies for 35 mm Kodachrome... Johnny Rogers back from Florida, nicely tanned... convinced now that fish can be caught there as large as we told him.

WMAL notes

Wdasworth busy these days on plans for new WMAL transmitter... Eddie Burg fishing at Oregon inlet... Charlie Fisher building new high-fidelity speaker cabinet... Bill Simmons eyeing WMAL's new water cooler with suspicion... Bill was gassed when its predecessor sprung a leak one night... had to retire to the fire-escape until the gas evaporated.

Cleveland

by W. C. Pruitt

F. C. Everett (TE) the normal recorder of the gossip which comes out of Cleveland, is at this writing some where in the United States (we hope) on his vacation and the column this time is going to be short.

J. D. Disbrow (FS) doing a few out of town jobs. One night broadcast stands, of some of the network shows originating in this area. Lowell Thomas, Town Hall, True or False and a couple others we can't recall at the moment.

J. J. Francis (CS) on his vacation, some where on the Ohio River, with Mrs. Francis, at present. Shipped his cabin cruiser to the Ohio just below Pittsburgh, then doing a cruise down the river to Cairo, Illinois. At that point will ship the boat back to Cleveland. At least that was the hope, if time allowed.

Mr. Sellar and Mr. Maher, New York Chapter Chairman and National Secretary-Treasurer respectively, recent visitors in Cleveland. The Cleveland group enjoyed having them stop off, even tho it was only a short visit, and hope to see them here again some time. Also extend an invitation to all the fellows to stop in and see us. We can't show you a World's Fair, as can N. Y. and Frisco, but we might be able to find some refreshment to cheer up the moment.

G. E. Makinson (TE) tells us that he and Mrs. Makinson spent their vacation doing the west. As he described it they covered just about everything possible in the three weeks. Some of the boys

on the coast will remember having seen them around the latter part of April.

H. A. Gowing (SE) with Mrs. Gowing, vacationed in Boston and New Hampshire. And now back home they're spending all available time on their 40 ft. cruiser. If H. A. doesn't show up for work at 5:30 A. M. some time in the future, we will know it's probably due to motor trouble with H. A. stranded out in Lake Erie some where.

H. A. Walker (TE) and T. C. Cox (SE) are the next up for vacation. We haven't heard what plans Walker has made, but Cox will be found somewhere in Michigan with rod and reel. In fact at present time Tommy is working madly to complete a row-boat to take along. It's being made small enough to carry on his car. Some of us doubt if it's large enough it float with an occupant, but Tommy swears it will take care of three people.

Thank (something or someone), Everett will be back before the next one of these has to be hammered out. Of the many jobs in the world one might try, one which yours truly won't attempt is that of columnist. 73

KFI-KECA

by H. M. McDonald

VACATIONS—Ray Moore is the first man away this year, stream-lining to Detroit on the Union Pacific's "Challenger", for a new Packard club coupe; thence to Boston, New York, Washington, and way points.

TAKES LONG WAY HOME—In an article in the current issue of Readers Digest it is stated that "drive-aways", those who pick up their new cars at the factory, wear out cars faster than other customers because of the extra miles driven on side trips on the way home. Ray Moore proved the truth of it when, after picking up a new car at Detroit, he took a "side trip" to New England and Florida, and came home via the deep South, with the speedometer showing over 6500 miles.

A highlight of the trip was at Schenectady where he was astonished by the clarity of the television pictures being broadcast from New York, 140 miles away. He also visited WIXOJ, the FM station at Paxton, and WNAC in Boston; saw the mobile television equipment at Radio City; was surprised at the amount of recording equipment at WOR; pleased with the warm welcome he received at WCAU, as well as at the other stations.

ALL VERY DISCOURAGING—When we moaned to Rex Bettis about the cost of playing golf he advised getting into some of the tournaments or sweepstakes like he does and winning prizes of equipment, etc. Says he hasn't bought golf balls for so long that he's forgotten the prices. Nice advice to one who has not yet broken 100, but of course we didn't mention that little thing. He asks, "how about another NBC Hollywood versus KFI-KECA match?"

NEWCOMERS—Our staff has been augmented by the addition of Dave Kennedy, ex NBC San Fran and Hollywood, and Lloyd Roe, formerly with CBS' KNX here. They will make vacation reliefs, Kennedy at the studios and Roe at KFI transmitter.

ODDS AND ENDS—Blatterman hospitalized a few days for a minor operation; now back at his desk, hale and spry.

John Hidy looking blacker than the European picture all because some so and so broke into his shop and stole some of his best test instruments, valued at \$150.

Johnson exultant; just defeated Rodriguez our star chess player. The 2½ meter FM transmitter which Mason is building is beginning to shape up and if neatness counts it'll perk OK.

CREATING DESIRE—Last week Headlee Blatterman took his Hudson into the shop for some adjustments and while waiting he wandered through the salesroom. To the salesman's approach he gave a casual "No thank you; just looking." So the salesman talked about this swell vacation weather; how grades in the mountains are hardly noticed these days; air conditioning in cars; sales up 76%, and — well, Blatt is now the owner of a shining Packard sedan "complete with overdrive, single push button radio," etc., etc.

ATHLETICS — Soft-ball season is here again and there seems to be even more interest than last year, 18 KFI-KECA having turned out for the first practice game. They play the snappy new KMPC team Saturday afternoon at La Cienega playground, and KNX the following Saturday.

Carl Estep is coaching two groups of soft-ball players, one of high school and the other of junior high age, both of whom play in the YMCA and Playground leagues. Carl much elated when the High boys beat Douglas Aircraft. Neither team has lost a game and Juniors playing for championship Saturday.

BYRD CONTACTS — Ray Walling is bemoaning the fact that his boys are growing up; and the QRM from their electric razor when he's trying to work the Byrd Expedition snow cruiser at

Little America, KC4USC, on about 6990kc.

Christensen reports a good phone QSO with KC4USA (14145 kc) about 10:30 one night recently, Chris using 400 watts and a V beam. **IT'S AN ILL WIND ETC.** — The FCC ban on amateur communication with foreign countries was a blessing to the Alexander and Everett households. When Alex and Pop learned that AC4YN in Tibet was being heard here, on about 14280 kc., their old DX spirit was aroused, and so was the family, at 4 a. m., while they attempted to contact the gentleman over Shangri-La way.

THE JONES FAMILY — At the end of a big military display before 50,000 people at the Coliseum the other night the P. A. system was blatantly summoning one lost Eddie Jones to come to his mother at the reviewing stand. We looked down from our seat in the 104th row and sure enough there was Lloyd Jones' wife, smiling and unperturbed, awaiting a response from their nine year old. Eddie, like his mother and father, is an ardent camera fan and was probably getting a shot of the ten-ton-50-mph tank which was thundering around. Incidentally, Lloyd is winning prizes quite frequently of late, for the outstanding work he's doing with his Contax.

VARIETY IS THE SPICE — Glen Litten, tired of the City and Bill Edwards tired of the country, so Glen is now out at KFI transmitter, wherefrom the distance to his Newport Beach home is cut in half, and Edwards is back at the studios, after many years at the 50.

OUTBOARD RACER — Floyd Everett tears in, addresses an envelope to the Southern California Outboard Association, and rushes out to mail the entry of his boat in the races to be held next Sunday at Marine Stadium, Long Beach. His pride and joy has been officially designated as C-89 by that organization, a branch of the National association, and is classed with the Service C Runabouts. It has plenty of zip and Pop is a hard driver so we're expecting to see him win.

Cleveland

by F. C. Everett

The following communiques have been received from the various divisions deployed along the Cleveland-Brecksville line.

BOAT BULGE. J. J. Francis, CS, is having all the metal parts of his boat chrome plated to give that commercial, factory custom built appearance to his yacht, preparatory to taking off on his long river boat trip into the south. H. A. Gowing, SE, had, at last reports, purchased and paid a holding charge on a power cruiser but had not yet received delivery.

HAM FRONT. G. E. Makinson, TE, has a new XEC electron coupled oscillator and as a result he and J. A. Cheeks, TE, and F. C. Everett, TE, are making an involved swap, it is alleged in which crystal holders of pin type, banana plug type, ATE frequency crystals, other frequency crystals, multiple holders and various boot are all intertwined. Somebody will get skinned plenty. J. F. Hackett, SE, is rebuilding his rig and preparing to install cathode modulation. A. B. Stewart, TE, has just installed a new pipe mast in his back yard with the assistance of all the local neighbors and most of the hams in Cleveland. He has just purchased a "slightly new" National 101X and celebrated the purchase by burning out the antenna coil in his other receiver with power pickup from the transmitter. T. C. Cox, SE, still doesn't have that two element beam hoisted into the air, but the tubular sections are being fabricated by a local metal worker.

PHOTOGRAPHIC SECTOR. J. D. Disbrow, FS, had a windfall when a commercial photographer friend went out of business and made him a gift of a large assortment of film, paper, and various other coveted equipment. (The photograph of Casky and the recorder was a double exposure made with a 4 x 5 Speed Graphic, Eastman Super Pan Frens film, first exposure F8 at 1/5 second, second exposure F32 at 1/25 second using GE foil flash. Developed in D76 at 65° for 14 minutes. Printed on Brevira Kashmir White Soft 7231.)

C. C. Russell, Station Engineer, has developed his first roll of Dufaycolor and is working on a roll of Kodachrome.

HOME ENFILADE. W. C. Pruitt, CS, is still gardening. H. B. Caskey, SE, with the help of his father, has finished two more rooms in the upstairs of his house. No reason why he can't ham more now. It has been reliably reported that F. E. Whittam, SE, bought an electric train for Christmas and that his boy has to play with a fifty cent edition, while Frank is intrigued by the relays on the real McCoy which dump coal. A. H. Butler, ASE, has been busy installing a revamped auto radio. With the amount of work he had to do on it, if he paid himself his regular wages, he couldn't afford it. Mr. Burt Pruitt, SE, is attracting attention to his work in fantasy both in radio and some various unrelated subjects. A sample of his work is presented herewith. Nice going, Burt.

OUR ATE JOURNAL

The purpose of our ATE Journal is to maintain a useful and understanding contact between our far-flung membership and fellow technicians in the Broadcast Industry.

In addition to fulfilling this responsibility, the Journal Management has endeavored to make the Journal self-supporting, without direct or indirect cost to the membership, through Journal Advertising.

To date, a good part of our Journal has been obtained through individual good will and personal friendship. It is the purpose of this letter to bring about the removal of this stigma of advertising based on semi-charity. The size of the Journal, quality of paper, the number of photos and pages per issue is determined by what the advertising revenue will bear. Therefore, to make the Journal "bigger and better," we must increase our advertising revenue, which is a function of advertiser-appeal.

The following questionnaire, when returned directly or through your Journal Representative, will allow us to procure advertising on the strictly business basis of catering to a specialized group of mature persons whose average income and interests legitimately warrant the advertising.

Since you are a partner in this Journal venture, we naturally expect and welcome any additional information or "leads" that might have been overlooked. We are not in the mailing-list business, and therefore do not ask you to attach your name; however, it is important that we know in what geographical location you reside, and for this reason we especially request that you do not overlook giving us this information.

- Q1. Approximately how many miles per year do you drive your automobile?
..... 15,000 Miles
- Q2. How frequently do you trade-in your automobile on a new one?
- About every third year
- Q3. Do you own your own home?
- yes
- Q4. Do you expect to own your own home?
- -
- Q5. What type of boat do you own?
- None
- Q6. What type of boat do you expect to own?
- None
- Q7. Do you expect to purchase a camera, movie camera, enlarger, or other major piece of photographic equipment?
- Movie Camera
- Q8. Please estimate your annual expenditure for photographic sundries such as film, filters, developer, paper, flash bulbs, photo-floods, etc. 35.00
- Q9. Please estimate your annual expenditure for:
- (A) Model railroading -
- (B) Model airplanes -
- (C) Fishing equipment \$20.00
- (D) Stamp and coin collecting -
- (E) Radio parts and tubes \$100.00

- Q10. Do you own a manufactured Ham Transmitter? *No*
- Q11. Do you expect to own a manufactured Ham Transmitter? *Possibly*
- Q12. Do you own a manufactured Communications Receiver? *yes*
- Q13. Do you expect to own a manufactured Communications Receiver? *--*
- Q14. Do you own Marine Radio equipment? *No*
- Q15. Do you expect to own Marine Radio equipment? *No*
- Q16. Do you own home-recording and playback equipment? *yes*
- Q17. Do you expect to own home-recording and playback equipment? *--*
- Q18. How many broadcast receivers do you own, including auto and portables? *Three*
- Q19. Do you own a Television receiver? *No*
- Q20. Do you expect to own a Television receiver? *Possibly*
- Q21. Through your contact with high-fidelity broadcast monitoring equipment, you have become a connoisseur of high quality reproduction. Are you interested in a local station, high-fidelity receiver for your home?
yes
- Q22. The average portable, auto, and midget radios cut off about 2,500 cycles; the consoles vary according to price, but probably average 5,000 cut-off. From your observation of your friends' and acquaintances' operation of their tone controls, please estimate the percentage of them that would utilize higher-fidelity reception than their present receiver affords them. *30%*
- Q23. In what geographical location do you reside? *Evansville Ind*
(Chicago, Los Angeles, etc.)
- Q24. Are you opposed to Advertising in our ATE Journal? *No*
- Q25. In the event that the majority choose to delete advertising from the Journal, how much are you willing to contribute per year for the continuance of the Journal? *yes*

Also, specific purchases of equipment resulting from Journal ads should be indicated; as an example, we know of two New York readers who bought Marine Radio equipment as a result of a recent Journal ad. This sort of information is what we're after, for our mutual benefit.

Your prompt cooperation will be reflected in an early issue of the Journal.

Sincerely

Ed. Stolzenberger
Managing Editor

*A.T.E. Publications Inc
30 Rockefeller Plaza
New York City*



Outstanding transmission at 1 k.w. on each of 5 bands by "Tom" Consalvi's W3EOZ at Bryn Mawr, Pa., is matched by the perfect performance of his AR-77 receiver shown in the foreground before installation in the panel.



**"It Beats Receivers
Costing
Twice as Much!
... says **W3EOZ****

Thomas A. Consalvi—W3EOZ—knows receivers. He has seen just about all of them—and he's actually given most of them a whirl. Many manufacturers have sent him sets to be tested under normal as well as exceptional amateur conditions. Here's what he says about the new RCA AR-77 with which he recently replaced a receiver costing more than \$300 in his shack:

"In many features, the AR-77 is superior to any other I ever tried—at any price. In every way, it matches the performance of my old receiver costing more than twice as much. Some features, particularly the noise silencer, are far superior. Its performance on high frequencies is unbeatable; its signal-

to-noise ratio excellent and its stability unmatched. I've tried it under all sorts of conditions and there is negligible drift, even over long periods."

Getting back to the noise limiter, Mr. Consalvi states: "It's the first really effective noise silencer I've ever tried. It really works. For instance, I've had three automobiles at the same time going full blast just outside of my shack, making all possible ignition noise. Then, I've gone to my AR-77, picked up the weakest signals I could find—signals inaudible without the noise limiter in operation—and brought them in 100%!"

AR-77 **COMMUNICATION** **RECEIVER**

Tests under average conditions show maximum drift at 30 Mc to be only 3.0 KC on one hour run, thereby keeping signal audible. A 2-to-1 ratio of signal-to-noise is obtained at an average sensitivity of 2 microvolts throughout range. Frequency coverage, 540-31,000 KC in six ranges. Try it at your nearest RCA distributor's store. You be the judge! Complete Technical Bulletin sent on request.

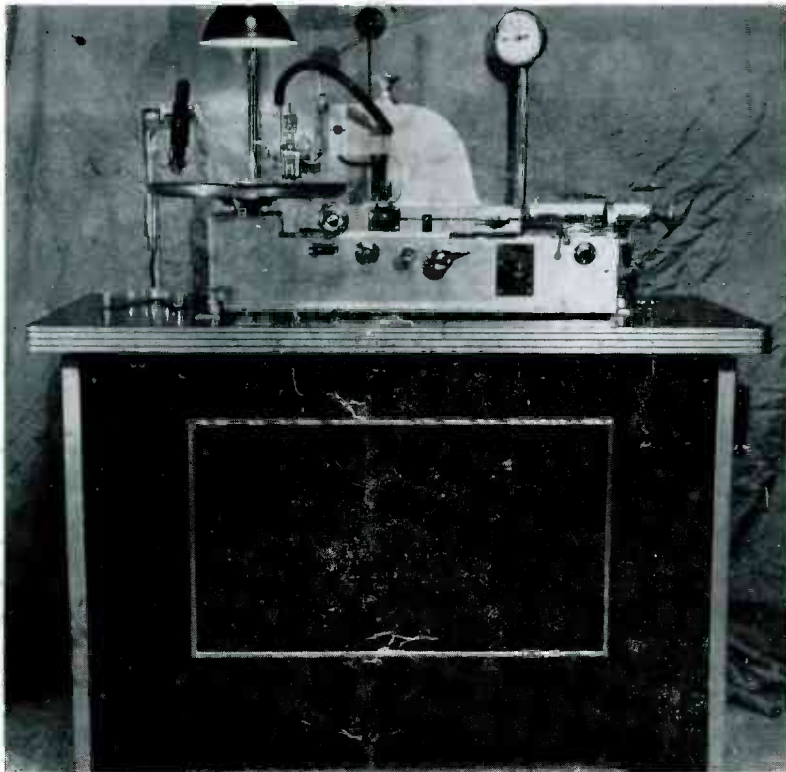
Net Price, **\$139.50** f.o.b. factory.
8" Speaker in matched cabinet, **\$8.00.**



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