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The Broadcast Engineers' Journal

Since 1934 . . . Of, By, and For The Broadcast Engineer

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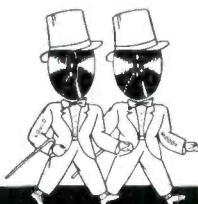
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NABET ACTIVITY

LATEST addition to the swelling NABET membership, is WMMN, Fairmont, W. Va. Welcome, fellows. The technical staff at WMMN was formerly CIO; NABET has since been certified, and contract negotiations have started June 19th. The WDNC, Durham, N. C., contract has been signed.

As we got to press, WSAM at Saginaw, Mich., has been certified to NABET, and NABET President Powley visited the WSAM technicians on June 15th; Powley plans important meetings with Vice President Fredendall in Chicago, and time permitting, will visit the West Coast NABET Chapters in San Francisco, Hollywood-Los Angeles, and Denver.

An attempt is being made to bring the Hollywood-Los Angeles living cost differential to parity with New York; those familiar with living conditions there since Pearl Harbor will readily agree that this adjustment is long overdue.

NABET Elections: Charlie Synder has been re-elected Chairman of the Rochester Chapter. Charles Thropp replaces George Riley as Chairman of the Hudson Chapter, and Russ Butler replaces Mark Dunnigan as Chairman of the San Francisco Chapter.

The Petrillo-NBC-ABC-NABET-NLRB dispute goes to the New York Southern District Court of Appeals June 15th; the Companies are in effect asking the Courts to order them (the Companies) to carry out the NLRB's order to bargain with NABET; this to avoid threatened repercussions by Petrillo a la the Jack Benny program fiasco, of some months ago. Likewise, it is expected that the Petrillo forces intend to go the limit, and take the Appeals Court decision to the U. S. Supreme Court. The welfare of the broadcast engineer and technician continues to be double-crossed by the AF of L's Petrillo-Musicians, with the apparent approval of the AFL steering committee, who have NEVER been interested in the welfare of the broadcast engineer and technician BECAUSE there will never be enough technicians in the whole country (only 4,000 to 6,000) to support an International Vice President in the style of a little king, and with a salary that will permit him to "keep up" with other power-drunk International V. P.'s.

NABET always has been, and still is, the ONLY union that has devoted 100% of its time, effort, and money solely to the broadcast engineer and technician. NABET looks forward to the day when it can and will "liberate" the enslaved broadcast members of the IBEW, now woefully tied to the apron-strings of the AF of L Petrillo-Musicians.

- NABET IS the only union that is fighting the AF of L's attempt to take legitimate jobs away from the broadcast technicians.

- ALL other broadcast unions, by tacitly standing on the side lines and doing nothing in behalf of the broadcast technician in this Petrillo dispute, show very plainly that they are NOT interested in the broadcast technicians.

- NABET always has been, and still is, the ONLY union that is 100% Of, By, and For the Broadcast Engineer & Technician.—Ed. S.



V-C Day, Tuesday, May 6th, 11 A.M. in New York. John Tassos at the WNBT television camera on top of the marquee of the Hotel Astor in the heart of Times Square. This is typical of the television program service in the Metropolitan New York area.

OUR COVER—EUGENIE BAIRD—Heard on the Kraft Music Hall program. Ralph Reid of the NBC-Hollywood office is the lucky Engineer. This is another entry for the title of Sweetheart of the Broadcast Engineer. How'r we doin'?

MEET THE BOYS

By G. Flynn

ONE of the younger members of the WOW engineering staff is **Albert H. Maller** who came to WOW in February of 1943 from KBON, the Mutual outlet in Omaha. Maller is the home town boy having been born in Omaha on December 4, 1919. His interest in radio started during the crystal set days and culminated in a course in radio at the Dodge Institute, Valpariso, Indiana.



He graduated from "Dodge" in 1940. Before going to Dodge, Maller completed a course in Electricity and Radio at Technical High School in Omaha. In 1940 he obtained both a Radio Telegraph second and a Radio Telephone first class operator's license. KDRO, Sedalia, Missouri, was the first stop of his career in commercial radio, followed by a short trick at KORN, Fremont, Nebraska, and then to the Police Radio Station at Ashville, North Carolina. It was from Ashville

that Al came to KBON and thence to WOW in Omaha.

Maller's spare time interests are mainly taken up by radio. His call W9DCQ was familiar on the Amateur bands before the war and during the past year he has been active in the Omaha War Emergency Radio System network.

At WOW, Maller's capacity is that of Studio Engineer. He also doubles on recording and field work when the need arises.

THE BROADCAST ENGINEERS' JOURNAL

Ed. Stolzenberger
Editor

Coordinator..... F. R. Rojas

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RADAR - the Science of Radiolocation

By Jordan MacQuay

MODERN warfare has one principle aim, one singular purpose: the systematic and wholesale destruction of the enemy. To that end every industrial and scientific effort has been directed during the past five years of war.

Now, with the defeat of Germany, we begin to see the results of these efforts. Now, for the first time, we can speak openly about some of the secret devices that have made the Allied War Machine the greatest in all history.

Among the many new and revolutionary discoveries and inventions that have modernized the art of warfare, the development of radar and the development of jet propulsion rank as the two greatest scientific contributions of this war.

We are concerned here with something of the development of radar, its many technical and practical ramifications, and its influence on the future.

Until recently, radar was a word to be spoken secretly, or not at all. Its principle of operation, its many uses, its great importance in winning the war, —were all considered of too secret a nature to be mentioned outside of military circles.

But this veil of secrecy has been lifted partially, and some of this once-highly classified information can now be discussed. There is, of course, much to be told that cannot be told—yet. In fact, the strategically important part played by radar in winning the war may never fully be known until hostilities cease. But be assured that radar is doing an important job.

Radar—or, as it is sometimes called: the science of radiolocation—is used both defensively and offensively.

Radar sets are used to defend ships, coastlines, and military and naval installations by detecting the approach of hostile ships or aircraft, long before they can reach the scene of their intended damage. This early warning permits the area or installation to prepare for the enemy attack, often soon enough for our planes to fly and engage the intruders before they have crossed the horizon.

Once an enemy ship or plane has been located, other radar sets are used

to aim and fire anti-aircraft, coastal, and naval guns, or to control anti-aircraft searchlights at night.

Radar's great virtue is that it functions equally well—in daylight or darkness, and in any kind of weather.

A system of radar coastal defense was in use in England almost from the first day of war in 1939. And much of the credit for the winning of the Battle of Britain was due to the many radar stations that ringed the British Isles, giving an early warning of the approach of the Luftwaffe.

Almost all Naval vessels are equipped with elaborate radar systems, protected by numbers of independent radar sets. They search the air and sea in all directions at all times to warn of the approach of other vessels or enemy aircraft—regardless of the weather.

Used offensively, radar performs even greater miracles.

It finds targets on the ground for bombers, targets that could not otherwise be seen by the human eye—because of clouds, or fog, or rain, or snow, or smoke. Bombers are directed to their targets by radar, some types of which also enable release of the bombs over unseen targets at the precise moment to obtain direct hits.

Variations of radar provide blind landings and take-offs for all kinds of planes and in every kind of weather.

Patrol aircraft over the sea use radar to locate enemy shipping. And night fighters use special, light portable radar sets to track down enemy bombers that dare to fly at night when close visibility in the air is all but impossible.

Radar is a seeing eye for aircraft.

It plays an important part in almost every air mission—whether it be night fighting, strategic bombing, or air reconnaissance. Radar even directs the guns and cannon on planes like the B-29.

There are perhaps a hundred different types of radar sets in use today for this wide variety of purposes, each set designed to obtain certain types of information.

But, in essence, every radar set is but a "collector" of information. And its most important characteristic is that it functions independently of weather con-

ditions, regardless of snow, or sleet, or rain, or fog, or storm.

Radar employs many of the technical principles of electronics, physics, u-h-f radio, and television—to detect and locate the position of objects at almost any distance *without the cooperation of those objects*.

Actual radar circuits cannot be made available for security reasons. And most of the many specialized techniques of radar must await V-J day, when Japan throws in what's left of her towel.

But we can discuss some of the more general principles and applications of radar, and for the first time begin to understand the tremendous importance of the science of radiolocation—not only in winning the war today, but in the post-war world of tomorrow.

The Simple Principle

There is nothing fundamentally new about radar.

The science of radiolocation stems from many unusual applications of known technical principles of electronics, physics, and radio.

Certain radar developments and methods, while advancing the science of radiolocation, have an even more far-reaching effect in related fields: ultra-high frequency radio, electronics, and television. Many, if not all, of these radar improvements and developments will find a ready application in radio and television after the war.

But fundamentally, radar is not new.

It operates on the simple principle of *echo reflection*.

A radar set transmits a short burst of radio energy and then receives a portion of this same energy reflected back from objects in its path. The r-f energy is not unlike radiations of ordinary u-h-f radio transmitters; but unlike ordinary radio transmitters, radar literally "picks up" its own signal.

The radar set transmits a short pulse of energy, receives its echo, then transmits another pulse and receives its echo. This out-and-back cycle is repeated from 250 to 5,000 times every second, and is known as the *pulse recurrence frequency* of the set.

There is an extremely short time interval between the transmission of a

pulse and the reception of its echo, but this time interval—even though it is often only a few millionths of a second—is measured by the electronic circuits of the radar set.

Since the speed of radio waves is known—about 186,000 miles per second—the distance from the radar set to the reflecting object or target can be determined from the elapsed time between the transmitted pulse and the received echo.

All the echoes received by the radar set are displayed *visually* on the time base of a cathode ray oscilloscope. The screen of the scope generally bears a scale in miles, or yards. And an observer can tell at a glance the range or distance to a target by the position of the echo along the calibrated base line.

Thus, using ultra-high frequency radio waves, the distance to a target can be obtained by determining the time required for each pulse to make a round trip journey. The elevation and bearing of the target can also be obtained by the radar set, but these are purely mechanical processes—not directly involving electronics or radio.

This, in effect, is the complete story of radar.

How the electronic measurement of distance is achieved by the radar circuits is a much more complex consideration. And to fully comprehend the technical significance of radar's operation, it's necessary to start at the very beginning.

In this respect, it should be noted that

the series of articles titled "*Elemental Electronics*," which appeared on these pages throughout the year 1944, supplied a wealth of purely *basic* material on the electronic foundations of radar. While it was not possible to mention or exploit this information at the time the articles were published, all of the material contained in the series "*Elemental Electronics*" should be consulted for a more thorough electronic background to the study of the science of radiolocation.

The Basic Radar Set

A complete radar set consists, essentially, of six basic components: a *radio transmitter*, a *transmitting antenna*, a *receiving antenna*, a *radio receiver*, an *electronic timer* or pulse synchronizer, and a visual means of observing the results obtained by the set, an *indicator*, consisting of one or more cathode ray tubes.

While most radar sets are extremely

complicated and consist of many divisions and subdivisions of the six basic components, every radar set can be conveniently represented by the typical block diagram shown in figure 1.

This is the way such a set functions.

Short bursts or pulses of u-h-f energy are generated by the radio transmitter and radiated into space by a highly directional antenna system. The pulses of r-f energy are extremely short—usually not more than a few microseconds in duration—and after each pulse is radiated, the transmitter is quiescent or inoperative for a period of several thousand microseconds.

An important property of u-h-f radio waves is that they are reflected by objects and surfaces immediately on contact, much as light waves are reflected by a mirror. Thus, when a u-h-f pulse strikes an object or target at any distance, the r-f energy is reflected—and a portion of the energy returns directly to the receiving antenna and receiver of the radar set.

The transmitter always allows time for an echo to return before another pulse is radiated. Therefore, the transmitter and receiver of a radar set function *alternately*.

The reflected pulse of r-f energy is known as an echo.

After the received echo has been detected and amplified, it is applied to the linear time base of a cathode ray oscilloscope—where the echo appears as

(Continued on Page Eight)

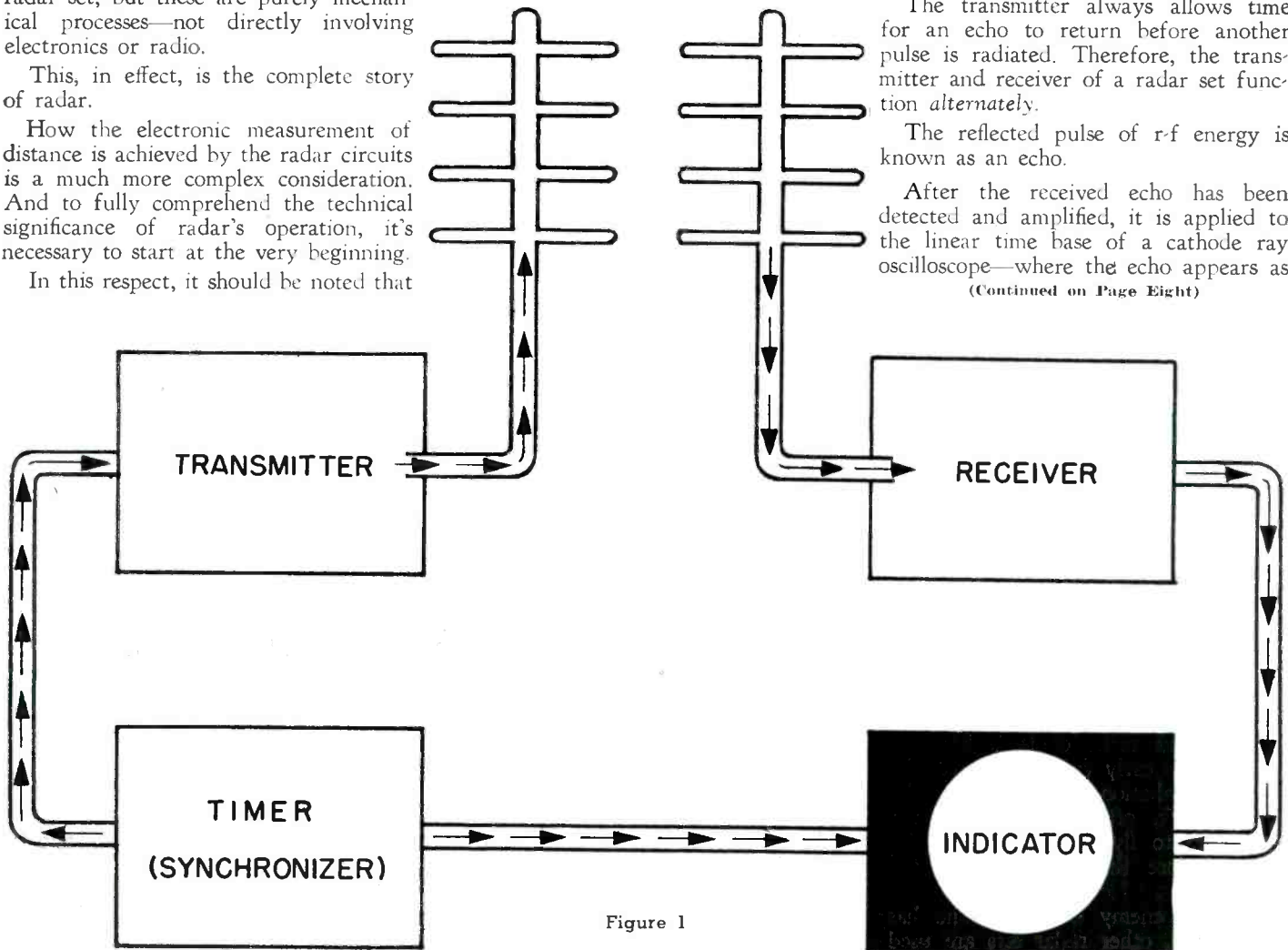
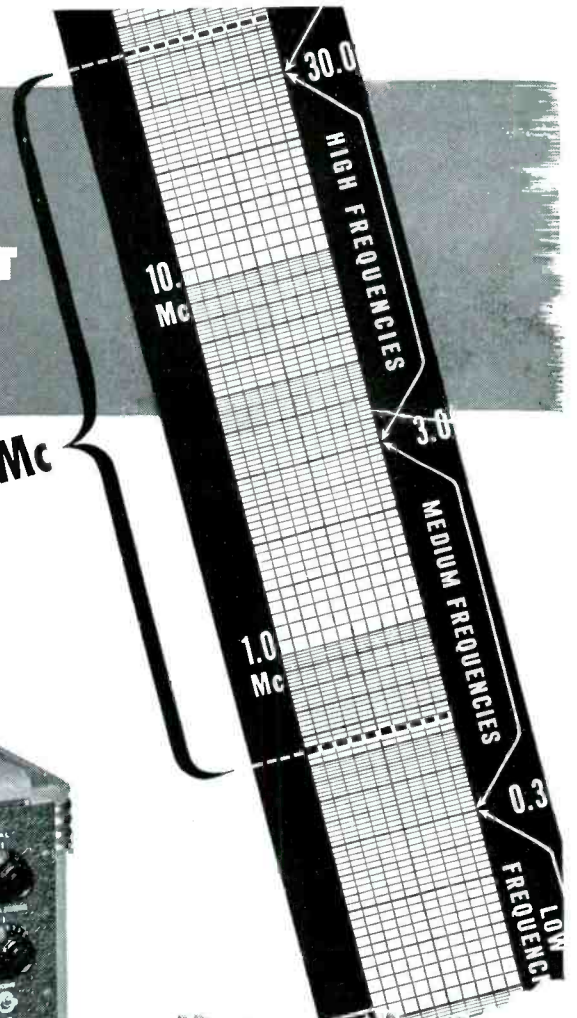
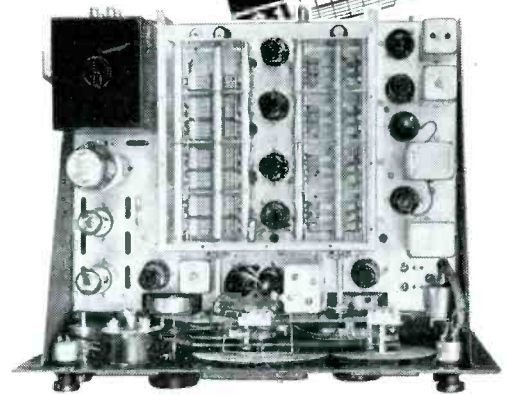


Figure 1

HOW hallicrafters EQUIPMENT COVERS THE SPECTRUM

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Radar

(Continued from
Page Six)

a thin wedge of light, sometimes known as a "pip".

Ingenious electronic timing circuits measure the exact time which elapses between the transmission of each r-f pulse and the reception of every resulting echo. These delicate circuits are located in the electronic timer or synchronizer (figure 1), and directly control all other components of the radar set.

Since the speed of radio waves through space is known, the range or distance from the radar set to any reflecting object or surface can be found by multiplying the speed of the r-f waves by one-half the time which the radio pulse consumes in making each round trip.

This calculation is performed electronically, and the cathode ray oscilloscope instantaneously translates this *measure of time* into a *measure of distance*.

For example, if the reflecting object is a mile away from the radar set, the complete out-and-back cycle is accomplished in about 10 microseconds, or 10 millionths of a second.

Radar always functions in "complete" cycles; the pulse path from the transmitter to the target and back to the receiver.

Locating a Plane

Almost any type of target may be detected and located by radar: an airplane, a ship at sea, or landmarks or shorelines.

But the principles of location may be more easily understood if we consider a typical radar installation on a mythical Pacific island (figure 2, facing page).

This radar station is constantly on the alert for enemy planes. Its beam sweeps the sky at regular intervals, recording the presence of any object in any direction, and in every kind of weather.

Suddenly a "pip" appears on the range or distance scope—indicating the detection of an unknown plane—and momentarily the radar antenna stops, as shown in figure 2. At this precise moment the set must be able to determine the exact position of the plane in space, and accomplish the feat in less than a second!

How?

To determine the position of a plane in space, we must know three significant things: how far away it is, the height

of the plane, and its angle of bearing from the radar station.

From a glance at our range oscilloscope we can obtain the distance to the target, as we have previously explained.

The antenna system is designed so that it transmits pulses within an extremely narrow beam, and this beam can be moved in any direction merely by moving the antenna structure.

Thus, the physical position of the antenna is changed so that the energy beam falls full "on target". This gives us two angular measurements, from the mechanical position of the antenna: the angle of bearing (in a horizontal plane), and the angle of elevation (in a vertical plane).

Since we know the angle of elevation and the range, the height of the plane can be determined by simple trigonometry, as shown by the triangular diagram in figure 2. Actually, even this calculation is performed electronically and automatically by timing circuits of the set.

Thus, we have determined all the data necessary to locate an airplane in space; range or distance, height, and angle of bearing.

The course of the plane can be plotted easily on a map by merely taking a number of "position readings" on the aircraft as it moves across the sky. The speed of the plane can be calculated if the readings are taken at regular intervals.

Locating surface vessels is, of course, much simpler, since the target is moving very slowly, and since the angle of elevation is so low that it can be neglected. Thus, only range and bearing are necessary to locate ships at sea.

This principle of radiolocation is generally applicable to determining the location of any radar target—in space, or on the ground.

To perform these intricate measurements, however, every component of the radar set must be perfectly and precisely synchronized.

The Electronic Timer

The chief function of the electronic timer is to control and synchronize all other components of the set.

This is accomplished by means of a basic, recurrent waveform which is generated in the first stage of the electronic timer. The waveform may be a sine wave, the output of a multivibrator, or any other type of *recurrent* waveform.

This basic waveform has an important characteristic: its frequency of repeti-

tion. This frequency, usually between 250 and 5,000 cycles per second—is known as the *pulse recurrence frequency* of the radar set. It is the frequency at which r-f pulses are radiated by the transmitter (but not the carrier frequency!), and it is the frequency at which the time base of the cathode ray oscilloscope repeats itself. The basic waveform from the timer also has a variety of other functions, which concern only a few types of radar sets and are not generally important to us.

The basic, recurrent waveform undergoes considerable transformation as it passes through later stages of the electronic timer. Squaring amplifiers, diode and triode limiters, and other shaping circuits are used to form a steep-front rectangular pulse—having a certain required *duration*, usually of about 10 to 20 microseconds.

This rectangular voltage pulse is used to control the activities of the radar transmitter, which we will next discuss. But it should be noted at this point that at some earlier stage in the electronic timer a recurrent waveform was taken from the timing circuits and applied to the indicator, to trigger the time base of the cathode ray oscilloscope.

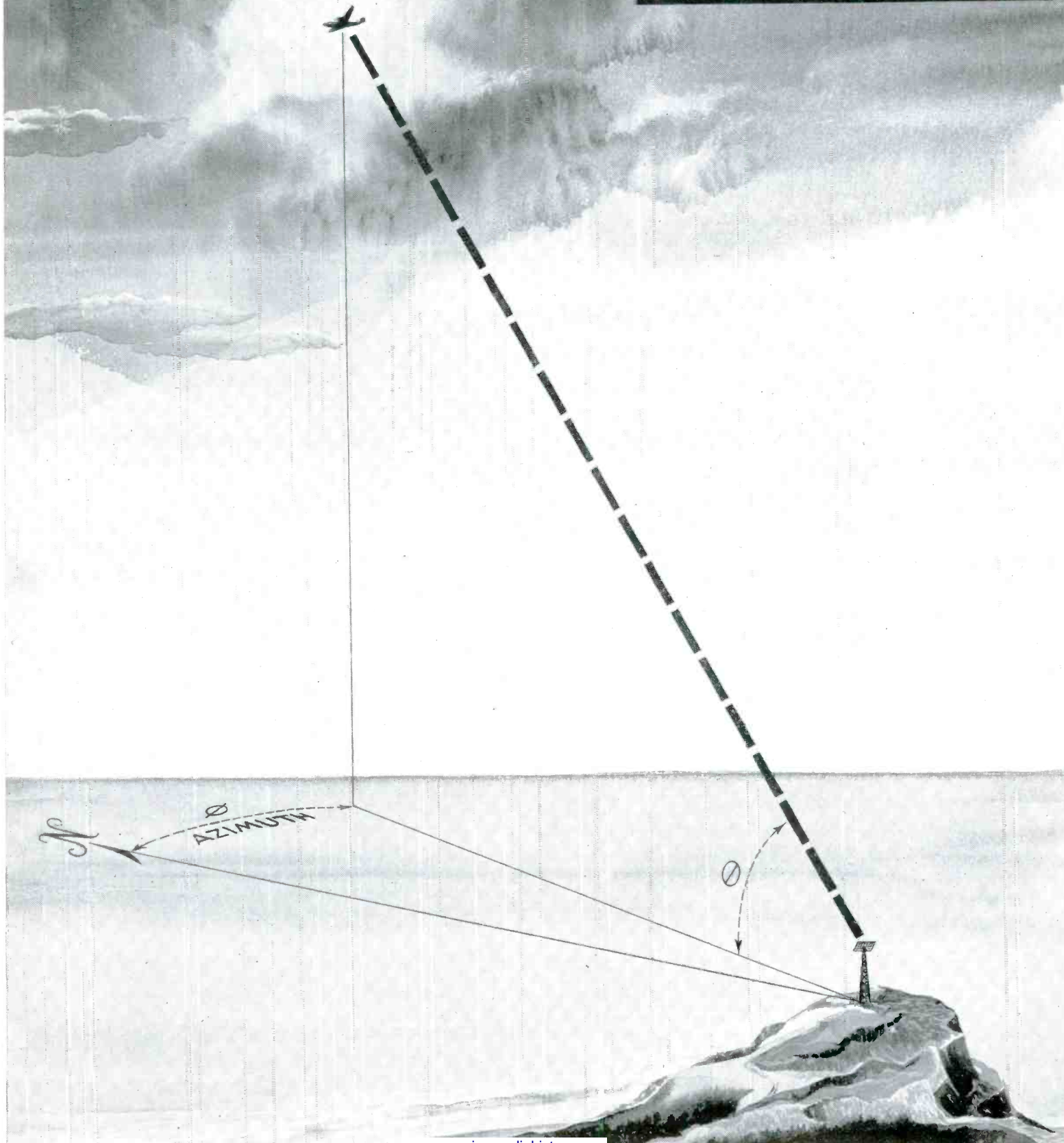
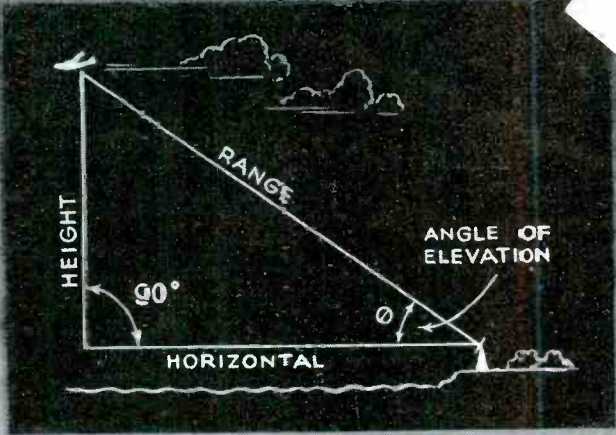
The Transmitter

The rectangular, recurrent pulse from the electronic timer generally has no appreciable power. Some additional amplification is therefore required, and this is supplied by buffer or driver stages just preceding the final u-h-f oscillator stage of the radar transmitter.

When a recurrent pulse of sufficient power has been formed, it is applied to the final stage of the transmitter in such a way that the u-h-f oscillator tube or tubes are permitted to operate *only for the duration of the control pulse*. In other words, the rectangular pulse which was formed by the electronic timer is used to switch on and off the output u-h-f oscillator of the radar transmitter.

The final stage of the transmitter oscillates at a carrier frequency, predetermined by the tube or tubes and by the circuit constants. Since this carrier frequency in effect *pulses* at regularly timed intervals dependent upon the control wave from the timer, the transmitter of a radar set effectively oscillates at two frequencies: the *u-h-f carrier frequency*, and the *pulse recurrence frequency* (usually between 250 and 5,000 cycles).

(Continued on Page Ten)



Radar

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Page Eight)

Tuned sections of transmission lines are used for circuit elements at the high operating frequencies employed by radar. And wave guides are often used to transport energy over considerably large distances.

The type of u-h-f generator is governed entirely by the operating carrier frequency required. In the lower megacycle range, high-frequency triodes can be used in well-designed, efficient oscillating circuits. Such tubes are invariably used in pairs. Often a large number of pairs are connected in parallel, known as a "ring" oscillator.

Higher in the u-h-f band, an efficient tube capable of delivering large amounts of power is the *magnetron*. This is a specially constructed diode, operating within a controlled magnetic field.

The power of a radar transmitter is very important, since radar requires extremely high peak power output during the transmission of pulses. The term *average power*—as used in radio broadcasting—has no meaning in radar, and is never used. Peak powers far in excess of 100 kilowatts are quite common in radar, and some sets operate with a full megawatt output. Excessively high powers may be generated by means of the magnetron oscillator, the tube best capable of delivering such huge amounts of r-f energy.

The Antenna System

The transmitting antenna usually consists of a number of center-fed dipoles arranged in a block array—of from 16 to 32 or even 64 elements. Such a large number of dipoles is necessary in order to focus the radiation into a very narrow beam.

Reflectors are always used with such arrays, since radar must be unidirectional.

At extremely high frequencies of operation, a parabolic reflector and a single radiating element (at the focus of the parabola) replaces the large array of dipoles. This type of radiating antenna produces an extremely narrow beam, and functions much as the reflector in an automobile headlamp.

Radar receiving antennas are exactly the same—physically and electrically—as the transmitting antennas. This is possible, of course, because of the theory of reciprocity.

For this reason, many radar sets employ only one antenna—single antenna which both transmits and receives.

This is possible, because the antenna is used to transmit r-f energy for only a short portion of each radar cycle. Thus, the same antenna can be used to receive echoes.

This antenna arrangement requires a special electronic switch, known as a T-R box, which automatically switches the antenna from the transmitter to the receiver at the precise microsecond.

The problem of transporting u-h-f energy from the transmitter to the antenna, and from the antenna to the receiver, may be solved by the use of coaxial transmission lines or wave guides.

The Radar Receiver

A superheterodyne circuit is used to detect and amplify the weak echo signals picked up by the receiving antenna.

The input r-f signal is usually fed directly into the crystal mixer stage of the receiver. The local oscillator and mixer unit are located close to the juncture of the transmission line or wave guide from the antenna. The mixer may be a crystal, or a diode—depending largely upon the frequency of reception.

Sometimes a second intermediate frequency is necessary in order to create a low enough i-f for satisfactory amplification.

Normally a receiver has from five to ten or more stages of straight i-f amplification, the number of stages varying with the different types of radar sets and the degree of sensitivity desired.

A conventional second detector removes the intermediate frequency from the echo signals. The output of the detector is then normally fed into one or more video amplifiers, similar in many respects to the wide-band amplifiers used in television.

The echo signals are then passed directly to the indicator component of the radar set.

The Radar Indicator

The information collected and timed by the rest of the set is displayed *visually* by the radar indicator.

The cathode ray oscilloscope is ideal for the presentation of this data, since it not only shows a variation of a single quantity such as voltage, but gives an indication of the relative values of two or more synchronized variations.

The simplest radar indicator is fundamentally the same as the conventional low-frequency test oscilloscope. Most of the controls are identical, or similar. And the sweep frequency of the time base is determined by the pulse recur-

rence frequency of the electronic timer, as previously described.

There are many varieties of oscilloscope presentations.

Some tubes use circular, elliptical, or even spiral time bases. Some systems combine range and bearing or range and elevation on a single scope with "dimensional perspective" scanning, similar to the raster pattern used in television.

Post-War Radar

We have discussed only the general aspects of a simple, representative type of radar system.

There are many variations of this basic system.

Radar sets vary in type, according to the information they are required to obtain. Radar sets vary in size from those that can be carried by hand to those that weigh tons.

The design of a radar set depends largely upon the job it is to do. And radar serves over a hundred different functions.

What of the post-war functions?

They are completely beyond prediction or even imagination.

We can, of course, speculate on the more obvious applications of the science of radiolocation to a world at peace.

Safety—in the air and on the sea—will be the most significant contribution of radar to the post-war world.

Air lines will function on regular schedules, with no cancellations due to bad weather conditions. And the pilot of the air liner of tomorrow will rely on electronic controls to warn him of disaster, sudden loss of altitude, collision in mid-air; he will have a constant picture of the changing ground beneath his plane, regardless of the weather; he will know his accurate altitude every minute; he will fly radar beams from coast to coast; he will know of the existence of mountains and tall buildings in his travel path.

Ships at sea will be protected by radar against collision with other ships, and with icebergs or other floating objects. Darkness or storm will never affect the usefulness and dependability of radar at sea.

And what other uses?

Many more—that can't be mentioned now, for security reasons. The war's not over—yet.

But we can say, that radar—already a major industry—is due for an even greater post-war boom. Like television, radar's greatest years lie ahead. And you can be certain: they will be momentous years!

Critical Studio Engineers

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Because There's Nothing Else

Quite Like Them.

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—Photo by Joe Conn

N. Y. - NBC NEWS

By Walter E. Mullaney

GEORGIE (I hate California weather) ANDERSON, JR., who normally writes this little juicy rumor deal, is now on vacation. Kinda bear with this lowly person and I'll try to inform yez.

REFERENCE RECORDING—"Smooth-top" **McCaroll**, recording's heavy man, just back from making flat round glass things aboard the captured German submarine U-505. He looked through the periscope and saw a large brown eyed mermaid giving him a lashful of wink . . . "Smooth-top" hasn't been the same since. Wedding bells sorta rang out for **Howard Firestone** and **Victoria Lazarek**. Yep, he pays the bills for both now. Anyhoo—congrates to you both. **Lou Palley** coming along fine after an operation on his knee. Working in the House of Glass must really beat one down. Recording **Fogarty** wore the same suit two days in a row . . . Yer slipping Glamour Gal. Ed "The Tie" **Schabbehar** down southway for a job . . . he'll show those rebels a thing or two betcha. Round and round they go, but 'nuff sed for this outfit.

MASTER CONTROL—Lucky **Bennis** trying to snag a daily double at Jamaica again. Last year he hit one, and I got twenty bucks commish, so keep pickin' 'em Chas.—I could use another twenty. The hired help kinda looking forward to the day when Milt (pass No. 1559) **Kitchen** comes in wearing that loud suit of his. That job really shouts for itself. Jerry **Sellar** back in the groove now after his leave of absence, and . . . well, he looks happy. Li'l **Alfy Wies** caught staring into space 'tother day, and when asked how come, he replied "Me memories, just me memories." Yeah, I said the same thing. What's he talking about? Anybody what wants to talk about his offspring, can find a good listener in **Frankie Williams**, BUT bring lots of pictures as he is loaded with them. All in all, MCD looks quiet-like now after VE Day horrors . . .

STUDIO—Willard **DuBois**, now doing Fred Waring early morning program, with a couple of days' vacation at Shawnee on Del thrown in two broadcasts a week. May the gods be good to you, Red One. **Gil Markle**, who dabbles in round, five dollar figures, was set back on his worn out "come-on shoes" 'tother day by a visit to the lounge of "**Ferdinando Montilla**" who swears he made 20 G's last year. Lt. Montilla, you are great! "The Master,"

(Continued on Page Thirteen)

N. Y. - BLUE NOTES

By Gil McDonald

WAR CORRESPONDENT **Bob Massell** (EX-SE), who has covered the Ninth Army for the American Broadcasting Co. since shortly after D-Day, was the subject of an overseas broadcast by his colleague, **Ted Malone**. Bob, a Lt. Colonel, two G.I.'s and two other correspondents were winding their way up the Elbe River in Germany one day when one bank was held by us and one bank by the Nazis. As they approached the German side they were hailed by two Krauts waving a white flag. The party landed, wary of tricks. There was no trick. The woods disgorged surrendering Nazis for fifteen minutes. All the Jerries wanted was a free ride to the American side, and a nice comfortable prison camp far away from the fast approaching Russians. All told, the boys brought back 80 prisoners.

Speaking of the Russians, here is Bob's comment after meeting them somewhere in the middle of Germany, "I'm still feeling the effects of a three day binge with the Russians. I've never had so much excitement. This meeting was even worse than being shot at. My hand is still sore from shaking hands. They are magnificent fellows, those Russians . . ."

Now that his work in Europe is finished, we are all anxiously awaiting his return. Let's hope it will be soon.

Fred Moore is a pretty tough guy on Blue Production men. The other nite he did a hard show with **Marty Andrews** and Fred got him so worried the guy went to the hospital for ten days. He has the same effect on production men as **George Vose**, NBC SE, has on elevator men. George hollered at one of the Rockefeller ops and the guy was so scared of his life that he was hospitalized and applied to the company for two days' compensation. After all, who wants to get slugged by a 6 foot ten inch 300 pounder?

Seymour Paget got himself married on Sunday, June 10. He wouldn't tell the lounge wolves her name but we hear she's FB. Lots of luck to you both, Si.

Marius Spinelli left the WJZ transmitter to go into business for himself and his place was taken over by **Arthur Griffen**, who previously worked at the WOV transmitter. That's **Kamke's** Alma Mammy. Mine too.

Be seeing you.—Gil.

NEW YORK

(Continued from
Page Twelve)

Sergei de Somov, should be congratulated for his swell article in the last issue, "Shades of the Past". Nice going. **Hollis (the silent one) Young** is a right good guy—he didn't want to go to Florida with Firestone, so lucky me went. Tnx Hollis. The lounge, in fact the whole joint, was honored with a visit from a local dignitary brought in by a member of the opposition, Blue to you, who called himself "**Ambassador Lopez**". NBC courtesy was extended completely, and the guy was really given the velvet rug routine. The aftermath of this li'l story came out later. The guy was a handy man in one of the local beer dispensaries. Me hat's off to the instigator of this wonderful gag . . . Nope, can't tell you who 'tis. **Bill Pooler**, the Soap Opera King, still grinding out the housewife stuff and doing right well. Lots of new guys in the studio lounge but I'll leave them for Andy's sharp pen . . .

FIELD—Harry (The Sorcerer) **Alexander** still holding out in his cozy Field corner, trying to convince me that we should hire a hansom cab to transport our gear to the local nemos. A few more broadcasts from Belmont Race Track, he'll at least have a horse to start with. In his presence, never mention quote tragic ending unquote . . . two more on that nag's nose and he'll own it. Anyhoo he sez, "Think of the publicity possibilities of using hansom cabs." The Sorcerer's apprentice, **Felix Ghirlando**, holding the fort up **Lowell Thomas'** way at Quaker Hill. **Gee Bee Butler** expected anyday now from San Fran. Sure will be

good to see him and hear his cheery greeting, "Hello, Bois" Guess he will have plenty to tell us about San Fran, its fog, buildings, food, etc. . . . Who, me . . . I hit this column last two times, so nuff said. **Jamie Hackett** covering Washington Mkt 6 A.M. nemo, says he knows where one can get some mighty fine radishes very cheap. Anyone wanting to load up on vegetables, see our Jamie, he'll get 'em for you wholesale.

MAINTENANCE—"Windy" or **Gordon R. Windham**, holds forth each working day in his "Fixit" shop dispensing timely comments on anything and everything. For appointments, see sleek, chubby **Dave Moloney**, who will arrange time and subject matter. **Red (I'll Slug Ya) Schultis**, sorta has that nautical look since he been guarding Unc Sam's eastern coast, and on him it looks good. Yep, one night a week, he dons the blue bell-bottom job with thirteen buttons. **Bill Irvin** by now must be an authority on vegetable gardens—he sure knows his "onions" along that score—guess I'll have to pay him a visit and get the lowdown on the how about carrots. Noticed **McCarthy** getting a little fat around that noticeable place, must be getting that Maintenance Stoop; on him it don't look so good. Eager Beaver **Dibbins** sure can bounce along lately—must be the "mula" he collected for his suggestion award. Lemme have a buck till payday, huh . . . 'Nuff said. I'll be afraid to go into the joint come next month . . .

All for now and if this li'l job carried a gratuity, Andy can have it. He'll be back come next issue so look for his swell wordage then . . . until next year, so long.



By Bob Rudd

Roy Glanton Elected Permanent Chairman

THE Omaha Chapter held its first regular election, May 11th and **Roy Glanton** (Transmitter Supervisor) was elected as permanent Chairman. He is the first to hold office under Omaha's newly granted Charter. **Roy** has been Councilman of the Omaha group ever since its affiliation with NABET, back in 1942. When the Omaha Chapter received its Charter March 15, **Roy** was made Chairman pro tem until the regular election.

The studio group voted in **Glenn Flynn** as their Councilman. Six ballots were necessary to determine the transmitter Councilman and resulted in **Bob Rudd** being elected.

By-laws for the Omaha Chapter were discussed and drawn up. The draft was turned over to newly appointed Secretary-Treasurer, **Louis DeBoer** for incorporation into document form.

There was unanimous sentiment expressed on strengthening our organization and future meetings are being planned to lay the ground work for membership expansion.

Those present were **Roy Glanton**, **Bob Rudd**, **Mark McGowan**, **Paul McDonald**, **Al Maller**, **Cy Hagman**, and **Louis DeBoer**. **Glenn Flynn** and **Waldon Seigh** were unable to attend because of work. Their votes were cast by their representatives, who were instructed how they wished to vote. The KOTY vote was cast by mail, with three voting.

Things and Stuff

We can start the column off with a chuckle this month and it is all due to **Gene Edwards**, announcer. Perhaps **Gene** was sleepy but anyway, he was announcing a musical selection on the WOW 5:30 Call program the other yawning. The number was to be "The William Tell Overture" played by **Alvino Rey** and his orchestra. It came out like this: "And now we hear William Tell and his orchestra playing the **Alvino Rey Overture**". Ha . . .

We wish to thank the San Francisco Chapter for the courtesy and brotherhood they extended our **Lt. Dunbar** when he was there, sometime in April. **Bill** spent four hours with the boys there and says that he has never met a finer bunch anywhere.

We mentioned in the June issue that **Cy Hagman** had wrecked his car and was using the pick-'em-up-and-set-'em-down method of transportation. The picture is now some-

what different. Cy got his boy, **Dick**, a bicycle for his birthday and now Cy no longer walks—he rides!

Mark McGowan won't appreciate this but it's too good to keep. May 10th, his church had a dinner for it's women members. **Mark** was chosen as one of the silent waiters and by the rules, he was not allowed to speak to any of the ladies or in any way acknowledge their presence. We bet he looked nice in his apron and cap.

We were delighted to hear from Inactive member **Ed Anderson**, now living in Lincoln, Nebraska. **Ed** was in Omaha just a few hours on V-E Day and took the time to call us up. He is very busy man and the work at W. E. keeps his nose on the stone seven days a week. He sends best wishes to all the gang and hopes that the hams will soon be back on the air, so that he may again work his old friends on 40 and 10 meters. **Ed** is a member of the 20-Year Club and has been a ham since 1919.

Thanks to **Glenn Flynn**, **Bill Kotera**, **Roy Glanton** and **Al Maller** for the help they gave your editor during the recent Scout Camporee, held June 1, 2 and 3. They all helped to get equipment together so that power was available for the scout show along with playback equipment for sound effects. **Roy** loaned a cot for the editor to sleep on and provided a test instrument for checking batteries, etc. **Thanks much.**

Cpl. Richard E. Peck is now (or was prior to V-E Day) operating a 75 watt rig mounted in a jeep. He is the Colonel's operator and says that he can pound the key just as good when the jeep is off the ground as when it is on. He asks that this not be interpreted in the wrong way. Why **Dick**, you do us wrong.

Another good laugh came the other A. M. when **Merill Workhoven** (Anncr) said: "The temperature is nineteen minutes past eight and the time is 43 degrees."

Our thanks to Editor **Stolzenberger** for the fine job he did on the masthead of this column. We left the layout to him and he certainly did a nice job. Also thanks for the WOW cover in the May issue. The layout was fine and the gang here was very pleased.

We wish to thank the Hollywood Editor and **Harold Powell** for their expressions concerning us in the May issue, but we feel that a minor correction is necessary to give credit where credit is due. We did meet **Mr. Powell** at an early hour in the A. M. but actually, we were just a guest of **Orv Weimer** (**KOWH Chief Eng.**) **Orv** was there to meet **Powell** and to take him to the theater where the Breneman show was to originate. The show comes through **KOWH**, the BLUE outlet here in Omaha.

A forecast by **Gene Edwards**—"Weather warmer with showers. Forecast for **Cy Hagrman**—No hair five years from now".

The last session of the **Dead-Beat** club held May 17, had for its guest **Howard Hamilton**, Chief of **KVOO**. **Mr. Hamilton** was so impressed with our great organization that he said he would start **Dead-Beat Club No. 2** when he returned to Tulsa. **Have a care, sir, and don't forget WE get the first month's dues. Bloop.**

Nabet Represented at NWLB Meeting

Chairman **Glanton** of the Omaha Chapter **NABET** flew to Kansas City to attend the **NWLB** radio conference at Kansas City, Mo., May 18.

The purpose of the meeting was to establish wage brackets for radio station employees. Labor and management were represented and the meeting was well attended.

The **IBEW** stations of Omaha, **KOWH**, **KOIL**, **KFAB** and **KBON** were represented by "**Pete**" **Nelson**, President of the Omaha local. **Roy Glanton** represented **NABET**. No definite decisions were reached but it was felt that enough argument pro and con was laid before the **NWLB** representatives to give them a basis for determining a fair wage scale for all. Chairman **Glanton** enjoyed his visit there and especially wishes to thank **Mr. Barron** of the Kansas City Local of **IBEW** and **Mr. Volk** for the St. Louis Local of **IBEW** for their hospitality and good fellowship.

Vacations

Mark McGowan and **Cy Hagrman** are vacationing this month but neither have any definite plans.

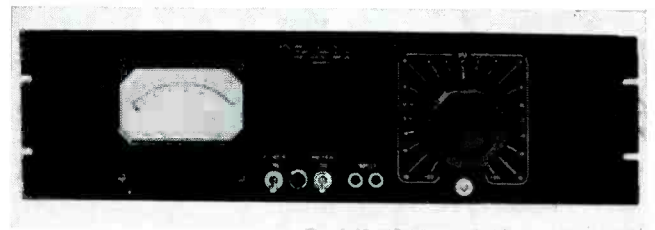
TRADE NEWS

RCA has enlarged its International Division staff in anticipation of huge foreign demands for theatre and industrial sound equipment. **K. Streuber** becomes Manager of the newly created Theatre and Sound Equipment Dep't, and **D. W. Lansing** becomes Recording Sales Manager.

The **Harco Steel Construction Co.**, Elizabeth, N. J., has been authorized to resume unlimited manufacture of radio and radar towers from idle or surplus inventories, and can fill orders promptly.

The **Hallicrafters Company** is still all-out to win the war. With 12.8 millions of unfilled government contracts, as against 9.9 millions a year ago. **Maj. Gen. Roger B. Colton**, recent official visitor, expressed satisfaction with **Hallicrafters'** continued war production.

The **Daven Company** of 191 Central Avenue, Newark, N. J., announces a new Volume Level Indicator—**Daven Type 920**—for low-level indication. Designed primarily for use across balanced lines, it also permits either side of bridged lines to be grounded. The unit is mounted on a panel for use in standard relay rack. This new Volume Level Indicator comprises a copper-oxide type indicating meter adjusted for deliberate pointer action, a meter zero adjusting control and heavy-duty meter range control



variable in steps of 2 VU, 100 to 130 volt 60 cycle A. C. power supply with voltage regulator to adjust for normal supply variations.

Its specifications are:

Range: -20 to + 20VU at 0 VU meter reading.
Extreme Range: -40 to + 23VU, including full meter scale.
Standard Reference Level: 1 mw into 600 ohms. Variation with frequency: less than 0.2DB between 30 and 15,000 cycles.



Radiophoto — news pictures out of the air!

RCA radiophoto transmits pictures halfway around the world and prints them—in a matter of minutes!

And thanks to RCA research, pictures now come through the receiver (shown above) just about as sharp and clear as the originals themselves.

Through RCA radiophoto, today's "news shot" in Honolulu or Cairo can make tomorrow morning's front page. Or—blueprints for a disabled power generator can be flashed to London—saving hundreds of vital war production hours.

Advertisements, fingerprints, documents and letters are radiophotoed by RCA Communications—as many as 2000 a month! Even musical scores—such as the new "Trio"

by the great composer Shostakovich—are sent by faster, error-proof radiophoto.

RCA has long been a pioneer in all fields of international communications. Progress is constantly maintained by scientific research . . . research that is reflected in all RCA products.

When you buy an RCA radio, or television set, or Victrola—made exclusively by RCA Victor—you enjoy a special pride of ownership in knowing that you possess one of the finest instruments of its kind that science has yet achieved.



1945—London to New York—7 minutes



1926—New York to London—1 hr. 35 mins.

Notice the great improvement in clarity, as well as in speed—both results of RCA research. Radiophoto prints are no longer blurred by a "pattern." Today, they're about as clear and sharp as the original photograph snapped thousands of miles away.

RADIO CORPORATION of AMERICA

PIONEERS IN PROGRESS



This Report Comes to You by Way of San Francisco

THE above title is not exactly correct as your correspondent is enjoying a vacation in Redlands, Calif. **Harry Puccetti** and I took the "Daylight" from San Francisco to Los Angeles Monday, June 4, and the following day visited the fellows at KFI and NBC Hollywood. Among those we said hello to were **Wayne Johnson** at KFI and **Hal Platt** at NBC Hollywood.

We have no current information of the activities of **Harold Schneider** and **Jack Morrissey** who are or were in San Francisco recording room during the Conference but there is reason to believe that their names will be preserved for posterity on the record of the San Francisco Press Club. The last we heard they were enjoying all the facilities offered by the "Deciples of Tombstone".

We are wondering if **Andy Mitchell**, R. E, remembered to put some "dough" on that 90 to 1 shot "Kings Gambit"?

Also in Hollywood was "**Duke**" **Fuhrman** spending his days off in Southern California. We understand that **Frank Schnepfer** said a quick hello to the fellows in Hollywood before he started back for Chicago.

We would like to congratulate **Russ Butler** on his election to the Office of Chairman of the San Francisco Chapter of N.A.B.E.T. At the same time we take this means of extending our thanks to our retiring Chairman, **Mark Dunningan**, for the fine work he has done in our behalf.

Harry Puccetti and your correspondent also paid a visit to the fellows down on the "flats" in Belmont wherein is situated the KPO transmitter. On duty we found **Mort Brewer** and **Ed Poage**. They certainly have done some face-lifting on the old shack. Those who were acquainted with the layout "before" will be interested to learn that they have extended the ceiling down to the top of the transmitter and installed flush ceiling lights. The whole rig and trim has been painted a very light grey which gives the plant a very swell appearance. If they keep it up they will figure they would be doing the fellows at the studio a favor if they associate with them.

Hal Platt, formerly of San Francisco and now in Field Maintenance in Hollywood, produced a large campaign poster calling for the election of **Tom Watson** for Congress. We are wondering if there is really anything to the nickname that "The Senator" likes to use? Your humble correspondent will make a full investigation and report in next issue.

Toby Hamma, SE, has voluntarily taken the graveyard watch on KGO which gives him a lot more time to devote to his law practice. Of course this makes the rest of the boys on the Blue very happy.

Norman Tapper, SE, will find himself getting up at the same time that he has been used to going to sleep since his 5:30 to 2:00 a.m. watch has been changed to 4:45 a.m. to 1:15 p.m. This will account for any slow fades, etc.!

Clark Sanders, our engineer, turned correspondent, is

By
Jack
Van Wart



getting itchy feet again. He says he wants to get out in the South Pacific where there is "Peace and Quiet". We imagine he is comparing the activities out there to those in San Francisco during the Conference.

Frank Barron, SE, invited **Harold Schneider**, RE, down to Burlingame for an overnight visit and the following morning Frank introduced him to our ex-NBC engineer **Willie Watson**. Willie suggested that Hal visit the **Rothery** estate in Black Mountain Road, San Mateo. Hal was quite amazed when he saw "Cliff's Flower Garden". Only one thing spoiled his visit and that was the appearance, practically under his feet, of a large Gopher Snake which Mrs. Rothery says they keep for a pet. When Hal quieted down he was quite ready to come back to "The City" where all you have to watch out for are street cars, taxi's and people, who think they are driving "buzz bombs".



Ruby Hunter, who conducts the daily "Barbara Lee" column on KPO, seemed to have the hearty approval of field supervisor **George McClwain** for the way in which she was handling the extra cables which were taken immediately afterward to NBC's special Conference studios in San Francisco's Veterans' Building and War Memorial Opera House.

Chicago-Corn from a Cob Reporter

By Kermit A. Slobb

PAID a visit to the guys over at RCA Recording several weeks ago. They are a swell bunch and we should all try to know them better. Les Chase showed me around the place, and it's very interesting to one who has never seen the processing of acetate and wax discs. Called Les yesterday and understand that Fred Elsasser, who was out on the West Coast for six weeks and is now in Camden on business, may be back in Chicago shortly.

Any of you guys have several thousand tons of corn? If you have, we have just the person to sell it for you. Harry Johnson, NBC studio engineer, is a member of the Board of Trade now.

These young kids learn fast these days. Took my boy, aged 5½, over to the five and ten the other day to try and get a toy gun he had been asking for. We couldn't find it at the toy counter, so Norry said, "Daddy, why don't you whisper and ask the clerk if they have them? Maybe she has them hidden under the counter!"

Glenn Webster has left Master Control for greener pastures. Glenn now has the imposing title—"Senior Engineer in charge of Broadcast Research and Development". All that and a paycheck too with the Collins people out in Cedar Rapids, Iowa. We wish Glenn and his family all the best.

Which reminds me of the shakeup out in Master Control. J. R. Miller is M. C. R. Engineer, and Bill Cole is Senior Supervisor. Al Otto went up to Junior Supervisor for a short time, but will be back to M. C. R. Engineer when Paul Clark returns June 10th. More about Lt. Col Paul Clark's return to civilian status in the next issue.

Joe Alusic is passing out cigars the day I write this. Name: Robert George Alusic. Birthdate: Saturday, June 2, 1945. Weight: Seven pounds, six and three-quarters ounces.

I understand the WLS studio group has joined IBEW. No chance to expand on that in this issue, but will let you

know more about that next month. We have a Council meeting and a General Meeting coming up shortly which should provide some interesting reading.

CHICAGO EDITORIAL:

I must retract a statement made in last month's column, for I did get one reply in answer to my plea for gripes. The page and a half letter made rather interesting reading but developed nothing new. The writers main gripe being that the engineer is paid less than announcers, musicians and production men and is unable to accept fees legally.

I trust that all you NABET men coast-to-coast are getting the Broadcast Councillor, an 8 page IBEW publication. Makes very interesting reading. Funny that they should suddenly claim they are "of, by, and for Radio Broadcast Technicians," when the Broadcast Engineer's Journal has used that line for years. Also amused by IBEW calling themselves the "Rank and File" organization. Why not drop the " . . . and file" part? IBEW members might be interested to know that they lost their cause forever here in the Mart when they attempted to use musicians to talk us into joining them. What a laugh!

Just to take this column out of the ordinary, will branch into another line. You guys might be interested to see in print that I think the production and programming staffs here in Chicago are blundering and incompetent. That will give me a black mark, no doubt, but I still don't understand why Chicago cannot put out programs to compare with New York and Hollywood, and hardly thing I'll be alone in laying the blame on ineffective programming and lax production.

By the way, I sincerely hope that

when our contract comes up for negotiation, our committee does NO TRADING! A study of the present contract will show that when trading, the Companies get the upper hand in the end. Our motto on this new contract should be . . . "Shove it in and turn it around!"

Another thing . . . whether a six year spread on a yearly increase basis is suitable for studio engineers? You'll think I'm nuts, maybe, but I think studio engineers, or "technical production" as one guy puts it, can raise ulcers with the best production men. Which leads me to wonder if a more competitive, commercial-fee type salary basis wouldn't be more suitable for studio engineers. What do you think?

Book Review

"Introduction to Practical Radio," by D. J. Tucker, EE, and Chief Engineers of stations WRR, KVP, and KVPA. Published by The Macmillan Company, approx. 6 in. x 9 in., 322 pages, \$3.00.

From the author's preface, "The author has long felt the need for a single text dealing with the basic fundamentals of radio that could be used as a stepping stone to more advanced books on the subject. This text was written with that thought in mind . . ."

The text discusses the molecule, atom, and electron, and goes on thru a rapid review of high school mathematics, problems and methods of solution of Ohm's Law and Kirchoff's Law. Other chapter headings include magnetism, elementary AC theory, electrical instruments, inductance, capacitance, and impedance. The text is well illustrated, and contains a wire table, Log tables (5 place), Trig function tables, in ½° steps, and a table of powers—roots—reciprocals.—Ed. S.



Photo by R. R. Jensen

Rochester Chapter News . . . By Art Kelly

THE Rochester Chapter feels a bit grown up now. We have held our first spring election in accordance with national rules and thereby judge ourselves now out of the adolescence stage, at least as far as N.A.B.E.T. activities are concerned!

There was much serious thinking among the boys in trying to figure out whether the "first week in May" meant the first full week or the first seven days but we finally got that figured out and everything went off in fine order.

Charlie Snyder was reelected Chairman. He has done a good job of handling the Rochester situation and the boys (and girls) thought that he should keep right on. Our sincere congratulations to Charlie and best wishes for the new year.

Howie Mouatt of WHEC was reappointed Secretary-Treasurer. Howie has also done a mighty fine job for NABET and the Rochester Chapter and again our sincere congratulations and best wishes.

Who was elected scribe for the Chapter? Well, it so happened that I had to work for WHAM the night of the elections so the first thing I knew I was informed that for the next twelve months, barring slander, bribery or other misdeeds, I would again be editing. It looked much like a little bit of a frameup on the part of my brothers but when one considers that they hold the majority vote to kick me out of the union what can I say—. But kidding aside, I really enjoy writing the Rochester column and am proud that the gang wants me to continue for another year. Thanks, boys.

Councilmen for WHAM, WSAY and WHEC were elected as follows: **Fred Ambrose** was re-elected councilman for the WHAM Control Room. **Alex Gressens** was named councilman for the WHAM Transmitter. **Fran Sherwood** and **Craig Williams** of WHEC continue as Transmitter and Control Room Councilmen, respectively. At WSAY the situation is fluid and at this writing no announcement of councilmen election has been made. WSAY has recently opened a new 1 KW transmitter which is located away from the site of the studios and control room and this means that two councilmen will have to be named at WSAY. Councilmen are a mighty im-

portant cog in the machinery of a Chapter and I, for one, want to go on record as saying "Nice work, boys" not only to the Rochester lads but also to the other councilmen of NABET.

Fran Sherwood of the WHEC Transmitter hasn't had enough trouble with red points and the meat situation so now he owns a Great Dane. Fran has named the little fellow Hannibal. The payoff came, however, when the town in which Fran lives declared a ban on dogs running without a leash, due to a rabies scare. Fran's happy home almost went on the rocks when the mighty Hannibal was confined indoors for a period of nearly two weeks.

Just to prove that there is good money in NABET stations both **Craig Williams** of WHEC Control Room and **Charlie Snyder** of the WHAM Control Room have both bought houses within the past month. All the Rochester gang is patiently awaiting the dual housewarming.

Nelson Smith of the WHAM Control Room has long been a model railroader in Double O division. His latest addition is a radio controlled train that operates by impulses supplied on 300 KC.

Kid Kelly of the WHAM Control and the "Journal" is currently spending his spare time in mastering the art of flying. It won't be long before he'll be soloing at Rochester's Page Airways.

Walt Lynch of the WHEC Control has been trying to figure out a talkback system that uses the same reproducer for speaker and mike but without switching. His idea involved a couple of trick bridge circuits that eventually got so involved that Walt began talking to himself instead of using the talkback. It was a swell idea tho, Walt.

Vacations are under way again and all the Rochester gang is busy looking over road maps, ads on the Adirondacks, and other plans for a lazy rest from the radio business. Ah, happy days.

Ken Gardner, Chief Engineer at WHAM, is receiving congratulations on the safe arrival, high fidelity and perfect calibration of his new son born June 4 at 11:45.30 p.m. This makes 5 in the junior division of Ken's family. Congratulations Ken, to you and Mary, from the Rochester Chapter.

Most of the boys on the WHAM and WHEC staffs are members of that great fraternity of operators, "The Hams". Perhaps two of the oldest "Hams," and best known too, are WHAM's **Ken Gardner**, who pounded brass under the call W8BGN, and WHAM's Control Supervisor, **Ray Lucia**, who handled traffic, worked DX by loop modulation and rag-chewed under the call of W8BEN. Ken and Ray would like to hear from any of the old "Hams" who might have worked them back in "the good old days".—Kelly.



Parallel-Resistance and Series-Capacitance Calculator

Allied Radio Corp., Chicago, has just released a new Parallel-Resistance and Series-Capacitance Calculator. This new calculator is essentially a slide-rule device, designed to provide a rapid and accurate means of determining the reciprocal of the sum of two reciprocals as expressed by the formula

$$\frac{1}{x} = \frac{1}{a} + \frac{1}{b}$$

A single setting of the slide automatically aligns all pairs of a and b values which will satisfy the equation for any given value of x. This calculator indicates in one setting the numerous pairs of resistances which may be connected in parallel, or capacitances in series, to provide any required resistance or capacitance value. Range: 1 ohm to 10 megohms; 10 mmfd. to 10 mfd. However, the capacitance and resistance figures on the face of the rule can just as well serve to represent inductance, impedance, reactance, or other units which can be handled in a similar manner. Thus, the calculator becomes equally valuable in solving problems involving inductance in parallel, coupled inductance, numerical magnitude of impedance, parallel reactance, etc. An invaluable time-saving aid to students, technicians, engineers, and others in the radio and electronics field. Priced at 25 cents. Available from Allied Radio Corp., 833 West Jackson Blvd., Chicago 7, Illinois.



better recordings

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Radio experts cannot be sure whether they are listening to a "live" show or an audiodisc transcription. For high fidelity, minimum surface noise, low distortion and maximum frequency range, there is nothing finer than an Audiodisc.

**AUDIO DEVICES, INC., 444
Madison Ave., New York**



... they speak for themselves **audiodiscs**

New Transmitting Tube

The Amperex Electronic Corp., 79 Washington St., Brooklyn, N. Y., have just announced a new transmitting tube type 233, rated at 33.3 KW plate power output up to 20 mc.

The following technical data is supplied thru the courtesy of the Amperex Corp.:

233 Amperex Transmitting Tube

The Amperex 233 is especially suited for use as a Class C Oscillator or Amplifier for generating radio frequency power at frequencies up to 30 Mc. The use of two grid arms makes neutralization more convenient in the amplifier connection. They also permit cooler operation of the grid when the tube is used at the higher frequencies either in a self-excited oscillator or power amplifier.

General Characteristics

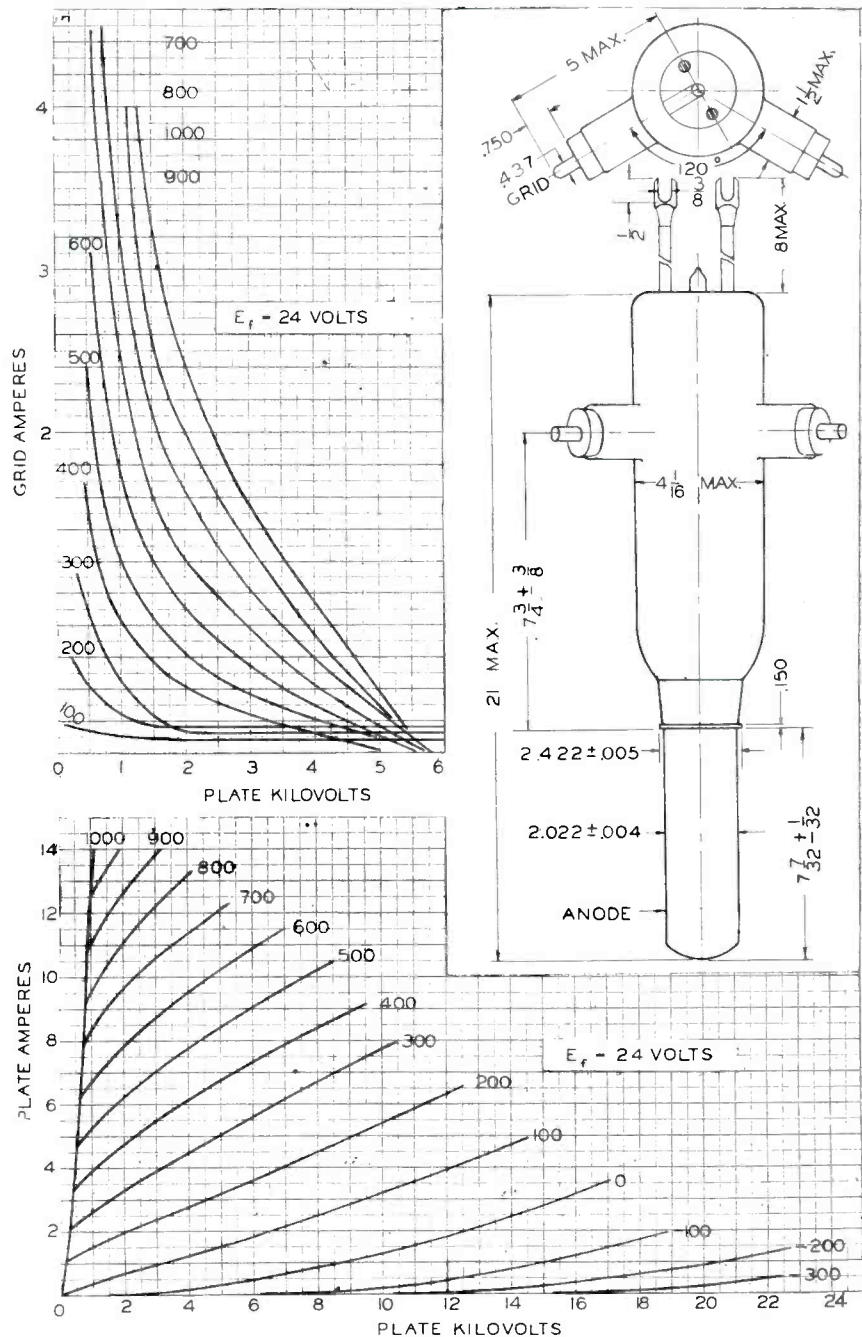
Filament Voltage:—	24 Volts
Current:—	70 Amperes
Thermionic Emission:—	16. Amperes
Amplification Factor:—	52.
Direct Interelectrode Capacitance:	
Grid to Plate:—	24 uuf
Grid to Filament:—	22 uuf
Plate to Filament:—	1.5 uuf

Maximum Ratings and Typical Operating Conditions

R.F. Power Amplifier — Class C Telegraphy and Industrial

	Maximum Rating per tube	Typical Operation One Tube
Filament Voltage	24	—
D. C. Plate Voltage	15,000	12,500
D. C. Grid Voltage	—3,000	—600
Plate Load Resistance	—	1,800 ohms
Peak R. F. Grid Voltage	—	1560 V.
D. C. Plate Current	4.0	3.5 A.
Plate Input	50	44 KW.
Plate Dissipation	25	10.7 KW.
D. C. Grid Current (Approx.)	500	400 mA.
Driving Power (Approx.)	—	625 W.
Plate Power Output	—	33.3 KW.
Frequency Limit for Above Operation	7.5	20 Mc.

AMPEREX 233



The RCA-Victor Division announces the RCA 195-A Voltomyst; features high input resistance, and ability to measure receiver grid circuits and discriminators with receiver in normal operation. Bulletin describing the RCA 195-A Voltomyst can be obtained from the Test and Measuring Equipment Section, RCA-Victor Division, Camden, N. J.

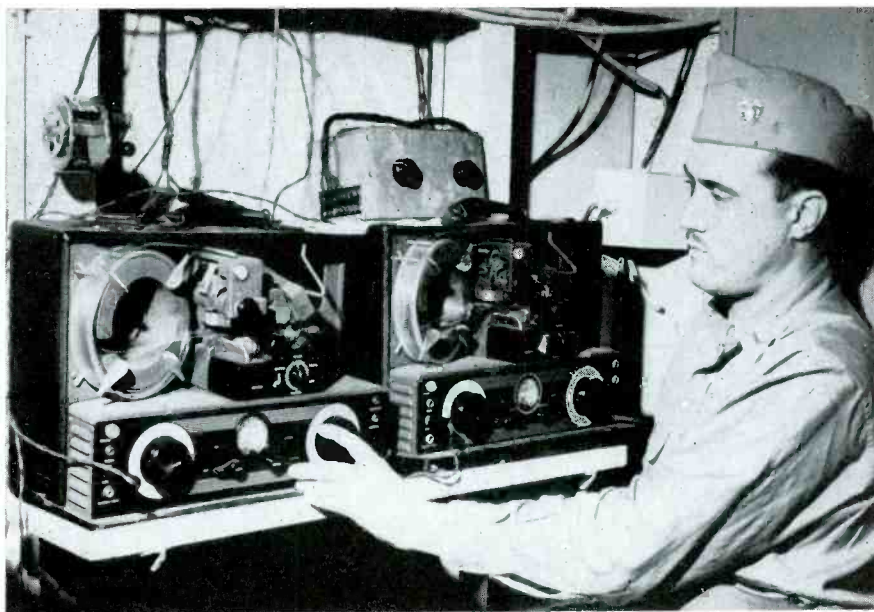
General Electric announces an 8-page booklet (ETR-7) on their disc-seal "lighthouse tube" available free on request from the Publicity Section, G. E. Co. Electronics Dep't, Schenectady, N. Y. The booklet describes principles of design and operation, and is intended for all uhf applications.

Network Battle-Scene Recording

SOME time ago, the military was faced with the problem of standardization of sound recording equipment, which would have to be operable under severe conditions of vibration, such as heavy gun fire, and at the same time have maximum resistance to conditions of extreme climatic changes.

After testing various forms of recorders (wire tape, disc, photographic sound-on-film) the embossed film method was found to be ideally suited to meet the rigorous conditions of battle recording. The photo shows Lt. Marvin F. Royston operating two of the units, which take a fifty foot loop of plastic (not photographic) film. One hundred and fifteen sound tracks are embossed side by side in a continuous track on one side of the film which provides ninety minutes of continuous recording and many hours of intermittent recording at the sixty foot speed. The upper frequency limit of this recorder is stated to be about 5,000 cycles.

The embossing of the plastic is produced by great pressure of the re-



Official U. S. Navy Photo

recording stylus on the plastic, which embosses a sound track with the sound modulation transmitted to the stylus; embossing does not produce a groove thread. The equipment is built by Frederick Hart & Co., Recordgraph Division, of New York, and is designed especially for communications and authorized telephone recording, conferences, radio interception, code, etc. Remote pick-ups, monitoring, reference recordings, air checks and frequency checks are among the numerous ways these long time recorders serve

the radio field. A single portable unit weighs about fifty pounds.

The embossed plastic requires no processing, and may be played back immediately. The Recordgraph has a built-in automatic volume control; built-in loud speaker; a track locator, which permits the finding of any track out of the entire recording in a few seconds; manual or remote start-stop from voice or other signal. The machine is supplied to operate at either 40 or 60 feet of film per second, depending upon the degree of fidelity desired.

Hermetically Sealed Meters

In applying the principles of vacuum tube sealing, i. e., glass to metal, in addition to other design refinements, engineers at the Marion Electrical Instrument Company of Manchester, New Hampshire, have achieved true hermetic sealing in their newly perfected hermetically sealed 2½" and 3½" electrical indicating instruments.

By building the mechanism into a protective cup-like frame, and then sealing the glass cover to the metal rim, positive hermetic sealing has been effected with a minimum number of seals. There are no rubber gaskets or cement seals. Tests have proven the effectiveness of the new type of sealing under severe tropical and/or freezing conditions. The Marion instruments can be immersed in boiling brine solution for weeks, or frozen to minus 40° F., with out deterioration of the seals.

The window sealing process was developed and perfected in cooperation

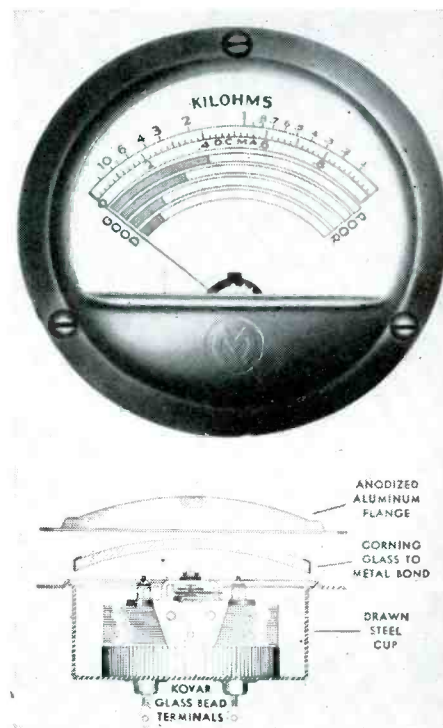
with the engineers of the Corning Glass Company.

Windows are of double thickness tempered glass, processed for solder sealing, and are highly resistant to shock. Completely dehydrated, the instruments are filled with dry air at sea level pressure. A newly designed crowned crystal permits greater scale length, reduces shadows and makes for better visibility. Magnetic shielding makes possible interchangeability on any type of panel without affecting calibration. For extra R.F. shielding, the instrument can be supplied silver plated.

Silver clad beryllium copper hair springs reduce zero shift at all temperatures. The standard Kovar glass bead type terminals with solder lugs and the special phosphate finish on the case, which meets a two-hundred hour salt spray test, are among the features incorporated in the new Marion instruments.

Built to A.W.S. standards the meters are available in all DC ranges. Type HM 2 is directly interchangeable with A.W.S. type MR 24 and 25. Type

HM 3 is directly interchangeable with A.W.S. type MR 34 and 35.



Good News!

Again Available
to Broadcasting Stations
and
Sound Recording Studios

(On AA-5 Priority or Better)



REK-O-KUT RKD-16 DUAL SPEED 16-INCH RECORDING MOTOR ASSEMBLY WITH NEW IMPROVEMENTS

Here is the news you've long been waiting for. The famous RKD-16, the preferred recording motor assembly among major broadcasting stations and recording studios, is again being made available to essential users. Unsurpassed in performance, this precision instrument is ruggedly constructed and painstakingly assembled for efficient and prolonged service. A heavier turntable, closer machining tolerances and better lubrication materially increase the life and performance of this unit.

1. Lathe turned, 25 lb. cast iron turntable, balanced, with disappearing drive pin and rubber turntable pad.
2. Turntable fitted with one inch diameter polished steel shaft, with special oil grooves for force feed lubrication when operating. Rotates on a single ball bearing at the bottom of the turntable well.
3. 1/20 H.P. General Electric constant speed motor.
4. A simple and smooth shifting arrangement guarantees a positive repeat speed change at all times.
5. Adjustable stops to regulate idler pressure against turntable.
6. 10 lb. machined and ground mounting base of Cast Iron with integral lathe bored and lapped turntable bearing.
7. This single unit type construction insures positive and easy alignment of the REK-O-KUT overhead mechanism with the turntable.
8. Improved lubrication system eliminates oiling of idlers more than once in three months.

Since our monthly output is subject to WPB regulations, we suggest that you send your order without delay.

Coming!

We'll soon be ready to announce more REK-O-KUT products for broadcasting stations and sound recording studios. Be on the lookout for them.

REK-O-KUT COMPANY

146 GRAND STREET

NEW YORK 13, N. Y.

Export Division. 458 Broadway, New York City, U. S. A. • Cables: MORHANEX

HUDSON NEWS

THE after VE-day operations have been quite normal, except that the War Bond Drive is taking place of the European War News, and it looks at this time as if the Hudson Chapter would be 100 per cent sold! The more we buy, the nearer that next "D" Day and "VJ" day will be.

Chas. Thropp, MC, was elected new chapter chairman in the recent Chapter elections succeeding Geo. Riley, who has done a lot for the chapter . . . Good Luck, Charlie . . . The Carteret Transmitter swimming meet was a big success, ask Shaw and Stanford . . . Otherwise known as the cooling pond annual cleaning! George (Pour one for Me) Ruckstuhl is finally getting tired of these amateur motor mechanics and is taking over himself. hi, hi. Johnnie Cooke, SE, sends in this one . . . A woman called in the middle of John Gambling's Gym class to say that her husband had just returned from the Aleutians after 3 years with the army. He was pleased that after 3 years, the Gambling show hadn't changed at all . . . "Same program, same jokes, same music, same John!"

The WOR Bowling team came out tied with CBS which is not so bad according to "Pappy" Davis of Maint., who was captain of the WOR Team . . . He thanks the members of the team for their "Strikes?"

Ed Franke, TE, back from the Wars having covered for Mutual by way of wire recording all there was from Normandy beaches to Air strikes on Japan . . .

Sam Morse and Jack Kean demonstrating their new portable sound effects turntable . . . Hi . . . Definition of Portable . . . If it has handles it is portable . . .

WOR welcomed the 1st Army from NY Bay by a special features SW pickup . . . It was the first SW pickup since war restrictions cut down some of these broadcasts . . . Too bad we didn't get a picture of Geo. Riley rigging the Antenna . . . on the Army Tug . . . Him and Tarzan!

Recording . . . After V-E day, which kept the recording dept. gang on the tip end of their toes, all is running smoothly . . . As you should know,

Broadcast Engineers' Journal for July, 1945 **22**

CHAPTER

By
Richard H. Davis

Bob Doherty passed out seegars on account he is pappy to a nice baby girl . . . Tom Kellher, Rec. Sales Manager, duplicated Bob but for a son . . . Frank Ennis and Paul Baldwin helped the bowling team get that second place tie with CBS . . . Pres. Yeoman's camera is still waiting for film so he can take some pictures . . . That is what he sez.

Pappy Hawkins missed the draft again! Just when we thought he would look good in suntans . . . Danny Conover taking over Ralph Schlegel's duties so that Ralph can design new studios and copy room . . . Just can't hold the department from expanding. Miss "Kit" Koontz, engineering sec'y, has joined the program department. Kit takes the sincere best wishes from the recording gang . . . Come down and see us some time . . .

The little things that make life worth while . . . The "Dick and Jeannie" cast taking time to sing "Happy Birthday to Ray McEntee . . . How old did you say? . . . George Cory on vacation . . . Geo. so tired from lugging portable equipment that he couldn't pack to go away . . . sez that a grip reminds him of a portable turntable . . . Bart Simpson also away on vacation . . . Schlegel is making a new coil winder . . . can make coils from this size to great big ones . . . Irene Rabanow takes over Eng. Sec'y job . . . comes from MGM . . .

WOR Feature Records have just released for sale a new, double-face ten-inch record containing excerpts from seven of the late Pres. Roosevelt's memorable and inspirational speeches. The records are on sale at Macy's, Liberty Music Shop, Haynes-Griffin and the Center Music Shop. The speeches from which excerpts are made include the first inaugural address of 1932; the Quarantine speech, 1937; the "stab in the back" address, 1940; Four Freedoms, 1941; Declaration of War, 1941; D Day Prayer, 1944; and the report on Yalta, 1945.

In order to accommodate the increased sustaining and commercial program schedule of Mutual, WOR will construct three new large studios on the

(Continued on Page Twenty-six)

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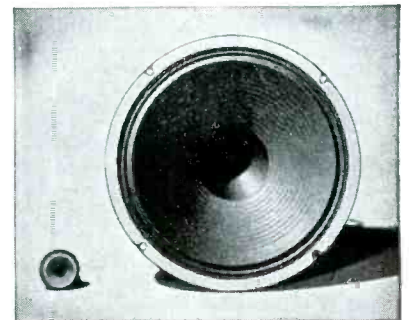
Post-War Performance!

Permoflux Midget Transformers Conserve Vital Space and Weight!

● Because of their exceptional operating efficiency and uniform frequency response characteristics, Permoflux midget transformers have literally hundreds of practical applications where size and weight are determining design factors. Developed by Permoflux engineers, with new materials and manufacturing methods, they are available unshielded, shielded or hermetically sealed for your specific requirements. Why not let us design a unit for you?

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Their wide frequency response, extreme sensitivity and rugged mechanical design have established new concepts of tone realism. Permoflux speakers in sizes from 2" to 15", with power handling capacities from 1 to 20 watts, are available for your post-war developments.



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PIONEER MANUFACTURERS OF PERMANENT MAGNET DYNAMIC TRANSDUCERS

from HOLLYWOOD . . . By Norman Dewes

SUMMER . . . brides . . . babies . . . visitors . . . operations . . . promotions . . . casualties . . . Kee Klub moving . . . KECA . . . OT . . . ACT . . . ETC.

WELL . . . here we are SUMMER again . . . perhaps we mentioned this LAST month . . . but allow us to REITERATE, 'cause its REALLY summer out West here now . . . the Sun is shining down 'most every day with lots of ultra-violet ergs, producing skins of ANOTHER hue . . . sorta infor-RED . . . yer epidermis gits reddernell and yer IN for it tomorrow . . . and we speak from ACTUALITY, having spent last week-end at Balboa working on our boat . . . due to other commitments, had been unable to get down there for several weeks and MEANWHILE the seagulls had taken over our craft for an intermediate base or overnight stop or SOMETHING, 'cause there was EVIDENCE of 'em roosting in our rigging and having BOMBING PRACTICE all over our decks . . . well, we scrubbed and soused and sluiced and squee-geed . . . and the Sun got hotter 'n hotter and we peeled off more 'n more clothing and pretty soon were down to BARE ESSENTIALS and next day found that we had been OVER EXPOSED and spent next week cussing and peeling off SKIN. We wishtaheck those (censored) seagulls would go somewhereselse to do their sitting. Boat gets a paint job next and then will be ready for the summer sailing season. THIS year, we really mean to find out what the wild WAVES are saying . . . they spend their time lapping on the shore and when we get CLOSE to 'em they SLAP us in the face . . . which reminds us of the story of the Marine who . . . but guess we better not tell THAT one . . . ANYWAY, Sail Ho! Booms away! Change the Main Sheet! 'cause out to sea we go, BOTTOMS UP!

VISITORS . . . several distinguished ones to the Halls of Makee-zuma this month . . . we was walking down the hall on the third floor with the sun in our eyes and ALMOST didn't recognize Captain Marvin Adams, USMC . . . looked so lean and tanned and MILITARY that we DARNED NEAR just saluted and passed on by . . . Miv was in from Okinawa with a chest full* of ribbons, stars and things and had the most beautiful TAN we ever saw . . . and on Miv it sure looked good . . . he had just been ordered back by Washington for new duties somewhere he couldn't mention and had MANY STORIES to tell about things on the islands . . . seems that he, through ACTUAL CONTACT has become rather an expert on JEEPS, having been through them inside and OUT . . . and VICE-VERSA . . . claims if you break 'em in right, they make a darn good automobile . . . but you gotta get them before they get YOU . . . he got one that had only seven miles on it and raised it from a Jup and the thing would do everything but GIVE MILK and Miv was working on THAT. Sez he saw Lt. Bob Brooks, USNR on Guam with a Navy Broadcasting Unit with Don Thompson, ex-Special Events from NBC San Fran and Bob wanted to show Miv his nice new studios and Miv sez "What are THOSE?" . . . another Navy man, Lt. Bob Shuetz, former NBC Hlyd Radio Recording down from Alameda for a short stop . . . still with the Bureau of Ships up there (from chips to Ships?) and sez that San Fran is still very crowded and

you can't find room to light a cigarette and you can't find cigarettes ANYWAY . . . things must REALLY be bad up in that wild city . . . glad we live in a CIVILIZED spot like Hollywood. We can't, sometimes, find ciggies down here EITHER, but at least we have room to LIGHT 'em, if we HAD 'em. The ABC gang were VERY glad to welcome Jack Colvin, RCA Plant Engineer out from Indianapolis to LOOK OVER the new KECA studio installation on Sunset 'n Highland . . . to make a long story VERY short, it seems a FEW things had been OVERLOOKED in the original design . . . or rather UNANTICIPATED, shall we say . . . ESPECIALLY in the design of some equipment of a RIVAL company, which through necessity had been included in the RCA-Not-Quite-All-the-Way installation . . . and Jack's gentle suggestions and kind co-operation with the SOLDERING IRON were GREATLY appreciated. Inasmuch Mr. Colvin has since been placed in charge of Audio Operations for the entire ABC net, we will have more to say for him in the ABC department. Al Nicolay, the Head Cheese (for Cheese read Chief) up at KTMS in Santa Barbera also down for a quick stay . . . Al is formerly NBC Hlyd Recording and sez he is remodeling joint up there, with many fine improvements in technical end . . . also sez the WIFE isn't HAPPY up there, so maybe they may be down THIS way again some time. (Remember our motto . . . "They Always Come Back to Southern Calif" . . . and NO remarks . . .)

NATIONAL . . . news this month is replete with a Variety of items . . . (we ALSO steal stuff from the Hollywood Reporter, Collier's, Popular Mechanics and the Country Gentleman and we don't care WHO nose it . . .) ANOTHER of our engineers is missing, altho this time by his OWN HAND and it is Johnny Morris who upped and moved to the Production Dep't . . . Johnny was one of our BEST engineers too . . . having been with the Company from Top to Bottom, and in charge of Maintenance while Frank Figgins was away to the wars and then back to Studio and NOW to Production . . . we will miss Johnny and hope that he will be VERY HAPPY in his new venture, but just let him try to give US any guff about setting up the orchestra, etcetc. . . . he better not TRY it, thass all WE got to say. Some NEW LITES have been thrown on things in the mike closets . . . little rooms under the stairs to the Clients' Booths in each big studio where the mikes are kept . . . cute little wall lights on pull cords so you can now see whathafoo you are looking for in the way of microphones . . . they didn't used to be any light in the places except a hanging flash which somebody had always swipped and you would get in there and someone would come along and nudge the door shut and there you were, in the DARK . . . it's NO FUN, either, 'cause some of the doors don't open from the INSIDE and ONE engineer was in there for SEVERAL HOURS before he could attract someone to let him out . . . now we keep a stock of cookies and some magazines in each one, just in CASE. Well, it finally HAPPENED . . . we KNEW no good would come of those guys riding GIRLS

around on the backs of their MOTORCYCLES . . . **Hal Lea's** (RE) BACKFIRED and now they're going to be MARRIED . . . the fortunate female is **Les Culley's** secretary **Evelyn Raff** or "Evie" as we call her by and nuptials have been set for July 21st at St. Paul's Cathedral . . . after the news had been released, **Evie** flitted around the halls about THREE FEET off the ground for DAYS and you couldn't bring her down to EARTH nohow . . . both of the kids are from Noo Yawk 'n their Flatbush accents match and **Evie** LIKES to ride on motorcycles so everything is rosy . . . we tried to get a statement from **Hal** but couldn't FIND him, but noticed that he had some new saddle bags on the motor, fixed so that his beloved can put her FEET inside 'em to keep warm. All WE got to say is, courtin' on a MOTORCYCLE must be a bit of a PROBLEM and is probably a NEAT TRICK and we would like to SEE it . . . NABET elections for Councilmen are over and the following fellows were CHOSEN to represent their constituents for the coming year: **Jim Thornbury**, more popularly known as "Thornbush" because of his taciturnity represents Recording, **Floyd** (the Deacon) **Wetland** is the gentleman from McDesk, **Eddie** (the Fishman) **Miller** stumps for Studio/Field and **Oscar** ("Normals") **Wick** maintains from Maintenance. The ABC fellows ALSO selected their favorite, a very popular fellow and a FINE engineer, whose name we will reveal LATER. Our **Mr. Rob't Jensen** REFUSED to run again for Chairman, was over-ruled and re-elected and refused AGAIN, claiming outside activities and that someone else should have a crack at it, etc. . . . so as we go to press, they ain't NOBODY runnin' tha thing out here, altho ANOTHER election has been held but ballots not counted yet . . . personally, WE feel that **Mr. Jensen** made a VERY fine CC and should be DRAFTED . . . for the JOB, **Bob** . . . NOT the Armeeeee. **Jack Daniels**, chairman of the NBCAA (Athletic Assoc) Swimming Committee has proclaimed Saturday the 16th for a Beach Party at State Beach near Santa Monica . . . his dodger sez it will be "an informal get-together," with fun in the sun, etcetc. but every beach pahty WE ever attended, the fun was with FORMS getting together in the SHADE, which will undoubtedly be the case in THIS case . . . will report FURTHER later . . . We regretted very much to read that **Lt. Johnny Fraser** had been killed in action off Okinawa recently . . . **Johnny** was a very popular member of NBC's Hollywood announcing staff before enlisting in the Navy as an Ensign shortly after the start of the war and had advanced in rank and been assigned to active duty with the Air invasion forces in the Pacific. He had been with NBC for a long time, doing many of the commercial shows, and was a darned good gin rummy player to boot . . . his boisterous voice is missed around the halls and studios . . .

AMERICAN . . . biggest news THIS month from the Third Floor is the opening for business of the new studio facilities of KECA, the ABC O & O outlet in Los Angeles . . . they FINALLY did it, after MANY obstacles . . . the place looks DARN NICE, and what's MORE important, it all WORKS . . . right off the bat and 100%, thanx to the COMBINED efforts of **Eilers, La Croix, Heffernan, Doty, Ragsdale, Erickson, Rex Bettis, Dewes** and OTHERS . . . INCLUDING Messrs. **Jack Colvin** and **Jack Frost** of RCA . . . we can SAFELY say that it took a pair of JACKS to open THIS pot, for without their earnest efforts we don't know WHAT we would have done . . . when the job was left in the lap of **Mr. Denechaud** and his Studio Starletts,

the situation was Tarfu . . . in fact it was FUBAR, and many plaudits are due the above named men who under the coordination of **Denny** got things straightened out until it was only Snafu, which as all radio people know, is NORMAL conditions in this biz. We attended the "first morning" the first morning, and were there to witness the breathing of the first WORD into the new mikes 'n amps, and sure enuf it came out the OTHER END, as confirmed by the station manager who was listening outside on his car radio, NATCHERLY . . . The Great Day was May 27th, a NEVER to be forgotten day in our lives, and in comes Manager **Clyde** (the "Great") **Scott** with a HAPPY SMILE on his phiz and carrying a great big red CARPENTER'S level which he places on top of the Master Control Desk, for checking purposes . . . Shifting of operations from Vermont Avenoo to Sunset 'n Highland has brought many NEW FACES and additional names on the ABC Engineers' Schedule . . . the list now lists eighteen ABC engineers and includes new **Taggart, Crosby** (no relation . . .) **Cook** and **Schroeter**, all of whom came over from the old KFI/KECA gang on Vermont. They all seem to be very congenial fellows and we will try 'n dig up some biog notes on 'em for next issue, as we UNDERSTAND that they ALL have lurid pasts. They become regular ABC employees and may be used interchangeably at the KECA studios or Sunset 'n Vine. The above mentioned event also brought about a couple of PROMOTIONS for two of our MORE TALENTED ones, to wit **La Croix** and **Eilers** . . . **Thor La Croix**, NABET ABC councilman and former NABET National Secretary-Treasurer has been placed in charge of Engineering Operations at the Highland Studios and **Johnny** (Little Beaver) **Eilers** assumes responsibility for all Engineering Equipment in that building . . . which is FINE and congrats, kids. The boys are WITHOUT PORTFOLIO at present writing, but this will undoubtedly CHANGE. We might mention that during the THROES of the construction, **Eilers** kept us all going with a CONSTANT flow of WITTY SAYINGS, turning many a SAD situation into a PUNNY one . . . even rather reserved and civilized **Jack Colvin** became inoculated with the gag routine and toward the end, essayed to venture a mild quip or two HIMSELF, which WEREN'T BAD, either . . . we would like to REPEAT that we certainly enjoyed **Jack's** visit, we WELCOME him as a member of the ABC gang and we hope that he will COME AGAIN. Of course, the best part OF ALL was the OT . . . and WAS there OT . . . **Johnny Eilers** established an all-time high with a 94 and $\frac{3}{4}$ hour week, clipping the Company for fifty-four some hours of GRAVY, with **La Croix** and **Dewes** placing second and third with some forty-three hours of THAT STUFF each . . . but it was all EARNED by the perspiration of our foos, WASN'T it fellows . . . NATCHERLY, many FUNNY THINGS happened that First Day, as they do on ALL F. D.'s . . . such as **Thor** getting in a HURRY going into Recording and walking thru the lower half of the dutch door while NEGLECTING to open the UPPER half . . . sich LANGWITCH . . . and **Eilers** running around with THREE hot soldering irons, trying to cover ALL FRONTS in case something busted loose . . . and the BOTH of 'em piping thru one of the ABC's big commercials TC, but not hearing a THING on the McDesk monitor speaker 'cause the monitor selector switch was set on something ELSE . . . BOTH almost had a youknowwhat right then and

(Continued on Page Twenty-eight)

A

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HUDSON NEWS

(Continued from Page Twenty-three)

ground floor of 1440 Broadway, it was announced today by Theodore C. Streibert, president of the station. WOR has received a priority from the War Production Board, which will be the first of its kind in New York City since Pearl Harbor. Work will begin immediately. The studios, costing in the neighborhood of \$150,000, will be approximately 25 by 40 feet, and will be completely air-conditioned. The technical equipment will be of post-war design incorporating all the improvements developed since the manufacture of equipment was discontinued by the war. Thus the studios will be actually a preview of post-war designs and improvements. The studio floors and walls will be "floated" and the ceiling suspended to avoid the transmission of sound through the structural part of the building. The most modern acoustic technique, similar to the successful treatment of the WOR-Mutual Playhouse No. 1, will be employed. The new studios are being constructed under the direction of J. R. Poppele, WOR's chief engineer, and will be used primarily by Mutual for programs originating in New York City.

Charles H. Singer has returned to WOR as assistant chief engineer to J. R. Poppele, it was announced today.

Since April, 1942, Singer, at the request of the Chief Signal Officer, was loaned by WOR to serve as assistant chief of the Operational Research staff in charge of maintenance to institute a system of Preventive Maintenance for use in the training manuals of the U. S. Army and also to act as consulting radio engineer to the Chief Signal Officer on problems concerning the proper operation and maintenance of electronic equipment.

WOR has been requested to allow Singer to continue as consultant radio engineer for the Chief Signal Officer for short periods from time to time as needed.

Singer joined WOR as radio transmitter technician at the original WOR transmitter in Kearny, N. J. In 1931 he became supervisor in charge of WOR's 5,000 watt transmitter. From 1934 to 1942 he served as supervisor in charge of WOR's 50,000 watt transmitter and WBAM, WOR's 10,000 watt FM transmitter.

Before he joined WOR Singer served as chief wireless operator on many large ocean-going vessels. In 1925 he was

awarded a Veteran Wireless Operators scroll for bravery at sea in saving all passengers aboard the SS Comanche.



New G-E Multirange Measuring Instrument Announced

A new multirange instrument, Type UM-4 Unimeter, has been announced by the Specialty Division of the General Electric Company's Electronics Department.

According to E. E. Williams, sales manager, the unit is useful not only in industrial and radio maintenance where rapid and accurate voltage current and resistance measurements are required, but also in cathode-ray tube and television high voltage uses.

The new device is equipped with special jumbo test prods which provide safety protection for the operator on high voltage work.

The unit has a wide coverage of ranges. On d-c it operates from 0 to 10,000 volts at 20,000 ohms per volt, which is an important feature when testing circuits of high internal resistance or high voltages along the bleeder circuit of cathode-ray tube networks. On a-c it ranges from 0 to 10,000 volts at approximately 5,000 ohms per volt.

Direct-current ranges extend from 100 microamperes to 10 amperes in six steps and resistance measurements are provided from 3,000 ohms to ten megohms in five steps.

A specification sheet on the UM-4 is available on request to the G-E Specialty Division, Schenectady, N. Y.

"The Gross Is Up, But . . ."

A total broadcast service income of \$68,888,110 for 1944—or more than a 47 per cent increase over their 1943 total and more than a 125 per cent increase over their 1942 total—was received by 836 standard broadcast stations reporting to the Federal Communications Commission, it was announced.

Unusual and Vital ELECTRONIC EQUIPMENT

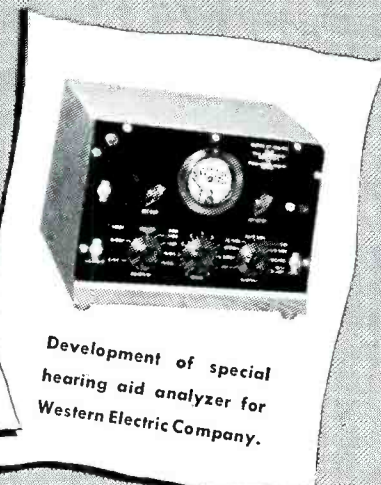
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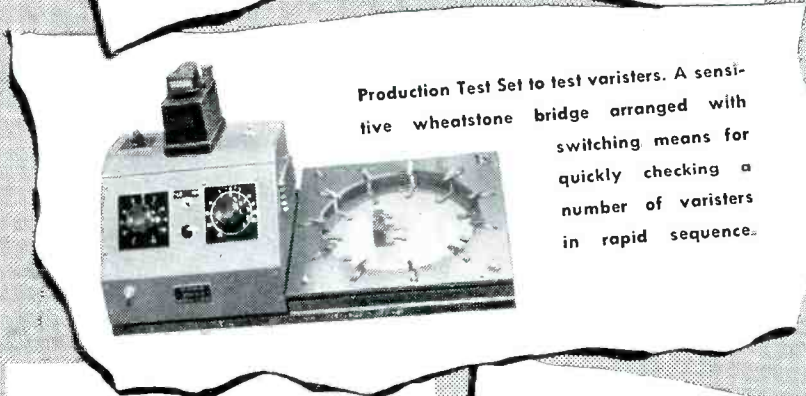
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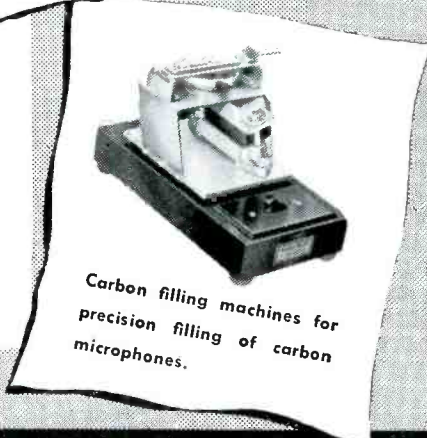


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15 LINCOLN STREET, JERSEY CITY 7, N. J.

HOLLYWOOD NEWS (Continued from Page Twenty-five)

THERE. Speaking of SUCH THINGS, we hear that Mrs. La Croix is ANTICIPATING, and it won't be LONG NOW . . . we can USE a good seegar, and we hope it's what they hope it is and it will make TWO for the La Croix'. Time now for a few quickies . . . heard that Carl Lorenz, our nimble nimrod and master of the FLY, went casting with Al Korb, NBC MCD at Lake Hanson near Roscoe and they are fishing along the head of the lake and Carl gets stuck in some quicksand and can't get OUT . . . Al comes to the rescue and HE gets bogged down TOO and they spend an hour or so pulling each other out . . . snamf, snamf . . . Ragsdale back FINALLY from a Coke show at Santa Fe, New Mexico . . . went over there for a one nite stand and STOOD AROUND for a week or more trying to get back . . . took the wife along and she stood by at the hotel with bags packed while Rags cased all the trains 'n planes that came thru for a possible berth or even a place to HANG ON . . . made out BETTER at Roswell, tho . . . he and the rest of the crew on the show split a whole CASE of ciggies . . . who ever HEARD of a whole case of 'em . . . McGaughey shooting some fine golf, according to HIM, who keeps his score . . . if we can ever get out of BED on our daze off, we will CHALLENGE that statement . . . and oyes we MUST tell about our OPERATION . . . it SEEMS that we had a very MINOR bit of snipping done . . . more of a clipping deal, really, performed on our DIERRIERE or however you SPELL it, of a small MOLE which had been bothering us in certain positions, but nobody will BELIEVE it . . . they INSIST it must have been SOMETHING ELSE, which has proved rather embarrassing . . . ANYHOW, we experienced some difficulty in maintaining or even attaining a SITTING position for some time following our recovery, which became the source and inspiration for many ILL-FOUND and UN-FUNNY remarks . . . it was quite SERIOUS for us at the time . . . and anyway it wasn't THAT at ALL, so PLEASE let's forget it, huh fellows . . . huh . . . PLEASE.

ETCETERA . . . across the Street from NBC and DIRECTLY opposite the new cross-walk from the Artists' Entrance to the Other Side and arow with Tom Breneman's, the Bowling Alley, etc., is a new and VERY convenient establishment whose address is 1529 1/2 N. Vine Street . . . there is no name on the front door, nor on the REAR one either, and it is very UNOBTRUSIVE looking from the outside, but habitues of Radio City and environs

know it as the Key Club . . . a LOVELY place where if you possess a KEY, you can get an HONEST portion of genuine, pre-war REPLENISHER . . . for four bits. It is veddy exclusive and for the "profession" ONLY and keys are restricted and there is NO JUKE BOX to torment you with yer own singing or playing . . . in short, a Shangri-La . . . a Mecca . . . an Oasis . . . and a refuge and retreat for weary and jaded radio peepul . . . yes WE have a Key, so LOOK us UP when you are in town, and wewillbuy. With PLEASURE. But don't get us WRONG . . . we NEVER partake ourselves, and are happy only to sit by any witness the pleasure of OTHERS, which we do FREQUENTLY, cush we like to shee heepul pappy . . . er, sheepul yappy . . . er shapul heepy . . . er, aHEM. Stopped in at Studio "C" to watch the proceedings on the "Truth or Consequences" opus, and you never SAW such goings-on . . . stuff 'n gear 'n props 'n MIKES all over the place . . . they even had a full-size and rigged-for-flying AIRPLANE on the stage . . . they tell me that MCD used EVERY patch cord in the room that evening and Steve Hobart and Kenny Hicks even had to borry one from Recording, to set up the trick circuits for cut-ins, etc. . . . sometimes we have our DOUBTS about radio . . . and the people IN it especially. Then you should see Leon Fry's HAIRCUT . . . a genuine ALCATRAZ BOB if WE ever saw one . . . tried to pull the OLD one about going to sleep in the barber's chair, but we SUSPECT he was just trying to SAVE DOUGH at one of those SCHOOLS where they cut your locks for 25 cents, for the PRACTICE. Ran into Charlotte, our Mail Gal . . . the one who writes the poetry . . . who was BLUSHING . . . sohelpus she WAS . . . a beautiful cerise, but we never found out what AT . . . must have been SOMETHING, tho . . . dropped into MCR to help Al Korb answer some of the phones . . . they have seven or eight of 'em, not counting the 10 or 15 trunks on the P.L. (order) board and when several ring at once, it is a bit of a problem to determine just WHICH ones they are . . . and then we discover a phone plugged into a key box under the table that NOBODY knew what was . . . apparently had been there for SOME TIME, but we left it alone, not wanting to stir up anything MORE. Which makes us think of a wonderful GAG which we will try some nite and let you know how it turns out . . . it should KILL 'em in there, snamf, snamf, snamf. The most HOOMERUS, yet pathetic sight of ALL tho, was Johnny Morris standing outside the door to the Maintenance Shop, waiting for some ENGINEER to come along and open it for him . . . he couldn't get in 'cause his PRODUCERS' key doesn't fit . . . But what really gives us ALL a laff is the news program titled "A Layman's View of the News" and sponsored by a MATTRESS company . . . heheheheh.

WELL . . . Stolzie, we're going to the BEACH and to FOO with Radio . . . MAY drop you a line or two from Balboa during our vacation, but won't PROMISE . . . F. Y. I. the new ABC councilman is some dope named Dewes . . . hear he's REALLY a stnker . . . what a choice . . . come on, Mable honey, let's BE OFF . . . BCNU.

The United Transformer Corporation of 150 Varick Street, New York, has been presented a second Army-Navy "E" Award for continued achievement in the production of essential war material and a White Star is now being added to the original UTC "E" flag.

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Rek-O-Kut RKD-16 dual speed motor and turntable New Net Price \$118.38

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What's new?

by
**JORDAN
MCQUAY**



OPENING of a 400-megacycle band for *unlicensed* operation after the war, is expected to bring chaos. It's the Government's belief that even widespread use of the u-h-f band will not create much interference, since transmissions would be confined largely to line-of-sight. But uncontrolled use of the new band by amateurs and pseudo-amateurs—particularly in heavily populated districts—will cause an ether imbroglio remindful of the early days of broadcasting, only worse!

* * *

With a membership of more than 13,000, the *Institute of Radio Engineers* is now the largest engineering organization in the world.

* * *

Radio manufacturers don't expect reconversion go-aheads for several months yet. New automobiles, refrigerators, washing machines, and certain other needed household items may arrive on the American market before new radio sets and radio equipment make their appearance. However, when war contracts *are* terminated, the radio receiver industry predicts the sale of over one hundred million (100,000,000) sets during the first five years after complete reconversion. After initial production of compact, utility sets—many of them built from pre-war plans and parts—radio manufacturers will blossom out with complex sets of every description, having all sorts of trick gadgets and gimmicks. Future radio consoles are destined to be Rube-Goldberg affairs, with emphasis on flashy appearance and unusual physical features. Electrically the new radio sets will resemble the old—at least for the first few years.

* * *

Field telephone wire wound on special spools is used by the Army to permit laying of the wire from vehicles moving at speeds up to 50 miles an hour, from packs carried by mountain, ski, and ground troops, and even from airplanes in flight. Any number of miles of this specially wound wire can be laid by lightweight reconnaissance aircraft in a few minutes—often duplicating wire installations that would take ground troops many weeks or months.

* * *

Bendix is expected to play a big part in the manufacture of practical and dependable v-h-f radio communication systems for use particularly by railroads—between moving trains, between trains and block-signal stations, between trains and controllers, and between points on any one train.

* * *

The Navy intends to continue electronic research and development during peacetime years. Capt. Jennings B. Dow, USN, Director of Electronics for the Bureau of Ships, has recommended an expansive program in the fields of radio, radar, and sonar—costing over 25 million dollars per year. Capt. Dow feels that the expenditure of such a sum would insure future technical supremacy of this country over other

(Continued on Page Thirty-one)

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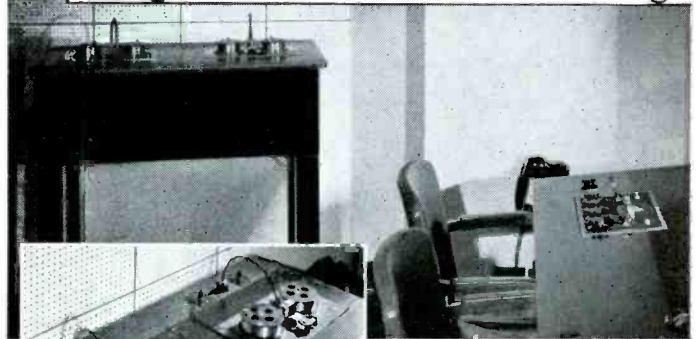
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High Level Modulation de KGO Transmitter

By Ken Martin

MAY, at GO Transmitter was marked by an endless stream of taunting missives mailed back from Hober's vacationland by that knave of good fellows, 'Gene Nickels, taking advantage of being first vacationer this year by pulling our combined whiskers about all the R9's and witches brew abounding where we ain't. Welcome home, Gene—the "mill" awaits. We are **nailing** all the chairs down in your acrobatic honor.

That guy, "Gentleman Jim" **Blanchet**, always manages to barge into the column one way or 'tother and this time, he really made a crash landing. Scene: Jim's 2-acre estate on the sidehill above Mills College (for exclusively exclusive femmes). Time: Whaddya care, it happened—this way . . . Jim comes hammering up the hill in his rejuvenated Olds, leaps out, and like a hog rooting for truffles or whatever, tears madly over his recently acquired, unimproved property. Possession of this miniature landslide qualifies Jim as landed gentry and he's justly proud. Can't you just see the O.B. braced atop the biggest pebble of the lot, flinging his Barrymore profile against the California horizon, dreamily sniffing the conference laden breeze whipping across the bay, and then—WHAM! Seems he forgot to put the brakes on the Olds or the brakes neglected to hold—purely a matter of controversy—anyway, the venerable chariot fetched up against a stout eucalyptus (pronounced E U C A L Y P T U S) tree and Jim spent the next 2 weeks hoofing & thumbing his way to watches and vigorously but unconvincingly denying that the sight of those luscious Mills sun worshippers was responsible—we know better! Too bad we can't illustrate this opus, with curves, etc.

J. Wallace Downs, back from Peace Conferencing, gives us to understand he knows which end of the needle goes

in the groove after a month's lend lease to the studios as a platter spinner. Welcome home, Wally, you're a tower of stren'th (6' 6" with understanding all out of proportion.) Try to keep your eyes off the stars and your feet on the ground.

Hank Dunton, our Chief, takes off June 4th for his vacation and passes the word he is checking in at a local hospital for removal of a wen from his shoulder. Wot is a wen and wen is a wen? There must be a good gag there but we'll leave it **lay!** Pick a steady sawbones, Henry.

The elusive **Herb Kramer**, our estimable councilman, is a temporary bachelor. If you want to reach him, don't call his house. There's a lad who really gets around . . .

Pop Perry, station janitor, is not ranchwarding this June 4th but will indulge in a paint splashing spree around the home lot. He's being relieved by **John Winters**, ex-station Guard of several years back and who faithfully shows up for two or three weeks midnight trick every year. Somehow we feel safer with John around to keep the Jappos off our necks.

Myron Case and **Yr Scribe** have discussed attendant details of opening a shop for the sole purpose of NOT manufacturing newsroom oscillators. We feel this undertaking has many possibilities. Don't encourage us.

Secret's out. **George Irwin** is responsible for the large box of lawn clippings that mysteriously appears and disappears on the parking strip. And I'm the guy what carts 'em off to my compost pit, almost got hump-backed from lugging fertilizer last year for this year's weed crop.

Visitors: **George Milne** ducked in and out of the station but your reporter was off at the time and unable to put the bite on the Chief Chief for the latest word from the East. Messrs. **Bodine, Miller, Hoskin & Bernard** of Westinghouse, San Francisco & Baltimore offices visited the transmitter on May 3rd. Tallyho and 73—



Official U. S. Navy Photo

Nabet is well represented in the Pacific. Pausing long enough from their duties at KUSQ, Guam, to have their pictures taken, are, l to r, Fred Frutchie, NBC Radio Recording NY; Ed Franke, WOR transmitter; Marvin Royston, ABC Chicago, now in the Navy; and Clark Sanders, ABC San Francisco.

Harry Adelman Enters Wholesale Field

Harry Adelman, advertising and sales promotion manager for the past five years of the Sun Radio and Electronics Co., New York, has resigned April 1st, to open a wholesale firm at 53 Park Place, New York City 7, under the name of "Scenic Radio and Electronics Co.," and intends to devote special attention to the broadcast field. Originally coming to Sun Radio in January, 1940, as their export manager, Mr. Adelman rapidly assumed additional obligations by taking charge of their advertising, sales promotion and publicity programs, also their personnel department, and, in the past year, their Sound Department, as well. Considerable credit must be accorded Mr. Adelman for Sun Radio's accepted rise in prominence due to his keen foresight in initiating contacts amongst industrial organizations, research laboratories and government agencies at a time when civilian production was due for curtailment in 1941. In his new organization, Mr. Adelman intends to feature amplifiers and complete sound system, including recorders, transcription players, high fidelity speakers, microphones, baffles, test instruments and other items of interest to the broadcasting industry.

DIXIE CHAPTER NEWS

By Rex Coston

TRIPP TAKES A TRIP

ALTON TRIPP has been reading travel folders of western North Carolina, not trying to slip one over on the ODT, but just catching up on his topography of the Great Smoky Mountain area. It seems that the summer get-together of the North Carolina State Senate will be in Hendersonville the last week in June and BC's Carl Goerch will do a daily report for WPTF. Tripp is going along to handle the feed, which sounds more like a vacation than a job. He'll be sleeping under blankets in the mountains while we roast in the city.

Frank Colvert is the first WPTF engineer to return from the service and pick up his "watch" where he left off. Skilled Flight Radio Operator and Mechanic Colvert spent a total of 450 flying hours at air bases in Mississippi, Tennessee, and the Reno Army Air Base, Nevada. Before enlisting in the army in May, 1945, Frank was with the engineering staff for more than a year, both at the studios and transmitter. After his discharge in May this year, Frank was welcomed back to the control staff on June 3.

The latest news from Durham and Gilmore Bowers is that the WDNC-NABET contract was signed May 28. Negotiations were carried on by Willard Dean, Chairman of the Dixie Chapter, assisted by WDNC chief Walter Hill.

William J. Speed joined the WPTF transmitter staff on June 3, coming from Raleigh's Mutual outlet WRAL. Bill has been in radio for quite a few years, including General Electric, North Carolina state engineer for NYA, and his own ham station W4BIP. Bill was with WPTF for a brief period in 1943, and has returned to the gang permanently, we hope.

Yep, we've done it again—another Bar-B-Q, I mean. It was a festive occasion at the home of (SE) Hunter Wall in Knightdale. The whole staff was invited and the place was literally mobbed—and the chicken flowed like wine! Or so they tell me—I had to work, darn it, and so did Joe Stephenson at the transmitter. All evening I whetted my appetite for a taste of that toast-brown barbecued chicken, but all was in vain. No chicken showed up, not even one walking. Joe's relief man, John Sherwood, brought him some, and Hunter faithfully promised to send me a plate.

I'm not calling any names, but a certain announcer by the name of Arthur Fazzini (better known to his public as Fredericks) signed up for two extra chickens and then ate 5. No wonder the navy didn't keep him. Any guy with an appetite like that would cause starvation in the ranks. That's o. k., I'll fix him. The next time I'm on the board during one of his shows I'll fix him. The next time I'm on the board during one of his shows I'll turn on my xtrobo-footophone and make him sound like mammy Yokum!

WHAT'S NEW

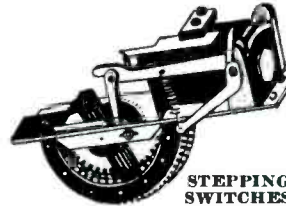
(Continued from
Page Twenty-nine)

nations—just in case there *might* be another war. Any extensive research in television is conspicuously absent from the proposed development program.

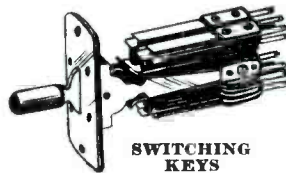
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IN AMERICA'S leading radio broadcast studios, Automatic Electric remote control devices are used for the dependable operation of such important equipment as master control boards and announcers' cabinets, for program monitoring and switching, and for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

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Radio and Electronic Equipment

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WENA, Michigan's First FM Station

By Dave Stewart

WENA, located on the top floor of Detroit's tallest office building, is the culmination of UHF Broadcasting activities begun by The Detroit News in 1935.

Since May 9, 1941, WENA has been on the air with a regular daily program schedule, and to date has 14,000

and associated speech input equipment meet the stiff requirements laid down by FCC for FM Broadcast stations.

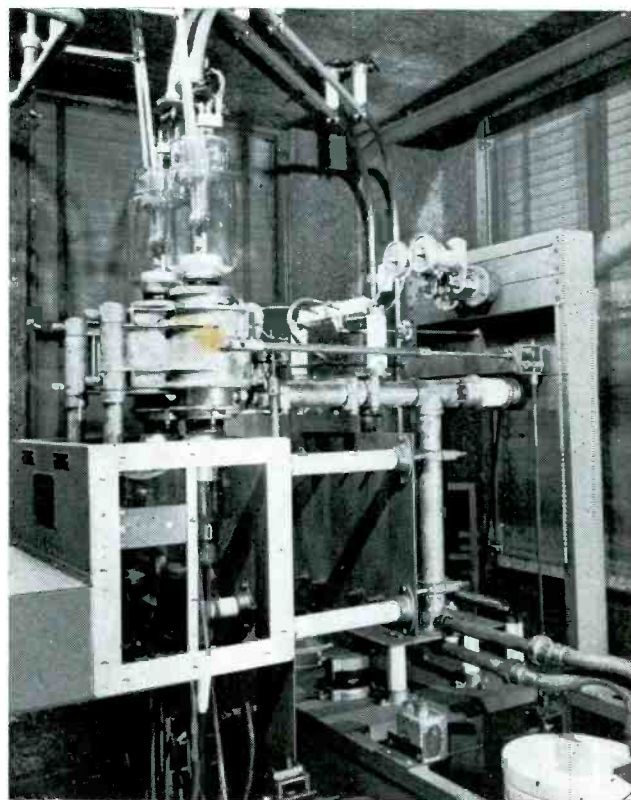
The station's radiating system consists of a 2-bay turnstile of the type developed and in use by The Yankee Network at its FM stations. In this type of turnstile, power is fed to each individual $\frac{1}{4}$ -wave radiating element. Eight $1\frac{5}{8}$ " concentric transmission lines supply power to the eight elements.

By the time of the "freeze order" in April of 1942, close to 21,000 FM receivers were in the hands of listeners within the 50 μ V/M contour, which extends to approximately 55 miles from the station. WENA's audience and staff look forward to an enlarged operating schedule as soon as the ban on manufacture of civilian receivers is lifted.

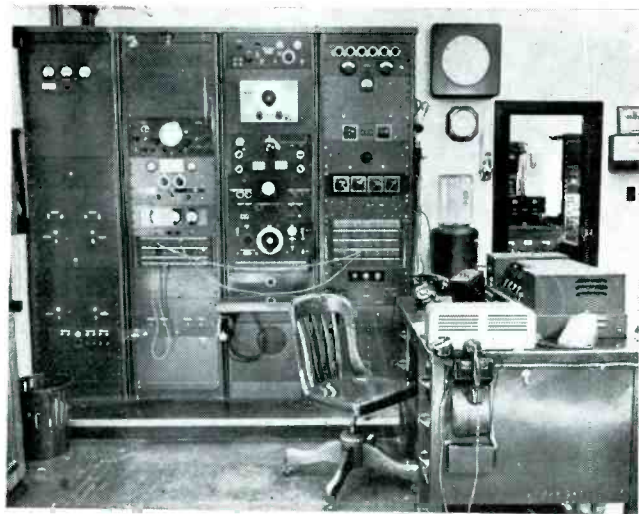


Modulator unit, intermediate power amplifier, driver, and power control console at WENA. The output of this unit delivers 3KW to the final amplifier.

hours to its credit, with a program outage percentage of .088. The 50 KW transmitter is a type 521 REL which employs the Armstrong method of modulation. Transmitter



50KW final amplifier at WENA. Note the plumbing in the plate circuit of the push-pull 899A's which serves as the tank circuit.



Control Room and speech equipment at WENA, the Detroit News FM Station.

The Washington, D. C., Zoning Commission has approved amended regulations to permit 300 foot television towers in residential areas. Expected to set precedent for other cities.

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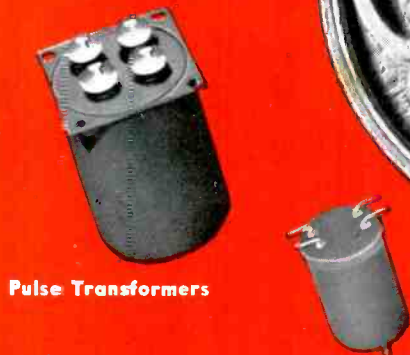
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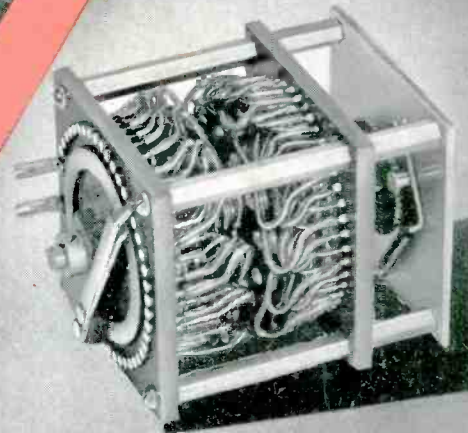
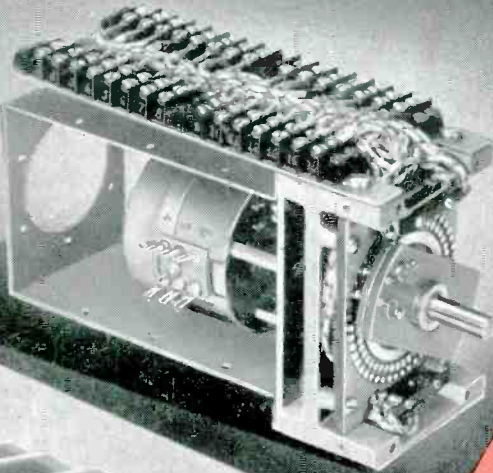
ALL PLANTS

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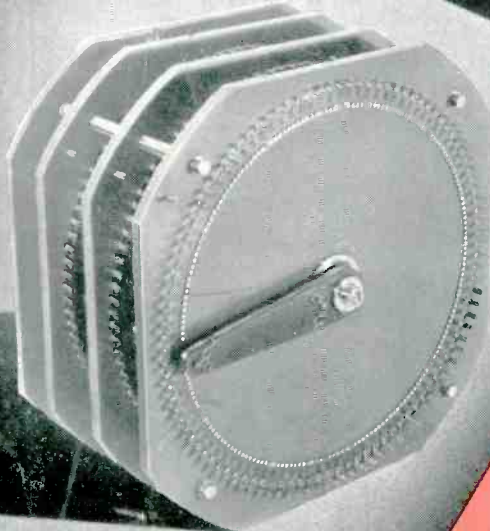
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NEW YORK 16, N. Y., CABLES: "ARLAB"

4 Precision Switches

ATTENUATOR COMBINED with SWITCHING DEVICE:
Application of rigid rotor with two pairs of spring-button type contacts.* Supplied as shown with terminal wired.



DUAL-POTENTIOMETER:
40 steps per deck; compact back-to-back type assembly. 40 precision wire-wound resistors, mounted on each deck.



SWITCH:
2 pole, 3 deck, 100 position. Break-before-make. 200 contacts, 101 solder lugs per deck. This unit employs a newly designed switch rotor with spring-button type contacts.*



SWITCH:
10 pole, 3 deck, 4 position, break-before-make. Total of 52 lines wired to adaptor base. Illustrated is a stripped, wired and enclosed view.



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job, plus important savings in time and cost of development. DAVEN-engineered switches are built in a wide range of sizes, of many types of materials, with varied numbers and arrangements of poles, positions, decks and terminals, in shorting and non-shorting types. A DAVEN engineer will gladly work with you on your switch problems.

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