

RADIO *Retailing* TODAY

IN TWO PARTS — PART ONE

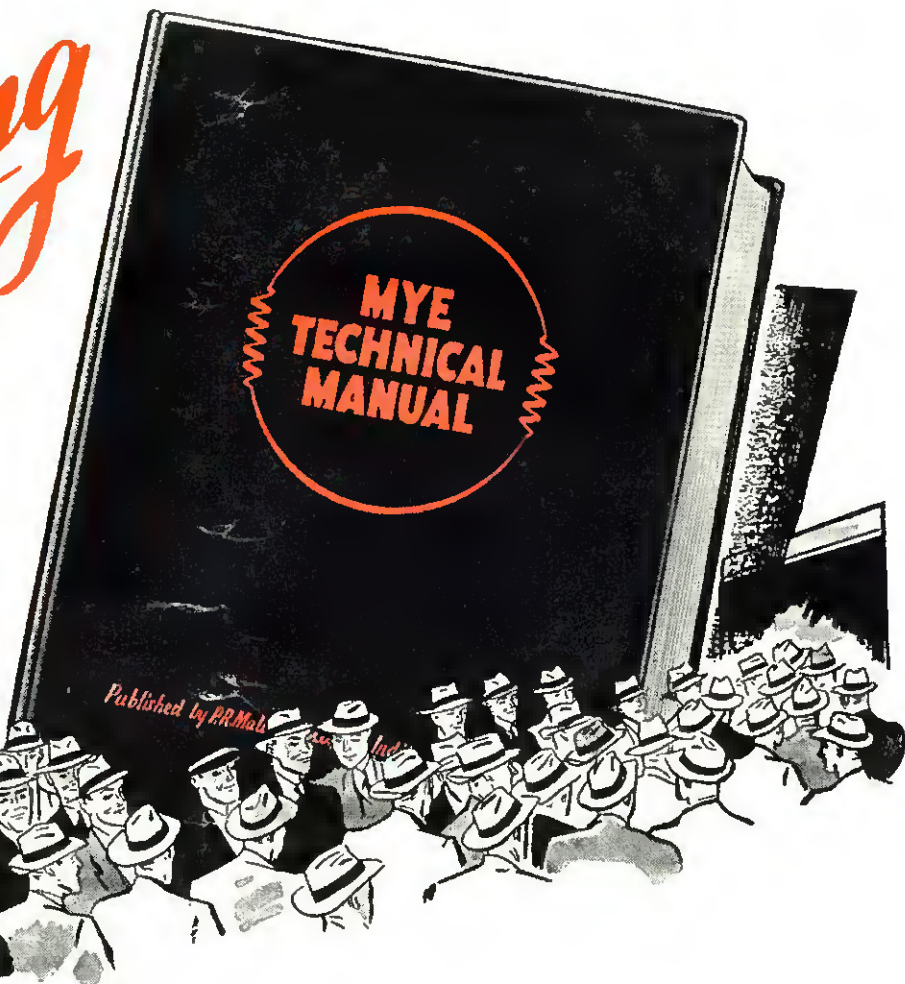
RADIO'S WAR OUTPUT
ALREADY 3 TIMES VALUE
OF FORMER CIVILIAN
PRODUCTION



AUGUST

Announcing

The Book You've Waited For



When 300 radio servicemen who are known to be outstanding write letters offering to buy a book before it's even printed, chances are it's a good book. And then, if military radio engineers decide to use many hundreds of copies to train the men in America's fighting forces . . . you know it's a good book.

That, briefly, is part of the story behind this new MYE TECHNICAL MANUAL. Just glance over this list of chapter headings, and you'll know why you want a copy.

- 1 Loud Speakers and Their Use
- 2 Superheterodyne First Detectors and Oscillators
- 3 Half-Wave and Voltage Doubler Power Supplies
- 4 Vibrator and Vibrator Power Supplies
- 5 Phono-Radio Service Data
- 6 Automatic Tuning—operation and adjustment
- 7 Frequency Modulation
- 8 Television—suggestions for the post-war boom
- 9 Capacitors—how to overcome war-time shortages
- 10 Practical Radio Noise Suppression
- 11 Vacuum Tube Voltmeters
- 12 Useful Servicing Information
- 13 Receiving Tube Characteristics—of all American tube types

Here's a suggestion. If you want to reserve a copy of this 392-page book, bound beautifully in hard cloth . . . go around to your Mallory Distributor today. The supply of manuals for civilian distribution, at the price of \$2.00, is limited. Order your copy now! Your Mallory Distributor has it!

P. R. MALLORY & CO., Inc.
INDIANAPOLIS, INDIANA

Cable—PELMALLO

P. R. MALLORY & CO., Inc.
MALLORY
Approved Precision Products

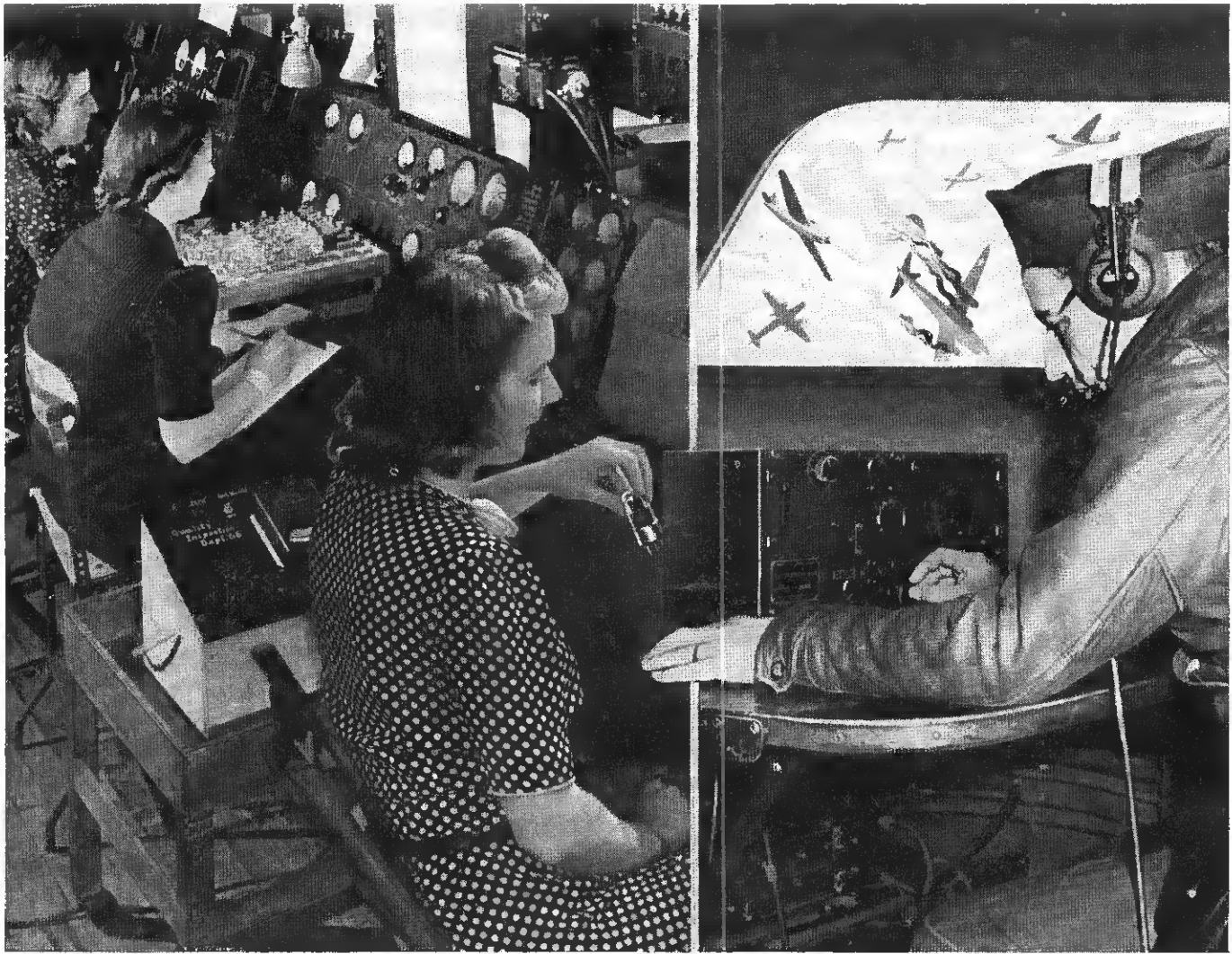


Photo Courtesy U. S. Army

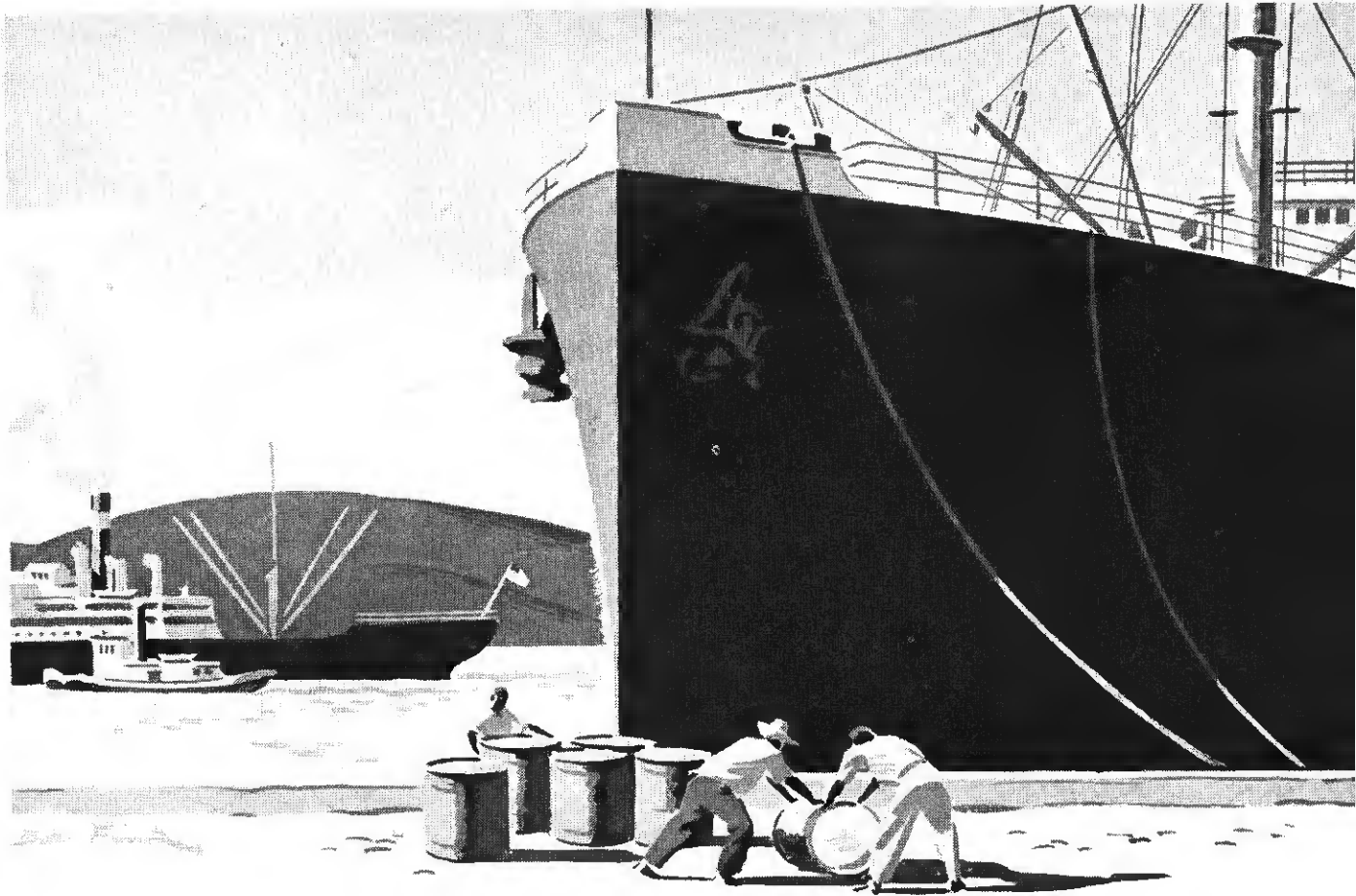
QUANTITY – QUALITY – *and Quickly!*

Radio tubes and lamps play an important part in the lightning transmission and reception of battle commands so necessary to victory. Realization of the responsibility in supplying our armed forces with this equipment is spurring every Tung-Sol employee to give his and her utmost effort to our Victory Campaign. Its objective is to utilize all available Time – Material – Machines to produce more and more tubes and lamps, in the quantity – of the quality – and on time.

TUNG - SOL LAMP WORKS INC.

FACTORIES: NEWARK, N. J. SALES OFFICES — ATLANTA • CHICAGO • DALLAS • DENVER • DETROIT • LOS ANGELES • NEW YORK

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THERE'S MORE SPACE FOR ...because RCA packs tubes

THIS is a war where *inches* count. Especially those precious inches in the cramped holds of ships that carry bombs and guns, communications apparatus and other equipment to our allies.

A few inches saved in the hold of a ship—or in a crowded freight car—may mean another round of ammunition for a United Nations fighter—another round of death pumped into the belly of the enemy.

RCA's new method of packing radio tubes frees *thousands of cubic feet* of critical space. It gets the same number of tubes in *half* the space formerly required! RCA's packaging engineers, working to Beat the Promise in production, have revolutionized the entire process of packing radio tubes.

Now we can have more speed—RCA will save *30,000* man-hours per year by this method—save it for other vital war work.

Now we can have more efficiency—loss by breakage is cut

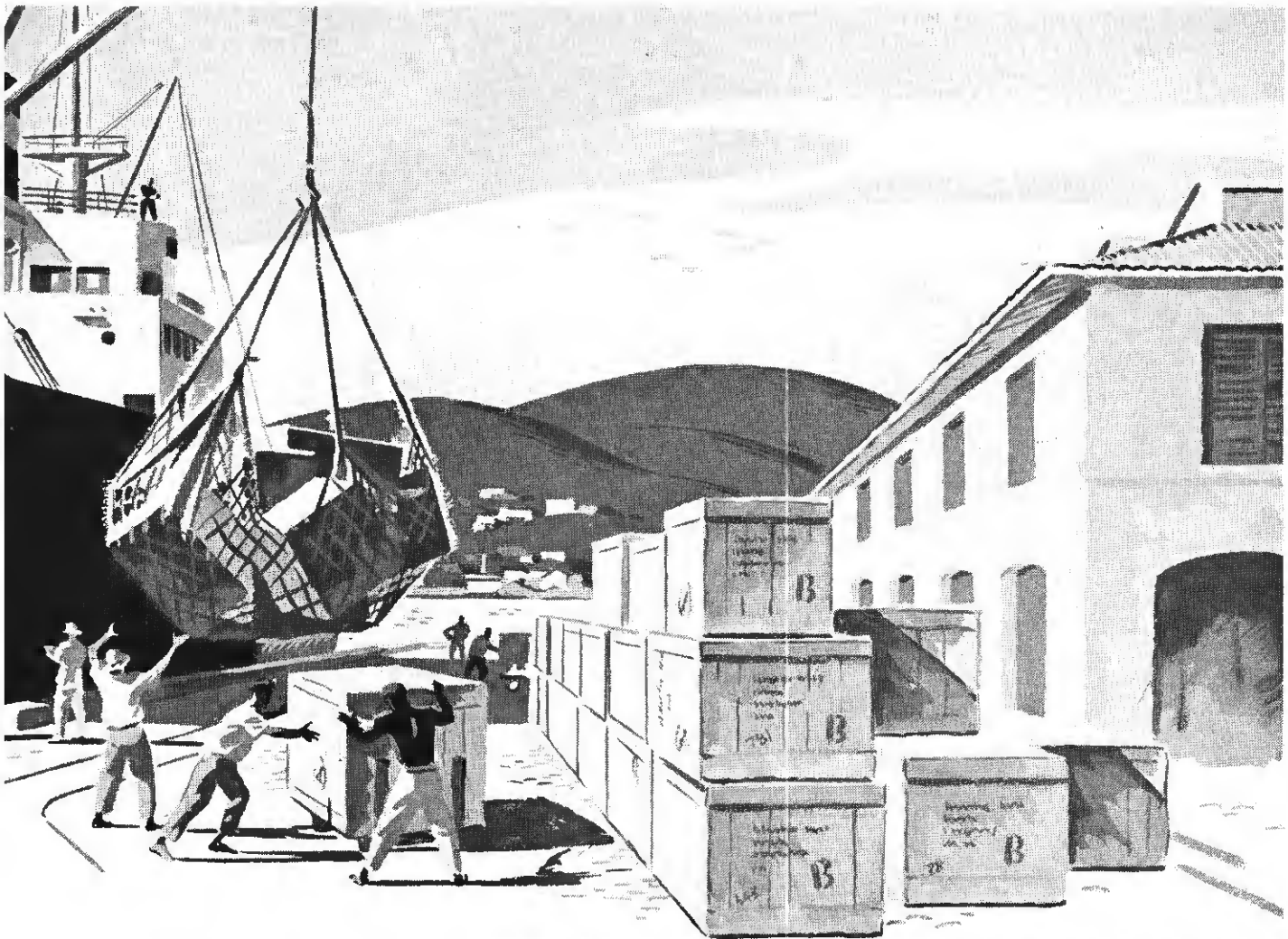
down, factory-handling efficiency at RCA has been stepped up 20%.

Now we can have economy where economy counts—RCA alone will save 120 tons of packing material a year by this method.

RCA gladly and willingly showed other tube manufacturers this new packing method and granted patent rights for its use so *they* can put this new principle to work, with equally important results.

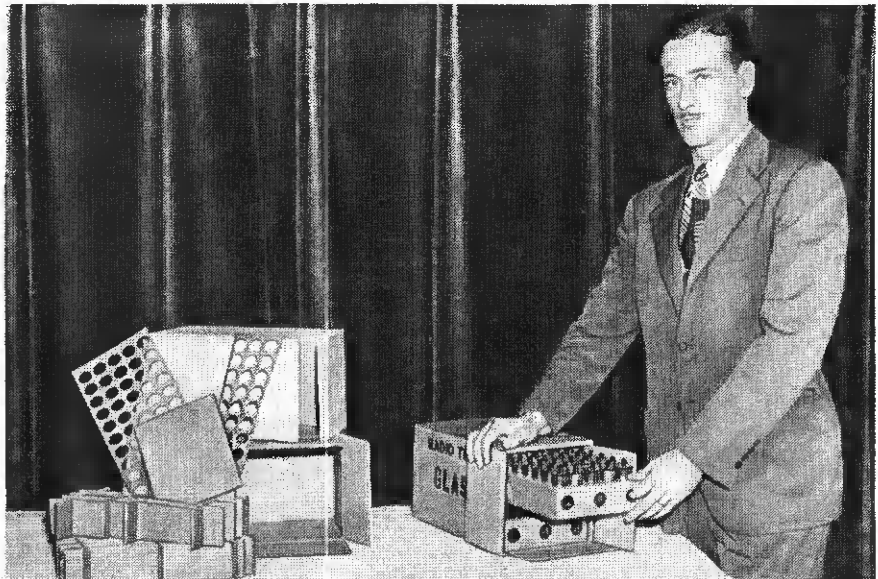
Shipping space is one of the fronts on which this war will be won or lost. This new packing method may help *you* save some of that space America so critically needs. . . . For complete details, write to RCA Manufacturing Co., Inc. Dept. 2-3. Camden, N. J.

BUY U. S. WAR BONDS EVERY PAYDAY



BOMBS new way!

Mr. Charles Elliott, RCA packaging engineer, demonstrates the saving of space and materials achieved by RCA's new method of packing radio tubes.



RADIO TUBES

RECEIVING TUBES • POWER TUBES • CATHODE RAY TUBES • SPECIAL PURPOSE TUBES

RADIO Retailing TODAY, August, 1942



At Listening Ease
WITH METAL TUBES

Metal radio tubes afford listening ease to so many radio users that there are over 80,000,000 in the nation's radios. When the war is over

we will again make and recommend metal tubes for civilian use. Our entire production of metal tubes is now being used in the war effort.

Handle Ken-Rad Radio Tubes and Be Sure of Satisfied Customers.

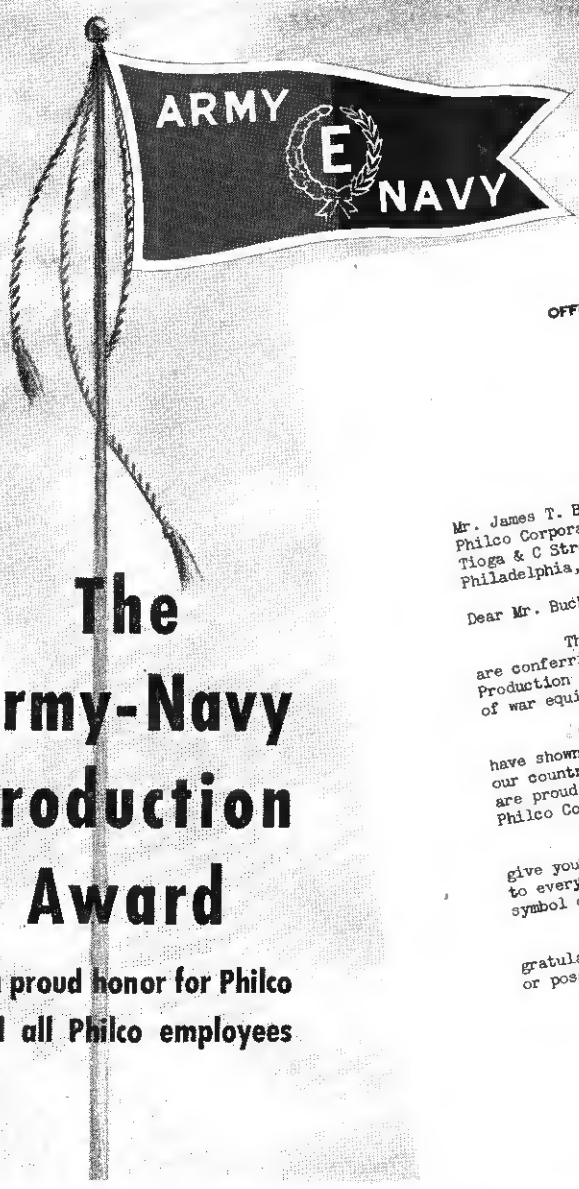


KEN-RAD

Metal Radio Tubes



KEN-RAD TUBE & LAMP CORPORATION, Owensboro, Kentucky



The Army-Navy Production Award

—a proud honor for Philco
and all Philco employees

WAR DEPARTMENT
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D. C.

July 22, 1942

Mr. James T. Buckley, President
Philco Corporation
Tioga & C Streets
Philadelphia, Pennsylvania

Dear Mr. Buckley:

This is to inform you that the Army and Navy are conferring upon your organization the Army-Navy Production Award for high achievement in the production of war equipment.

The patriotism which you and your employees have shown by your remarkable production record is helping our country along the road to victory. The Army and Navy are proud of the achievement of the men and women of the Philco Corporation.

In conferring this award, the Army and Navy will give you a flag to fly above your plant, and will present to every individual within your organization a lapel pin, symbol of leadership on the production front.

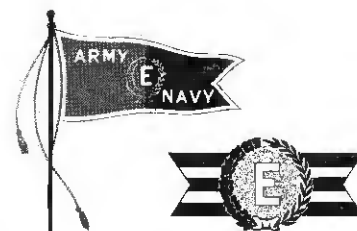
May I extend to the Philco Corporation my congratulations for accomplishing more than seemed reasonable or possible a year ago.

Sincerely yours,

Robert P. Patterson
Under Secretary of War

THIS proud citation to Philco and its soldiers of production from the fighting forces of the nation is a "report of progress" to all Philco dealers. From its peace-time products, Philco is now devoted to the production of the weapons of Victory . . . communications equipment, radios for tanks, airplanes and ships, artillery fuzes, shells and industrial storage batteries.

The honor which has come to Philco carries with it assurance for the future. When Victory is won, new and greater opportunities—for Philco dealers everywhere—will arise from the production achievements which have won this recognition from the Army and the Navy.



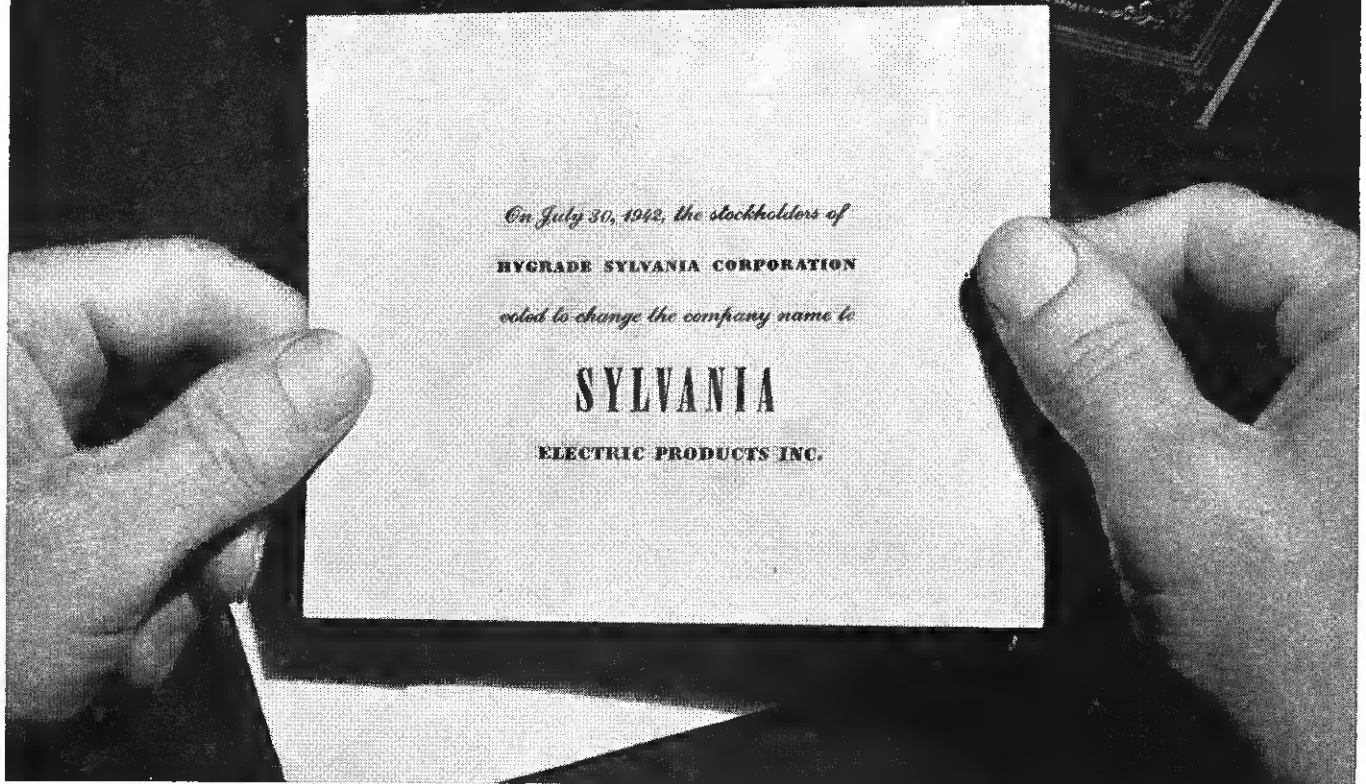
The Army-Navy "E" Flag and Employee's Lapel Insignia

At ceremonies held in Philadelphia on Friday, August 14, 1942, the Army-Navy "E" Flag was presented to Philco and an official Lapel Insignia awarded to all Philco employees of the Philadelphia plants.

PHILCO CORPORATION

OUR PRODUCTION PLEDGE: *More - Better - Sooner*

The name is new...the Purpose is not Changed



● There's little in a name beyond what men put into it by their sincere effort and their determination to give it significance.

There has been a great deal, though, in the name Hygrade Sylvania because of the high standards that have marked the manufacture of its products—Hygrade Incandescent Lamps, Hygrade Fluorescent Lamps and Fixtures, and Sylvania Radio Tubes.

But there are advantages in simplicity, and in a single title that stands for single-

minded insistence on the highest quality possible in any field with which it is linked.

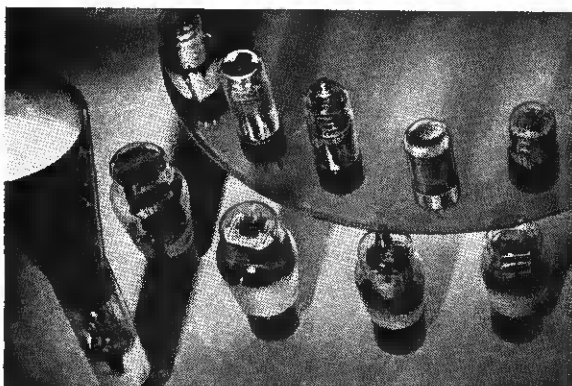
So as of July 30, the name of the Hygrade Sylvania Corporation, adopted in 1931, became Sylvania Electric Products Inc.

Largely as a matter of conserving stocks of cartons and scarce packaging materials, changes in the trade names of Hygrade products will be made gradually.

Eventually, however, all products of the company will take the name *Sylvania*,

which will become the single emblem of our one and unchanged purpose to produce the best in our field and to make our products widely known.

You who have known the quality of Hygrade Lamps and Sylvania Tubes will continue to find that same superlative quality in those products. The only change will be in the name, to which we intend to add new luster at every opportunity that is given us to improve on the quality and performance of our products.

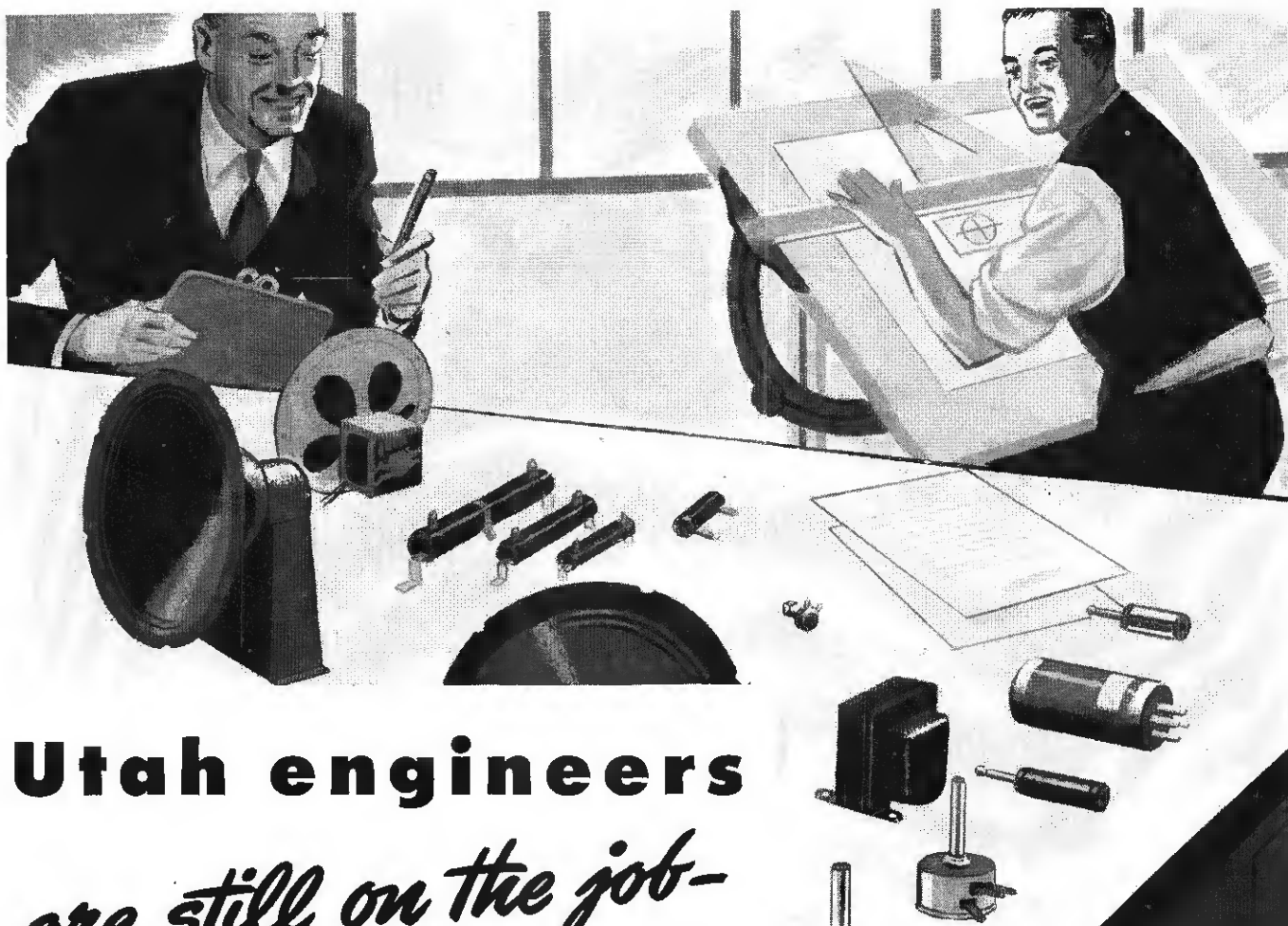


Radio tubes of many types and for many purposes have made the name Sylvania synonymous with utmost dependability and high quality. Such products will continue to be branded with this name, but will now be joined by similarly labeled incandescent lamps, fluorescent lamps and fluorescent lighting fixtures which were formerly brand-marked Hygrade.

Ben G. Cassin
PRESIDENT

SYLVANIA ELECTRIC PRODUCTS INC.
Emporium, Pa.

*Hygrade Incandescent Lamps, Fluorescent Lamps,
Fixtures and Accessories, Sylvania Radio Tubes*



Utah engineers *are still on the job-*

for the **VICTORY** program — and **YOU**

● War work continues to have a priority on Utah facilities and man-power. As a result, many Utah parts are now in service with the Army, Navy and Air Forces. For instance, when General Doolittle made his epic-building flight last May—Utah parts, too, were over Tokio, helping American courage and skill carry the fight right to the Japanese.

In addition to concentrating on the war effort, Utah will continue to do everything possible to *aid you* in your line of duty—the task of keeping America the best-informed nation in the world.

Materials are difficult to obtain, but there is no interruption of Utah's engineering skill, imagination, interest in product improvement, understanding of users' requirements which have kept Utah performance and reliability unchallenged. These are continuing. And their endurance is a promise of continued superiority of Utah products. **UTAH RADIO PRODUCTS COMPANY**, 810 Orleans St., Chicago, Illinois. In Argentina: **UCOA RADIO PRODUCTS CO., SRL**, Buenos Aires. Cable Address: **UTARADIO**, Chicago. In Canada: **Utah Products (Canada) Ltd.**, 560 King St., W., Toronto.



S P E A K E R S

VIBRATORS • TRANSFORMERS • UTAH-CARTER PARTS

Meissner RADIO KITS

ARE DOING THEIR DUTY
WITH THE ARMY SIGNAL CORPS!

... For Faster Radio Training



... Army sponsored Signal Corps Schools know the value of faster radio training... Meissner Kits are precision-built and engineered to give better results in basic radio instruction.
Illustration of actual Radio Kit instruction in Army sponsored Signal Corps School.
See your nearest Meissner Distributor

Meissner
MT. CARMEL, ILLINOIS
"PRECISION-BUILT PRODUCTS"



They have Enlisted **RAYTHEONS** too!

RAYTHEON Tubes have enlisted for the duration! . . . you will find them doing their duty in the "Walkie-Talkies" . . . it's a twenty-four-hour duty, too . . . and they must perform! These compact radio receivers are subject to plenty of rough handling. Yet the tubes must always deliver top-notch performance . . . that means RAYTHEON performance! Ask your RAYTHEON distributor.

Raytheon Production Corporation, Newton, Mass.;
Los Angeles, New York, Chicago, Atlanta

RAYTHEON
RADIO TUBES

NOTICE: If you have not obtained RAYTHEON'S interchangeable Tube Chart, it is important to get one of those cards at once from your RAYTHEON jobber. Speeds up radio repair service and simplifies your tube stock by elimination of a large number of types.

DEVOTED TO RESEARCH AND THE MANUFACTURE OF TUBES FOR THE NEW ERA OF ELECTRONICS

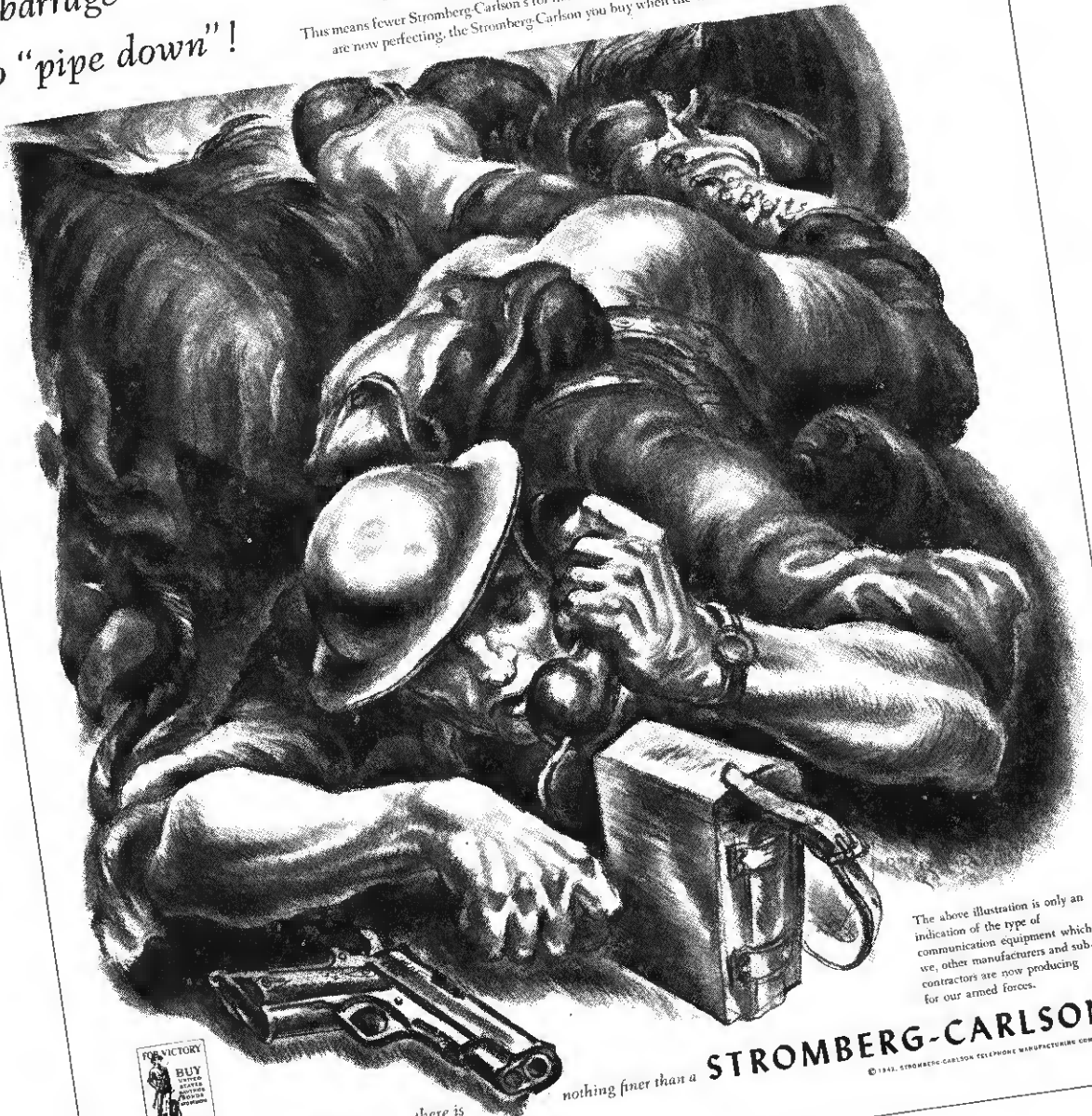
**MEMO:
TO
30 MILLION
AMERICANS!**

Month after month . . . advertisements like this one are telling the nearly 30 million readers of the SATURDAY EVENING POST and of LIFE of the part Stromberg-Carlson is playing in producing for victory! We sincerely hope that this advertisement and others yet to come will reflect credit not only on our workers . . . but on Stromberg-Carlson Dealers everywhere . . . and on the Stromberg-Carlson radios they sell.

STROMBERG-CARLSON, Rochester, New York

*You can't tell
a barrage
to "pipe down"!*

You CAN'T ASK the operator for a better connection when you're flat on your belly in a fox hole!
You're on a party line with all the noises of hell . . . and you must have . . . you've got to have communication equipment of the highest reliability, the utmost durability
For 48 years Stromberg-Carlson has been perfecting just this kind of equipment!
Today the same skill that pioneered in FM radio is concentrating almost exclusively on building communication equipment for our Army, Navy and Air Forces.
This means fewer Stromberg-Carlson's for home use. However, with the new developments our laboratories are now perfecting, the Stromberg-Carlson you buy when the war is won will be even finer than it is today!



The above illustration is only an indication of the type of communication equipment which we, other manufacturers and sub-contractors are now producing for our armed forces.



In radios, telephones, sound systems . . . there is

nothing finer than a

STROMBERG-CARLSON
© 1942, STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY

RADIO RETAILING TODAY

Including Radio and Television Retailing

O. H. CALDWELL, EDITOR. M. CLEMENTS, PUBLISHER
480 LEXINGTON AVE., NEW YORK, N. Y.

What Are the "Electronic Industries"

With so much talk about the electronic future, these days, radio men and observing laymen are asking just *what are* the electronic industries of the present? Just how big and how real is the electronic field today?

For the most complete answer ever presented to this query, we refer you to the big "flow-chart" of the electronic industries which appears in Part II of this issue. There shown graphically are the channels of inter-industry and intra-industry movement of materials, parts and equipment, in the electronic and radio fields.

There at a glance the reader can see how millions of dollars worth of electronic supplies are produced and distributed among the industries based on electronic tubes and electronic action.

Radio Only a Part

Today the electronic tube plays a role in almost every industry, science and activity of everyday life.

Radio, of course, is at present the largest user of electronic tubes. And radio's expansions into television, facsimile, FM, and the ultra-shortwaves, all depend upon electronic phenomena. Other industries based on electron tubes are sound pictures, long-distance telephony, and carrier systems. Power transmission, motor control, safety measures, anti-sabotage guards, and the new welding, heat-treating, and plastic-cement techniques are using electronic tubes more and more. And throughout all industry and scientific research, the uses of electron tubes are legion.

Statistical Bullseye!

A great many inquiries come to us regarding our annual statistics and how compiled. In reply we explain that these figures are, in general, informal estimates secured from the best industry authorities, in an effort to present an *immediate* statistical picture of the current radio situation. Such an immediate picture can be of real industry value to radio executives in making their current plans—whereas government statistics are usually not available for many *months* or *even years* after the date they depict.

An interesting illustration of the usefulness of a careful estimate is presented by the figure for

Total U.S. Homes with Radio, 1940, 28,839,154,

just made available this month by the NAB based on the 1940 Census Figures. This figure is undoubtedly as accurate as the elaborate machinery of the Census can make it.

Yet two and a half years ago, in *Radio Today's* January, 1940, issue, we printed our corresponding estimate as being 28,700,000—a figure within one-half of one per cent of the Census figure as finally arrived at, two and one-half years later!

This example illustrates that careful estimates can hit close to the facts,—while having the great advantage of being available for *immediate* use.

Radio—Voice of Victory

At the suggestion of Henry C. L. Johnson of Sylvania, we quote from *Sales Management* this stirring statement defining radio's role today:

What is radio's part in disseminating the truth that makes men free? War-bulletins from the front? These are functional and routine. Music and badinage to build morale? Important but incidental. Radio has a larger duty to perform in the War for Survival.

Men and women who wrest our basic foodstuffs from the good earth want to know what, when, and how to plant for maximum yield. Radio tells them . . . brings them last-minute instructions from their government. Women who guard the national health via the kitchen want the newest thinking on vitamins and diet. Radio supplies it through home forums and similar services.

Steel-workers, shipbuilders, aircraft-workers, munition-makers; soldiers, sailors and civilians cooperating in the common cause in camp and canteen; civilian-defense patriots who LOSE sleep in order to GAIN freedom . . . to all of these, Radio is a sort of cosmic cement that flows out to bond Americans into a willing working whole.

Radio is the Voice of the People . . . the Voice of Victory. No mere medium of entertainment, it is a constructive force in America's fight for freedom.

Global War, Global Radio

Radio men have long been accustomed to think in terms of the whole wide world.

Europe, South America and Australia have been regular hunting grounds for short-wave listeners and radio hams. Radio men early learned to think internationally and in a global sense—more than any other civilian group.

And now as American radio men in great numbers are joining the armed services of the United Nations and being



scattered among the seven seas, "global war" is taking on a new meaning. Radio men, our own friends and buddies, are today manning outposts all across the huge world map. The American radio fraternity is today a worldwide organization.



Are You a **VICTORY**

A Quiz of 15 Questions to Test Your Wartime Enterprise

• This game of "total war" we are playing now is a rough, tough game—and getting rougher.

The problem of keeping a small civilian business going, even an essential one like radio, in the face of growing shortages, is no simple one.

Our government, quite properly, must determine what is essential. Sales of new radios are not in that category.

Only action counts. You can watch your business melt away, your expense build up, your profits vanish. Or you can "take the bull by the horns" and *do* something.

And there are plenty of things an enterprising radio man can do to keep his business on top, make profits and build for the future at the same time.

Dealers should honestly and repeatedly make a check-up on these wartime measures, to see which ones are

best adaptable to new conditions in their communities. Here are 15 questions that may be asked of dealers who are ready for action:

1. **HAVE YOU TRIED** to do a real service business, merchandise it, dramatize it—really sell it? There's more service business now than for many a long year, and fewer "screw-driver" mechanics to share it and spoil it.

2. **HAVE YOU TRIED electronics?** This field is bigger than radio ever was, or ever will be. Electronics embraces radio—and a whole lot more. Electronics has countless applications in industry, and installations of various kinds are being made by the thousands.

It means equipment to sell, equipment to install, and equipment to maintain.

Don't overlook this rich field with its high prices, high standards of service, high profit and high priority equipment.

3. **HAVE YOU TRIED records and music?** They are still going strong, and many a dealer is "paying the rent" and more too, from them. But you've got to expect no more *out* than you put *in*.

Display them nicely, arrange your store attractively, advertise them consistently, sell them strongly, with intelligent salespeople, who "know what it's all about."

4. **HAVE YOU TRIED adult games?** Outdoor games for the summer such as croquet, badminton, etc., are increasing in sales demand daily, in the "gas rationed" East, as more and more people "stay at home."

Indoor games for the fall and win-

ter—card games, darts, table tennis, and the like, are going to be more popular this year than ever. Somebody is going to cash in.

5. HAVE YOU TRIED porch, terrace and game-room furniture?

Some dealers are "going to town" with this merchandise. Prices are good, demand is up, and the supply is not curtailed. Looks like buying of these products should continue, as "gas and rubber" keep an ever increasing number of people "at home" and we turn back the pages of our social life a quarter of a century.

6. HAVE YOU TRIED the idea of cooperative delivery?—Joining

with four or five other merchants, to combine deliveries, use only one truck each day. On a rotating schedule, perhaps, with a common driver. It saves a lot of delivery expense.

7. HAVE YOU TRIED to combine your business with one or two others in the same boat as you? Under this plan, it will help if all the bosses or partners work.

8. HAVE YOU TRIED employing women in your Service Dept.? Also, how about high school girls at your record counter, part-time, married women to sell your music, games, furniture and other merchandise.

9. HAVE YOU TRIED speeding up your slow accounts? You might try crediting 10 per cent of new cash sales against the slow account. It keeps the customer buying, and happy and brings in money too.

10. HAVE YOU TRIED to get your rental costs on a wartime basis? This means to put your lease on a "per cent of sales" basis, and thus eliminate a "fixed" expense, in a way which is equitable to both tenant and landlord.

11. HAVE YOU TRIED giving

the soldiers extra thought? Soldiers in training, at the camps, use plenty of things from home. Have you made it easy for the "home folks" to get a suggestion, and send the article along to their "soldier"?

12. HAVE YOU TRIED to make your business mean anything more to the men in the "services" than a place to spend some money, and be forgotten? This can be made to pay real dividends in good will—and in sales, too.

13. HAVE YOU TRIED to sell Sound, to your local industry? Music has proven its ability, invariably to reduce nerve tension, to increase production, and to lessen fatigue. Important factors all, in war production. Sound is being sold—and serviced as never before. And it's a *sound* business. No pun intended.

Much of the new business these days—business connected with the war effort—needs "going out and getting." Nothing is so effective as personal calls.

14. HAVE YOU TRIED systematically, to find new service customers? Do you call on two houses each side of every customer's call you make, and see if there is a job you can do while you are right there? Some mighty fine service businesses have been built on that simple little idea—and service work is plentiful right now too. And profitable.

15. HAVE YOU TRIED talking with people, and looking around town, to see what people want, what is hard for them to buy, that you could sell them? Remember, again, that more and more people are going to stay nearer home and still more in the future than do now. Shopping habits are changing, and the smart merchant will capitalize on the change.

No Single Answer

It is more than probable that in going through these questions, if you think, and plan and look, no single thing will answer all your problems. You've got to try many things.

A collection of several things is far more certain to produce the end result you are after than waiting for any one thing to skyrocket your sales, or cut your expense, or guarantee you a profit. Don't wait until you find a "perfect" answer. If you wait for perfection you'll do nothing, for everything that you can think of has some element of risk, some feature of disapproval, or disadvantage.

Cutting Expenses

For instance, some dealers have stopped service pick-ups and deliveries. This has some advantages and saves some expense—but it also has some risks. Risks of sending your customer to the nearest serviceman, to a serviceman who will call, or to a "screw-driver mechanic" in the neighborhood.

Others are servicing in the home. This has many advantages of saving time and expenses, too.

But it also has some risks—particularly if it takes you an hour to locate and replace a "two-bit" condenser or resistor. Or you lay your "iron" on a rug.

And so with everything you do. But make no mistake about it—it's more risky to wait and hope and do nothing!

Action, prompt action, now is a necessity.





Radio Delivers



Top, left, GE radio workers mean business with their "V-7 Program" for more weapons.

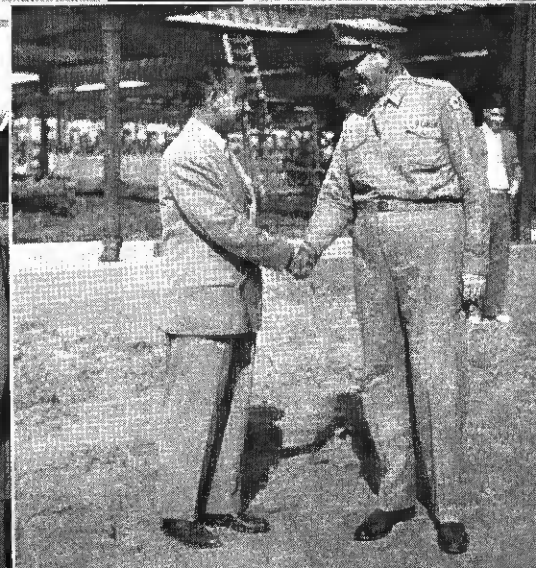
Top, right, Farnsworth execs coordinate their expediting, procurement and production units.

Directly above, Stromberg-Carlson war products paraded on a float, dramatizing current ads.

Right, center, Philco production experts salvage enough rubber for 2 flying fortresses.

Below, left, Crosley plant chalks up its war products now taking shots at the dictators.

Below, right, pres. Muldowny, National Union, greets Maj. Johnson, Signal Corps, at new NU plant.





RCA workers turn out for a rousing "Beat the Promise" production rally.

to Uncle Sam

A Great Industry Puts Up a Great Fight

• Radio is getting its two-billion-dollar wartime production job done with a resourcefulness and dispatch that should be recognized and remembered by everybody in the industry.

Manufacturers by the dozen, those hard-hitting outfits who were the familiar suppliers for dealers and distributors during peace times, have converted 100 per cent to the Victory job of producing the slickest precision weapons that ever smashed a Jap. In a way, this is no more than other industries have done. Yet radio has managed to distinguish itself on a number of counts. Radio's products are unique to start with, because of their heroic vital-communication nature, but the way in which these products are turned out shows such engineering wisdom and productive skill that the industry deserves additional credit.

Plus Effort

Radio manufacturers have stepped smartly in the direction indicated by the national necessity as outlined by the War Production Board (look at the soaring curves on the front cover) but they have also staged some spirited "firsts" on their own. These "plus" qualities of our industry have

registered notably in the \$125,000,000 per month war production goal set for the industry.

Trade Interest

These feats should have a direct bearing on the way that the retailer and the distributor look at the mid-war and the post-war radio picture. From the factory performances in the Victory program, all the radio tradesmen get a new idea of who is meeting the highest standards in the world, with what success, and why. Radio men may regard this war period as a kind of test which will indicate some interesting details as to where lies the development power, the mass-production genius, the exceptional engineering, and the quality status of the various suppliers of the business.

Aside from these factors, even the most casual and modest radio man has a real stake in the war-winning progress of the industry with which he is most closely identified. And it helps him to explain to the customer in an enlightened and inspired way, the status of an industry which is not now able to produce the things that the customer may want to buy. If the dealer knows about war production trends and responsibilities, he remains in the trade swim.

Actually, the experts at the radio plants have been beating some special drums in the thundering march of American production. They welcomed the schedules, requirements and suggestions from Washington and they added something of their own.

Delivering the Goods

Such wrinkles as the V-7 Program, the Beat the Promise drive, the Q4V-Quicker for Victory campaign, and the "Voice of Victory" program belong exclusively to radio factories who were anxious to do something plus about winning the war. These things are leaving a mark on the industrial record of the nation.

Radio headquarters are getting applause for their speedy formation of labor-management committees as a factor in increased production. Also, their participation in the 10 per cent Payroll War Bond Savings Plan has been notable, and in some cases the drives were so successful that factory employees averaged 17 per cent instead of 10 per cent.

Notable, too, is the number of "E" awards that have been awarded to radio factories. The total of these awards is changing every week, but whatever it is at the moment, the figure is a proud one.

Where They Score

The industry has also excelled specifically in the setting up of safety standards to protect workmen during the rush of the period, the staging of morale-building rallies in cooperation with Army and Navy officials, and in the sponsoring of employee "idea" competitions.

Likewise, much to the credit of the plants is their extra effort in the training of radio technicians, their cooperation in the collection of industrial scrap materials, and their wise efforts to use peace-time personnel on the new war jobs.

Up to the limit of available raw materials, radio manufacturers are thus developing their wits and their facilities to a commanding peak. They're making the life of the enemy into a miserable and shaky proposition, and they're blazing the way toward greater radio products for the times of peace.

Acoustic Principles

Applying to Sound

Jobs Intended to

Cover Whole

Communities

AIR-RAID WARNINGS

● Radio and sound men who are called in to figure on air-raid-alarm loudspeakers or sirens for local home-defense committees, are invariably asked by the inexperienced laymen to "install one or two huge high-power units that can be heard all over town!"

The layman's idea of an adequate alarm system seems to be to mount *one* powerful speaker or siren at some central point, expecting such a unit to be heard many blocks or even miles in every direction.

Yet all practical sound experience with high-power units is that they can really be heard for only a comparatively short distance in noisy densely-populated communities. Practical sound

men are unanimous in recommending instead, in such cases, a *number* of *smaller units*, rather than one or a few high-power sound sources.

City Problems

Where it is necessary to pour sound across a densely-built city, a high power unit, even if well elevated, can deliver only a very small fraction of its sound energy into the narrow streets and spaces between the buildings, while most of its sound energy "bounces" off the flat roofs of the buildings. Such small part of the sound energy which does penetrate into the narrow canyons between buildings,

thus reaches the street level considerably attenuated, and then at the street level it has to compete with the usual noise of city traffic. It is not surprising then that the alarm sounds can be heard only with difficulty, on the sidewalks and inside the buildings. Such a central-unit air-raid warning system is little effective, and is usually a waste of the taxpayers' money.

To cover such a closely-built city area, the home-defense committee and the sound man will therefore make the best use of their funds if the sound contractor is instructed to install a number of smaller units at strategic radiating positions such as corners and public squares—locations from which the alarm sound can be projected down the streets at considerable intensities.

While such a scattered installation of small units, of course, involves considerable wire-line distribution to operate the multiplicity of speakers, even this is not a serious difficulty, because usually police, fire or other city-owned circuits can be borrowed, and the installation made by using already-existing conductors.

Residential Sections

In residential sections where low buildings of uniform height of two or three stories are surrounded by considerable ground space, such as wide streets and open lawns, a central high-power sound unit, well elevated, may be used with more success. For under such conditions, the open spaces enable a greater proportion of the sound to reach ground level where it reverberates into the residence interiors. In such residence sections the surrounding noise level is also usually low, so that even faint outside sounds attract attention.

The distance air raid warnings may be heard varies considerably, but differences in the ability to hear a distant alarm from day to day can usually be traced to difference in noise levels on different days. In some cases this

Steel Air-raid Shelter, with Chandelier Speaker



To educate the public in air-raid protection, this model Armo steel shelter has 18-watt Atlas ceiling speaker reproducing sound effects.

change in ability to hear is also ascribable to the *presence* of wind—although contrary to public belief, the *direction* of the wind actually has very little effect on the “carrying power” of the distant sound source.

Effect of Wind

Indeed that sound is *not* “carried by the wind” to any appreciable degree, can be readily realized when it is recalled that the normal velocity of sound is about 1,000 ft. per second, whereas even a brisk breeze of 30 miles an hour, is traveling only 44 ft. per second. Such a 30-mile wind could have only the effect of reducing the apparent distance from source to listener by 44/1,000 or about 4½ per cent, which would not be noticeable to the ear.

But the blowing of wind does create noises everywhere about the listener, and these local noises may reach surprising intensities. Such nearby sounds, of course, compete with and mask the faint distant sound. In this way, wind “blanks out” distant alarm sounds that would be easily heard in a dead calm when no nearby noises were being produced in trees and buildings.

Many officials and civilian co-ordinators planning on purchasing an air raid siren, frequently have an exaggerated conception of the volume, range and penetration qualities of siren signals.

“Silence Pockets”

Conditions in the area to be served govern the selection of the proper type siren. A siren may be audible for miles, and on the other hand, though only a few blocks away, its sound might be less than that of a radio in the home. The action or penetration of sound and light is somewhat alike—they pass through some materials and are absorbed by others and again they are reflected, creating so-called “silence pockets.” Prime factors such as noise levels, location, height, wind, buildings or other obstructions, the terrain, and atmospheric conditions affect sound coverage and audibility. These conditions are never the same in two different locations and in a certain location will vary from day to day. The distance that any siren can be heard cannot be guaranteed by anyone because of these variable factors.

To serve as an alarm, a siren must project sufficient sound volume at a given point to drown out other adjacent noise levels, or coverage will not be effective. If it does not drown out other sounds, it means that additional equipment is necessary, perhaps requiring a smaller unit nearby, or a larger one farther away.

Small Units

In dense, noisy business districts, tests have shown that liberal distribution of smaller sirens will produce more effective coverage. Especially is this true when a lane of tall buildings,

close together, line the streets, forming a regular canyon which confines the sound. Smaller sirens can be located at intersections and combined with units placed inside of buildings or in such spaces which are not penetrated by outside sounds.

In residential or outlying business districts closely built up and with low type buildings, a one or two horsepower siren located at points of say one-half mile to a mile apart so that sound waves will overlap is very effective, declares E. T. H. Hutchinson of Sparks Withington. The spacing of sirens as outlined is most important and of course if larger sirens are used, greater sound intensity is assured.

Mounting on Buildings

As regards point of installation of sirens, the best place is seldom the same in any two instances. Under favorable conditions, it is desirable to locate such a siren in the approximate center of the community.

Usually, to obtain the best results the siren should be mounted at an average height of 30 to 40 feet above

street or ground level. Mounting a siren too high increases the sound range, but may cause the sound to pass by certain areas in between. Before making a permanent installation, try out various heights so that best sound range will be developed according to the local situations.

Wherever possible avoid mounting near surrounding obstructions such as taller buildings, trees, etc. Installation on roofs should be 9 to 12 feet above roof level, provided roof has no parapet; a parapet would be an obstruction, so siren should be mounted 8 to 10 feet above its top, then the sound waves will not be confined or deflected.

Where motor driven sirens are used, it is recommended that a remote control be a part of the operating system. The purpose of the remote control is to take the heavy current load off the necessarily small contact points of the operating switch; further, it permits the installation of push buttons, timers and other operating switches at different places and remote from points of siren location, as desired.

“Lady in the Dark” with UV Mike, etc.



Martha Deane of WOR, with her phosphorescent microphone, handkerchief and typewritten script, as made to glow in the dark, by a Westinghouse ultra-violet lamp, during a studio blackout.

Radio Stores "Convert"



"These washers will all run again," say the servicemen at this Indiana store which buys up the old units to re-build and re-sell. It's one of the steps taken by the dealer to keep up his income while wartime shortages force out the regular lines.

Hoosiers Like Service and Furniture

Merchandise stocks at The Radio Club, LaPorte, Ind., have been radically changed to meet wartime needs. The report from this prominent radio and appliance store is that "it is still a shock to us every time we open the door."

Upstairs, the store is showing \$2,000 worth of new furniture lines, and downstairs the emphasis is on the store's long-time specialty, the rebuilding of electric washers.

New Business

Used washers of all makes and descriptions are bought and re-conditioned to sell at around \$49.50, backed by "a strictly honestly-run service department" offering an unconditional one-year guarantee. The washers are processed in a basement workshop, by the dozens. However, no positive "junkers" are allowed. When it is decided by a repairman that a washer is junk, the motor is stripped off, and

if the transmission is current, it is removed. The wringer is usually taken off; copper, aluminum and iron are separated and sent to the junk yard.

The fact is, the last shipment of six "junkers," minus wringers, motors, etc., brought \$10.16. The store got wise to the fact that it is much more profitable to spend half an hour separating metals than to have the junk yard casually offer 50c for the unit as is.

Jobber Helps

For the new furniture lines, the Radio Club gives much credit to the helpful efforts of the local jobber, Radio Equipment Co., South Bend, Ind. Store managers say that "Our old friend Harold Sunderlin of Radio Equipment, who has always been a loyal fighter for the dealer, gave the shortages in regular lines very serious thought and a lot of hard work . . . he chased all over the Middle West, looking up lines, buying the

complete output of various factories and in fact converting a very successful wholesale appliance firm into a complete furniture supply warehouse."

The buyers from Radio Club went to the warehouse and had a look. And that's how they ended up with "something hot" in the way of substitute lines.

Home Furnishings Succeed in Los Angeles

"Conversion" activities at Thompson & Holmes, Ltd., Los Angeles, got under way the minute this prominent jobber realized that radio and home appliance lines would soon be but a memory for the duration.

The firm did a lot of survey work on supplies of various types of merchandise, before it was decided that wartime concentration should go to products for the furnishing of homes, produced from non-critical materials. Buyers then combed the country for such lines and then lined them up in a way that, according to Caleb Sharrah, vice-president and general manager, "we got such widespread dealer acceptance on the new merchandise that we are actually expanding our operations."

Big Variety

Included in the new lines which are cited as "life-savers" to this jobber as well as a means for many of its dealers to remain in business are: Courco blackout shades, Whitney hampers, baby carriages and juvenile furniture, Counselor bath scales, Taverner polishes, waxes, Nu-Enamel paints, Topper bridge and coffee tables, Western occasional furniture and mirrors, Edelmuth four-in-hand chairs, Lee oak dinettes, Frank & Son occasional furniture and Coolerator ice-conditioned refrigerators.

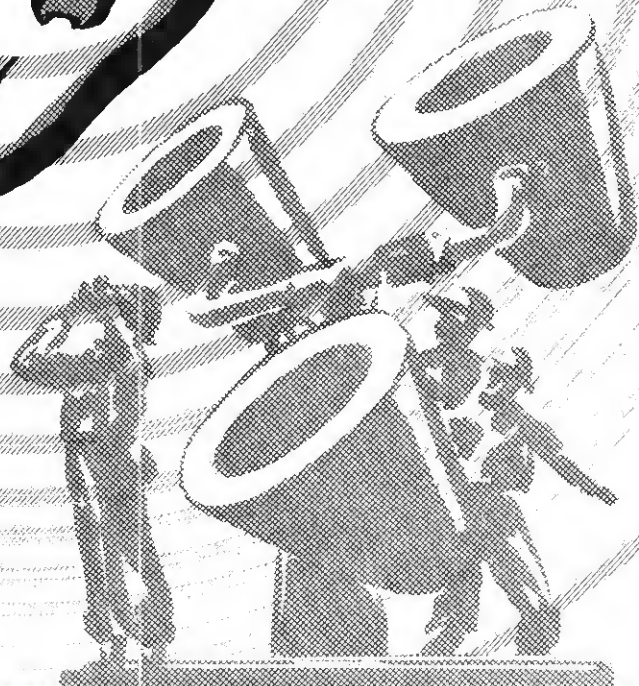
Since Thompson & Holmes have reported "immediate success" among dealers selling these lines, the distributor has announced that this new division of the business will be continued after the war as a permanent service to the trade.

"EARS" for peace and WAR

Americans are the best informed people on earth. At almost every American's fireside stands a radio whose ears reach to the far corners of the earth. With our nation at war, the radio becomes a vital source of information on the home front.



Wilcox-Gay is proud of its contribution to the radio industry. Now, as we mobilize to produce the "ears" of war, we can assure you that America's armed forces will be always "on the alert."



WILCOX-GAY CORPORATION

CHARLOTTE, MICHIGAN

"Producing for war... planning for peace"



Carmen Miranda, the "Brazilian Bombshell," is responsible for a lot of interest in the "South American Way" of making music. She records for Decca.

Latin American Records

New Activity in Pan-American Discs

• The music of Latin America is becoming more important at the retail record counter. The tricky rhythms of our "Good Neighbors" are beating their way to the front.

In many a U. S. record shop today, dealers are not getting all the records they order, by a long shot. War shortages are a factor, and may be more so. This means that when a record fan comes into the store and asks for a most-asked-for disc, he may not get it. But if the retailer is in position to promote other types of records, he may make a "substitute" sale. And among these "other types" the Latin American kind of records is a good bet. Not just for the record man who makes a specialty of stocks for Spanish-speaking communities, but for the typical record retailer with an average group of customers.

Aside from the fact that many of the songs and dances of the Latin type are sure-fire sellers purely because they have colorful rhythm and romantic appeal, there are a number of new reasons for this trend to Latin American records. Our wartime feeling of Pan-American unity is the basis for most of our awakened interest.

For instance, the public is getting interested in this music via a number of newer features on the networks. The "Pan-American Holiday" show on NBC and the "Music for Neighbors"

program on the same web are examples. CBS has its "Calling Pan America" feature and also "El Charro Gil Trio" of interest to wide audiences.

There have been a number of musical movies with Latin American flavor which have added considerably to the trend. The recent "Rio Rita" and the forthcoming "Panama Hattie" are examples.

Public interest in the study of Spanish languages has greatly increased and the interest in lyrics in this language has grown too. All this is a special break for language-study records also, and the new disc releases in this field are dolled up with a lot of extra sales appeal.

Southern Stars

Another factor in the situation is the increasing number of star performers from the countries to the south of us, coming to the attention of U. S. record fans. Latin American personalities, including singers, dancers and instrumentalists, are becoming favorite figures in our entertainment world and sometimes it takes only a short while for their recordings to become fast sellers.

Also, when you consider the widespread interest in dance steps like the rumba, conga, tango, etc., with new ones coming up regularly, you have a large group of record buyers for "dance" reasons alone.

The thing to do is to give these

records a good break in your store. Display materials are plentiful and not expensive. Travel folders, photos of Spanish dancers, Mexican scarfs, sombreros, unusual musical instruments, etc., will help out for window displays.

A regular system of tie-ups with local theaters should be worked out so that when the musical movies with the Latin American settings get to town, the record dealer will be headquarters for the music heard in the shows. And these movie tie-up displays are appropriate for the theater lobby as well as for the record store.

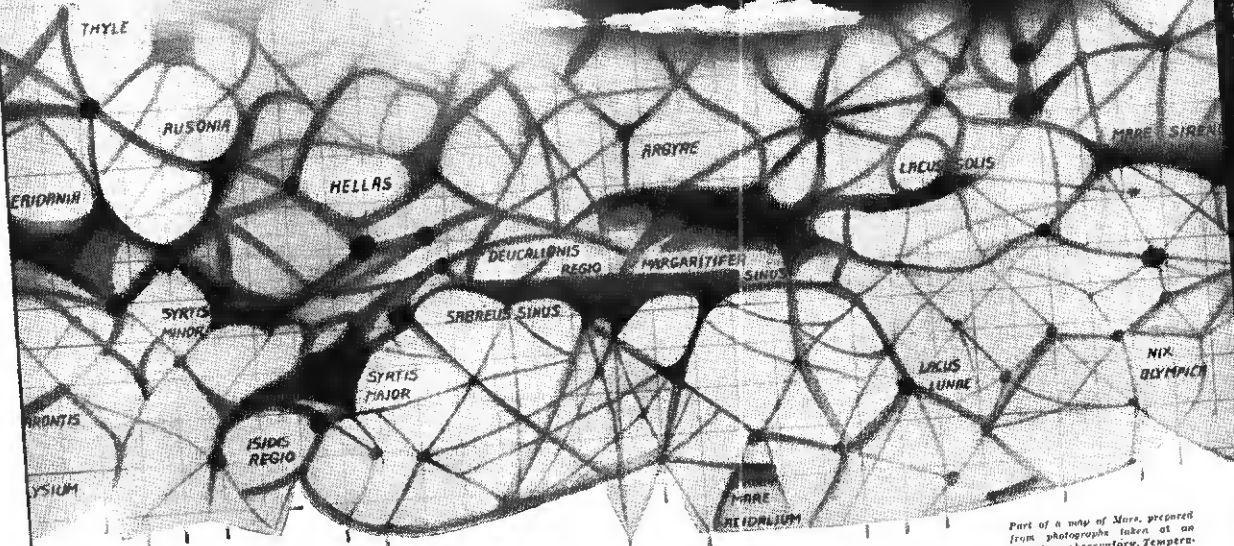
Whatever kind of display the retailer decides to use, however, he will find that the *albums* of Latin American records will add greatly to the color and effectiveness of the set-up. There are plenty of these released by Victor, Decca and Columbia.

For instance, among the newer Columbia albums are "Continental Tangos" on C-90, "Native Brazilian Music" in two albums C-83 and 84, and "Conga with Cugat" on C-74.

Decca has "Carlos Gardel" on A-333, Carmen Amaya (Vol. 2) on A-288, "Rhumba Rhapsody" on A-238, and many others.

The newer album releases in this group from Victor include "Mexicana" on S-40, "Fiesta in Cuba" on P-129, "Cubano Rhythms" on P-100, "Latin Favorites" on P-71, and others.

HOW COLD IS IT ON MARS TONIGHT?



Part of a map of Mars, prepared from photographs taken at an American observatory. Temperatures on Mars will vary from 100° F. above zero to about 200° below zero.

PERHAPS that may seem a trivial question to you. Yet for centuries, scientists have been trying to unlock the secrets hidden in the dark reaches of the Universe. Secrets which some day may change the whole course of human existence.

Today, truly amazing instruments are measuring sun, moon and stars. Among them are the Farnsworth Photo-Cell Multiplier Tube and Dissector Tube . . . used by scientists to help push time and space aside, and bring new worlds in sharper, clearer focus. These tubes, and many other discoveries in the field of electronics, have resulted from Farnsworth's 15 years of research in television.

With our nation at war, the Farnsworth laboratories are now devoting their skill to the development of new weapons for our armed forces. The great Farnsworth plants, with

thousands of employees and 10 years' experience in the manufacture of the famous Capehart Phonograph-Radio, are producing precision electronic instruments in endless stream.

But progress in television is still proceeding! This is one of the world's great industries, destined to play a magnificent part in our national post-war economy.

How far off is that day, no one knows. But your purchase of War Bonds today will bring it nearer! And you will be building soundly for the future, when the purchase of an airplane, a motor car, a television set, or perhaps a new home may be your urgent desire.

Meanwhile, Farnsworth is steadily marching toward the day when the realm of science, the news of the day, the music of life will appear on a magic screen in your own home.

• Manufacturers of Radio and Television Transmitters and Receivers; Aircraft Radio Equipment; the Farnsworth Dissector Tube; the Capehart, the Capehart-Panamuse, and the Farnsworth Phonograph-Radios

Michael
President
Farnsworth Television & Radio Corporation
Fort Wayne, Indiana

FARNSWORTH TELEVISION

• Farnsworth takes great pride in presenting to the music and radio trades of America the first in its distinguished new series of advertising on television. Tomorrow is television's world, and it is our purpose that the name of Farnsworth shall loom bright and clear upon the future's magic screen.

Wartime Parts Supply

• One of the most pressing problems in the radio parts business today concerns the supply of wire-wound resistors, volume-controls, wire, solder, etc., according to a survey of possible shortages conducted by the National Electronic Distributors Association, P.O. Box 2, Reading, Pa.

George Barbey, the NEDA president who makes it his business to keep up to the minute on parts priority rulings, says that "we are aware of this problem and we are working for relief on these lines. . . ." Meanwhile parts distributors are advised to apply their latest instructions on these items until new and definite rulings are issued and interpreted.

Simplify PD-IX

On the subject of parts supplies in general, in which the use of form PD-IX (Distributors' Application for Preference Rating) is a factor, the NEDA reports that this form is still not bringing the results expected of it. It is pointed out that use of this form needs to be simplified as much as possible, and the suggestion is that each PD-IX be confined to *one* type of merchandise such as transformers, speakers, batteries, etc. It is even advisable to send in separate forms for variable condensers and fixed condensers, to make it simpler for the officials

in Washington who have their hands full these days.

War Volume

The distributors association is also collecting data on "war business" done by its members and has invited them to make reports to headquarters on local experiences. In some localities it has been found that there are more headaches than profits in this business, while distributors located in the thick of war activity have found that the volume is very much worth getting.

The above projects are, by the way, examples of NEDA activities which are making the association particularly valuable to parts distributors during wartime. Much of the work will be brought to the attention of the industry in the NEDA membership drive now under way.

The Time to Join

During this drive, in which distributors throughout the U.S. will be urged to line up with local NEDA chapters, the 7-point program of the organization will be emphasized. These points are:

A. To keep the radio parts business in the hands of legitimate radio parts distributors.

B. To help establish an "Industry Code of Ethics" and live up to it.

C. To look after the interests of

the parts distributors in all their relations with the Government, manufacturers, dealers, and service-men.

D. To improve both personal and business relations between competing distributors, through district group conferences.

E. To support a *national organization* that can act as a watch-dog, always ready to act at a moment's no-

(Continued on page 47)

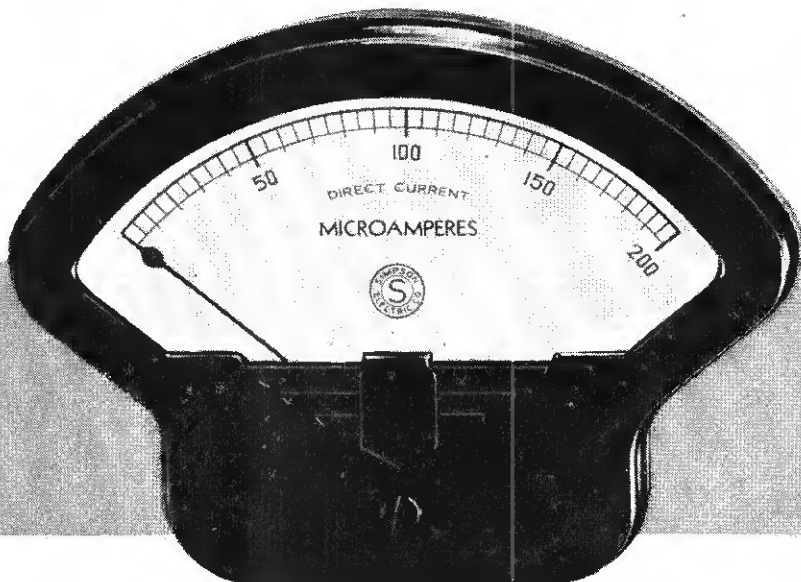


Store manager of Stamford Radio Supply is Mrs. Marjorie Lockwood, who knows complex parts stock thoroughly and can discuss with servicemen their purchases. Mrs. Lockwood knows radio inside out, having formerly served as section boss in the Stamford factory of Cibaundagraph.

Connecticut Distributor Goes After Industrial Biz



With the war boom swelling Stamford (Conn.) industries, G. W. Morton, president Stamford Radio Supply Co., sees the big future ahead in selling electronic supplies to local plants, and is now concentrating sales effort on this and on sound.



Time is an important dimension of Accuracy

IN the strict meaning of the word, accuracy is not a measurable thing. An electrical instrument is either accurate, or it isn't accurate. There can be no more or less, no "almost".

But there *is* one important way instrument accuracy can be qualified—if not in terms of "how much", then in terms of "how long".

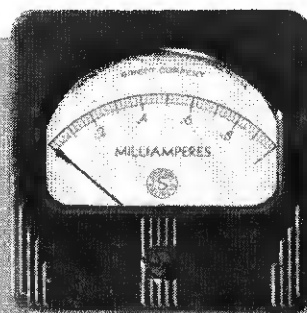
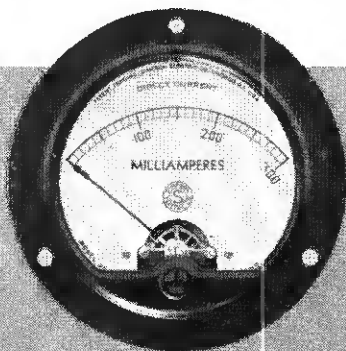
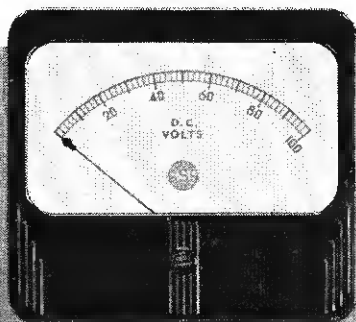
How long will Simpson Instruments stay accurate? Examine the Simpson movement and you'll find your answer. First of all you'll find heat-treated, aged magnets—carefully selected springs, tested and tempered for permanent re-

siliency—specially processed pivots, completely Simpson-made.

But most important of all you'll find a fundamentally-better, stronger construction, with soft iron pole pieces for absolute accuracy, and full bridges at top and bottom that hold the moving assembly always in perfect alignment.

If your requirements are vital enough to give you the right to buy instruments, they are vital enough to rate the best. To those who have learned to measure accuracy in terms of "how long", best can only mean . . . Simpson.

SIMPSON ELECTRIC COMPANY, 5208-18 Kinzie St., Chicago, Illinois



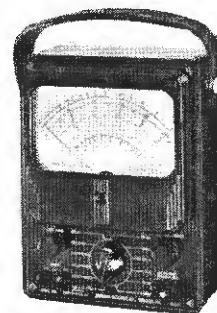
**ALL POPULAR STYLES,
SIZES, RANGES**

Simpson

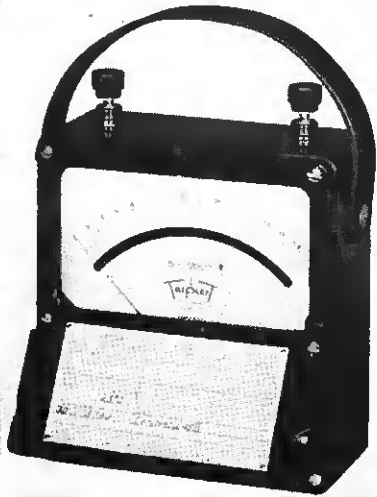
INSTRUMENTS THAT STAY ACCURATE

MODEL 260 High Sensitivity Tester

Here is a typical example of Simpson leadership. Ranges to 5000 Volts, both AC and DC, at 20,000 ohms per volt DC and 1000 ohms per volt AC. Current readings from 1 microampere to 500 milliamperes. Resistance readings from 1/2 ohm to 10 megohms. Five decibel ranges, -10 to +52 DB.



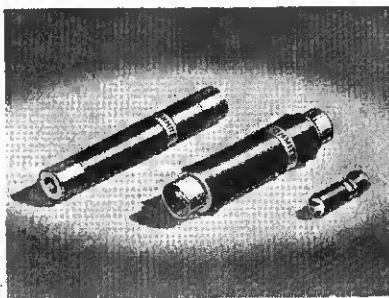
New Products



TRIPLETT PORTABLE TESTER in molded case has long 4.58" hand calibrated mirror scale. Hinged cover. Black case for DC instruments, red for AC. 6 in. x 5½ in. x 2½ in. Detachable leather strap handle. Model 525 DC; 635, AC. Triplet Elec'l. Instr. Co., Harmon Rd., Bluffton, Ohio—RRT.

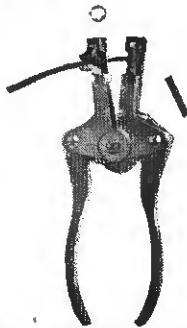


WALSCO STAPLE DRIVER 500A, an improved model made with hardened steel inserts which prevent jamming and clogging its automatic staple magazine. Quickly sets staples in otherwise inaccessible places and even into hard surfaces such as brick, plaster walls, or hard wood. It's a great time and labor saver for radio, intercommunication and telephone installations. Walter L. Schott Co., 9306 Santa Monica Blvd., Beverly Hills, Calif.—RRT.

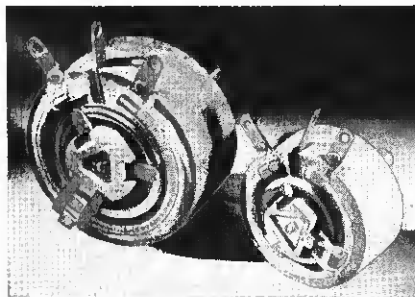


OHMITE FERRULE RESISTORS have been designed for easy interchangeability without the use of tools. An even winding of resistance wire on a ceramic core is protected by an Ohmite vitreous enamel coating. Ferrules are cup, sleeve or cartridge type. Special ceramic cores are available which, with special coating, will withstand the temperature shock test of from ice cold water to hot water. Protective coatings, which pass salt water immersion tests are also available. Ohmite Mfg. Co., 4835 Flournoy St., Chicago, Ill.—RRT.

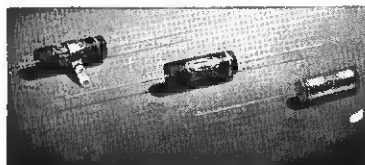
PHILCO AUTOMATIC TIMER, a simple electrical timing device which should find many applications in industrial plants. This automatic time-switch is arranged to close an electrical circuit after the end of a pre-determined time. By reversing the position of the mercury switch element, it can also open a circuit. On AC, it has 1200 watts capacity, enough to control a 1-hp. motor of the repulsion-induction type. Setting merely requires turning of a knob to the time (AM or PM—up to 23 hours in advance) the switch is to operate. Series connector with 5 ft. of cord is supplied. Philco Corp., Tioga and C Sts., Philadelphia, Pa.—RRT.



GENERAL CEMENT AUTOMATIC WIRE STRIPPER for electricians, sound and radio men, etc., instantly strips insulation from all types of wire, just by pressing the handles. Can also be used as a wire cutter. \$6 list. General Cement Mfg. Co., Rockford, Ill.—RRT.

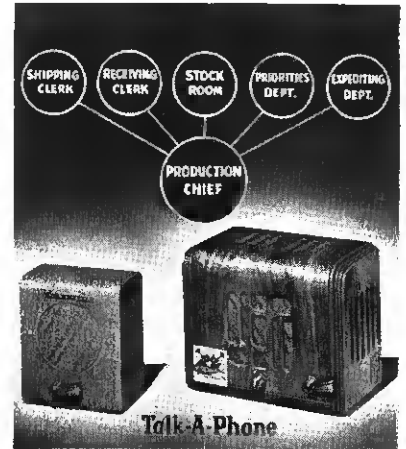


CLAROSTAT 50-WATT RHEOSTAT is wound on an insulated metal core which distributes the heat at intermediate rotational settings. Resistance element is imbedded in a ceramic housing with an inorganic cement. A graphited copper contact shoe rides the collector ring and winding, assuring 2 positive sliding contacts. Contact pressure is provided by a helical spring. Available in any resistance value up to and including 10,000 ohms. Clarostat Mfg. Co., 285 N. 6th St., Brooklyn, N. Y.—RRT.



SOLAR TYPE XT CAPACITORS are oil-impregnated metal tubulars, non-inductively wire wound, sealed with rubber

bakelite end discs. Supplied with strong, flexible bare, tinned copper wire leads. Wax-impregnated outer cardboard insulating tube. Available with section insulated from the container or grounded to it. Especially recommended where high insulation resistance is vital. Solar Mfg. Corp., Bayonne, N. J.—RRT.



TALK-A-PHONE INTERCOMMUNICATOR consisting of 5-station master, one sub-station and cable, selling as low as \$29.95. Installations can be made to include all masters to a total of 5, a master and a maximum of 5 sub-stations or a combination of master and sub-stations to a total of 5 units. Operates on 110 v., AC or DC. Master station mechanisms housed in walnut cabinets, sub-stations in durable metal cases. Talk-A-Phone Mfg. Co., 1219 W. Van Buren St., Chicago, Ill.—RRT.



RCP MULTITESTER, model No. 423, is a general utility volt-ohm-milliammeter. 3-in. square meter has movement of 395 micro-amperes or a sensitivity of 2,500 ohms per volt, and uniform AC-DC voltmeter sensitivity of 1,000 ohms per volt. Ohmmeter range of 10 megohms. Suppressor type copper oxide rectifiers for AC measurements. Walnut finish in both bench (\$23.50) and portable (\$25.95) models. Radio City Products Co., Inc., 127 W. 26 St., New York City.—RRT.

**Still YOUR BEST BET
ON REPLACEMENTS!**

Centralab MIDGET RADIOHMS

Servicemen recognize the "plus-performance" that these sturdy controls give on every replacement job... Old Man Centralab's good advice to "ALWAYS SPECIFY CENTRALAB" was never more timely than now . . . when it is so important to keep the "radio ears" of the nation properly tuned to the events of these critical moments in our history . . . For smooth, silent, sure attenuation . . . specify **CENTRALAB MIDGET RADIOHMS.**

CENTRALAB: DIV. OF GLOBE-UNION INC.
MILWAUKEE, WISCONSIN, U. S. A.



Servicing Portables

Part II. RF and IF Alignment Methods in Series Filament Receiver Circuits

• The unusual circuits which must be used in certain types of portables in order to make them operate from batteries or power line current introduce alignment problems which do not exist in other types of sets.

In the usual IF alignment procedure, it is customary to connect the signal generator "ground" to the chassis of the set and the "high" or output terminal through a capacitor to the grid of the tube just preceding the transformer to be aligned. In most circuits this method is acceptable since, as can be seen in Fig. 1, the signal from the generator is applied directly across the tuned circuit of the secondary of the IF transformer. Since the secondary has a very high impedance at the frequency of the signal generator, approximately the full signal from the generator will be applied between the grid and ground.

Common Ground

Although the grid return circuit of most of the IF stages in sets using circuits similar to Fig. 1 is made to the AVC bus, this bus is at ground potential as far as any RF voltage is concerned due to the large capacity filter condenser between the bus and the chassis or B—. Thus the ground side of the signal generator has no impedance, except for the small value due to the AVC condenser and lead inductance, in series to the return or "cold" side of the IF transformers.

Fig. 2. AC/DC-battery portables using series filament circuits do not have the common ground return for all tubes so that generator connections disturb normal operation. Point 2 is best position.

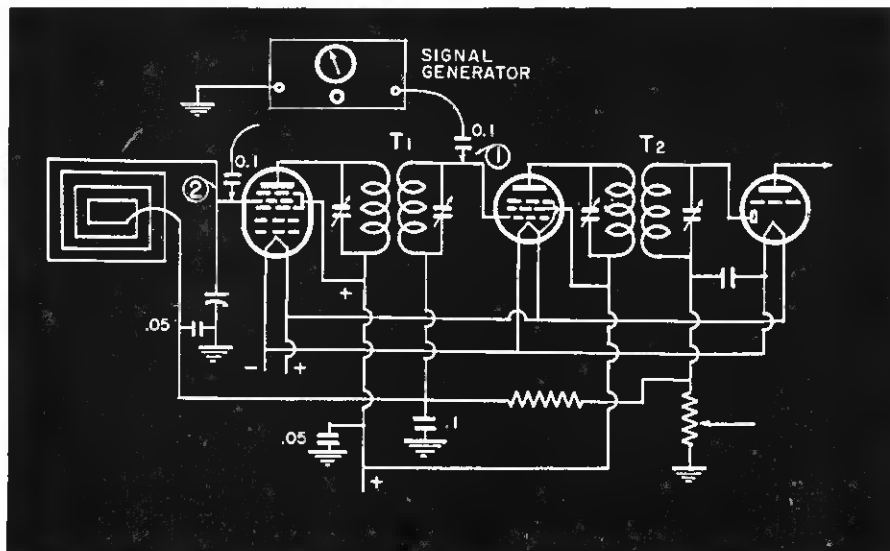
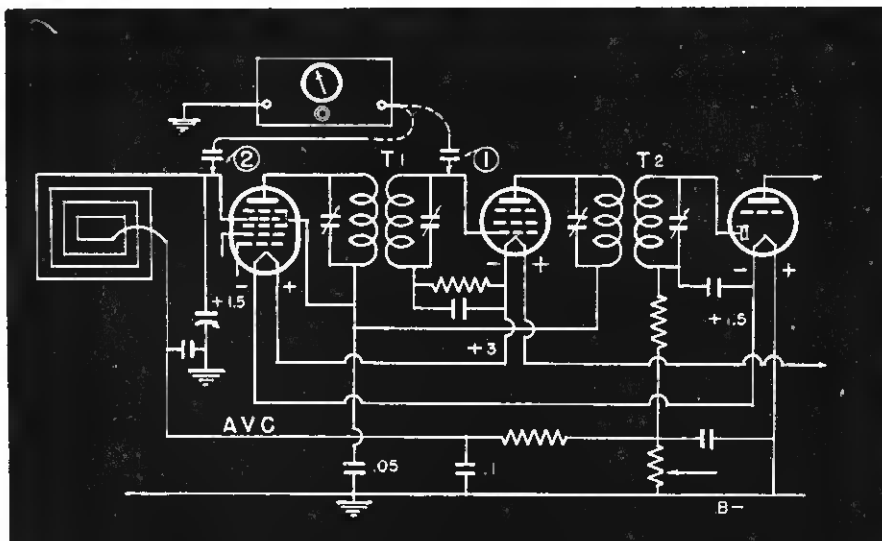


Fig. 1. Typical IF alignment set-up for parallel filament type portable set. Generator is usually connected to Point 1 if more than two IF stages are employed. Point 2 is recommended for most sets.

We can usually therefore, leave the generator ground connected to the chassis of the set and move the "high" side of the output from point to point as is necessary to align the transformers.

The connection of the "high" side of the signal generator through a 0.1 mfd. capacitor to an IF grid with the ground connection to the chassis causes considerable detuning of the secondary of the transformer connected to that grid. This is not serious

since only the following transformers are being aligned and it is only necessary to supply a signal of the proper frequency and strength to adjust them.

When multiple stages of IF transformers must be aligned, it is usually necessary to apply the signal from the generator to one of the intermediate stages rather than to the converter grid. This is especially true when the stages are considerably out of alignment. Insufficient signal voltage from the generator usually makes it necessary to start nearer the audio end in order to get a signal through the transformers.

Disturbing the Circuit

The common practice of IF alignment in sets which have only one IF stage is to feed the signal from the oscillator to the grid of the converter tube. With this one connection, all transformers are aligned to give the peak output.

In any receiver the process of alignment is to be carried out so that the artificial conditions introduced by connecting the signal generator to the circuits and the strength of the applied alignment signal approach the conditions under the normal operation of the set. It is highly desirable that the test conditions do not cause the set to be aligned to a degree that does not exist the moment the signal generator is removed and thereby cause



the set to perform improperly to normal received signals.

These problems of aligning the set to perform at its best under actual conditions of reception lead to several precautions which should be observed. Point number one is be sure that the signal, to which the circuits are to be aligned is being introduced at one point only. This means that the signal generator must be well shielded and the output lead to the set must also be shielded. If the test signal is picked-up by several circuits at the same time due to incorrect shielding, the alignment of transformers is made difficult through phase differences in picked-up signal and the signal which comes through the circuit in the normal manner.

Controlling the Signal

The strength of the applied test signal is also very important. There are several suggested methods for determining the correct strength of the signal. The general instructions which most receiver manufacturers give are to keep the output of the generator as low as possible in order to prevent the AVC system from affecting the alignment. This usually means a very weak signal and also one which is sometimes difficult to observe on an output meter. These instructions are given because the AVC voltage changes the grid bias on the IF tubes and this in turn varies the input impedance of the tubes and changes the loading across the tuned transformer.

This change of input impedance is called the Miller effect. It means that if the transformers are aligned to a strong signal which furnishes a high AVC voltage, the transformers will not be correctly aligned at other signal strengths. The major reason for aligning below the AVC point is to have

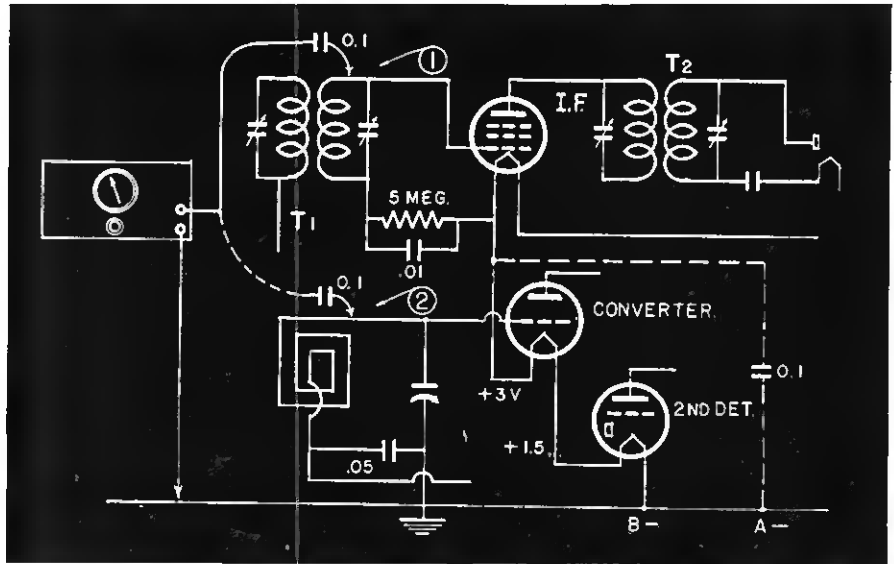


Fig. 3. Simplified circuit of Fig. 2 showing relative position of tube filaments with respect to ground. RF input at Point 2 is applied directly across tuned circuit.

the IF transformers peaked for maximum gain at weak signals which is the condition at which maximum gain is desired. The alignment will be incorrect on strong signals but this will mean that the IF stages will not be as selective as before. This lower selectivity can usually be tolerated since the strong signals are locals which are well separated and don't require the extreme selectivity.

Floating Grounds

Other alignment procedures recommend that a fixed AVC bias be applied while the circuits are being aligned. This fixed bias should be a value which the receiver normally develops when operating from the local stations. The value to use depends of

course upon the individual set, the location where it is used, the antenna, power of stations to be received, etc. The usual procedure is to apply a value of AVC voltage that is about the average of that developed by the stations to be received. This will mean 5 to 10 volts for small sets and 10 to 15 volts for sets with considerable gain. This AVC voltage is applied to the AVC bus after it has been disconnected from the source of control voltage in the receiver, usually at the ground end of the second detector transformer.

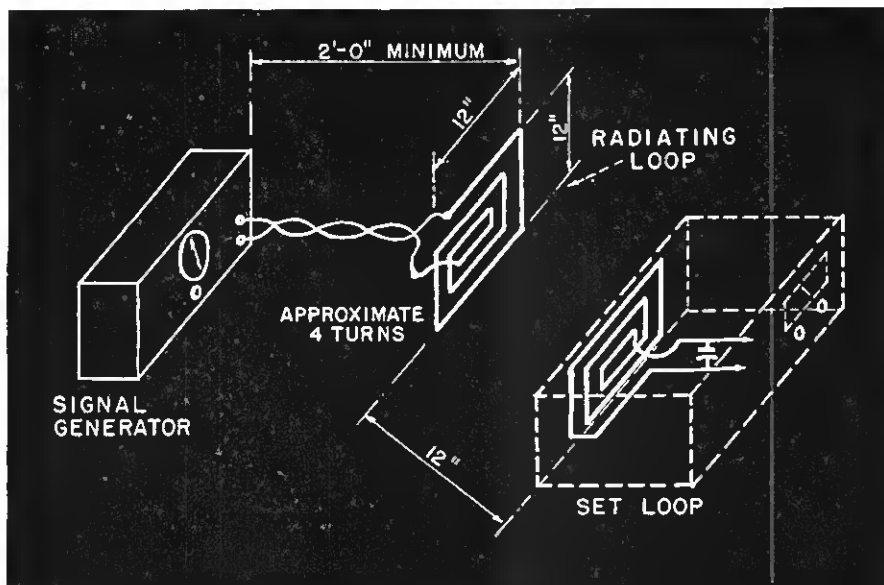
Series filament portable circuits do not usually have a common ground return for the RF circuits since the grid return circuit is made to the filament of the same tube. In Fig. 2 the signal generator is shown connected to either of two points, one on the IF grid and the other on the converter grid. The ground side of the generator is connected to the B- or chassis of the set. The current from the signal generator will thus flow through the IF transformer (with the connection to IF grid) and back to the ground side of the generator through either the filaments of the other tubes between the IF tube and ground, or through what ever by-pass capacity is provided.

Common Paths

If the IF transformer to be aligned is connected to a tube whose filament is between that of the tube to which the signal generator is connected and ground, it is possible that the RF current from the generator and that circulating in a following stage will flow through a common impedance such as the filament of one of the tubes and thereby cause faulty alignment, oscillation, etc.

(Continued on next page)

Fig. 4. Recommended set-up for RF alignment of loop antenna sets. Keep large metal objects away from set loop while allguing to avoid incorrect adjustment due to stray capacities. See text.



SERVICING PORTABLES

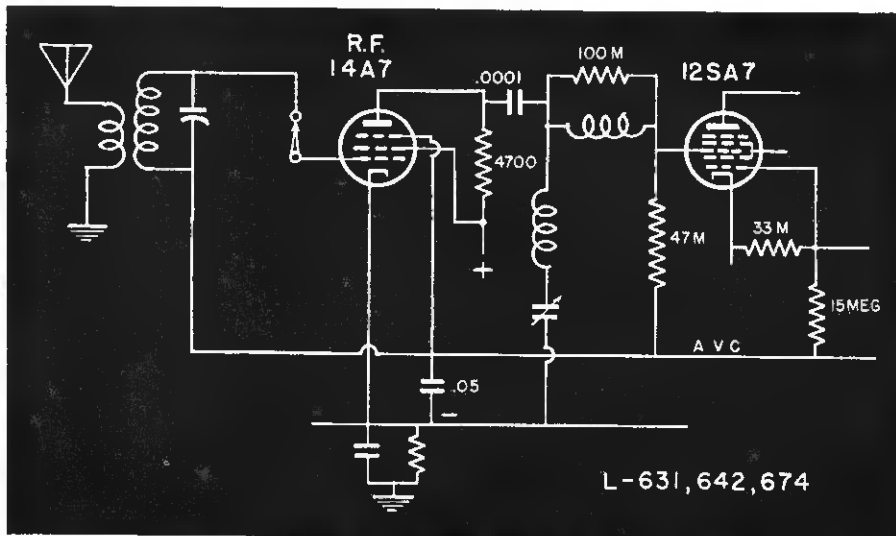
(Continued from preceding page)

Fig. 3 shows a simplified portion of the circuit in Fig. 2. Because the grid return circuits are not all made to the common ground or chassis in a portable of this type, it is important to be careful in connecting the signal generator to the set, especially the ground connection. In these circuits it is most important to follow the manufacturers' instructions on alignment. Notice particularly where the signal generator ground is to be attached.

Because most of these circuits have one IF stage the signal for alignment is usually introduced into the converter grid. This is point 2 on Fig. 2, and Fig. 3. Because the grid circuit of the converter tube appears as capacity to the signal generator it is customary to set the tuning condenser with plates full open to reduce the shunting of the signal to ground.

The RF alignment on portables and other loop antenna sets is usually carried on by inductively coupling the signal to the set. Since the loop is a large coil with a large field about it, the signal should be introduced with as little disturbance to the alignment as possible. The usual recommended procedure is to connect the output of the signal generator to a loop antenna of a few turns about 12 inches on a side and place this loop parallel with and about one foot from the set loop. The same story about signal strengths from the generator applies as mentioned under IF alignment. Fig. 4 shows the set-up for this RF alignment.

When aligning the RF portions of the set it is usually necessary to have the set in the case and the loop



RF converter circuit in GE models discussed below.

antenna and batteries in their normal positions since the capacities of the chassis and batteries to the loop must be taken into account.

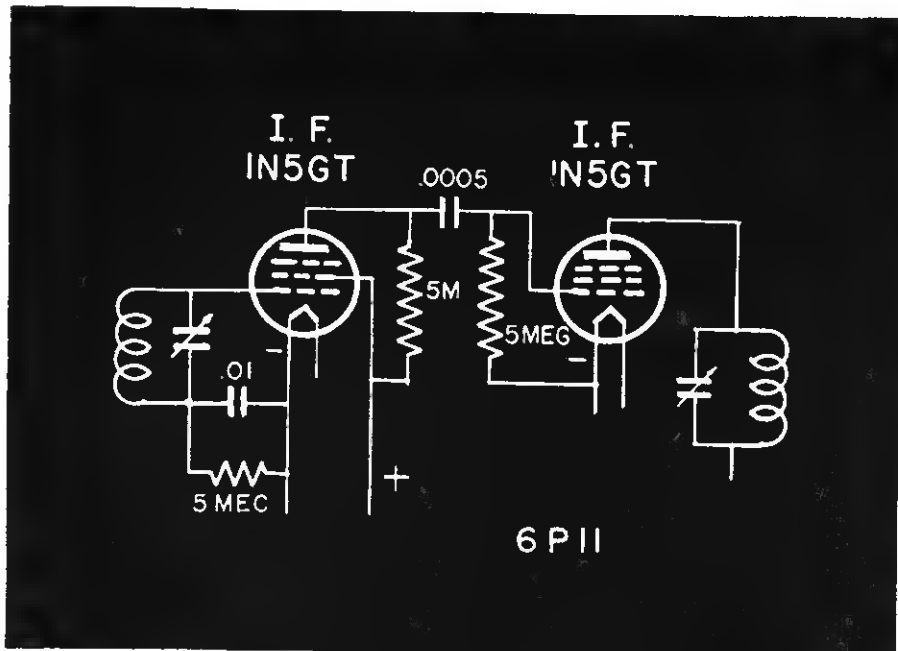
AVC on Suppressor in GE Series

GE models L-631, L-642, L-674 all use the RF-converter circuit shown in accompanying diagram. This two-band 6-tube AC-DC circuit uses a high- μ 12B7-14A7 RF pentode with a tuned grid input circuit and a resistance-impedance coupling to the converter tube. The AVC voltage is applied to the control grids of the RF, converter, and IF tubes in the normal fashion. In addition, the suppressor grid of the RF tube is also connected to the AVC bus for additional control of gain.

The AVC bus is connected to the oscillator grid through a 15-megohm resistor for the purpose of using the negative voltage developed by the oscillator as an initial bias for the RF tubes. This rectified oscillator voltage, about 8 or 9 volts, is divided by the 15 meg. resistor and the AVC circuit resistors so that about 1/6 or 1.5 volts negative is applied to the RF, converter and IF tubes.

The coupling between the RF and converter stages is a combination of resistance and impedance. The plate circuit of the RF tube is loaded with a 4700-ohm resistor. The signal is capacity coupled to a series wave trap and series peaking coil to the grid of the converter. The peaking coil is shunted by 100M ohms to make the compensation broader over the two bands. The signal voltage applied to the converter is made more uniform over the two bands by the combination coupling circuit since the reactance of the condenser is high when that of the coil is low and conversely.

Diagram for the Belmont portable circuit described at lower right.



Resistance Coupling Used for Portable IF Circuit

Two IF stages used in the Belmont portable 6P11, are coupled together through an R-C circuit. In the accompanying diagram, the first 1N5GT has a 5,000 ohm plate load resistor and the output signal across this load is capacity coupled to the grid of the second 1N5GT through a 500 mmfd. capacitor. A high value of grid resistor is used in the second stage to serve as an overload prevention. Since these two IF tubes are operated at zero bias, some means of protecting the tubes on large values of positive RF voltage is needed. This is accomplished in both tubes by high value grid return resistors which will bias the grid negatively when the positive RF peaks cause grid-current to flow.

Including Radio & Television Retailing

New ELECTRONIC Uses in INDUSTRIES

• Probably no tool applied to industry has found such a diversity and number of uses as has the electronic tube. It is employed to speed up production, to safeguard workers, to protect against sabotage, to refine measurements, and to afford amazing sensitivity of control.

How wide are the 1942 ramifications of the electronic industries and how they reach into many fields of human activities is strikingly shown by the large 4-page "Flow-Chart of the Electronic Industries" which occupies the central section of this Part II. Raw materials, parts and components; electronic devices; how they are distributed; and the purposes for which they are used, are all shown in this

remarkable chart for the first time.

Meanwhile on this and the last page of Part II, we describe some of the new electronic applications to American industry and the war effort.

Short-Wave Drying of Tobacco

Tobacco in casks is now being rapidly dried without excessive heating of the tobacco leaves, by a new ultra short-wave process developed by the Girdler Corporation, Louisville, Ky. Formerly the tobacco casks required a long time to dry out. But with the new short-wave process any moisture in the tobacco is rapidly heated by the electric currents induced in the moist material. Of course as soon as the moisture evaporates, no

further conductivity is provided and so, heating stops. The short-wave process is thus foolproof in application, since excessive exposure of the tobacco to short-wave bombarding can do no injury or produce no heating after the moisture has been expelled.

Cementing Plywood by HF

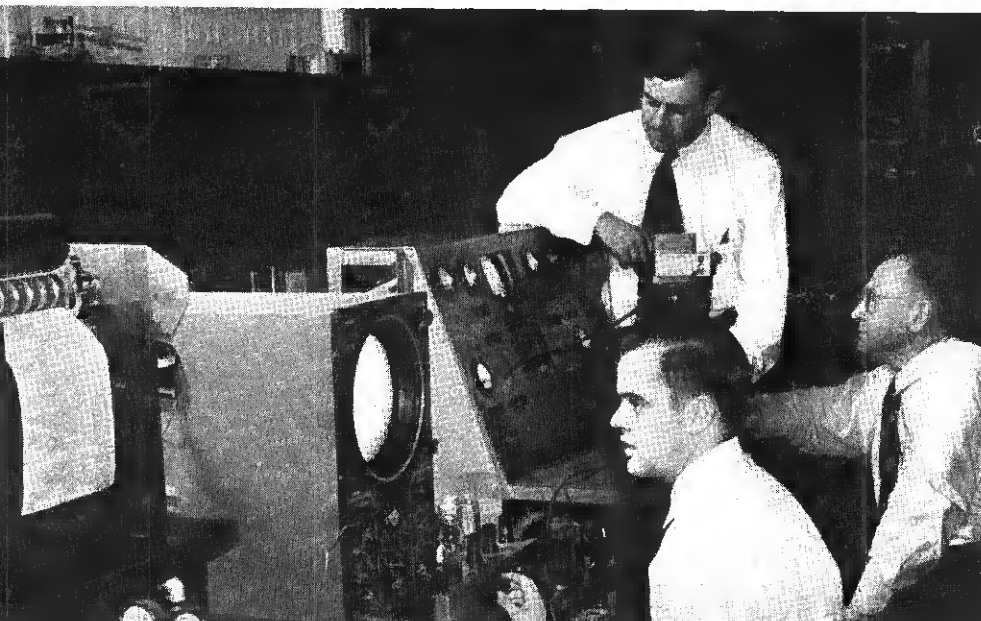
Patents of the above company (formerly the Thermal Engineering Corporation of Richmond, Va.), are now being applied on a large scale for the cementing of plywood. The plastic polymer cements used are electrically conductive, and when such plywood assemblies are introduced into a high-frequency field, the currents induced in the plastic cement heat and "set" this cement, without applying excessive heat to the wood sheets themselves. Such plastic cement, once "set," is impervious to water, and produces a bond even stronger than the wood itself. Such plywood is proof against failure from the usual trouble of moisture softening the glue.

Veneers that Are Crack-Proof

The new plywood-treating apparatus applies up to a thousand kilowatts of radio energy of a frequency not far from the broadcast band (but completely shielded so that no stray field can leak out to disturb broadcast listeners). Plywood sheets up to 8 by 10 ft. can be treated.

(Continued on last page)

To enable industry to study opaque substances and the grain-structure of metals, Dr. V. K. Zworykin of RCA (right) has now developed a "scanning" electron microscope.





GE photo-cell door saves time and heat at a big Louisville, Ky., tobacco plant. A hinged section and limit switch reverse motor if any person is caught in door.

With short-wave inductive heating, also, comparatively great thicknesses of plywood "sandwiches" can be treated rapidly, whereas to heat the same thicknesses of plywood assemblies by ordinary heat, would require a long time to bring the whole wood mass up to the cementing temperature.

Veneers can also be cemented rapidly by the new electronic method, producing a method of adhesion which is proof against cracking off or loosening of the veneer—long the bane of veneered furniture in moist climates.

Electronic Moisture Detector

Many precision steel parts for guns, planes, tanks, and other war materiel must be hardened by heat in a special airless gas atmosphere, such as hydrogen, so that their highly finished surfaces will not be scaled or rusted. Because the presence of only a little watervapor in the gas would result in rust, heat-treaters must spend a good deal of time in moisture determinations.

Now, however, the heat-treater can do such a job instantaneously with the Westinghouse electronic moisture detector. Its business part is a two-element tube similar to a radio rectifier, but with an inlet and outlet through which gas is passed on its way to the furnace. As long as dry gas passes through, electrons flow

steadily from the tube's hot filament to the plate, producing an unvarying electric current. When water vapor is present, some of the electrons attach themselves to the water's oxygen atoms, reducing the current. Such current fluctuations can be read in terms of moisture from a simple meter or recorded on a more elaborate recording device. Incidentally the same method may also be used in detecting and measuring impurities in certain other industrial gases.

Electronic "Fish Fences" and Locators

In the Pacific fishing industry, the U. S. Bureau of Fishes has been making use of an inductor detector device to locate marked salmon bearing identification plates. These metal plates are attached to the fish when young, and the fish then released. Later catches at distant points along the same coast, are then "scanned" by these electronic detectors, and the marked fish quickly isolated, for study of their movements since first marked.

And now an adaptation of the "electronic fence" for farm animals, has been applied to produce fish barriers which will keep finny swimmers away from penstock intakes and other dangerous waters.

Statistics show that millions of game fish are killed annually in irrigation ditches and power plant diver-

sions. A practical and unusual solution to this problem is provided by the Burkey electronic fish screen.

By means of this electronic device a special current wave causes an unpleasant but harmless stimulus to fish coming within the electrified zone, causing them to stop or be diverted. By electrifying areas of water harmful to fish, the fish are saved from death.

Photoelectric Door Saves Money

The Brown & Williamson Tobacco Company, Louisville, Ky., is saving as much as \$30 per day in operating costs as a result of the recent installation of photoelectric control on the doors of its shipping and receiving departments. Substantial savings in heating costs are also being made.

With the shipping and receiving departments operating on a 24-hour-a-day basis, their six huge doors must be continually opening and closing to allow for the passage of incoming loads of leaf tobacco and outgoing shipments of cigarettes and smoking tobacco. These doors were previously operated manually at comparatively high cost, both in actual operating expense and in time lost in signalling for the doors to be opened.

A limit switch, mounted at the top of the door on a hinged panel is used as a safety device to protect against persons being caught in the door. This switch operates the control circuit and reverses the door.

Dr. A. A. Bates of Westinghouse Research Laboratories measures electronically the size of metal particles used in powder molding.





RESISTORS for REPLACEMENTS



The Army, the Navy, the Air Force have first call on all the radio parts and equipment that can be made today. Their requirements are *vital*. Maximum dependability, stability and accuracy are essential under all of the severe conditions of war. That is why IRC resistors are specified, and why IRC is producing resistors 24 hours a day, 7 days a week.

This explains the increasing difficulties service men are experiencing in securing dependable resistors for repair and maintenance of home radio sets.

Realizing the importance of maintaining and servicing home radio sets, IRC is making available for servicemen large stocks of the same dependable resistors the armed forces are using (but in ranges and tolerances not called for on war orders) and are offering the following suggestions to enable servicemen to obtain greatest possible use of resistors in these times.

1/2-, 1-, and 2-watt Resistors

The resistors in home and automobile sets are almost invariably of the so-called "Preferred Number" or "RMA" standard resistance values and are color-coded accordingly.

Jobbers have, in the past, carried in stock the 1/2-, 1-, and 2-watt resistors only in "nominal" or round figure ranges such as 1,000, 5,000, 10,000 and 25,000 ohms, etc.

Now, however, many jobbers are stocking the IRC resistors in RMA ranges. These resistors are being furnished by the factory from stocks originally accumulated for the set makers before the manufacture of home sets was discontinued. They are of exactly the same quality previously used in the finest radio sets, but as they are not the ranges and tolerances required for military equipment, they can be supplied without interfering with the all-out war program.

A defective resistor in a set can always be replaced satisfactorily by a new resistor within

20% of the color-coded resistance value of the original unit.

In rare cases, where close tolerance units are used as original equipment, they are usually identified by a gold or bronze band for 5%, or a silver band for 10% tolerance. If a close-tolerance unit is required for replacement, two resistors, one higher and one lower than the required range, may be used in series or in parallel when matched for their combination resistance value.

If a 2-watt resistor is required and none is available from the jobber, two 1-watt units in series or in parallel will do the trick. Similarly two 1/2-watt units can be used instead of one 1-watt. Any low-wattage unit can, of course, be replaced satisfactorily by any higher-wattage unit of the same range.

Power Wire Wound Resistors

All wire wound resistors above the 2-watt size are becoming scarce because they are made of critical materials which must be conserved for war requirements. Fortunately, however, they are seldom required for service work except in A.C.-D.C. sets. Also, they are seldom used at their full rating.

If a wire wound resistor of the required wattage rating is not available, a combination of any types of lower-wattage units, either in series or parallel, may be substituted. In combining resistors for this purpose, the wattage rating is cumulative based on the number and rating of the resistors used.

Substitutions

It is daily becoming more necessary to make substitutions in many civilian industries to conserve the critical materials needed for winning the war. The substitutions suggested above will not affect the quality of replacement jobs. We hope that these suggestions may help to keep the home sets of the country operating.



INTERNATIONAL RESISTANCE COMPANY

401 NORTH BROAD STREET, PHILADELPHIA, PA.



Service Instructions for Emerson Chassis GH, GH2

These two chassis models are identical with the exception that GH2 has an AC-DC motor for the record changer, while GH employs a straight AC motor. Set model numbers are GH-437, 447, and GH2-447. Two 35Z5 rectifier tubes are used in parallel to supply the DC load of the set and the speaker field. Notice in the accompanying diagram for this chassis, that the speaker field is operated across the output of the rectifier in place of the usual series connection.

Basic Set-up

A 12SF7 combination IF amplifier and diode detector is used and the base compensated audio is fed into a 12SJ7 audio amplifier. The plate circuit of the 12SJ7 has a 100M load resistor and a 50M decoupling resistor. The 50L6 output tube employs an un-bypassed cathode resistor for degeneration and the audio voltage across the secondary of the output transformer is divided by a series R-C

circuit. The portion of the voltage across the 0.05 capacitor in this speaker circuit is fed back into the phono pick-up at the tone-selector switch S1. The rear side of the deck on S1 selects the radio or phono function, while the front side of the same deck controls the tone and also opens the cathode circuit of the first three RF tubes during phono operation. The switch S1 is shown in the maximum bass phono position.

Voltages shown on the diagram are those obtained with a 1000 ohm per volt meter on the 250 volt scale. Voltages shown on the screen and plate of the 12SJ7 are much lower than those actually present due to the loading of the meter through the high values of series resistance.

The numbers on the output transformer and speaker field correspond to pins on the five-prong connector socket.

Circuit Alignment

To align the IF transformers, inject a 455 kc. signal through a 0.01 mfd. capacitor to the grid of the 12SA7. Starting with the output

transformer adjust trimmers for peak output. Use smallest possible signal. Proceed to first transformer and peak for maximum output.

To align the wave trap, feed the 455 kc. signal into the external antenna lead and adjust trimmer for minimum response.

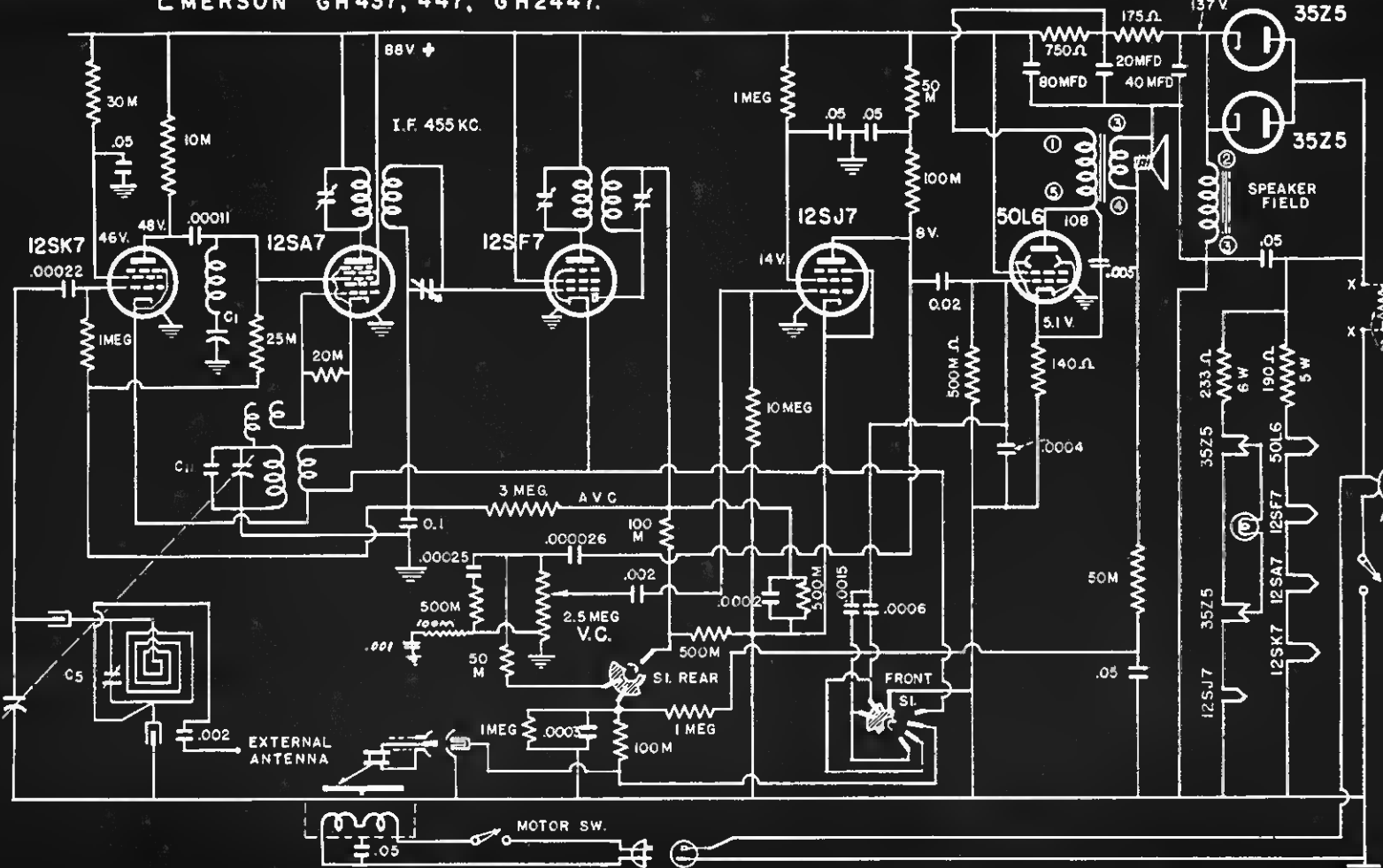
Final Adjustment

The RF coils are aligned at 1400 kc. by feeding a signal of that frequency into the set through a 12-inch diameter loop of wire connected to the signal generator and held parallel to the set loop about one foot distant. Adjust the oscillator trimmer mounted on the tuning gang for peak output when the receiver dial is set at 1400 kc. Also peak the antenna trimmer mounted on the loop frame.

If the loop antenna has been replaced or changed, it may be necessary to adjust its inductance at 600 kc. With the set and generator tuned to 600 kc., move the outside turn of wire until peak output is obtained.

The connection between "x-x" in line circuit is removed when the extra pilot light is used.

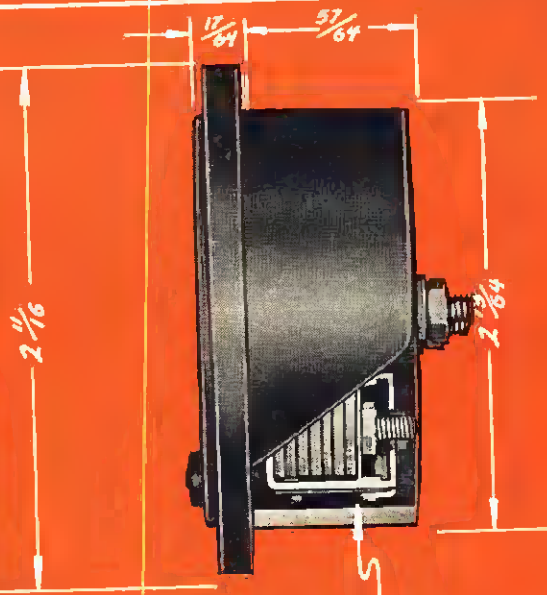
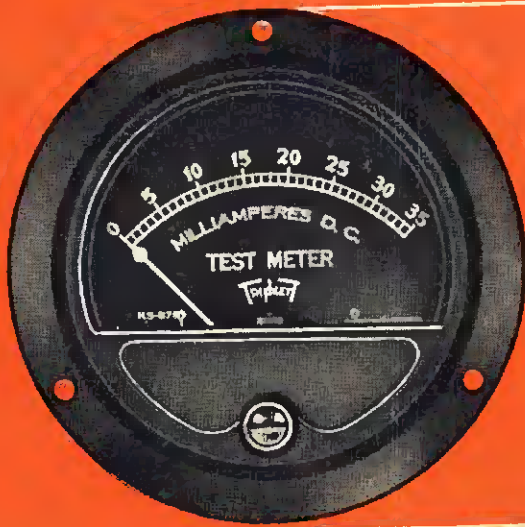
EMERSON GH437, 447, GH2447.





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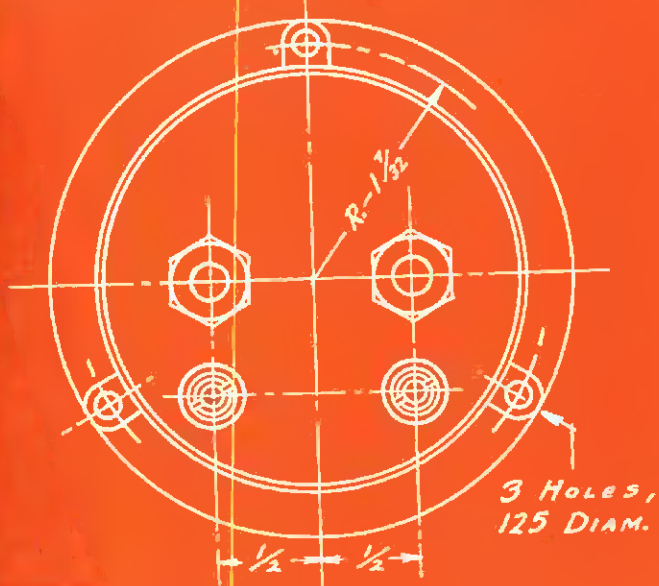


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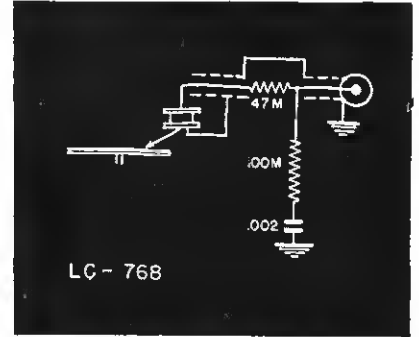
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SERVICE NOTES

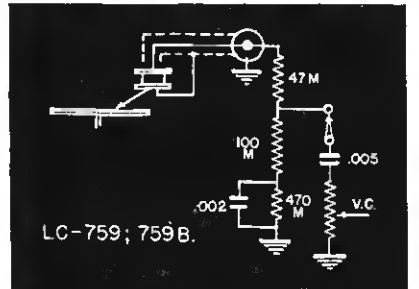
Phono Compensation Circuits in GE Combinations

The pick-up compensation in GE radio phono combination models LC-759, LC-759B, and LC-768 is shown in the two accompanying diagrams. The compensation shown for the LC-768 is built into the changer chassis, while the other two models have

no compensating circuit within the changer chassis. The two circuits are similar, the only difference being the shunt resistor across the 0.002 mfd. capacitor in the circuit for the LC-759, and 759B. In both circuits the voltage from the pick-up is divided by the resistor-capacity combination so that the voltage fed to the volume control is developed across the 100M resistor in series with the 0.002 mfd. capacitor.



The circuits shown above and below are described at left.



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Radio Servicing "by Appointment?"

America's radio service men may soon be seen only by appointment, declared Stanley H. Manson, service manager of the Stromberg-Carlson Tel. Mfg. Co., in telling a convention of his company's salesmen how priorities, price ceilings and the lure of Signal Corps appointments, was rapidly thinning the lines of the country's radio repair men.

"Pick-ups and deliveries of radios may soon disappear entirely," said Mr. Manson, "because of gas rationing and tire shortages. The service man will find himself increasingly flooded with business and unable to handle it all as an increasing number of radios develop trouble. Without his assistants, now in the Army, the service man will be king. He will be able to pick and choose his jobs. Customers will have to make appointments as much as a week or two in advance. Already, the average radio repair job takes from three to four days."

The new condition will work to the customer's advantage, however, according to Mr. Manson, who said that repair jobs are now being done more expertly than ever before. He pointed out that with few radios left to sell, most repair jobs were being done by the proprietor of the average radio store, who has had long experience in radio. With large manufacturers devoting more emphasis than ever to radio repair work, and with more care lavished by the proprietor on a repair job, he saw no reason to expect a great drop in the number of radios now functioning.

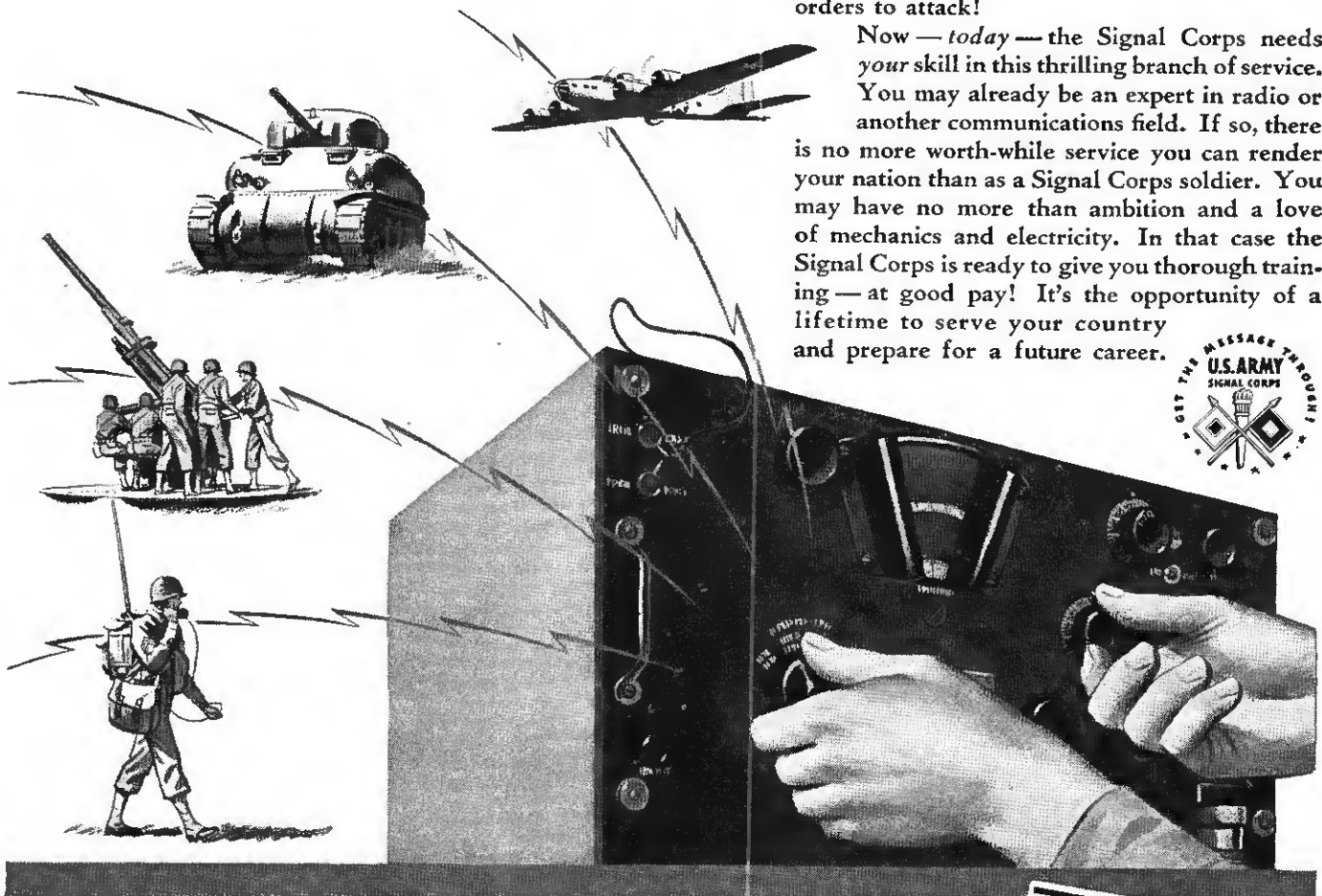


The "Nerve Center of the Army" needs your skilled hands TODAY!

THIS is a war of speed — a radio war. Commands and messages must go through like lightning. Never have communications been so vital to victory, or have new devices meant so much.

The whole responsibility for "getting the message through" is in the hands of the U. S. Army Signal Corps. Hands that install and maintain countless thousands of radio sending and receiving sets — hands that adjust the marvelous mechanisms of America's newest and most secret weapons — hands that flash the orders to attack!

Now — *today* — the Signal Corps needs *your* skill in this thrilling branch of service. You may already be an expert in radio or another communications field. If so, there is no more worth-while service you can render your nation than as a Signal Corps soldier. You may have no more than ambition and a love of mechanics and electricity. In that case the Signal Corps is ready to give you thorough training — at good pay! It's the opportunity of a lifetime to serve your country and prepare for a future career.



HOW YOU CAN GET IN NOW

1. ENLISTMENT

If you are 18 to 45 and physically fit, you may apply for enlistment in the Signal Corps or in the Signal Corps Enlisted Reserve.

DIRECT ENLISTMENT: Experience as a licensed radio operator, a trained radio repairman, a telephone or telegraph worker, will qualify you for active duty at once. From Private's pay you can advance rapidly as you earn higher technical ratings—up to \$138 a month, with board, shelter and uniforms.

ENLISTED RESERVE: If you are skilled with tools but lack qualifying experience, you may enter the Enlisted Reserve. You will be given training, with pay, in one of the many Signal Corps schools, and ordered to active duty when you have completed the course.

COMMISSIONS: Graduate Electrical Engineers may apply for immediate commissions in the Signal Corps. And special opportunities for training and commissions are open to Juniors and Seniors in electrical engineering colleges.

2. CIVILIAN TRAINING

If you are over 16 years of age, and even though registered for Selective Service, have not received your order to report for induction, the Signal Corps offers you an outstanding opportunity.

If you have ability with tools—if you want to secure training in the vitally important field of communications—you may attend a school in or near your home city. You will be paid not less than \$1020 per year *while learning*. And when you have finished your training—in 9 months or less—you can advance to higher pay as your technical skill increases.

Even if you have a minor physical handicap, Signal Corps Civilian Training may give you the chance you've wanted to serve the Army of the United States.



U. S. Army

FOR FURTHER INFORMATION REGARDING ENLISTMENT— Call and talk this over at the nearest Army Recruiting and Induction Station. Or write to: "The Commanding General," of the Service Command nearest you:

- First Service Command Boston, Massachusetts
- Second Service Command Governors Island, New York
- Third Service Command Baltimore, Maryland
- Fourth Service Command Atlanta, Georgia
- Fifth Service Command Fort Hayes, Columbus, Ohio
- Sixth Service Command Chicago, Illinois
- Seventh Service Command Omaha, Nebraska
- Eighth Service Command Fort Sam Houston, Texas
- Ninth Service Command Fort Douglas, Utah

Or write to: Enlisted Branch, AE-1, A.G.O., Washington, D. C.



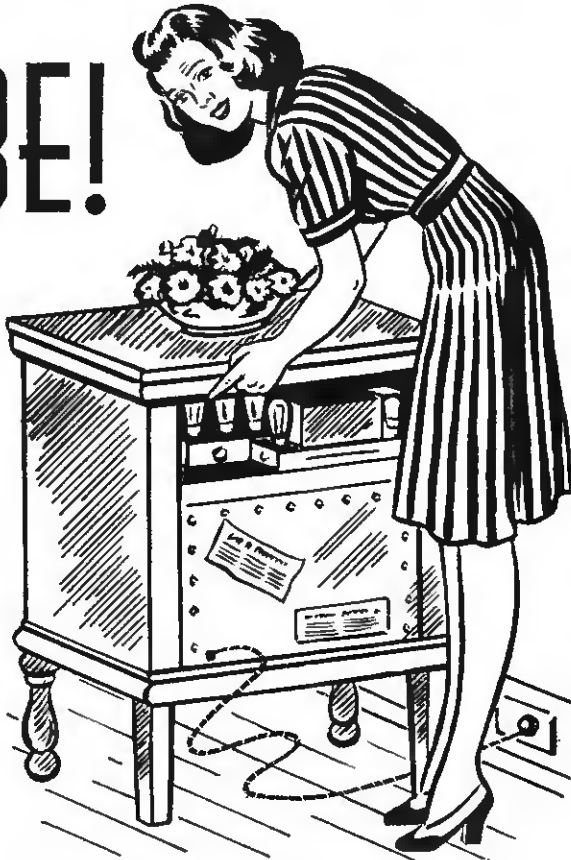
FOR CIVILIAN TRAINING INFORMATION — Call at any office of the U. S. Civil Service or U. S. Employment Bureau.

It Shouldn't be Repaired But It MUST BE!

What if the set IS ten or twelve years old, if it goes dead you still have to fix it. Even your customer might admit "it's ready for a new one"—if a new one could be bought!

Mr. and Mrs. America are depending on their radios more than ever—and depending on you to keep 'em playing. The only way you can handle your share of this tremendous volume is to work more efficiently—use your Rider Manuals more regularly. Stop spending valuable time trying to "guess out" servicing data—look it up in one of your thirteen volumes of Rider Manuals.

If you don't have all thirteen—better order today.



RIDER MANUALS

Volumes XIII to VII.....\$11.00 each
Volumes VI to III..... 8.25 each
Abridged Volumes I to V.....\$12.50
Automatic Record Changers and
Recorders 6.00

FOR EARLY PUBLICATION

Inside the Vacuum Tube—complete elementary explanation of fundamentals of vacuum tubes.

**JOHN F. RIDER
PUBLISHER, Inc.**

404 Fourth Ave. New York
Export Division:
Rocke-International Elec. Corp.
100 Varick Street, New York City
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Servicing by Signal Tracing 3.00
Meter at Work 1.50
Oscillator at Work 2.00
Vacuum Tube Voltmeters 2.00
AFC Systems 1.25
HOUR-A-DAY-WITH-RIDER SERIES—on "Alternating Currents in Radio Receivers"—on "Resonance & Alignment"—on "Automatic Volume Control"—on "D-C Voltage Distribution." 90c each

Just Out!

A-C CALCULATION CHARTS—Two to five times as fast as a slide rule—and more fool-proof. All direct reading—operative over a frequency range of from 10 cycles to 1000 megacycles. 160 pages in 2 colors—9 1/2 x 12 in.—\$7.50.

**YOU NEED RIDER MANUALS
TO "CARRY ON"**

Safeguard your

"GUARANTEE"
USE **STANCOR**



**STANDARD TRANSFORMER
CORPORATION**

1500 NORTH HALSTED STREET... CHICAGO

Service Notes

MYE Technical Manual for Service Engineers

The new MYE Technical Manual or handbook for radio service engineers, now on the press, contains a wealth of new technical data as outlined under the chapter headings below. The MYE Manual is published by P. R. Mallory & Co., Indianapolis, Ind., and will be sold at \$2 per copy. Bridging the gap between radio theory and practice, the new 392-page handbook is designed for servicemen, engineers, amateurs and experimenters.

- 1. LOUD SPEAKERS AND THEIR USE.** Covers the acoustical properties of various designs. Tells in detail how loud speakers may be selected and installed for greatest economy and best performance.
- 2. SUPERHETERODYNE FIRST DETECTORS AND OSCILLATORS.** Makes servicing easier by presenting the basic principles. Covers all modern conversion systems.
- 3. HALF-WAVE AND VOLTAGE-DOUBLER POWER SUPPLIES.** Explains the power supply design in AC-DC and series heater-type receivers and amplifiers.
- 4. VIBRATORS AND VIBRATOR POWER SUPPLIES.** Complete information on the operating conditions and applications. Important facts about design, and requirements for satisfactory performance of vibrator-operated equipment.
- 5. PHONO-RADIO SERVICE DATA.** Mechanical and electrical principles involved.

Guide for Tube Stocks

Sylvania Radio Tube Simplification Chart

This chart has been designed as a guide for simplification of radio tube stocks. The types listed in the first column can be replaced by the corresponding Sylvania tube types listed in the second column. In some cases there may be certain exceptions which are shown in footnotes.

Type	Replace With Sylvania Type	Type	Replace With Sylvania Type	Type	Replace With Sylvania Type
6Z4G	6Z4	6K1	6K1GT	12X8	12X8GT
1A5G	1A5GT-G	6N3	6N3GT	12SA7	12SA7GT-G
1A6GT	1A6GT	6L6	6L6G	12SA7GT	12SA7GT-G
1C5G	1C5GT-G	6L7	6L7G	12SF5	12SF5GT
1C5GT	1C5GT	6M7	6M7G	12SJ7	12SJ7GT
1G4G	1G4GT-G	6P5C	6P5GT-G	12SH7	12SH7GT-G
1G4GT	1G4GT	6P6GT	6P6GT	12SN7GT	12SN7GT-G
1Q5G	1Q5GT-G	6Q7	6Q7GT	12SQ7	12SQ7GT-G
1Q5GT	1Q5GT	6R7	6R7GT	12SQ7GT	12SQ7GT-G
1S4G	1S4GT-G	6S7	6S7G	12SQT	12SQTGT-G
1S4GT	1S4GT	6S7	6S7G	12SQTGT	12SQTGT-G
17A	17A	6S7	6S7G	12SQTGT	12SQTGT-G
5W4	5W4GT-G	6S7	6S7G	12SQTGT	12SQTGT-G
5W4GT	5W4GT	6S7	6S7G	12SQTGT	12SQTGT-G
5Y3	5Y3G	6S7	6S7G	12SQTGT	12SQTGT-G
6AR	6ARGT	6S7	6S7G	12SQTGT	12SQTGT-G
6AC5G	6AC5GT-G	6S7	6S7G	12SQTGT	12SQTGT-G
6AC5GT	6AC5GT	6S7	6S7G	12SQTGT	12SQTGT-G
6AG5	6AG5G	6S7	6S7G	12SQTGT	12SQTGT-G
6BE	6BEG	6S7	6S7G	12SQTGT	12SQTGT-G
6C7	6C7GT	6S7	6S7G	12SQTGT	12SQTGT-G
6C7GT	6C7GT	6S7	6S7G	12SQTGT	12SQTGT-G
6C8G	6C8GT-G	6S7	6S7G	12SQTGT	12SQTGT-G
6C8GT	6C8GT	6S7	6S7G	12SQTGT	12SQTGT-G
6C9G	6C9GT-G	6S7	6S7G	12SQTGT	12SQTGT-G
6C9GT	6C9GT	6S7	6S7G	12SQTGT	12SQTGT-G
6D6	6D6G	6S7	6S7G	12SQTGT	12SQTGT-G
6E5	6E5G	6S7	6S7G	12SQTGT	12SQTGT-G
6E5GT	6E5GT	6S7	6S7G	12SQTGT	12SQTGT-G
6F6	6F6G	6S7	6S7G	12SQTGT	12SQTGT-G
6G6	6G6G	6S7	6S7G	12SQTGT	12SQTGT-G
6G6GT	6G6GT	6S7	6S7G	12SQTGT	12SQTGT-G
6H6	6H6G	6S7	6S7G	12SQTGT	12SQTGT-G
6I6	6I6G	6S7	6S7G	12SQTGT	12SQTGT-G
6J6	6J6G	6S7	6S7G	12SQTGT	12SQTGT-G
6K6	6K6G	6S7	6S7G	12SQTGT	12SQTGT-G
6L6	6L6G	6S7	6S7G	12SQTGT	12SQTGT-G
6M6	6M6G	6S7	6S7G	12SQTGT	12SQTGT-G
6N6	6N6G	6S7	6S7G	12SQTGT	12SQTGT-G
6O6	6O6G	6S7	6S7G	12SQTGT	12SQTGT-G
6P6	6P6G	6S7	6S7G	12SQTGT	12SQTGT-G
6Q6	6Q6G	6S7	6S7G	12SQTGT	12SQTGT-G
6R6	6R6G	6S7	6S7G	12SQTGT	12SQTGT-G
6S6	6S6G	6S7	6S7G	12SQTGT	12SQTGT-G
6T6	6T6G	6S7	6S7G	12SQTGT	12SQTGT-G
6U6	6U6G	6S7	6S7G	12SQTGT	12SQTGT-G
6V6	6V6G	6S7	6S7G	12SQTGT	12SQTGT-G
6W6	6W6G	6S7	6S7G	12SQTGT	12SQTGT-G
6X6	6X6G	6S7	6S7G	12SQTGT	12SQTGT-G
6Y6	6Y6G	6S7	6S7G	12SQTGT	12SQTGT-G
6Z6	6Z6G	6S7	6S7G	12SQTGT	12SQTGT-G

* Directly replaceable except where space does not permit.
† In some cases an external shield, properly grounded, and replacement may be necessary.
‡ Type 6X5GT-G may be used where output current does not exceed 70 ma.



6. **AUTOMATIC TUNING.** A full description of the various systems. How they work and how to adjust them.
7. **FREQUENCY MODULATION.** A simple explanation of design principles and operating conditions.
8. **TELEVISION.** Basic information needed to prepare for successful work in television boom sure to follow the war.
9. **CAPACITORS.** Wartime servicing depends on making best use of available components. Shows how to install condensers for specific applications, without being dependent on duplicate replacements.
10. **PRACTICAL RADIO NOISE SUPPRESSION.** How and where to use noise filters, and much other data.
11. **VACUUM - TUBE VOLTMETERS.** This measuring device is proving increasingly useful in both radio work and industrial electronics.
12. **USEFUL SERVICING INFORMATION.** Tables, coding data, standards, design charts, etc.
13. **RECEIVING-TUBE CHARACTERISTICS.** Complete tables covering all American tube types.

Fewer Tires for Radio Men

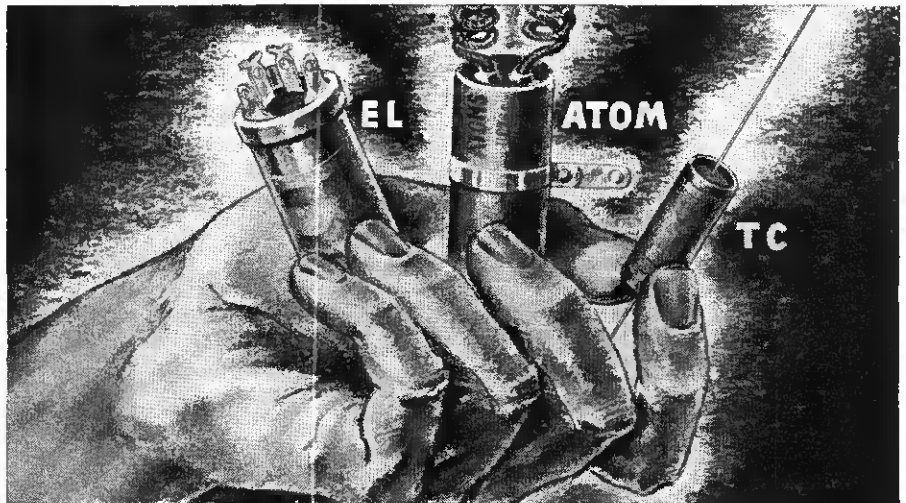
Although some servicemen are cutting down on delivery services offered to their customers, many have continued the practice and now it appears that they are faced with new problems in getting tires for their trucks and cars.

On July 20 the Office of Price Administration announced a sharp revision of truck tire rationing which denied new or recapped tires after July 28 to radio servicemen, dealers and distributors. The order prohibits allocation of tires to all privately operated trucks carrying radios, phonographs, musical instruments, toys, novelties, and "other luxury goods."

Also denied any more tires are private carriers furnishing transportation for incidental maintenance services, including the repair of any "portable household effects." Interpretations so far are that this will preclude tires for radio service cars.

Stotts to Air Corps

On Aug. 30 the radio trade will contribute another expert to the Armed Forces. Ray Stotts, a widely known engineer of Standard Radio Parts Co., Dayton, Ohio, has received a commission in the Air Corps and will report for duty on that date.

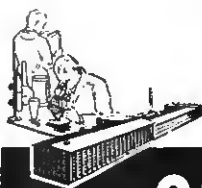


TODAY'S CONDENSER PROBLEMS WERE SOLVED YEARS AGO!

No matter how many condenser types war restrictions may make it impossible to supply... you're still in business as far as condenser replacements are concerned as long as you can continue to get Sprague Atom Midget Drys, Sprague EL prong-base Electrolytics, and Sprague TC Paper Tubulars.

Long ago, Atoms proved that they were the truly universal condensers—just the thing to replace any cardboard or can-type unit up to their rated values, and regardless of size. For higher voltages and wet condenser replacements, use EL's. For all tubular by-pass needs, use Sprague TC's—the most famous units of their kind in the history of Radio, and still the most dependable. These three types enable you to handle practically any condenser replacement job!

Practically all of Sprague's greatly enlarged facilities are devoted to war work, have been for a long time past, and will be until Victory is won. Although present jobber stocks of the above condenser types are largely complete, it is obvious that further production for civilian use must depend upon authorization from those in charge of the allotment of manufacturing facilities and critical materials.



SPRAGUE PRODUCTS COMPANY
North Adams, Mass.

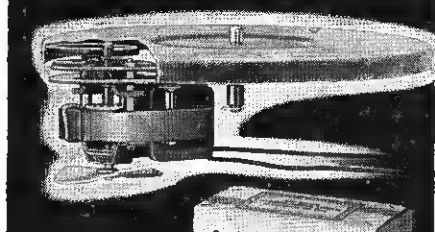
**RADIO ENGINEERS
RADIO TECHNICIANS
WIREMEN
COIL WINDERS
ASSEMBLERS**

An outstanding opportunity for Radio Technicians, Wiremen, Coil Winders and Assemblers with experience on aircraft receivers, transmitters, and electronic equipment in an organization with large war orders as well as post war plans. Plant located in the east.

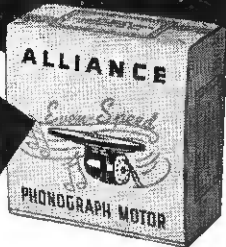
Write Dept. S, c/o RADIO RETAILING TODAY, giving full personal history, experience and present salary; personal interview will be arranged later. We do not desire applications from men in key defense positions.

Replace
with the
Best!

ALLIANCE
"EVEN-SPEED"
PHONO-MOTORS



INDIVIDUALLY
PACKAGED



EASY TO INSTALL...
Fit 95% of all makes

● The low cost and quick, easy installation of "Even-Speed" Motors make it more practical and profitable to replace the entire unit when trouble occurs than to attempt what may prove to be a difficult repair job. The "Even-Speed" line of only four phono-motors provides a unit for 95% of all replacement requirements. Carry a few in stock for every month will bring a greater demand for replacements.

Each motor and turntable comes in an attractive carton for your greater convenience.

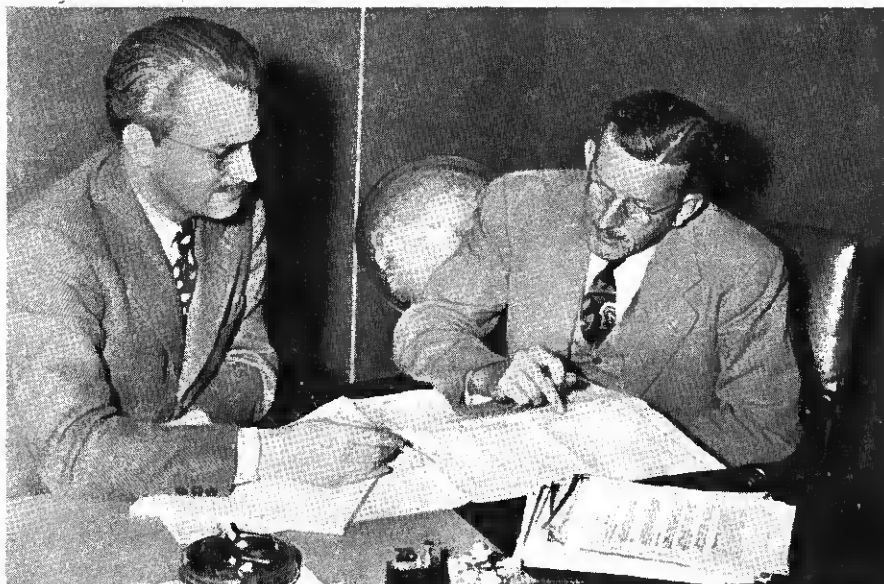
Write today for complete information and low prices on the "Even-Speed" line of phono-motors.

Export Address:
377-379 Broadway, New York City, N. Y.

ALLIANCE MFG. CO.
ALLIANCE, OHIO

RECORD NEWS

Recorder Manufacturer's Victory Plans



Ironing out the engineering problems on the war production program of the Wilcox-Gay Corp. are C. M. Wilcox, president, and Paul Gay, secretary and vice president in charge of engineering. Preliminary engineering work at this plant started months before the emergency and WG officials were thus able to speed conversion.

**Classic Records
Elects New Officers**

The record industry this month took notice of the incorporation of the Classic Record Co., 2 W. 46th St., New York City, makers of the Elite, Hit and Concertone labels. Newly elected officers are Al Middleman, president; Val Valerius, vice president and sales manager; and Eli E. Oberstein, secretary.

Mr. Valerius, who became well known in the radio and music business as vice president and business manager of the Henderson Publications for the past 22 years, only recently joined the organization.

The Classic firm, which has specialized on a "Every Side a Hit" policy on its Hit label, now has national distribution through more than 60 jobbers throughout the U. S. Recordings fea-

ture such popular orchestras as Chico Marx, Les Hite, Mal Hallett, Ray McKinley, Johnny "Scat" Davis, and others. On the Elite records are Blue Barron, Vincent Lopez, Clyde Lucas, Bunny Berrigan, Jan Garber, Ina Ray Hutton, and others. The Concertone classical line includes both single records and albums of such favorites as Strauss Waltzes, A Tchaikowsky Concert, Schubert's Fifth Symphony, etc.

**"The United Nations"
on a New Record**

Special release from RCA Victor is the Red Seal record "The United Nations" (On the March). The composer is the much-discussed Russian artist Shostakovich. Igor Gorin sings the lyrics, while Charles O'Connell con-

"I AIN'T LOOKING FER AN ORDINARY NEEDLE - I'M LOOKIN' FER A -

Fidelitone
PHONOGRAPH NEEDLE
5000 Plays - \$1.00

The greatest improvement in 25 years. Up to 5,000 plays from one needle! Platinum metals tip prolongs record life. Unique Floating Point construction filters record scratch. Only one dollar...ask your record dealer for a demonstration. Permo Products Corp., Chicago, Ill.

Permo Products
IN AIRPLANE INSTRUMENTS "Keep Them Flying"



ducts the Victor Symphony orchestra.

This music is simple, strong and straightforward; it rolls along in a stirring march style and the lyrics are good. Reports are that the music is chorused by Russian soldiers marching into battle, and Victor proudly announces that "we are the first to present it to the English speaking world."

Other side of the record has Shaklovitov's Aria by Moussorgsky, also sung in English by Mr. Gorin. The Red Seal number is 11-8250.

Music Merchants to Chicago Meeting

Big event for the members of the National Association of Music Merchants is the annual meeting of NAMM now in progress at the Palmer House, Chicago. Music merchants from all parts of the U. S. assembled Aug. 14 to make the meeting of special interest by heading the discussions into wartime conditions confronting the industry.

Government officials to address the music dealers on price ceilings, War Production Board regulations, etc., are Sam G. Rowland, chief, Musical Instrument and Piano Unit, Office of Price Administration; and William C. Mayfarth, chief, Musical Instrument Unit of WPB.

Attracting the dealer guests on Aug. 15 is the 13th Annual Chicago Music Festival at Soldier's Field, featuring prominent military musicians.

The annual Convention and Music Trade Show had been cancelled by NAMM, as a wartime economy move. The meeting Aug. 14 was originally scheduled for the Hotel Stevens, but was switched to the Palmer House when the Stevens was taken over by the Armed Forces.

Imprints for Needle Packages

A plan whereby dealers may now have their names and addresses imprinted on packages of Recoton phonograph needles, has been announced by Recoton Corp., 21-10 49th Ave., Long Island City, N. Y. The idea is to encourage repeat sales, and to provide dealers with individual advertising, free.

Arrangements for the imprints may be made by writing the firm direct.

Stafford District Manager for Columbia Records

Jack Stafford, formerly with The Eastern Co., Boston, has taken a sales staff post with Columbia Recording Corp. as district manager for the New England territory, according to news from Paul Southard, CRC sales manager. Mr. Stafford replaces Fred Cook, now with OPA.



BUILD CONFIDENCE

with Astatic
Replacement Parts

Conservation of present radio, public address and phonograph equipment will bring constantly increasing demands for replacement parts . . . replacements which can best be made with Astatic's tried and proven Microphones, Pickups, Cartridges and Recording Heads . . . exact duplicates of those used by a majority of leading manufacturers in the original assembly.

Shortage of certain materials makes it necessary that all purchases of Astatic Pickup or Microphone Cartridges be accompanied by old cartridges or similar type.

See Your Radio Parts Jobber



THE ASTATIC CORPORATION

YOUNGSTOWN, OHIO

Licensed Under Brush Development Co. Patents

In Canada: Canadian Astatic Ltd. Toronto, Ontario

PRESTO DISCS NOW BETTER THAN EVER

Contrary to rumors, there is no scarcity of first grade Presto Recording Blanks. No priority rating is required to purchase them. All orders are being shipped the day they are received.

Changes in certain coating ingredients due to war conditions have actually improved their cutting qualities. The thread throws more cleanly away from the needle. The coating is consistently smooth, entirely free of "hard spots." The surface noise is well below audibility. Prices remain the same.

Don't neglect the profit possibilities in commercial recording discs

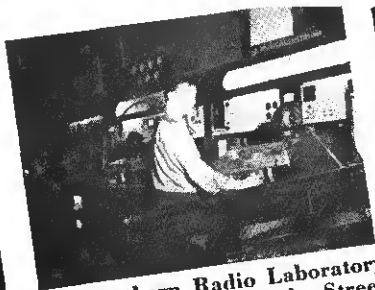


. . . one of the few lines still free for civilian use. Look over your stock today. Suggest to your disc customers, radio stations, and schools, that they order for the coming fall business.

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

In Other Cities, Phone . . . ATLANTA, Jack. 4372 • BOSTON, Sel. 4510
CHICAGO, Her. 4240 • CLEVELAND, Ma. 1565 • DALLAS, 37093 • DENVER, Ch. 4277 • DETROIT, Univ. 1-0180 • HOLLYWOOD, Hil. 9133 • KANSAS CITY, Vic. 4631 • MINNEAPOLIS, Atlantic 4216 • MONTREAL, Wel. 4218
PHILADELPHIA, Penny. 0342 • ROCHESTER, Cul. 5548 • SAN FRANCISCO, Su. 8854 • SEATTLE, Sen. 2560 • WASHINGTON, D. C., Shep. 4003

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



Northern Radio Laboratory
3927 East Lake Street
Minneapolis, Minn.
"We have been using N.U. products since their inception. They have an aggressive merchandising plan we feel all dealers should avail themselves of."
"After 22 years in the radio business, we find National Union's helps have always been an asset to us."
A. H. WOLFE

WHERE YOU FIND
NATIONAL UNION
YOU FIND BETTER
RADIO SERVICE

PREMIUM
Quality
TUBES



BATTERIES



CONDENSERS

also Transmitting tubes, panel lamps, cathode ray tubes, exciter lamps, sound equipment, photo electric cells, sound accessories, dry batteries, flashlight bulbs.

NATIONAL UNION invites . . .

All radio service dealers to enjoy the benefits of the N. U. Shop Equipment Plan. The latest in tube testers and test equipment are available to you . . .

More than 60,000 completed deals prove the success of this plan. Investigate now.

Ask Your N. U. Distributor or Write



NATIONAL UNION
RADIO Corp.
57 STATE ST., NEWARK, N. J.

Price Ceiling Adjustment Rulings Extended

Two temporary regulations issued by the Office of Price Administration, which outline the procedure for dealers and servicemen to use in adjusting abnormal maximum prices, will be in force a month longer, according to announcements from Washington. The life of the two rulings has been extended from Aug. 1 to Sept. 1, to give OPA more time for drafting permanent regulations covering adjustment cases.

Temporary procedural regulations Numbers 2 and 5 are the ones involved in the extension. No. 5 provides for the method for adjustment of ceiling prices set by Maximum Price Regulation No. 165, which governs "consumer services." No. 2 provides for adjustment methods of out-of-line ceiling prices set by the General Maximum Price Regulation.

More Firms Join RMA Roster

As the war time services and activities of the Radio Manufacturers Association are greatly expanded, membership of the organization steadily increases. Newest additions to RMA include Westinghouse Electric & Mfg. Co., with factories in Pittsburgh, Baltimore and Bloomfield, N. J.; Remington Rand, Inc. (Electronic Division), of New York and Middletown, Conn.; Radio Engineering Laboratories, Inc., Long Island City, N. Y.; and Technical Radio, Inc., San Francisco.

The current wartime concern of RMA is the standardization of military radio equipment, and a new program for the transmitting apparatus field.

Radio Clam Bake



Two guests are shown here at the annual "Yow Chow" picnic event, for Iowa servicemen, near Des Moines. They are Leonard Tesdel, left, of Iowa Radio Corp., and Jack Heinmann, manufacturers' rep. Local jobbers cooperated with servicemen to make the affair a notable success.

OHMITE
Resistance Units

are built for long trouble-free service

Send for **FREE** Ohmite Stock-Unit Catalog No. 18. Very handy for quick reference.



The *extras* built into Ohmite Resistance Units make them electrically and physically fit for the toughest service. Ohmite units, for instance, were on the planes that bombed Tokyo. They're widely used in ships and tanks, too—in communications and electronic equipment—in research and production—in training centers and industrial plants. It's well worth remembering, when you build original equipment or make vital replacements—*today and tomorrow.*



Send 10c for handy Ohmite Ohm's Law Calculator. Helps you figure ohms, watts, volts, amperes—quickly, easily.

OHMITE MANUFACTURING COMPANY
4872 Flournoy Street, Chicago, U. S. A.





Listening Posts to Lick Submarine Menace

Benjamin F. Miessner, famous radio inventor, who has collected more than a million dollars in royalties from his many radio patents, now offers Uncle Sam a detection plan for submarines, as a means of guarding our coasts.

Mr. Miessner's scheme would put "listening posts for subs" all along the coast. Small 5 to 10-watt radio transmitters would be sealed in buoys, to be anchored every few miles along the coastwise shipping lanes. Mounted in each buoy would be a submerged microphone adapted for picking up submarine sounds. With this underwater mike modulating the radio transmitter, sounds of any submarine venturing into the vicinity, could be picked up by directional shore receivers, or receiving sets on nearby patrolling aircraft and ships. In this way, local "radio ears" scattered all along the coast would be provided for the anti-submarine forces, which could tune in one buoy position after another, listening carefully to any suspicious sounds.

Directional underwater mikes would be rotated continuously, with reference to a compass signal indicating position, so that direction of "sub" sound could be determined.

Wave-Action Power

Mr. Miessner's plan further contemplates an air-compressor chamber in each buoy producing pressure fluctuations by wave action, as in the case of whistling buoys. These pressure variations would be used to operate an air motor for driving a generator to recharge the storage batteries supplying the radio transmitter power.

"Submarine activity near any one of these radio buoys along the shipping lanes would immediately be heard and the location approximately determined according to the location of the buoy transmitting the loudest sounds. The whole problem is not a difficult one," says Mr. Miessner, "and the buoy transmitters used need not cost more than \$100 or so apiece. A few hundred of them along the Atlantic Coast should afford a great deal of protection because submarine activity along the ship lanes would immediately be heard."

Mr. Miessner now has his private laboratory at Morristown, N. J.

"Bring and Take" Service Clicks

When G. L. Winstead of the Jackson Electric Service and Sales Co., Nashville, Tenn., discovered there was ample room in town for featuring one-day service on radios, he called it the "Bring and Take" service. He pointed out customers could save one dollar by not paying for "call and delivery" service.

He featured this new curb service in newspaper advertising and through printed circulars, with the following copy: "Just bring it to town, drive by our store, blow your horn three times, and we will be right out. When you get ready to go home, come by and we will bring your repaired radio to your car. No parking worries, speedy service, reasonable prices."

Drop-in Traffic Gets Started

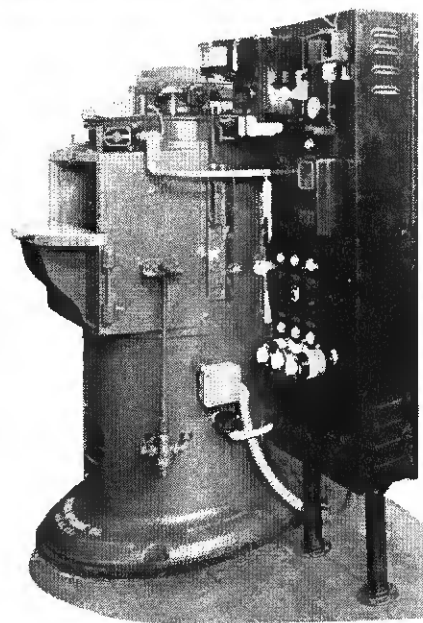
Thus frequently a man on the way to the office, or a woman coming in town on a shopping expedition, brought in the radio and called for it on the way home.

"We have had many compliments paid us on our one-day radio repair work which is steadily growing in popularity as one person tells another," Winstead explained. "It is surprising how many seek to save that extra dollar service charge."

Wartime Book Display



New display for Chirardi books, for jobbers stocking Radio & Technical Publishing Co. volumes. It has timely theme, lively colors, convenience features.



Announcing AUTOMATIC WAX-COATING

OF SMALL PARTS!
With this new Dipping,
Impregnating and Centrifuging
Machine

- Incredible economy
- Extreme simplicity
- Elimination of waste
- Faster production
- Finest mechanical design
- Wholly or Semi-automatic
- Pilot light and instrument control of wax and air temperatures; and electrical and mechanical operations.
- Absolute coating of surfaces, punch-holes, thin edges, etc.

For the moisture-proofing of small parts, delicate or rugged, at high speed and without breakage—to insure operation and stability under all conditions of dampness or moisture, in the stratosphere or on the ground—this machine has been developed in conjunction with one of the largest government contractors making airplane radio parts and equipment.

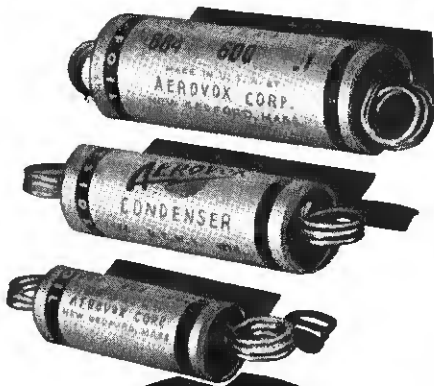
Whether it be hot-waxing of mica, plastic or porcelain radio parts, enameling or hot tin dipping, we can furnish you with apparatus designed and developed to do each in the quickest and most economical manner.

Machines now may be purchased by government contractors or high priority-rated concerns.

Manufacturers who prefer may lease machines or have their product coated by us on an economical contract basis.

Wire or write for full details

**PRODUCTION
ENGINEERING CORP.**
CLIFTON NEW JERSEY



Individually tested
PAPER TUBULARS

• Sold by the hundreds of thousands, true, but each and every Aerovox paper tubular is *individually tested*. Please remember that. Also, constant refinement has resulted in a high-quality product regardless of low cost. And now these quality paper condensers are dressed in sparkling yellow, black and red varnished-paper jackets. They look as good as they really are. You'll like them.

TUBULAR PAPER CONDENSERS
Type 484—400 v. D.C.W.
.01 to 1.0 mfd.
Type 684—600 v. D.C.W.
.001 to .5 mfd.
Type 1084—1000 v. D.C.W.
.001 to .1 mfd.
Type 1684—1600 v. D.C.W.
.004 to .05 mfd.

• **Ask Our Jobber . . .**
He'll gladly show you and supply you with these paper tubulars. Ask for latest catalog. Also FREE subscription to the monthly Aerovox Research Worker. Or write direct.

AEROVOX CORPORATION
NEW BEDFORD, MASS., U. S. A.
In Canada: AEROVOX CANADA LTD., Hamilton, Ont.
EXPORT: 100 Varick St., N. Y., Cable 'ARLAB'

Victory Rally at National Union

A big production rally and inspection tour was staged Aug. 6 at the National Union Radio factories in Newark, N. J., with Army and Navy officials on hand to share the spotlight with famous heroes of the war, National Union execs, and Union representatives.

Master of ceremonies was the NU president, S. W. Muldowny, who introduced the military and radio celebrities, along with Mayor Vincent J. Murphy of Newark. War Bond and Stamp prizes were awarded to employee winners in the NU slogan contests and idea competitions. Mr. Muldowny presented a service flag award to Elmer Chamberlain who accepted it for the employees.

Third Plant for Cornell-Dubilier

A new plant at Providence, R. I., has been started by Cornell-Dubilier Electric Corp., capacitor manufacturers, South Plainfield, N. J., and New Bedford, Mass.

The new factory will process raw materials for the older Cornell-Dubilier plants, and will use from 800 to 1,000 employees. The CD total personnel will then be over the 3,000 mark.

Major Kamin Reports

V. A. Kamin, who has been manager of the radio department, dealer and stores division of the Goodyear Tire & Rubber Co., Inc., Akron, Ohio, left for Washington, August 1, to become a Major in the Office of the Chief Signal Officer—Signal Corps, U. S. Army. Mr. Kamin has taken leave-of-absence from Goodyear for the duration of the war.

Display in Plastic



New type permanent plastic display now comes from Ken-Rad Tube & Lamp Corp., Owensboro, Ky. It's in full color, 2 ft. high, and is part of "Ken-Rad on Parade" program.



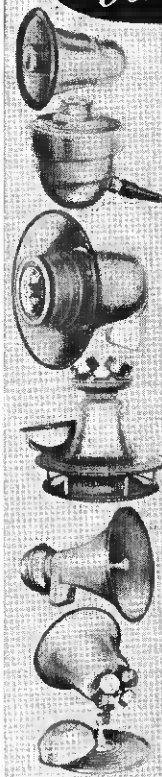
FREE
New
RADIO PUNCH Folder

Tells How To Cut Holes In Radio Chassis

Get the facts about the handy Greenlee Radio Punch in this new folder. Tells how to save hours when cutting holes for sockets, plugs, connectors, etc., in radio chassis. No tedious drilling, reaming or filing is necessary. A cap screw is inserted in a small drilled hole, and the punch is easily forced into the die by a few turns of the screw with an ordinary wrench. Ten punches are available for cutting $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{3}{8}$, $1\frac{3}{4}$, $1\frac{7}{8}$, 1 $\frac{3}{4}$, 1 $\frac{3}{8}$, $1\frac{1}{2}$, and $2\frac{1}{4}$ -inch holes. Write today for your copy of the new Greenlee S-119 Radio Punch Folder.



GREENLEE TOOL CO.
1908 Columbia Ave., ROCKFORD, ILL.



REFLEX SPEAKERS
are the accepted **STANDARD**
FOR **UNCLE SAM**

Only Reflex Speakers have the high efficiency vital for war use.

Only Reflex Speakers have the super acoustic output required for difficult war conditions.

Only Reflex Speakers have the waterproof characteristic so necessary for war use 24 hours a day in all types of weather.

Only in Reflex Speakers are found the years of acoustic engineering experience now at the service of UNCLE SAM in the All Out War Effort.

Send your special war problem direct to the engineering department.

UNIVERSITY LABS., 225 VARICK ST., NYC

Let's Cooperate!



Larry E. Gubb, the Philco Corp. executive, is now active in lining up the radio industry in the scrap salvage program of the American Industries Salvage Committee. All radio men are urged to help in this drive by the Conservation Division of the War Production Board.

"Sylvania Electric Products" Is the New Name

Hygrade Sylvania Corp. will now be known as "Sylvania Electric Products Inc." following a change in name voted July 30 by stockholders. Sylvania, with eight plants in Massachusetts and Pennsylvania, is listed as second largest manufacturer of radio tubes, third largest maker of incandescent lamps, and one of the three largest producers in the fluorescent lighting field.

Executive vice president Walter E. Poor said that "products and policies remain the same . . . and the 'modernized' name will help prepare the company for an even larger role in post-war electronics and lighting industries." The company's operating divisions have used separate brand names—Sylvania tubes, Hygrade lamps, and Miralume fluorescent units—and it was pointed out that the over-all activities of the firm were relatively unknown to the public. Under the new plan, all products of the company will eventually be issued under the Sylvania name.

Many new developments in the electronics field are among the big jobs now being done by Sylvania for the military services. The firm reported net sales for the first 6 months of this year as \$14,540,010, compared with \$8,992,878 for the same period last year.



Thordarson Wave Filters

Low pass, high pass, band pass or band rejection types of the size,

weight and characteristics to serve your purpose. Discuss your filter problem with experienced Thordarson engineers.

Write to us for Special Information on Filters

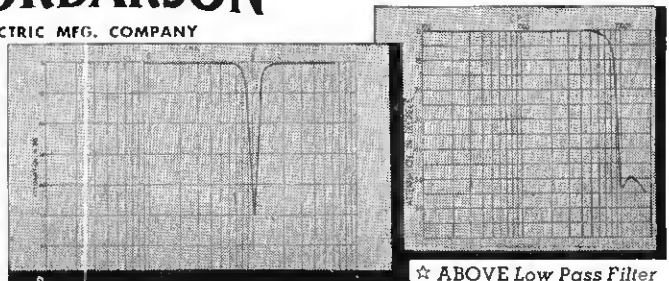
THORDARSON

ELECTRIC MFG. COMPANY

500 WEST HURON STREET
CHICAGO ILL.

Transformer Specialists Since 1895

☆ RIGHT Band Rejection Filter



☆ ABOVE Low Pass Filter

Erwood SOUND SYSTEMS

• Erwood Sound Systems are giving eloquent evidence of the part played by efficient sound equipment in producing for war and in war itself.

In hundreds of ways Erwood equipment is so valuable to the victory program that it has been made available to priority rated concerns.

Our complete catalog, showing systems from 8 to 75 watts, will be helpful to jobbers and dealers in selling this lively market.

8 TO 75 WATTS
Send for Complete Catalog

ERWOOD SOUND EQUIPMENT CO.
222 W. ERIE ST.,
CHICAGO, ILL.

Jobbers! . . . Protect yourselves on speakers by immediately ordering

PERM-O-FLUX TRADE MARK **PM Dynamic & Electro-Dynamic 3" to 12"**

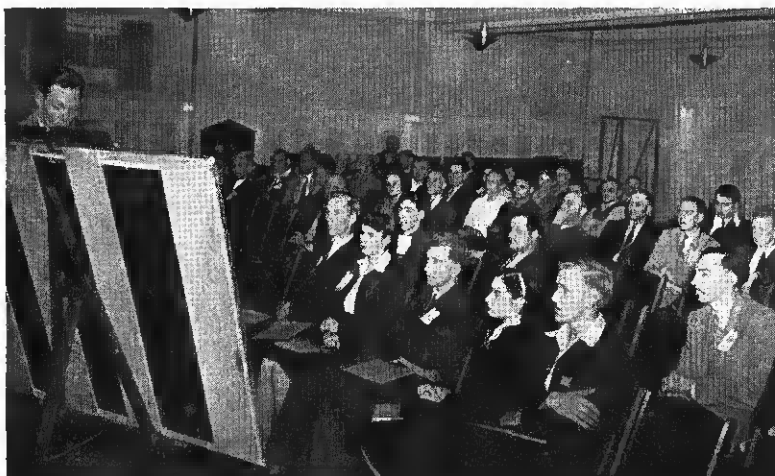
Even though our factory is busy on war work, we can still make prompt shipment of our new and improved line of replacement speakers without affecting our war production.

Many jobbers are ordering for current needs and reserve stock. Sizes and types for all sets, intercommunication and sound equipment. Write today.

PERM-O-FLUX CORPORATION, 4916 W. Grand Ave., Chicago, Ill.
Pioneer Manufacturers of P.M. Dynamic Reproducers



Service Problems Are Different Now



"Wartime Problems in Radio Servicing" as outlined by Frank Langstroth, commercial engineer for Sylvania Electric Products Inc., attracted these servicemen at Spokane, Wash., meeting. The huddle was sponsored by Morris Willis, local distributor for Sylvania tubes.

Want to Learn Code?

A special 48-page booklet on "Learning the Radiotelegraph Code" has been issued by the American Radio Relay League, Inc., West Hartford, Conn., arranged to fill the needs of wartime code students. Its system of code-learning is based on sound con-

ception, and its six sections on Learning the Code, Learning to Send, High-Speed Operation, Operating on the Air, Code Practice and Class Instruction are particularly helpful for home study. The author is John Huntoon, a star operator himself. The price is 25 cents.

Philco Honored by Army-Navy Award

"This is to inform you that the Army and Navy are conferring upon your organization the Army-Navy Production Award for high achievement in the production of war equipment."

Thus begins the letter written by the Hon. Robert P. Patterson, Under Secretary of War, to James T. Buckley, president of the Philco Corp., giving the new award to the Philadelphia concern. The formal presentation will be made to Philco next month.

Mr. Patterson complimented the Philco organization on its patriotism and cited the "remarkable production record" of the firm. The company is now 100 per cent converted to war work and is producing communications equipment for tanks and planes as well as shells, fuses, and heavy-duty storage batteries.

Murphy Works from Clarostat Headquarters

Frank Murphy, the Chicago representative for Clarostat Mfg. Co., Inc., Brooklyn, N. Y., has been transferred to Brooklyn headquarters and is now covering his Chicago territory from there. He will continue to contact his accounts personally, but is also needed at headquarters to help out with wartime production problems there.

To industries converting to war production where the use of magnet wire and coils is important...

Anaconda Can Help!...



Three Anaconda mills have unfilled capacity on magnet wire and coils... for war work

WRITE US IMMEDIATELY FOR COMPLETE INFORMATION

ANACONDA ANACONDA WIRE & CABLE COMPANY, GENERAL OFFICES: 25 Broadway, New York. CHICAGO OFFICE: 20 N. Wacker Drive, Subsidiary of Anaconda Copper Mining Company. Sales Offices in Principal Cities. 42263.A

Magnet wire and coils

ANACONDA WIRE & CABLE COMPANY

We're making only war materials now to hasten the day when we may serve you again —

ARVIN Radios

NOBLITT-SPARKS INDUSTRIES, INC., COLUMBUS, INDIANA
Before and After the War Manufacturers of Arvin...

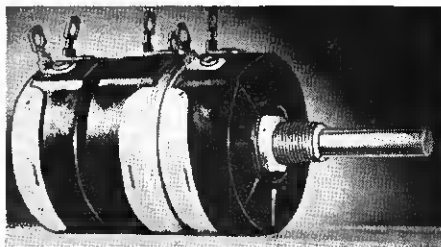
HOME AND CAR RADIOS • HOT WATER CAR HEATERS
METAL FURNITURE • BATHROOM ELECTRIC HEATERS

WANTED .. TO BUY FOR CASH

Any reasonable quantities and any makes, of good small radio receivers and/or combination radios and phonograph record players, for EXPORT PURPOSES ONLY.

Communicate at once with:

Harry J. Scheel, Exporter
2654 W. Morse Ave. Chicago, Ill.



P - A

Controls

- ★ In servicing P-A and theatre sound installations, don't overlook that wide selection of sound-system controls offered by Clarostat. The wire-wound T-pad constant-impedance series CIT-58 control here shown is typical. Also L-pads, mixers, faders, constant-impedance attenuators, etc. All are included in the Clarostat COMPLETE line of controls.
- ★ Likewise in servicing radio receivers, don't forget those Clarostat replacement controls, plug-in tube-type resistors, voltage-dropping power cords, etc.
- ★ Ask your local Clarostat jobber about these aids to your servicing.



*Coming
Soon!*

**ELECTRONIC
INDUSTRIES**

For

**All who design,
produce or op-
erate electronic
equipment.**

Zenith Starts Nationwide Radio Promotion

Announced by Zenith Radio Corp. is a big schedule of national ads to run in 25 of the major "general, class farm, and women's magazines" from now until May, 1943. The ads will headline the idea, "1917 war run by telephone—1942 war run by radio" and are designed "to keep the Zenith name before the public in the combined interests of Zenith dealers, distributors and the corporation."

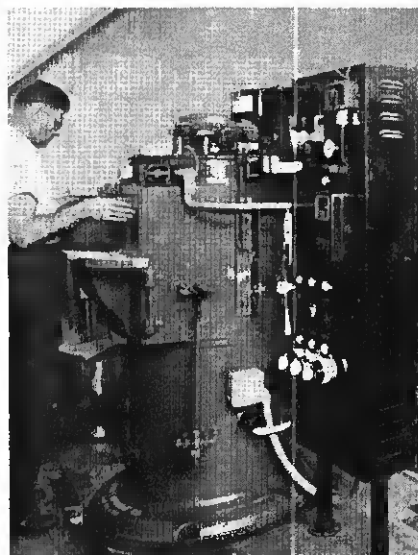
The Zenith vice president J. J. Nance said that the ads will emphasize the concentration of the firm's efforts in both war and peace on the manufacture of radio and electronic products only, with no distracting wartime diversification on unrelated products.

The ads will also deal with the importance of radio after the war, and will emphasize the service offered by Zenith dealers today.

Automatic Wax Coating for Radio Parts

A new machine which is designed to help out with the wartime need for more reliability and stability in radio parts has been introduced by Production Engineering Corp., Clifton, N. J. The unit has an impregnating, dipping action providing automatic wax coating of small parts. It is said to deliver a high-speed, but safe and moisture proof job on all types of items to be coated.

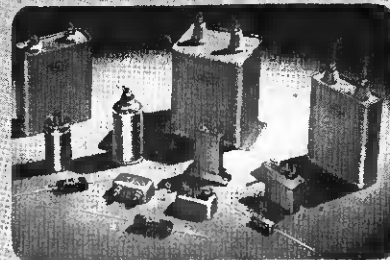
For those who prefer it, the firm has a plan whereby the machines may be leased temporarily. Or, quantities of parts may be sent to headquarters for coating.



Here is the unit which gives small radio parts a rapid wax-coating.

Needle Promotion

Currently helping retailers of Recoton Phoneneedles is a series of national ads run by Recoton, featuring endorsements by Jimmy Dorsey, Connie Boswell, Jane Pickens, etc.



**PAPER CAPACITORS
—at their best!**

Solar experience plays a vital part in the production of completely dependable paper capacitors for the Armed Service Branches of our Government. Consult Solar for prompt solution of your capacitor problems.

CATALOG 12-C
available on letterhead request



MFG. CORP. BAYONNE, N. J.

**MICA · ELECTROLYTIC · PAPER
CAPACITORS**

RADIO TESTERS
Only testers with transmitter and receiver experience considered.

**MECHANICAL
ASSEMBLERS**

WIREMEN
Transmitter receiver experience required.

TOOL ROOM WORKERS
All types skilled craftsmen desired.

**ELECTRICAL
ENGINEERS**
with background of either vacuum tubes or television or communications.

**WILL CONSIDER
RECENT GRADUATES**

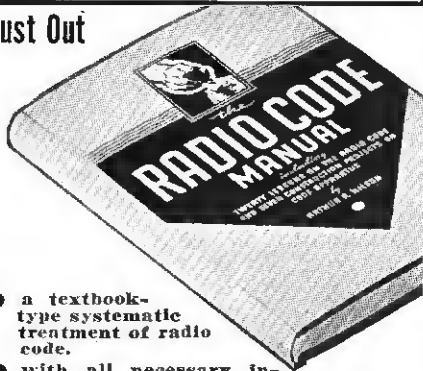
U.S. Citizens. Apply

**INTERNATIONAL
TELEPHONE & RADIO MFG. CO.**
1000 Passaic Ave. E. Newark, N. J.

*Those now employed on war work
will not be considered.*

Your complete
HOME-STUDY COURSE
in sending and receiving
RADIO CODE

Just Out



- a textbook-type systematic treatment of radio code.
- with all necessary instructions and practice material
- presenting PROFESSIONAL sending and receiving, the way it is taught in leading radio schools.

Use it to learn code from the very beginning—to raise your speed to highest professional requirements—to master this important and better-paying skill in the most convenient and inexpensive way, by home study.

Arthur R. Nilson's

RADIO CODE MANUAL

Price, only \$2.00

Here is a complete course in radio code—how to send it and how to read it—in practical form for self-study or classroom use. Gives 20 lessons, beginning with simplest code characters and leading up to the handling of actual messages and press dispatches, weather reports, and distress messages.

It shows you:

- how to make your own practice apparatus
- how to fix the code characters in your mind
- how to practice them for quickest progress
- how to develop sending and receiving speed
- how to get past the "plateau of slow learning"
- how to handle messages
- how to judge your rate of improvement

The 20 lessons are a carefully worked out, progressive series, very similar to courses offered in Navy, Signal Corps, and other radio schools. Each lesson contains instructions and pointers and ample practice material. Besides this direct drill in code, the book also gives you, in 7 other chapters, a great deal of helpful information on training yourself in the code and on becoming a good operator generally.

- good for pre-examination practice
- includes a chapter on organizing and running a radio code class

10 DAYS' FREE TRIAL SEND THIS COUPON

McGraw-Hill Book Co., 330 W. 42nd St., N. Y. C.
Send me Nilson-Radio Code Manual for 10 days' examination on approval. In 10 days I will send you \$2.00 plus few cents postage or return book postpaid. (We pay postage on orders accompanied by remittance.)
Name.....
Address.....
City and State.....
Position.....
Company..... R.R. 8-42

New Booklets

Ohmite Mfg. Co. has published a new stock catalog No. 18, of rheostats and resistors, for radio, television, sound, electronic and industrial uses. Ohmite Mfg. Co., 4835 Flournoy St., Chicago, Ill.

New J. W. Miller catalog, No. 42, containing specifications, illustrations and circuit diagrams of radio interference filters and coils and allied products, is available free of charge. J. W. Miller Co., 5917 S. Main St., Los Angeles, Calif.

Emby Products Co., 1800 W. Pico Blvd., Los Angeles, Calif., has just issued a bulletin which comprises technical data and electrical characteristics of the blocking layer photo-electric cells. Price list is also enclosed.

The Palnut Co., Irvington, N. J., has announced publication of a Manual No. 2, 12 pages, explaining and illustrating design, locking principle, advantages and applications of various types and sizes of self-locking Palnuts.

An unusual and interesting booklet "Long Live Your Microphone" tells in story and pictures how to get the best service from your mike and gives helpful hints on the use and care of crystal, dynamic and carbon mikes. Free of charge. Write for Bulletin 173G at Shure Bros., 215 West Huron St., Chicago, Ill.

"This is war" is the keynote of the new 1942 Aerovox catalog just off the press. It lists essential condensers, resistors and test instruments in popular demand and still produced, stocked and available for delivery. It also includes several pages of motor-starting replacement capacitor listings for refrigerator maintenance. Aerovox Corp., New Bedford, Mass., will supply a copy of this catalog.

A new Solar Paper Capacitor catalogue, with an elaborate section devoted to oil-impregnated and oil-filled paper capacitors in metal tubes is now ready. Copy of this 48-page catalogue may be had by writing on your letter-head direct to Solar Mfg. Corp., 586 Avenue A, Bayonne, N. J.

New RCP instruments for laboratory and production use are described and illustrated in a new folder No. 126. Requests for copies should be addressed to Engineering Dept. Radio City Products Co., 127 W. 26th St., New York, N. Y.

A new catalog from the Elastic Stop Nut Corp., Union, N. J., announcing reduction in prices of about 415 items in the stop-nut line, gives both old and new prices, which went into effect July 1, 1942.

BUY WAR SAVINGS BONDS & STAMPS

Victory
is in the air
WITH
POLYMET

We are now supplying the Army and Navy contractors with POLYMET Condensers. Uncle Sam comes first with us. However, expansion of our facilities enables us to fill regular requirements with very little delay.

POLYMET CONDENSER CO.
699 E. 135th St.
NEW YORK, N. Y.

A "LAB" to fit your pocket

Readrite
RANGER

MODEL 739
\$10.89
Dealer Net Price

A.C. D.C. VOLT-OHM-MILLIAMMETER

Packet Volt - Ohm - Milliammeter with Selector Switch Molded Case. . . . Precision 3-Inch Meter with 2 Genuine Sapphire Jewel Bearings. AC and DC Volts 0-15-150-750-1500; DC MA. 0-1.15-15-150; High and Low Ohm Scales. Dealer Net Price, including all accessories, \$10.89 MODEL 738 . . . DC Packet Volt-Ohm-Milliammeter. Dealer Net Price. . . . \$8.25

WRITE FOR CATALOG
SECTION 1120 COLLEGE DRIVE

READRITE METER WORKS, Bluffton, Ohio



INDEX

To Advertisers

	Page
AEROVOX CORP.	42
ALLIANCE MFG. CO.	38
AMPERITE CO.	47
ANACONDA WIRE & CABLE CO.	44
ASTATIC CORPORATION	39
BELL SOUND SYSTEMS, INC.	34
CENTRALAB	25
CLAROSTAT MFG. CO. INC.	45
ERWOOD SOUND EQUIPMENT CO.	43
FARNSWORTH TELEV. & RADIO CORP.	21
GENERAL ELECTRIC CO.	Insert pages 4, 5
GREENLEE TOOL CO.	42
INTERNATIONAL RESISTANCE CO.	31
INTERNATIONAL TELE. & RADIO MFG. CO.	45
JENSEN RADIO MFG. CO.	Cover IV
KEN-RAD TUBE & LAMP CORP.	4
LITTELFUSE, INC.	47
MALLORY & CO. INC., P. R.	Cover II, 29
McGRAW-HILL BOOK CO.	46
MEISSNER MFG. CO.	8
NATIONAL UNION RADIO CORP.	40
NOBLITT-SPARKS INDUSTRIES, INC.	44
OHMITE MFG. CO.	40
PERMOFLUX CORP.	43
PERMO PRODUCTS CORP.	38
PHILCO RADIO & TELEVISION CORP.	5
POLYMET CONDENSER CO.	46
PRESTO RECORD CORP.	39
PRODUCTION ENGINEERING CORP.	41
RADIO CORP. OF AMERICA.	Cover III
RAYTHEON PRODUCTION CORP.	9
RCA MFG. CO., INC.	2, 3
READRITE METER WORKS	46
RIDER, JOHN F.	36
SCHEEL, HARRY J., EXPORTER.	44
SIMPSON ELECTRIC CO.	23
SOLAR MFG. CORP.	45
SPERRY GYROSCOPE CO., INC.	37
SPRAGUE PRODUCTS CO.	37
STANDARD TRANSFORMER CORP.	36
STROMBERG-CARLSON TELE. MFG. CO.	10
SYLVANIA ELECTRIC PRODUCTS INC.	6
THORDARSON ELEC. MFG. CO.	43
TRIPLETT ELEC. INSTRUMENT CO.	33
TUNG-SOL LAMP WORKS, INC.	1
UNITED STATES ARMY	35
UNITED STATES TREASURY	48
UNIVERSITY LABORATORIES	42
UTAH RADIO PRODUCTS CO.	7
WILCOX-GAY CORP.	19

While every precaution is taken to insure accuracy, we cannot guarantee against the possibility of an occasional change or omission in the preparation of this index.

WARTIME PARTS SUPPLY

(Continued from page 22)

tice when events occur to jeopardize the interests of the radio parts distributor.

F. To act as a clearing house for the exchange of ideas, plans, and information of value to all distributors.

G. And last but not least, to insist that every Government Regulation affecting our business is Intelligently Drawn and Equitably Administered.

Industry Action on Supply of Radio Parts

An allocation order from the War Production Board, providing materials for the future production program of radio replacement parts, is expected to be developed in Washington following the meeting Aug. 13 of the "Radio Replacement Parts Industry Advisory Committee." Data and recommendations on parts requirements for civilian use during the next 12 months have been requested of the committee by WPB officials.

Appointments to the Parts Industry Advisory Committee were announced July 18, following an organization meeting on July 13. The government presiding officer is Chief Frank H. McIntosh of the WPB Radio Section, Communications Branch, and the personnel is as follows:

James P. Quam, Quam-Nichols Co.; T. A. White, Jensen Radio Mfg. Co.; Ray F. Sparrow, P. R. Mallory & Co.; Octave Blake, Cornell-Dubilier Electric Corp.; I. A. Mitchell, United Transformer Corp.; Victor Mucher, Clarostat Mfg. Co.; Ernest Searing, International Resistance Co.; J. J. Kahn, Standard Transformer Corp.; R. C. Sprague, Sprague Specialties Co.; F. R. Hopkins, Girard-Hopkins Co.; F. P. Kenyon, Kenyon Transformer Co., Inc.; W. M. Kohring, Continental Carbon, Inc., and Edwin I. Guthman, E. I. Guthman & Co., Inc.

Developing a similar program for transmitting tubes is the WPB "Transmitting Tube Industry Advisory Committee" which includes nine of the leading executives in this field.

Alexander Honored

Louis Alexander, veteran condenser salesman of Aerovox Corp., has been honored by the Radio Club of America via his recent election as a Fellow of the Club. Mr. Alexander has been busy at condenser sales since the first days of capacitor manufacture and has sold hundreds of millions of units.



4 STANDARD TYPES
of Amperite Regulators replace over 400 types of AC-DC Ballast Tubes now in use.

Amperites are real REGULATORS have patented Automatic Starting Resistor which prevents initial surge and saves pilot lights.
Ask Your Jobber.

AMPERITE

THE *Simplest* WAY TO REPLACE

BALLASTS

WRITE FOR REPLACEMENT CHART

AMPERITE CO. 561 BROADWAY, NEW YORK, N. Y.



Look for these FEATURES in

LITTELFUSES

LOCKED CAP 90° TWIST IN ELEMENT
GOOSENECK FEATURE

- These are LITTELFUSE FACTORS—not "equivalents." It is the LITTELFUSE Twisted Element that protects against severe vibration—the LITTELFUSE Locked Cap Assembly that holds caps firmly under all conditions—the LITTELFUSE Gooseneck that takes up contraction and expansion.
- Mechanical Strength, Fatigue Resistance, and Long Vibration Life are LITTELFUSE qualities accounted for by its scientific structure. It will pay you to familiarize yourself on the details of difference among fuses. Send for the complete Littelfuse Catalog, listing fuses and mountings for every instrument service.



Underwriters Approved Littelfuse



See Catalog for Littelfuse Extractor Posts and mountings for every requirement.

LITTELFUSE INC.

4791 Ravenswood Ave. Chicago, Ill.
261 Ong St., El Monte (Los Angeles Suburb) Cal.

TO EXECUTIVES: NOW YOU CAN HELP

Even More...

**New Treasury Ruling Permits Purchases
UP TO \$100,000, in any Calendar Year, of
Series F and G WAR BONDS!**



The Treasury's decision to increase the limitations on the F and G Bonds resulted from numerous requests by purchasers who asked the opportunity to put more money into the war program.

This is not a new Bond issue and not a new series of War Bonds: Thousands of individuals, corporations, labor unions; and other organizations have this year already purchased \$50,000 of Series F and G Bonds, the old limit. Under the new regulations, however, these Bond holders will be permitted to make additional purchases of \$50,000 in the remaining months of the year. The new limitation on holdings of \$100,000 in any one calendar year in either Series F or G, or in both series combined, is on the cost price, not on the maturity value.

Series F and G Bonds are intended primarily for larger investors and may be registered in the names of fiduciaries, corporations, labor unions and other groups, as well as in the names of individuals.

The Series F Bond is a 12-year appreciation Bond, issued on a discount basis at 74 percent of maturity value. If held to maturity, 12 years from the date of issue, the Bond draws interest equivalent to 2.53 percent a year; computed on the purchase price, compounded semiannually.

The Series G Bond is a 12-year current income Bond issued at par, and draws interest of 2.5 percent a year, paid semiannually by Treasury check.

Don't delay—your "fighting dollars" are needed *now*. Your bank or post office has full details.



Save With . . .

War Savings Bonds

This space is a contribution to America's All-Out War Program by Radio Retailing-Today

IN TWO PARTS
PART TWO

RADIO *Retailing* TODAY

Including Radio & Television Retailing

AUGUST
1942

New ELECTRONIC Uses in INDUSTRIES

• Probably no tool applied to industry has found such a diversity and number of uses as has the electronic tube. It is employed to speed up production, to safeguard workers, to protect against sabotage, to refine measurements, and to afford amazing sensitivity of control.

How wide are the 1942 ramifications of the electronic industries and how they reach into many fields of human activities is strikingly shown by the large 4-page "Flow-Chart of the Electronic Industries" which occupies the central section of this Part II. Raw materials, parts and components; electronic devices; how they are distributed; and the purposes for which they are used, are all shown in this

remarkable chart for the first time.

Meanwhile on this and the last page of Part II, we describe some of the new electronic applications to American industry and the war effort.

Short-Wave Drying of Tobacco

Tobacco in casks is now being rapidly dried without excessive heating of the tobacco leaves, by a new ultra short-wave process developed by the Girdler Corporation, Louisville, Ky. Formerly the tobacco casks required a long time to dry out. But with the new short-wave process any moisture in the tobacco is rapidly heated by the electric currents induced in the moist material. Of course as soon as the moisture evaporates, no

further conductivity is provided and so, heating stops. The short-wave process is thus foolproof in application, since excessive exposure of the tobacco to short-wave bombarding can do no injury or produce no heating after the moisture has been expelled.

Cementing Plywood by HF

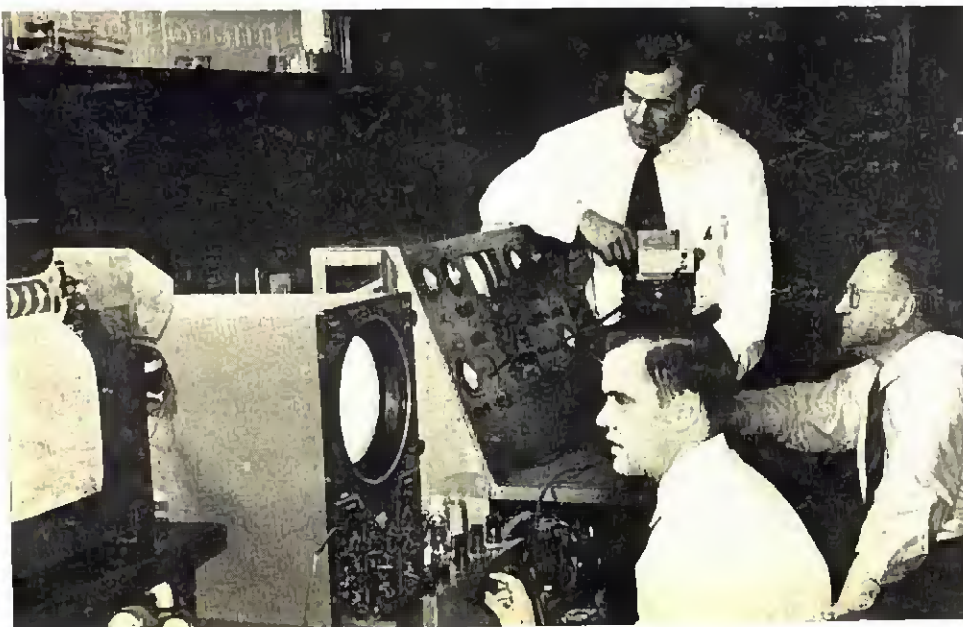
Patents of the above company (formerly the Thermal Engineering Corporation of Richmond, Va.), are now being applied on a large scale for the cementing of plywood. The plastic polymer cements used are electrically conductive, and when such plywood assemblies are introduced into a high-frequency field, the currents induced in the plastic cement heat and "set" this cement, without applying excessive heat to the wood sheets themselves. Such plastic cement, once "set," is impervious to water, and produces a bond even stronger than the wood itself. Such plywood is proof against failure from the usual trouble of moisture softening the glue.

Veneers that Are Crack-Proof

The new plywood-treating apparatus applies up to a thousand kilowatts of radio energy of a frequency not far from the broadcast band (but completely shielded so that no stray field can leak out to disturb broadcast listeners). Plywood sheets up to 8 by 10 ft. can be treated.

(Continued on last page)

To enable industry to study opaque substances and the grain-structure of metals, Dr. V. K. Zworykin of RCA (right) has now developed a "scanning" electron microscope.



ELECTRONIC INDUSTRIES

THE GREAT ELECT

ENGINEERING AND MANUFACTURING

OPERATION AND MAINTENANCE

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 CEMENTS
 CERAMICS
 CHEMICALS
 COMPOUNDS
 CORES, SHEETS, POWDER
 DIELECTRIC
 FABRICS
 FELT
 FIBRE
 FINISHES
 FLUXES & PASTES
 GASES
 GLASS
 INSULATION—
 ELECTRIC
 ACOUSTIC
 HEAT
 LIQUIDS & OILS
 METALS—
 ALUMINUM
 BRASS
 BRONZE
 COPPER
 IRON
 LEAD
 MAGNESIUM
 MOLYBDENUM
 NICKEL
 PALLADIUM
 PLATINUM
 SILVER
 SPECIAL ALLOYS
 STEEL
 TANTALUM
 TIN
 TUNGSTEN
 ZINC

Manufacturers of PARTS, TUBES, ACCESSORIES AND EQUIPMENT

ADAPTERS
 AMPLIFIERS
 ANTENNAS
 ATTENUATORS
 BAFFLES
 BATTERIES
 BLANKS, DISC
 CABINETS
 CAPACITORS
 CASTINGS
 CHARGERS
 CHASSIS
 CHASSIS HOLDERS
 CHOKES
 CIRCUIT BREAKERS
 COAXIAL CABLE
 COIL FORMS
 COILS & ASSEMBLIES
 CONNECTORS
 CONTROLS—
 REMOTE
 TONE
 TUNING
 VOLUME
 CONVERTERS
 CORD
 CORES, IRON
 COUPLINGS
 CRYSTALS
 CUTTING HEADS
 DIAL BELTS
 DIALS & KNOBS
 ELIMINATORS, BAT.
 ESCUTCHEONS
 FILTERS, LINE
 FLEXIBLE SHAFTING
 GAS ENGINES
 GENERATORS, D.C.
 HARDWARE
 MIXERS, INPUT
 MOTORS, PHONO
 MOTORS, TUNING
 NEEDLES & STYLI
 OSCILLATORS
 PICKUPS
 PLUGS
 POTENTIOMETERS
 POWER PLANTS
 POWER SUPPLIES
 RACKS & PANELS
 RECORDS
 RECORD CHANGERS
 RECTIFIERS
 RELAYS
 REMOTE CONTROLS
 RESISTORS
 RHEOSTATS
 SHAFTS
 SHIELDS & SHIELDING
 SOCKETS
 SPEAKERS & PARTS
 SPRINGS
 STAMPINGS
 STORE EQUIPMENT
 SWITCHES & JACKS
 TERMINAL STRIPS
 TIME SWITCHES
 TOOLS, BENCH
 TOWERS & SUPPORTS
 TRANSFORMERS
 TUBES—
 BALLAST
 CATHODE RAY
 ELECTRIC EYE
 HEARING AID
 PHOTO-ELECTRIC
 RECEIVING
 RECTIFIER

Manufacturers of SETS, TRANSMITTERS and other ELECTRONIC EQUIPMENT for

INDUSTRIAL CONCERNS
 COMMUNICATIONS
 BROADCAST STATIONS
 GOVERNMENT SERVICES
 AIRCRAFT & AIRPORTS
 POLICE DEPARTMENTS
 MARINE & COMPASS STATIONS
 PRESS SERVICES
 TELETYPE
 FACSIMILE
 TELEVISION
 COLLEGES & OTHER TRAINING ORGANIZATIONS
 HOSPITALS
 MUNICIPALITIES
 RESEARCH, DEVELOPMENT & TESTING LABORATORIES
 MISC. ULTRA-HIGH FREQUENCY APPLICATIONS

Manufacturers of PHONOGRAPHS RECORDING EQUIPMENT MUSICAL INSTRUMENTS

PHONOGRAPHS & PLAYERS
 PHONO-OSCILLATORS
 RECORDERS
 TRANSCRIPTION MACHINES
 CABINETS & ALBUMS

Manufacturers of SOUND EQUIPMENT

INDUSTRIAL and COMMERCIAL USERS of ELECTRONIC PRODUCTS

In connection with

ADHESIVES	LIGHTING
ALARMS, MISC.	MEASURING
ANTI-SABOTAGE	METAL ANALYSIS
BACTERIOLOGY	METAL SURFACING
BLACKOUT EQUIPMENT	MICROSCOPY
CARDIOGRAPHY	MINING
CHEMICALS	MOTORS & GEN.
CIRCUIT BREAKERS	LIMIT SWITCHES
COLOR MATCHING	LOCATORS
COMBUSTION	PACKAGING
COUNTING	PHOTO PROCESS
CUTTING	PLASTIC HEAT
DENSITOMETRY	SAFETY
DETECTION	SELECTING
DETONATION	SIGNALLING
DOOR OPENING	SIGN FLASHING
DRYING	SORTING
ELEVATOR LEVELING	SPECTROSCOPY
ENCEPHALOGRAPHY	SYNCHRONIZING
ENGINE TEST INSTR.	THEATER EQUIPMENT
FENCE, ELECTRIC	THERAPY
FIRE & FURNACE	THICKNESS
FISH MIGRATION	TIMING
FOOD PRESERVATION	TRAFFIC
GEOPHYSICS	TURBIDITY
GRADING	VIBRATION
HEATING, INDUCTION	WARNING, AIR RAID
HEATING, PREMISES	WEIGHING
HEAT TREATING	WELDING
HUMIDITY	WRAPPING
INSPECTION	X-RAY

SOUND in INDUSTRY

INTERCOMMUNICATING	PUBLIC ADDRESS
PAGING & CALLING	MUSIC FOR WORKERS

RONIC MARKET

How Equipment Flows from Maker to User

FOR the benefit of our readers, this chart visualizes the wartime growth and relationship of the electronic industries — and the still greater growth that is certain to come when the manufacturers again are able to develop new products made possible by the electron tube.

At the left are the engineering and manufacturing operations, including the intra-industry marketing that takes place between manufacturers themselves. These manufacturers also sell to users of electronic equipment, either direct or through distribution channels.

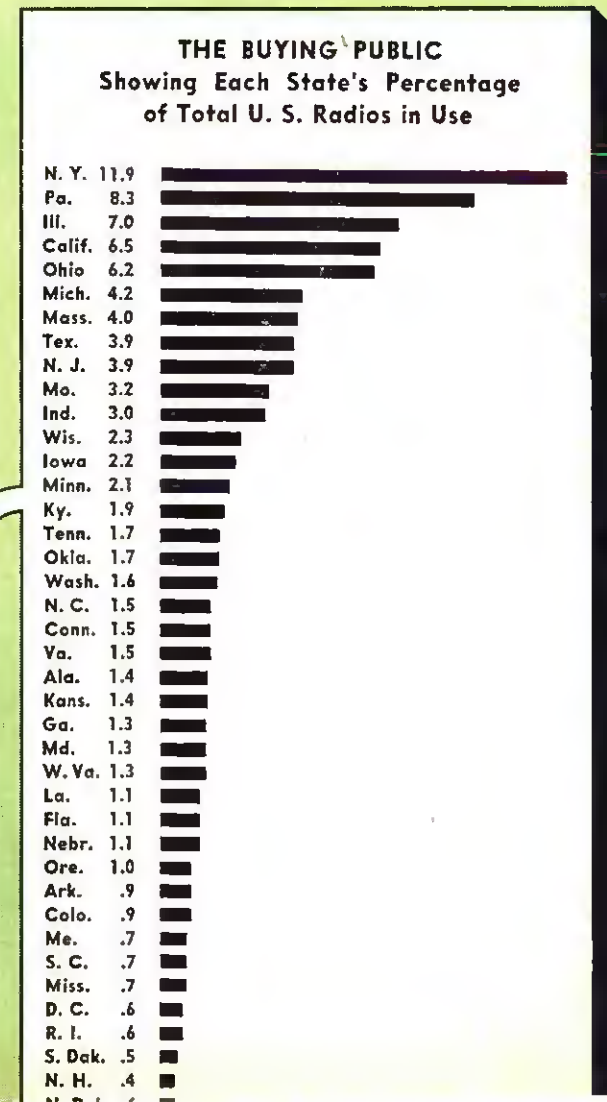
And at the right are the well-known factors in radio distribution,— the parts jobbers, the dealers and servicemen, the various radio specialists, the "hams" and finally the vast market of 30,500,000 radio homes containing some 59 million radio sets in use.

WHOLESALE

RETAILING AND SERVICE



RADIO CONSUMER MARKET



RUBBER
SOLVENTS
STEATITE
WAXES
WIRE

KITS, MISC.
LAMPS, MISC.
MAGNETS
METERS & MOVEMENTS
MICROPHONES & ACC.

VIBRATORS
WIRE & CABLE
WOBBULATORS
MISC. SMALL PARTS
& SPECIALTIES

STADIUM, TRACK, ETC.
MOTION PICTURE STUDIOS
WIRED WIRELESS
GROUP HEARING AIDS
CHURCHES, CHIMES, SIRENS

POINT-TO-POINT
SHIP-TO-SHIP
SHIP-TO-SHORE
TELETYPE
PRESS & PICTURE
MISC. RADIO-WIRE

AIRMAIL
AIRPORT CONTROL
TRAFFIC NETWORKS

Industrial
OIL, GAS, POWER
MINING, LUMBER
TRANSPORTATION
PAPER, PLANTATIONS
COLLEGES
EXPEDITIONS
EXPLORATIONS
MISC. NON-PUBLIC
COMMUNICATION
SERVICES

Municipal
POLICE—FIXED,
MOBILE & NETS
HIGHWAY CONTROL
HARBOR PATROL
FIRE BOATS
MISC. SAFETY
SERVICES

INTRA-INDUSTRY MARKETING

SELLING AND INSTALLING

MFERS.' BRANCH OFFICES
FACTORY, TECHNICAL &
INSTALLATION SERV.
REPS, SALES AGENTS, ETC.
ELECTRONIC DISTRIBUTORS—
Complete Units and Parts
ELECTRONIC SERVICE
SPECIALISTS
CONTRACT INSTALLERS—
Radio, Engineering and
Electrical Contracting
Firms

BROADCASTING, RECORDING and SOUND

DOMESTIC AND INTERNATIONAL BROADCAST
STATIONS (AM, FM)
TELEVISION STATIONS
RECORDING AND TRANSCRIPTION
COLLEGE INTRAMURAL CARRIER SYSTEMS
SOUND MOTION PICTURE STUDIOS

PROFESSIONAL SERVICES

CONSULTANTS
INDUSTRIAL ENGINEERS
ORGANIZATIONS for
TESTING
DEVELOPMENT
RESEARCH
MANAGEMENT
LICENSING

Manufacturers of PRODUCTION and LAB. EQUIPMENT

BENCHES, TABLES
RACKS, BINS, TANKS
CABINETS, CONVEYORS
DRAFTING EQ. & MAT.
HEATING, VENT. & LTG.
OVENS & FURNACES
COIL WINDING EQUIP.
MISC. MACHINERY

LAB. & ASSEMBLY LINE
TESTING EQUIPMENT—
INDICATORS
BRIDGES, METERS
GENERATORS
OSCILLOSCOPES
STANDARDS
SPECIAL INSTRUMENTS

Manufacturers of SERVICING EQUIPMENT

ANALYZERS
AUDIO OSCILLATORS
BATTERY TESTERS
BRIDGES
CHECKERS, TUBE & LC
CONTINUITY TESTERS
DECADE BOXES
FREQUENCY METERS
MULTI-METERS
MODULATION METERS
NOISE FILTERS
NEON INDICATORS
OSCILLOSCOPES
OUTPUT METERS
SIGNAL GENERATORS
SIGNAL TRACERS
SOUND LEVEL INDICATORS
SPEAKER TESTERS
VAC. TUBE VOLTMETERS
VIBRATOR TESTERS
MISC. SPECIAL PURPOSE
INSTRUMENTS & METERS

GOVERNMENT Radio-Electronic Uses and Services

War and peacetime equipment of ARMY, NAVY, MARINE
CORPS, COAST GUARD, NATIONAL GUARD.

Services of MARITIME COM., LIGHTHOUSE, AIRWAY
RANGE & BEACON, METEOROLOGY, FORESTRY, FLOOD
CONTROL, NAT. PARKS, F.B.I., COAST & GEO.
SURVEY, F.C.C., BUREAU OF STANDARDS.

EDUCATIONAL

TECHNICAL PRESS
SERVICE MANUALS
COLLEGES & SCHOOLS
BOOK PUBLISHERS

INDUSTRY ORGANIZATIONS

RADIO MANUFACTURERS
ASSOCIATION
INSTITUTE OF RADIO
ENGINEERS

NATIONAL ELECTRONIC
DIST'RS ASS'N
THE "REPS"
SALES MANAGERS CLUB

THE ELECTRONIC INDUSTRIES MARKET

SET DISTRIBUTORS

PARTS
DISTRIBUTORS
& Ham Supplies

CATALOG HOUSES

EXPORTING AGENTS

Independent
SERVICE STATIONS

AUTO RADIO
Installation & Service

SOUND
SPECIALISTS
and
SOUND SERVICE

Freelance, Part-time and
Amateur Servicemen

Wyo.	.4	■
Ida.	.4	■
Vt.	.3	■
Ariz.	.3	■
N. Mex.	.2	■
Del.	.2	■
Wyo.	.2	■
Nev.	.1	■

Non-professional Users of
SOUND, INTERCOMMUNICATION
and ELECTRONIC DEVICES

AMATEURS
"Hams"

NOTE

Government-trained operators and servicemen in ultra-high frequency and Radar—numbering approximately 100,000—are on active duty in the armed services, or are still in training. In the post-war period these men are likely to be a major factor in developing the electronic industries.

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Publishers of
ELECTRONIC INDUSTRIES
RADIO RETAILING TODAY
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For Industrial Control Devices

For Power Generation and Conversion

For Television Transmitters and Receivers

For Radio Broadcast Transmitters and Receivers

For Police and Emergency Radio Systems

For Aircraft Communications and Instruments

For Army, Navy, and Air Force War Equipment

For Carrier Current Communication and Control

For Amateur Radio Transmitters and Receivers

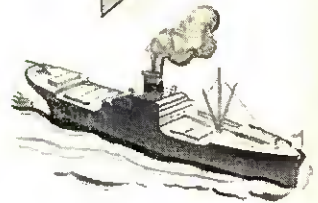
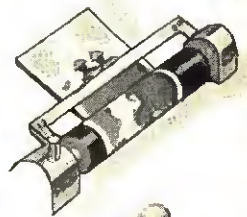
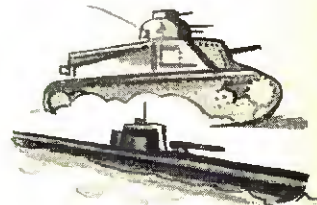
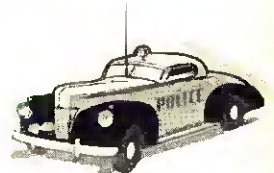
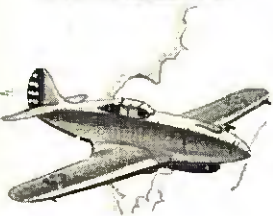
For Facsimile Transmission and Reception

For Public Address and Communication Systems

For Merchant Marine Communication and Navigation

For Laboratory and Testing Equipment

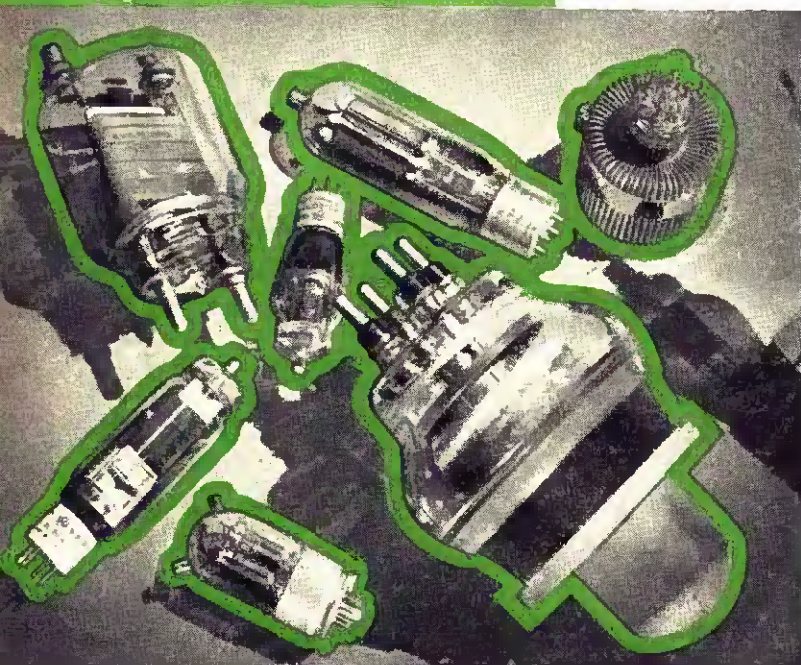
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