

# IN THE WORLD OF RADIO

## Ship Experiment With Short Wave

### Messages Transmitted From San Francisco to Eiffel Tower.

Short wave length wireless telegraphy is now attracting much attention. Signor Marconi has announced that he expects to attain startling results in the very near future. The French government is also studying the question in connection with the Eiffel tower station.

The French authorities have loaned to the Jacques Cartier, a French Line cargo carrier and training ship, a small transmitting station of 400 watts, with which the ship's messages have been transmitted direct from San Francisco to Eiffel tower on a 115-meter wave length. The ship has been able to receive Eiffel tower signals sent out on 115 meters, with a 400-watt transmitter similar to the one loaned to the Jacques Cartier, the receiving apparatus in both cases consisting of a one-tube outfit.

The Jacques Cartier uses its 400-watt station to forward directly to Paris weather messages received from Alaska, Japan and Russia. This saves considerable time and enables the Paris weather bureau to have in a few hours sufficient data to draw an accurate weather chart of all the northern hemisphere.

The Paris weather bureau and the Jacques Cartier work in close cooperation with the United States weather bureau and with Maj. E. H. Bowler, a pioneer in that branch who has contributed very valuable information on the subject. Capt. Marcel Coyocque is in charge of the Robert aboard ship, of which A. M. Robert is the wireless chief. The radio assistants are A. J. Sclaud, L. P. Boissonade and L. A. Mouton.

## Difficulties From Bent Wire.

Wire that has been bent is apt to break if an attempt is made to straighten it out, and even if it does not break it will be weak where the bend occurs or, due to crystallization at this point, it may cause high resistance.

## Even Convict Gets Europe.

An inmate of the Rockview penitentiary, near Bellefont, Pa., "tuned in" radio station LRO, Rome, during the recent transatlantic tests. More than 30 stations in the United States were picked up by convict radio operators in one night.

## Radio Waves to Be Studied.

An exhaustive study of what happens to radio waves after they leave the broadcasting stations is to be made by the Moore School of Electrical Engineering of the University of Pennsylvania.

## Largest Loud Speaker.

The largest radio reproducing instrument in the world is 11 1/2 feet high and its mahogany bell contains more than 2,500 individual pieces of wool. The aluminum base is larger than an ordinary car wheel.

## Copenhagen Broadcasting.

The new Copenhagen broadcasting station is testing out radio transmission on 150 meters, and is also transmitting regular programs on 471 meters on Sundays, Wednesdays and Thursdays.

## Police to Install Radio.

The Surete Generale of Paris has recently been authorized to install radio receiving sets, and is training some of its men in the use and operation of wireless instruments.

## KFGZ Is Now WEMC.

The Radio Lighthouse, Berrien Springs, Mich., heretofore known as station KFGZ, recently had its call letters changed to WEMC, significant of Emmanuel Missionary college.

## Dirt Reduces Volume.

Because dust is composed of metal, the volume of sound in the receiver will be cut down if the inside of the set is permitted to become dirty.

## To Improve Loud Speaker.

Tones from a loud speaker can be improved if the opening is facing a corner of the room. The edge of the speaker should just miss the walls.

## The American Radio Relay League.

The American Radio Relay League is gathering statistics in 20 nations in its survey of amateur radio progress throughout the world.

## Never use an acid as flux in soldering.

As the acid will attack the copper in the wire and in a short time the set will not function correctly.

## Antenna Selector Performs Wonders Sharpening Up Tuning of Reflexes

Any tuning device used as an antenna coupling unit on a reflex set operated within a half a mile of broadcasting stations which will enable one to tune out these stations so effectively that it becomes almost unnecessary to search for them the same as distant stations certainly will find favor with fans having trouble in getting selectivity.

It is well known that any receiving set not having the inherent quality of at least partial selectivity forestalls any possibility of enjoyment of radio programs. This is true particularly in cities where conditions are exceptionally severe. Most any of the standard circuits will give satisfactory results where these conditions do not obtain.

In congested areas radio enthusiasts must be more careful in the selection of receivers. Reflex receivers, notwithstanding their splendid volume, have suffered much because of their poor selectivity.

In many instances where a set that has been designed primarily for loop reception and is used with an outside aerial there is a noticeable increase in volume with proportionate decrease of selectivity. In this case, unless an efficient antenna coupling unit is employed it might be just as well to stick to the loop. The problem resolves itself into using some type of antenna tuning or coupling unit that will provide maximum volume with the degree of selectivity originally intended. Furthermore, it is not only desirable but really necessary that the device be of such a nature that its use does not involve complicated changes in existing circuits and that it can be attached very easily.

**Like Changing Antenna.**  
We know that the coupling or relationship between the antenna system of a circuit and the grid or secondary circuit must necessarily be increased as the wave length is increased, in order that the energy or current in the secondary system be at maximum value. Again, it can be demonstrated that the relationship or coupling between these two circuits is reduced when great selectivity is desired. This gives us our working basis for the selective tuning unit, or "selector," which is to be described.

An easily understood analogy demonstrating the above paragraph may be had from the popular regenerative three-circuit tuner, especially when it is being used near a powerful broadcasting station. Suppose we are listening to WAEE, operating at 402 meters, the set being operated at maximum or near maximum volume. When we wish to tune to a local station on a lower wave length and use only the secondary tuning condenser to accomplish this, we find that the set will begin to squeal. For this lower wave length we find that it is necessary to readjust our regenerative control. In other words, we change the degree of regenerative coupling for the various stations operating on different wave lengths. In a reflex set we find that our selectivity would be increased if we could efficiently change the degree of coupling for the different wave lengths and not sacrifice any volume. As already mentioned, selectivity at the expense of volume is not the object.

**Sharpens Up Reflexes.**  
A selector has been developed which can readily be made part of any reflex circuit and improve its selectivity to a remarkable degree. It can also be used with advantage on reflex sets designed for loop reception, as well as many other types of circuits. The use of this selector permits the control of the primary cir-

cuit with regards to its coupling to the secondary or grid circuit, from the equivalent of one-half to 16 turns tight or close coupling. This gives us considerable flexibility with what is usually a fixed or aperiodic primary.

To be able to vary at will in a most simple manner from a minimum to maximum number of turns is one of the most efficient and practical methods of obtaining real selectivity. No impairment of tonal qualities makes this method most desirable.

The pros and cons of aperiodic primaries have been discussed so many times that most experimenters are more or less familiar with them, and will at once appreciate the possibilities of the selector, especially since its use is not confined to reflexes, but also may be used with radio fre-

quency and regenerative circuits or, in fact, wherever a selective antenna tuner is desired. Another point in its favor is that no important changes are necessary to incorporate it in a receiving set.

**Details of This Unit.**  
Roughly speaking, the selector consists of a secondary winding of about 40 turns with a primary of 16 turns, wound in such a manner that one-half the turns of the primary are fixed on the outside of the secondary while the remaining half of the primary rotates within the secondary. While this may sound like something extremely complicated, it is comparatively simple to make. It becomes difficult only when one tries to make it after the fashion of low loss coils, because mechanical support of some kind is almost an absolute necessity. However, it will repay those who have the patience to make one in a low loss type. If an old variometer is handy, strip off all the wires and on the stator wind 40 turns of No. 22 or No. 24 wire. Right over this wind four turns about one-quarter inch from the outside edge, in the same direction as the turns on the secondary and four turns on the opposite edge, making eight turns of the primary wound in two sections of four turns each right on top of the secondary.

Leave enough wire on the ends of the inside turns of the primary windings so that they may be connected to the remaining part of the primary which is to be wound on the rotor of the variometer in the same fashion as the primary was placed on the secondary—namely, in two sections of

four turns each, wound near the outside ends of the rotor.

**Hooking Up the Selector.**  
The primary is connected in this manner: Hold the selector with the rotor shaft facing toward the front. From left to right we should have four turns wound about a quarter inch from the left hand edge, right over the secondary winding of 40 turns, with the inside or last turn connected through the rear rotor shaft to the outside winding of four turns on the rotor. The inside or No. 4 wire on the rotor should be joined to the winding on the rotor is one piece of wire to the inside winding of the remaining four turns and the extreme end connected through the front rotor shaft to the inside turn of the fourth part of the primary winding.

If built properly we should have a ground and connected as usual to the primary. In still another reflex it is a bit more difficult to connect because of the fact that the secondary of the present tuning unit is tapped so as to allow neutralization of the reflexed tube.

If the variable selector is tapped at a point about two-thirds from the beginning of the secondary winding the unit may be connected exactly as is the present tuner. Unless this is done, the use of the neutralizing small capacity condenser will be to no avail.

**Sermon Over Radio**  
**Boon in Bad Weather**  
Holyoke, Mass., Jan. 2.—Even though some pastors are averse to having Sunday morning church services broadcast because of the fact that many will stay away from the churches, one cannot deny that in cases of stormy weather broadcasting the services accomplishes one of the main objects of church teaching, namely, to make better men and women of us.

This is true because the sermons reach those who are confined to their homes by reason of the weather, and the lessons are so driven home. A splendid evidence that such is the case is to be had in a letter received recently by Westinghouse station WBZ from a listener in this city: "Yesterday we were 'shut-ins' temporarily. But we went to church via radio. And we realized what a really fine thing WBZ is doing in broadcasting church services on Sunday mornings."

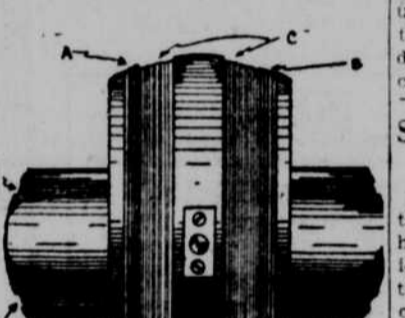


Fig. 1. New coil which sharpens tuning.

side aerial is desired it is only necessary to connect the two secondary posts to the set in the same manner as the loop is ordinarily connected. The condenser which was used to tune to loop will control the secondary to loop will control the secondary. The antenna and ground connections are made to the primary in the usual way. Tuning is accomplished in exactly the same manner as heretofore, with the exception

that there is an additional control in the primary circuit which will effect great selectivity.

More volume will be had with this method because of the larger amount of energy picked up by the aerial and inductively transmitted to the grid of the first tube through the secondary. A loop or indoor aerial is only a substitute for an outside aerial and consequently does not pick up quite so much energy.

### With Special Sets.

In attaching this selector to certain other types of reflex sets it is only necessary to connect the secondary winding to the grid and through the secondary of the reflexed audio transformer filament of the first tube with the tuning condenser shunted across the secondary. The antenna and

in the event that this small condenser is not going to be used, connect one end to secondary winding of the selector to the grid of the first tube and the remaining end to the grid of the reflexed audio transformer in the usual manner. Figure 1 shows the entire circuit using the selector.

### The Complete Circuit.

The circuit shown in Figure 2 is by no means new, but it certainly is an efficient one. In volume it will equal most three tube regenerative sets and will bring in plenty of distance on the loud speaker. It is easy and simple to operate, having only one main control, yet tunes very sharply. The selectivity obtainable is ideal for city receiving. The "C" battery, which has been incorporated in this diagram will be appreciated by many. It is an in-

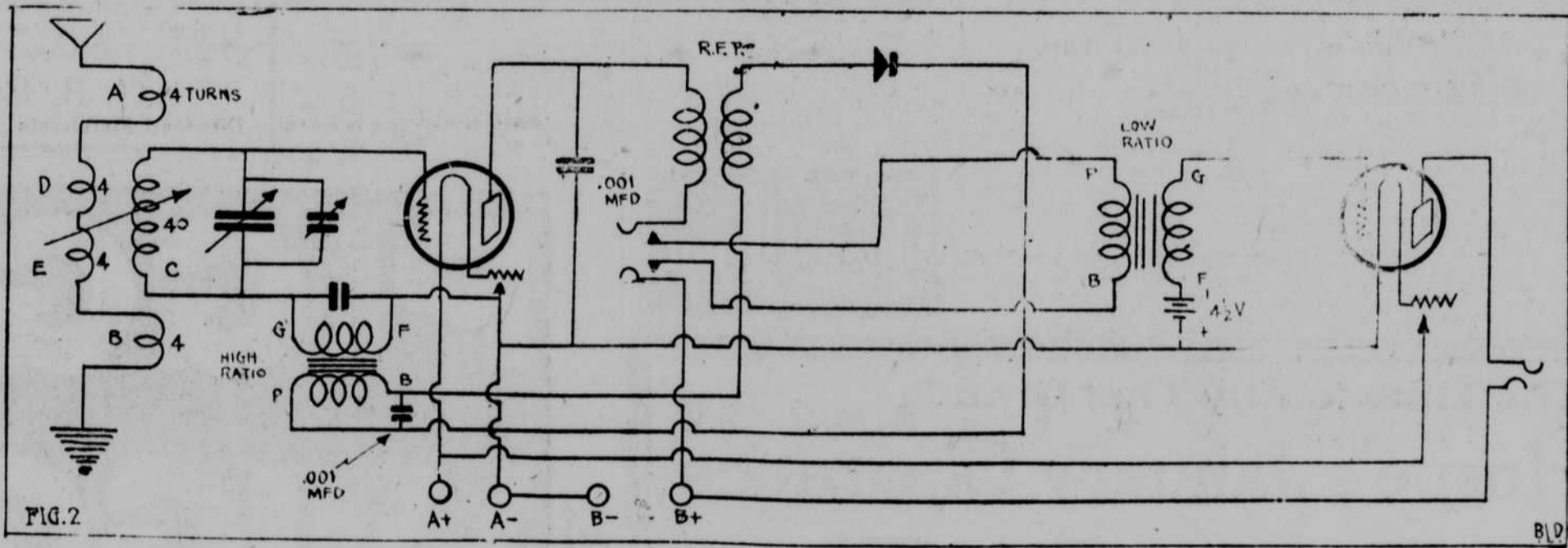


Fig. 2. Showing how the new coil is being used in reflex circuits to make it selective.

## RADIO

Program for January 24.

(Courtesy of Radio Digest).

By Associated Press.

WMAQ, Chicago News (447.5); 6 Ukelele girls; 8 orchestra; 8:30 Radio photo-story; 9 Chicago theater review.

WLS, Chicago (248); 7 entertainers; 12:15 review organ; Harry Gitta, orchestra; Chicago Tribune (270); 8 organ; 8:30 concert; 8 classical; 10 orchestra; 10:15 review; 11:30 concert; 12:30 classical; 12:35 Southern Companion; 1:35 classical; 2:35 carnival.

WEBS, Chicago (270); 7 Sunday school lesson; orchestra; 7 readings; Hawaiian guitarist; 10 orchestra; 10 Program.

WGN, Cincinnati (423); 6 concert; instrumental outlet.

WFLX, Cuba (400); 7:30 concert; WFLX, Detroit (488); 7:30 religious discussion; 8 orchestra; 8:30 musical; 9:30 Detroit News (516); 6 News orchestra.

WBP, Ft. Worth Star (411); 6:30 (423); 7:30 orchestra; 8 musical; 8:30 KXN, Hollywood (377); 8 musical; 10 WJAZ, Kansas City Star (411); 6:30 (423); 7:30 orchestra; 8 musical; 8:30 orchestra; 9:30 orchestra; 10 orchestra; 11 orchestra; 11:30 organ.

WDR, Newark (403); 7 string quartet; 7:45 pianist; 9 cellist; soprano.

KGO, Oakland (212); 6 concert; 10 club; guitarist; 12 dance; solista.

WOAW, Omaha (452.5); 6 dramatic; 6:30 announcement; 9 program; 9:30 program; 11 orchestra; 11:30 organ.

WTAR, Norfolk Post Dispatch (549.1); 8 symphony orchestra.

WDC, Washington (465); 9:30 dance; 10:15 organ.

CKAC, Montreal (425); 6:30 concert; 7:30 studio; 9:30 dance.

WJZ, New York (453); 6 orchestra; 7 talk; 7:30 soprano; 7:30 musical; 7:45 soprano; 8 Jewish history; 8:30 piano; 9 orchestra; 9:30 orchestra; 10 orchestra; 10:30 pianist; 11 orchestra; 11:30 organ.

WFL, Philadelphia (355); 6 talk; 7 talk; 8 orchestra; 8:30 orchestra; 9 orchestra; 9:30 orchestra; 10 orchestra; 10:30 orchestra; 11 orchestra; 11:30 organ.

WKA, Pittsburgh (509.1); 6:30 Richard; 7:30 band; 8:30 band; 9:30 band; 10:30 band; 11:30 band.

WCAE, Pittsburgh (509.1); 6:30 Unleash; 7:30 movie; 8:30 musical; 9:30 musical; 10:30 musical; 11:30 musical.

KPO, San Francisco (425); 6:30 tea; 7:30 tea; 8:30 tea; 9:30 tea; 10:30 tea; 11:30 tea.

WOAW, Seattle (455); 8:45 program; 10:15 program; 11:30 program.

WBZ, Springfield (527); 6:15 history; 6:30 vic; 7 burlesque; 8:30 vic; 9 vic; 10 vic; 11 vic; 11:30 vic.

WDC, Washington (465); 9:30 dance; 10:15 organ.

## Radio Goods 1924 Exports Large

### Department of Commerce Report Shows Total of \$5,000,000.

Exports of all classes of electrical equipment for the year 1924 will approximate \$5,000,000 and will exceed the 1923 total by about \$1,000,000, according to the electrical equipment division of the Department of Commerce. This estimate is based on trade figures for the first 21 months of the year and does not include figures covering exportation of such electrical equipment as motor cars, the built-in motors of machine tools and the like.

As has been true since radio assumed a commercial role, the exportation of storage batteries, both primary and secondary, again showed a decided increase in 1924 over that of the previous year. In the case of primary batteries, however, the gain was probably due principally to the marked increase in the shipments of flashlight—\$692,307 for the first 11 months of 1924, as against \$455,561 for the same period of 1923.

Of special interest is the radio business itself, which, due largely to the ever-growing market caused by the dissemination of radio knowledge throughout the world, together with the ever-growing tendency in other countries to remove restrictive measures that have hampered the manufacture and use of radio and the greater freedom granted to broadcasting stations in operation and under process of construction by each foreign government in question, have also contributed toward making our 1924 exports in this class practically twice that of 1923. Our radio exports, by value, for the year just passed will undoubtedly exceed \$5,000,000.

## Foreign Market Survey.

Ruben A. Lundquist, chief of the electrical division of the department of commerce, has sailed from New York to investigate market possibilities in Central and South American countries for American radio and electrical equipment. His itinerary will include Venezuela, Colombia, Costa Rica, Nicaragua, Guatemala and Mexico. Mr. Lundquist will make particular inquiry into the question of available sales agencies for electrical manufacturers of the United States, especially as to radio goods.

## Value of Low-Loss Apparatus.

Low-loss apparatus in a set adds greater selectivity, more volume and reception over long distances. Low-loss instruments are designed to reduce loss of energy from absorption, resistance and leakage, thus more energy can be utilized in the circuit, greatly improving the results.

## Many Seek Training.

More students are enrolled in the radio correspondence course of the Pennsylvania State college than in any other of the correspondence courses offered by the department.

## Best Radio Pliers.

The most useful pliers for building receiving sets are of the small round-nose type, with cutting jaws.

Longevity of Dry Cells.  
Because heat hastens the evaporation of the contents of dry cell batteries, they should be kept in a cool, dry place and should always be stored in an upright position, never on their sides.

## Where Shall We Go Tonight?

What far distant city shall we visit tonight? Shall it be New York, San Francisco, Winnipeg or Atlanta? You may be immediately transported to the city of your choice. You may search out the finest entertainment there. Radio puts you in contact with wonderful programs of music, lectures, sermons, world news, etc.

Take your choice of either of the proved radio receivers shown below. Both have demonstrated that for long distance, quality reception, there is nothing finer.



### Thompson Neutrodyne Radio

Wherever radio is known the Neutrodyne is preferred. And the Thompson represents the Neutrodyne at its best. Through walls of local interference it reaches out and brings in any desired station clearly and with unusual volume. Easy tuning. No squealing or howling. Every tone comes clear and distinct. Long distance. Rare selectivity.

The instrument shown above is a 5-tube receiving set, embodying two stages of tuned radio frequency amplification, detector, and two stages of audio amplification. Neat and attractive cabinet with compartment in bottom for batteries. Look it over.

### Zenith Music Master

The Zenith makes possible an amazing succession of programs, ranging at will from the dinner concert at the Waldorf-Astoria, New York, to the dance music at the new Ambassador, Los Angeles—and even while powerful locals are on the air full blast.

The model shown has six tubes—two stages tuned frequency amplification, detector and three stages audio frequency amplification. Solid mahogany cabinet. Costs a trifle more but does a lot more. See it.

## NEBRASKA BUICK AUTO COMPANY

LINCOLN OMAHA  
Schmoller & Mueller Piano Co. Troup Auto Supply Co. P. A. Clark Motor Co., Benson Continental Furn. and Carpet Co. A. Hospe Co. Wilbur Brandt, Inc. W. Peperkorn, Florence Council Bluffs, Ia.

## The Finest Radio Receiver

In the World



The FREED-EISEMANN NEUTRODYNE  
4 and 5-Tube Sets, \$169.50 and Up.  
Installed in your home complete. Aerial extra. Easy payments.

A. HOSPE CO.  
1513 Douglas St.

## "I WOULD JUST AS SOON BE WITHOUT A NEWSPAPER AS WITHOUT A RADIO SET."

## Do You Know

A \$14.50 Crosley 1-tube Radio will put you in touch with the ENTIRE RADIO WORLD?

DECIDE NOW to see how well you like radio by buying a small set.

## Ask About Crosley at

BEATON DRUG COMPANY  
PATTON MUSIC COMPANY  
MICKEL MUSIC COMPANY  
UNION OUTFITTING COMPANY  
OAKFORD MUSIC COMPANY

If You Want to Put More Money in a Set, Ask Them About

- 2-Tube Crosley ..... \$18.50
- 3-Tube Crosley ..... \$30.00
- Tryrdyne ..... \$50.00
- Tryrdyne Special ..... \$60.00
- Garod 4-Tube Neutrodyne ..... \$100.00
- Melco Supreme Acmedyne ..... \$100.00
- Freed-Eisemann 5-Tube Neutrodyne ..... \$150.00
- Freed-Eisemann Deluxe ..... \$175.00
- Freed-Eisemann Console ..... \$285.00

Above Sets Distributed by

## Auto Electric & Radio Corp.

OMAHA