

SEES RADIO AS KEEPER OF PEACE

NEWS BRIEFS FROM THE BROADCASTERS

DICKENS' YULETIDE CAROL TO COME OVER KGO

Navy Band Will Give Homecoming Concert—Toledo Night Is New Feature at Jewett WJR

Charles Dickens' immortal "Christmas Carol," especially adapted to Radio, will be the feature production from KGO, Oakland, Thursday evening, December 24. Special music has been written for the purpose of creating atmosphere, accentuating characters, identifying voices before the microphone, and to break the strain of listening too long to the voice alone.

A homecoming concert by the United States Navy band will be broadcast December 19 by WRC, Washington, D. C. The tour completed by the Navy band this year included concerts in nearly all of the leading southern cities.

WJR, the Jewett Radio and Phonograph company 5,000-watt station, has decided to adopt Toledo one night each week, putting on the air a program by Toledo musicians and entertainers. The city has a large number of talented musicians and the addition of their art to the supply of Radio entertainment will be quite worth while.

To give additional Christmas flavor to the KGO broadcasts this week, the KGO Little Symphony orchestra will play the Haydn "Toy" symphony Sunday afternoon, December 20, at 3:30 p. m., pacific time. Arthur S. Garbett, writer and musical analyst, will give a brief word sketch of Haydn and his "Toy" symphony, and the orchestra will play small parts from the work illustrating his remarks.

Negro spirituals, which have been handed down by word of mouth through generations, many of which have never been written, were presented recently at WSM, Nashville, by the Fisk Jubilee singers who have made several world tours and have sung before kings.

Talented children of the capital are to be given an opportunity to become full-fledged broadcasters by WRC, Washington, D. C. Through the inauguration of weekly periods devoted entirely to performances by child artists, WRC hopes to encourage the development of musical art among the youth of the city.

Uncle Bob, the big brother of WEEI, Boston, has 26,000 active correspondents who write to him every week. Although swamped with this tremendous mail which shows his popularity with Big Brother club members, Uncle Bob manages to give his young listeners interesting programs by leading men of the day, to direct the uke and harmonica bands, glee club and debating team of the organization, and to arrange Friday concerts of orchestras and bands from various schools.

Radio churchgoers around the country who have tuned in Central church on Sunday mornings over KYW, Chicago, since this feature's return to the ether a few weeks ago, have heard Dr. Frederick F. Shannon's sermons and the chorus of one hundred voices under the direction of Daniel Protheroe, as well as prominent soloists.

Radio engineers of WGY have solved the difficulties of organ pickup and the organ programs from the Schenectady station are now among its finest transmissions. Lovers of organ music will be interested to learn that Elmer A. Tidmarsh, organist and choirmaster of All Saints Cathedral, Albany, and director of the Albany community chorus of one thousand voices, is giving a series of recitals on Tuesday nights.

Long hair and other revivals of woman's past glories will be worn by the heroines of this year's offering of the Princeton University Triangle club. The play, "Fortuno," which will be given in Pittsburgh December 23, will be broadcast by KDKA. The invisible audience may have some difficulty in distinguishing the ladies from the gentlemen.

The Copley Plaza orchestra, directed by W. Edward Boyle, is the new Sunday attraction at WEZ, Boston and Springfield, Mass. Its programs consist entirely of classical selections.

HOOVER TO HANDLE RADIO SEPARATELY

WASHINGTON, D. C.—Secretary Hoover will send a communication to congress early in the session in which he will transmit the resolutions of the fourth Radio conference together with any suggestions which he has to make. This is the reason that the secretary did not even mention in his annual report to the president the subject of Radio, but he will give a history of the past year's accomplishments or make recommendations for legislation. This is the first time, since Mr. Hoover has been secretary of commerce, that he has not mentioned the subject of Radio.

FANS GUESS COLOR OF SINGER'S HAIR

PARIS.—A very original competition has been opened by the editor of a French Radio journal. Listeners are to say what is the color of the hair of various singers being broadcast. To a correspondent who objected that this was a mere guessing contest, the organizer replied that this was not the case; science has established that blind persons can often tell the color of a speaker's or singer's hair by the sound of the voice, and the purpose of the competition is to determine whether ordinary persons, when deprived of sight of the speaker, can exercise a similar gift.

FAIR PORTIA IS NOW RADIO STAR



The soprano voice of beautiful Maria Kurenko, graduate of the law school of the University of Moscow and the Moscow Conservatory of Music, was recently broadcast in America when the celebrated Siberian singer appeared on an Atwater Kent program over the WEAf chain.

Classical Music Only on WHAP

New 500-Watt Will Also Give Opinions on Current and Social Questions

NEW YORK.—And still another station! The metropolitan district added another station to its number when WHAP recently went on the air, broadcasting under a 500-watt license on 240 meters.

Among those who appeared on the opening program were Percy Grainger, famous Australian pianist and composer; Mina Hager, distinguished contralto who is engaged to appear later this season with the New York symphony and other orchestras; Kitty Cheatham, well-known interpretative artist, who gave a number of recitations and songs, and the Stellar Male quartet.

This station is said to be solely for the service of the public, and is not identified with manufacturing or advertising interests. Believing that those who favor

jazz and comedy songs are receiving ample from other stations, WHAP will not broadcast music of this type.

In matters of civic and social questions, as well as of current opinion, WHAP will not be neutral in these matters as other broadcasting stations. It has definite convictions which will be expressed on the air, in the same sense that a newspaper's opinions are expressed on its editorial page. WHAP will foster and support those public policies and movements that it believes to be of benefit to the United States.

Leslie Joy, chosen as studio director of WHAP, is well fitted for the position by virtue of his long connection with broadcasters in this territory.

Radio Comes to Main Street

MINNEAPOLIS.—Sauk Center, former home of Sinclair Lewis and reputed to be the original "Gopher Prairie" of "Main Street," is now educating its school children in better music by means of Radio. The principal is having all the children in the grades report what they heard, the name of the songs, and what they learned about them, according to a letter sent to Gold Medal Station WCCO, Minneapolis-Saint Paul.

WOULD CLEAR ALL DISPUTES OF COUNTRIES

Claims Radio Would Do More to Prevent War Than Dozen Leagues

Fans Could Hear Parley

Leaders Talking Over Differences Would Fulfill Wilson's Hope of "Open Diplomacy"

OTTAWA, Canada.—The prediction that Radio will be a great factor in preventing future wars, was made by C. W. Horn, superintendent in charge of the Westinghouse broadcasting station, in a recent address delivered here.

"I feel that Radio will accomplish more in the prevention of wars than a dozen Leagues of Nations could do," said Mr. Horn. "Radio seems to be the means that is destined to bring into the very homes of the people of this world the thought and character of the people of the different nations."

"I can conceive of no greater event than the settlement of a dispute between two nations by a discussion of the problem and the presentation of facts by the leaders of these two nations, with the general public listening to it. It will be the fulfillment of the hope of our former President Wilson, expressed when he referred to 'open diplomacy.'"

WEAF CHAIN ADDS CHICAGO STATIONS

WGN and WLIB Put Great Programs of New York Broadcaster on Air

CHICAGO.—The Chicago Tribune station, WGN, and WLIB, the Liberty magazine broadcaster, are now linked in the WEAf chain and on a recent Sunday program gave Chicago listeners their first local broadcast of the chain program which featured an Atwater Kent hour.

For more than a year, listeners here have tuned to WOC, Palmer school, at Davenport, Iowa, to hear the great artists and even the advertising programs originating at WEAf.

W. G. "Bill" Hay, recently announcer of WOK and prior to that time announcer at KFKX, is now a member of the WGN staff and is heard over their mike every Sunday from 4 to 11 o'clock and on Wednesday, Thursday and Saturday evenings between 7 and 11 o'clock.

Station WLW to Give Big Christmas Frolic

Third Annual Festival Promises to Be Greatest of All

CINCINNATI.—The third annual Christmas festival for children will be given by Powel Crosley, Jr., in Music hall, Cincinnati, Tuesday evening, December 22, at 7 o'clock. Children in Greater Cincinnati are invited to be present and enjoy the antics of clowns, hear the funny minstrels and see the performing dogs, including the famous "Pup"; magic and music will be offered by theatrical stars. There will be candy for all.

The Radio audience will hear the festivities broadcast through the Crosley WLW station; special attention being given to this part of the show because it is impossible for more than 4,000 people to get into Music hall and the past two years' shows have filled the place to capacity.

London Hears Canada

LONDON, Eng.—Listening posts at the office of the Canadian National Railways in London, Manchester, and Southampton have reported the reception of items of the published program broadcast from the company's station, CNRA at Moncton, Canada.

Two Bills at KLX Sound Like KI-YI, China



HIT the air at 508.2 meters almost any Monday night around 9 o'clock and you will get the most ding-awful gabble-gabble and clatter-quack from somewhere west of the Sierras that ever hopped off a self-respecting antenna.

But don't get excited and by all means preserve your temper. Put away your screw driver and don't worry about the inductance liver in your receiving cabinet—forebear kicking off the middle dial and just listen. Out of the cross-jangle of sounds you presently discover a thread of coherence. There's something Oriental and magic about it. Perhaps if you rub your loudspeaker just right the spiral vapor of a genii may twist its way upward from the interior. Ah—and three taps on the tip of the nose and you will catch a whiff of, of—sweet essence of chop suey!

"Ah-yah-ki-ya-aaa-ee-cho-goo-iggy-ko-lo-song-sooey—" or something like that comes to you in a sing-song tone. You hop up on the arm of your chair in sudden excitement.

(Continued on page 10)

"Shet yo' mouf, yellow man," says Bill Boyle (right) to Bill Seroy, both of the KLX Ducks, Oakland, Calif., "foah ah vacuumizes yo' heah cleanah."

Christmas Comes for the Little Americano



"Oh-O-hear the herrul an-gels sing—" came the bird-like warble of the little Americano while bandit horsemen listened by the garden gate.

(Specially Posed)

SENORA Gomez untangled two tiny hands from the meshes of her black lace mantilla and tenderly lifted the little Americano down from her fat shoulder. For a moment she held him close to her ample bosom; then, with a playful shake, she balanced him on the rail of the veranda outside his father's rancho.

"Bravo Don Gallos!" she exclaimed as she stepped back to survey him on his narrow perch. "You are my little rooster. Let me hear you crow. And you must flap your wings to scare the bad, bad wolves away."

"I am not a rooster—you are a rooster," answered the little Americano with a pout and a frown.

"Crow just once like the big rooster and I will put you safely into the little window," pleaded the plump and jolly Mexican woman.

Still the boy refused and began edging his way along the rail, reaching out to a rose lattice and steadying himself by the swinging water jar, a big red jar the inside of which he always had longed to see—hanging there just above his head. Here he stopped and eyed his tormentor as she stood with arms akimbo and black eyes twinkling merrily. Her hand stole beneath her mantilla. A paper rattled suspiciously.

"I will not crow," the boy bargained, "but if you will give me a praline I will sing for you."

"All right," agreed the woman, "a praline you shall have and I will put you in the window besides."

As she transferred him to the little balcony window he thought of what he would sing.

"I will sing you about the little babe in the manger that my daddy told me about last night and the three men who followed the big star over the desert all night long to bring lots of nice presents to that little baby. And the herrul angels sang halla-loo-ya to the shepherds on the hill—all just because of that little baby in the manger. Want me to sing you about it? I will"

To put down the words that he sang would mean nothing. They were inspired for the time and the occasion. Music it was—who cares what the words are when a little child sings—

Leaving the scene of their depredation the renegades galloped away and out of the smoking ruins of Topolobampo came a man leading a little boy by the hand. With other of the remaining refugees he sailed away to San Francisco. And the little boy grew up a great singer—Wilfred Glenn (right and below) of WEAJ, New York.



his voice a bit quavery but clear and true. "Oh hear the herrul an-gels sing," was much repeated and perhaps the "herrul angels" themselves were listening to the voice of the little one lifted up in the full glory of the joy of song. It was the song of the mocking bird and the thrush and the wren that sang in the little garden all woven in with the spirit of the wild flowers and the sunbeams and moonbeams down there in Topolobampo—a small American colony in Lower California during the early nineties.

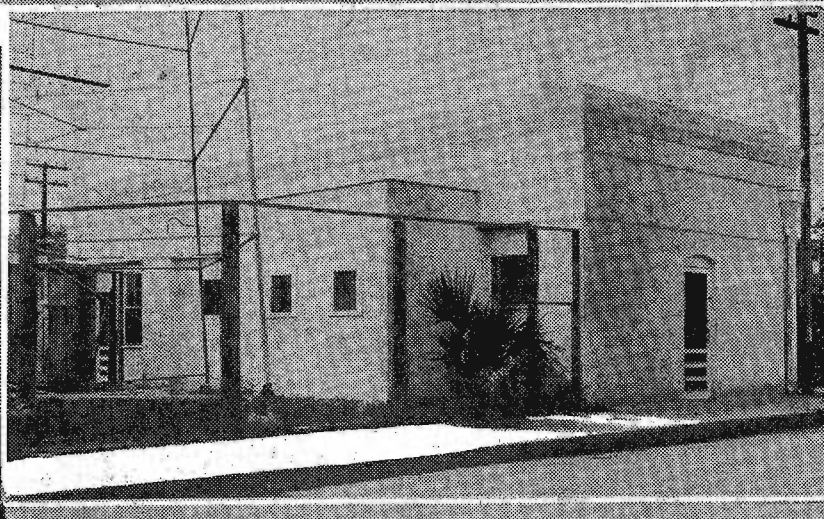
And as the little Americano sang his own Christmas carol to the dark skinned woman her jesting manner slipped away. Something fine and sweet came into her face and she felt humbled in the presence of a being that seemed almost divine. She turned her face to the red ball of fire that was sinking from sight over a distant sand dune. Tropical twilight soon faded into night.

Four idling horsemen came to a halt before the garden gate. Clanking spurs were stilled and through the deepening night came subdued murmurs of masculine voices in tones of admiration. A rabbit darted through the hedge. Swallows skimmed gracefully high in the evening sky.

Suddenly the four horsemen spurred their steeds and galloped away. In the distance from the direction whence they had come could be heard the steady loping of a horse nearing home after a long journey. But the boy did not cease his caroling to the enraptured woman until the horse had stopped and a tall shadowy form stood in the archway of the veranda. Then the little Americano recovered from his trance. Two chubby arms were held out to the tall form before him. The Mexican woman drew the mantilla over her head.

(Continued on page 10)

"Kum to the World's Winter Garden," KWWG



Wild oranges grow around the studio of KWWG (above) at Brownsville, Tex. "The Skipper," H. H. Philips (left), and Miss Florence Pierce (right), "assistant skipper,"—or what is that nautical term? "Ship's belle," maybe.

By Susan Haymes

THE hearty invitation given to Radio fans everywhere, to "Kum to the World's Winter Garden," was first heard from KWWG at Brownsville, Texas, the southernmost city in Continental United States, on May 16, 1925.

KWWG is fostered by the Brownsville Chamber of Commerce. In the short time it has been on the air, reports of reception have been received from twenty-two states and from three foreign countries. Many personal responses have been received to the hospitable solicitation; some have come from snowbound regions to make their homes in the land of perpetual sunshine; others have come to marvel and have gone away to sing the praises of the veritable paradise.

KWWG was deemed of sufficient importance to have a home devoted strictly to it—a stucco building of old Spanish mission architecture. Due to Brownsville's being the gateway to northern Mexico and situated amid semi-tropical vegetation, the style is uniquely fitting.

Standard Western Electric 500-watt equipment is used, on a wave length of 278 meters. Programs are broadcast at 8:30 p. m., central time, Tuesdays, Thursdays and Saturdays. The activities and influences of the churches are prominent factors in the lives of Brownsville and the towns of the valley, so no immediate need seems to exist for Sunday church services a la ether over KWWG.

The studio has been pronounced by experts as acoustically correct in every detail. Soft drapes of gray sateen, oriental rugs and graceful floor lamps lend that elusive something called "atmosphere" to the surroundings.

A large and comfortable reception hall, attractively furnished in mahogany, leads into the studio and provides a waiting room for guests and artists, many of whom come from a great distance. Mrs. F. C. Pierce is the charming hostess. To her also falls the lot of inspiring courage to shakey-kneed individuals before they face the formidable "mike."

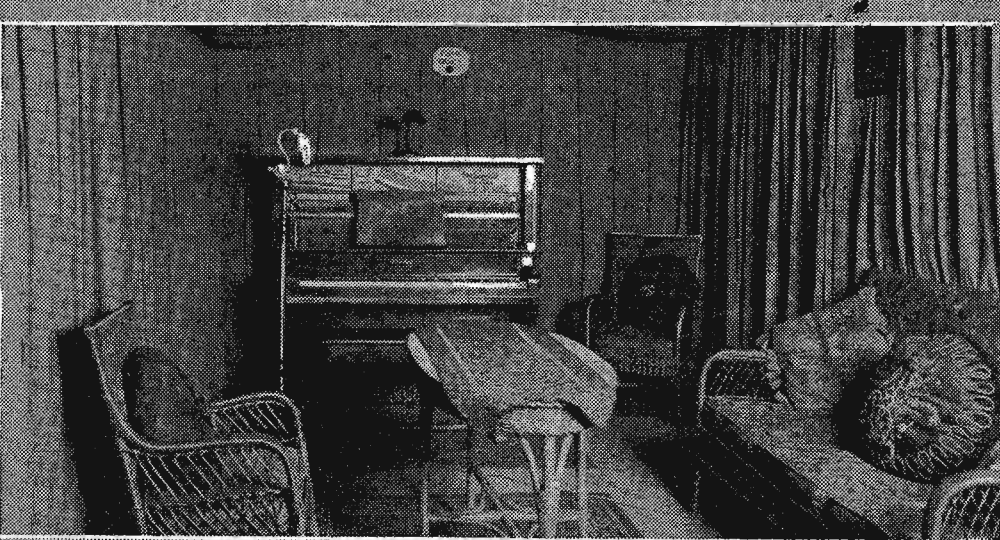
The transmitting room is back of and adjoining the studio. The operator in charge, Minor Wilson, is a dyed-in-the-wool Radio enthusiast. He doesn't get enough "operating" over KWWG, so he has a transmitter of his own. Yes, girls, he is single.

H. H. Philips is program director, announcer and station superintendent. Quite a number of positions for one man! But then, clever folks are ever being imposed upon! H. H. P., "The Skipper," is extremely popular; his diction is clear, his voice pleasing and his keen sense of humor ever evident; and when he says: "Kum to the World's Winter Garden," listeners may bank on it that a worthwhile trip is in store. (Continued on page 10)



Shivering folk of the north states are urged to "Kum to the World's Winter Garden," the slogan of KWWG. Among the many who call through the ether here are the voice of Miss Marion Grisham (left, center) and the instruments of Miss Annie Fute-grate and Sergeant J. R. Callahan (lower).

“Radio Lighthouse,” a Jazz Storm Refuge



“Rock of Ages cleft for me—” and other songs that our grandmothers sang come from the Radio Lighthouse, near Lake Michigan. John E. Fetzner (left) is engineer-announcer and Paul M. Pearce (right) as station manager and program director guides the beams. Miss Clotilde James (below, left) is pianist and Miss Ruth Nelson (right) violinist. In the circle is Miss Letha Wenke, one of the lighthouse keepers who assists at announcing. Above is a corner of the old studio now being replaced by a new one. Below is a portion of the transmission panel.

DID you ever go groping through a dark DX night, touching the flickering rays of distant star beams here and there and from Minneapolis to New Orleans and from New York to San Francisco pick up the same syncopating ragtime hullabaloo until you almost turned from your wandering flight through the drift with the thought the whole nation is rocking in a storm-tossed ocean of ether jazz?

Then suddenly through the vibrating maze of “mam-mam-mammy’s lam—lam lamm’y yam; Sweet, potat-tat-tato” like a clear, white light from a familiar shore you caught the sound of a celestial choir as it sang to the shepherds of Bethlehem nearly two thousand years ago—

“Rock of Ages cleft for me
Let me hide myself in Thee—”

You thought of mother, of your childhood, the little village church with the vine-clad door, the village choir, the little black walnut organ with its yellow keys and the dials brought you down into a placid and comforting harbor.

If such was your experience it is quite likely you found yourself in the lee of the Radio Lighthouse located at Berrien Springs, Michigan—the “jazzless Radio station,” as it proudly broadcasts far and wide.

Here is a Radio station with a mission—not rampant with religious hymns scampering around in jazz clothing but old fashioned and undefiled by the worldly tendencies of the day. You like it because it appeals to the finer and holier feelings within. You sense that there is sincerity in the voices, that there is no

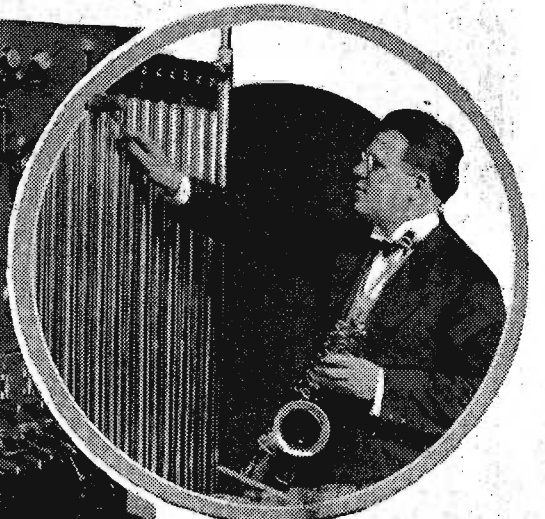
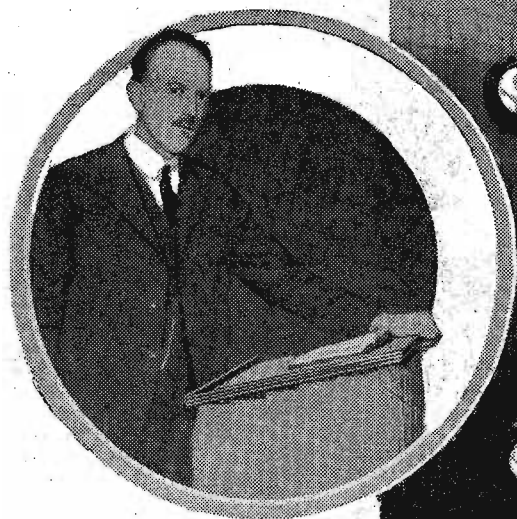


intent to dramatize sacred things of the soul just to play on your heart-strings.

It is a Radio station with a mission because it is produced by an institution that lives and teaches its religion day by day. WEMC, the Radio Lighthouse—the name at its masthead—is broadcast by the Emmanuel Missionary college. The need for such a station was realized almost from the beginning of broadcasting by some religious institutions. A year ago two members of this small college obtained an endowment for the construction and maintenance of a 500-watt station. And forthwith the Rev. W. R. French, shepherd of the little flock at Berrien Springs, found that his fold had increased nation-wide, almost over night.

Thousands upon thousands of letters came from all sections of the country praising Emmanuel college for its piloting light from the whirlpool of fast night life. Shut-ins, invalids, those who bear the weight of years and are looking forward to reunion with those who have gone before, wrote feelingly and touchingly of the comfort that they had found through the Radio Lighthouse.

So the trustees of the college were awakened to a great work to be done. If so much could be accomplished within the limits of a 500-watt transmission power, how much more useful would a thousand-watt become? They read some more letters. Then they decided that 5,000 watts would not be extravagant—and 5,000 watts was decided upon. John (Continued on page 12)



Rev. W. R. French, who broadcasts Bible messages from the Radio Lighthouse at Berrien Springs, Mich., maintained by the Emmanuel Missionary college.

Professor T. H. Barritt, one of the versatile faculty artists who plays a saxophone or chimes but never, never any jazz from WEMC, the Radio Lighthouse.

PANATROPE IS NEW SOUND REPRODUCER

INVENTION IS BASED UPON ELECTRICAL WAVES

Device Uses Power of Batteries Rather Than Voice of Singer to Make Record

NEW YORK.—To break through the wonder-filled minds of the people of today and cause more than a common interest, to excite even a ripple of amazement, requires more than a mere strain upon credulity. But, nevertheless, a new and strange force has people wondering. Wondering what a "Panatrope" is. And the oddest thing of all is that that force is the panatrope itself.

Before a distinguished audience of scientists, musicians, and men and women prominent in society, the panatrope recently made its formal entry into the field of electrical reproduction of sound. It has been perfected by scientists of the Radio Corporation of America, the General Electric company, the Westinghouse Electric Manufacturing company and the Brunswick-Balke-Collender company and started upon its career at the Aeolian hall recently.

Incorporates New Principle

Through the panatrope it is possible to take an original sound, cause it to be changed to light waves and electrical waves and finally reproduce it again with a loss and distortion which is infinitesimal. It is not a new or improved phonograph but a musical instrument involving new inventions and new principles.

The name panatrope is composed of the Greek words "pan," meaning all, and "trope" which as applied to music, means octaves. The word in its entirety means "all octaves in music."

How It Works

The mechanical method of phonograph recording has been superseded in the panatrope by electric recording. The singer stands in front of a device which is analogous to the finest broadcasting microphones. This extremely accurate telephone transmitter produces electric currents which are amplified by vacuum tubes like those in a Radio receiving set, and the final output of these vacuum tubes operates a most precise cutting tool

LIKE CALLING FOR THE BUTLER



All one has to do to get a station is to press a button with that station's call letters upon it, and the machine pictured above automatically tunes in. The pressing of the button actuates electromagnets, which in turn cut in portions of the tuning coil. The set was displayed at several of the more recent Radio expositions.

which makes the master record. Note the absence of the sound-distorting horn and the fact that the energy for cutting the record no longer comes from the voice of the singer, but on the contrary, from the electric generators or batteries feeding the vacuum tubes.

In electric reproduction, as used in the panatrope, there is no sound box, and there is no horn. Instead the needle resting in the record groove actuates a tiny strip of metal in what is known as the electrical pickup, a small device enclosing the needle holder. The vibrations of a metal strip produces electrical currents which then pass through a powerful vacuum tube amplifier using the modern radiotrons. In most of these instruments the entire amplifier is operated from alternating current from the house lighting supply. The amplified output of the vacuum tubes is fed into a remarkable cone type loud speaker.

The panatrope in reproduction of sound, therefore, does not depend upon the record to supply the energy to produce the sound but also leaves that to the power plant, the batteries.

Station Changes

Last month the following broadcasters left the air: WCAZ, Carthage, Ill.; KOP, Detroit, Mich.; KFNV, Santa Rosa, Calif.; KFRZ, Hartington, Neb.; WEBB, Highland Park, N. J.; WNAR, Butler, Mo.; KFGX, Orange, Texas; WKAP, Cranston, R. I.; WGAC, Amarillo, Texas; KFFV, Lamoni, Iowa; WEBU, Monmouth, Ill.; KFQC, Taft, Calif.; KFRX, Pullman, Wash.; WDBQ, Salem, N. J.; KFIO, Spokane, Wash.; WEBB, Newark, Ohio; KFAW, Santa Ana, Calif.; KPVX, Bentonville, Ark.; WIBQ, Farina, Ill.; KFQT, Denison, Texas; WAAC, New Orleans, La.; KFDH, Tucson, Ariz.; WGBW, Spring Valley, Ill.; WEBG, Mattapoisett, Mass.; WRHF, Washington, D. C.; KFKQ, Conway, Ark. No new stations were licensed during the past week.

VOICE OF THE FAN IS NEED TO HELP RADIO

MANUFACTURER SAYS LISTENERS SHOULD RULE

Stations Aim to Please But They Need Views of the Public for Guidance

WASHINGTON.—A national clearing house through which Radio fans of the country may express themselves on Radio problems has been proposed by A. Atwater Kent, prominent Radio manufacturer of Philadelphia.

"I think the man on the other end of the air ought to have a stronger voice in Radio affairs," said Mr. Kent. "He is silent because he has no effective way to make known his grievances, troubles or desires. He is at the mercy of Radio because he cannot talk back to it.

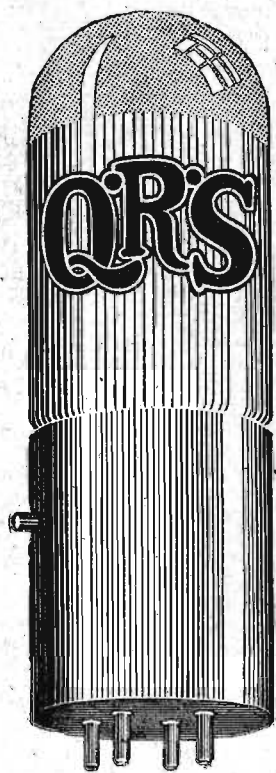
"After all, the whole point of Radio is to please those who listen. I am sure it is the desire of broadcasting stations generally to please their respective audiences. It would be of immeasurable assistance to them if there were some medium through which listeners might help them solve the many problems that perplex the Radio industry.

Listeners Could Tell Much

"There are all kinds of questions to be answered. Are there too many stations broadcasting? Is there too much jazz, or too much classical music? Can announcing be improved?

To cooperate with the department of commerce in advancing Radio, there should be a committee, board or group of men and women, either official or unofficial, to whom listeners might make complaints and suggestions.

"This group should act as a clearing house and see that suggestions received are properly assigned for consideration, followed up and acted on. The listener should feel that he or she has a voice in governing Radio affairs and a feeling that he or she is contributing to the improvement of the industry. After all, Radio is of, by and for the people."



201A Type

QRS RED TOP Radio Tubes Are Better

EVERY TUBE GUARANTEED

Different From Other Tubes

Double Grid—Double Filament
Double Plate

Anchored Top and Bottom
Most Durable—Best Tone
Volume Without Noises

Price \$2.50

At All Leading Radio Stores

Replace Your Tubes With QRS Red Top and Note The Wonderful Improvement

Manufactured Only by and in the Plant of the

QRS MUSIC COMPANY

306 South Wabash Avenue, Chicago

NEW YORK SAN FRANCISCO TORONTO

For 25 Years Makers of Quality QRS Music Rolls

USED IN OVER A MILLION HOMES

Unconditionally Guaranteed

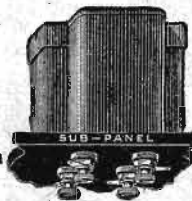
THORDARSON

Super

TRANSFORMERS

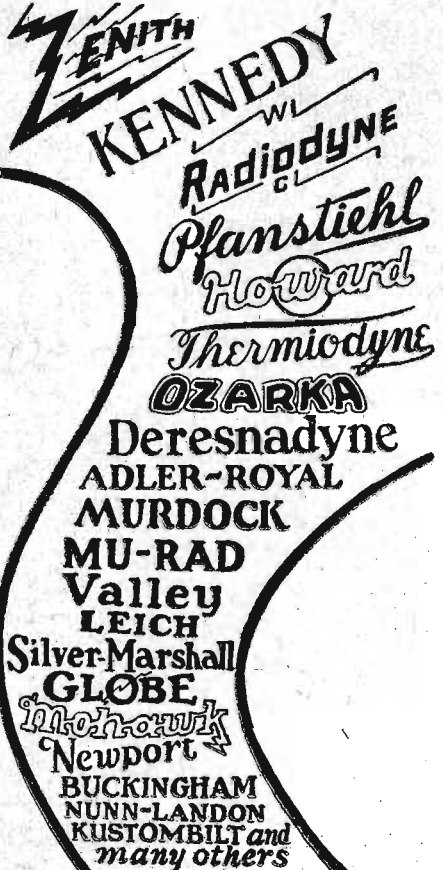
Standard on majority of quality sets

—AND CHOICE OF MacMILLAN ARCTIC EXPEDITION!



ONE REASON that leading builders of the finest sets use more Thordarsons than all competitive transformers combined is because Thordarsons run ABSOLUTELY UNIFORM — always "match up" perfectly, always amplify evenly. Follow their lead — build or replace with Thordarsons. Unconditionally guaranteed. Recommended by best dealers. Audio frequency: 2-1, \$5; 3½-1, \$4; 6-1, \$4.50. Power Amplifying, pair \$13. Interstage Power Amp., \$8. Autoformers, \$5.

Write for Latest Bulletins.



THORDARSON ELECTRIC MANUFACTURING CO.
Transformer specialists since 1895
WORLD'S OLDEST AND LARGEST EXCLUSIVE TRANSFORMER MAKERS
Chicago, U.S.A.

MAKE-UP ENFOLDS BROADCASTS IN REALISM TO ATTRACT JADED EARS



"Winger's Crescent Park Entertainers, (left) go out "on location," as the moving picture producers say, when they put on this "Village Blacksmith" feature over WGR, Ridgeway, Ont., and listeners are made to feel that they are in a real blacksmith shop because the performers are in a real blacksmith shop. It's not hard for actors to pretend when they are in the midst of realities. Below is the famous movie star "Two Gun" Bill Hart and Bear Valley Charley, (left) and Charley Jones. All three are favorites over KNX, Los Angeles. They produce real cowboy stuff under actual ranch conditions with a cow to produce a mournful "moo."



"IT CAN'T be done without a make-up," a phrase often seen as the subject of a newspaper comic, applies more modernly to Radio entertainment. The Scotch bagpiper gets up before the microphone in his kilties. The "Bar X" cowboy fiddlers must have their proper accoutrements to get the twang of the cattle camp into their music. Even the village serenaders feel that they must have genuine atmosphere to get the right effect across the air to the Radio listener.

Comparatively few people actually see the performers in the broadcasting studio and yet the actor or actress or concert musician generally feels that the actual audience conditions must be simulated.

WGR Blacksmiths Even Use Horse

The top picture on this page shows just how far "Winger's Crescent Park Entertainers" carry out the idea of the village blacksmith shop to get over what is called a convincing program. Listeners over WGR at Ridgeway, Ont., were entranced when they heard the actual clang of a real anvil. They could almost smell the scorching hoof as the sounds of the smithy's hammer could be heard fitting a horse shoe to the animal, seen in the background. (The WGR "mike" is on the floor in foreground.)

Even the wheezy bellows suggested the glowing flame of the forge. There was a drawling conversation between the village smarty and the old blacksmith that brought many a chuckle in town and country homes that were listening in. The entertainers had enough material in this program, with singing and guitars, to make up an intensely interesting evening program. They had a real blacksmith shop to work with.

Cow's "Moo" Broadcast

The California movie studios lend themselves admirably to the creation of atmosphere for broadcasting programs that must breathe of a special kind of setting. Bill Hart, Bear Valley Charley and Charley Jones are well-known microphone contributors at Station KNX. Bear Valley Charley and Charley Jones are real cowboy fiddlers and they stir the listeners by bringing them right into a cowboy's camp. Others of their pals intersperse the fiddling numbers with Will Rogers' repartee and occasionally a cow is heard mooing in the distance. For one of these programs a real cow, separated from her calf, was introduced to produce the realistic effect by her mournful lowing.

Bill Hart, of course, is just Bill Hart—"Two Gun" Bill. But he doesn't sound so hard over the microphone. Do you suppose they could get their "stuff" over without the sombreros and the rest of the typical western make-up? Write and ask 'em.

Listeners for hundreds of miles around the station, formerly known as KFRU, Bristow, Okla., knew what it was to go fishing every Tuesday night with Wilson's Catfish band. It was the real thing. The band actually took along a microphone with fishing paraphernalia and caught fish—all the sounds of an expedition of this sort being faithfully reproduced and conveyed to the listener.

Live Fish Flop in Mike.

The sound of the fish being swished through the water, the splashing of oars, the rattle of the anchor chain, and thump of the stone in the bottom of the boat, were heard half way across the continent. Fortunately the uncaught fish did not hear the amplified sounds reproduced by the receiving sets.

Some of the leading studios have announced plans for developing this phase of broadcasting entertainment on a broader scale this season. The football games and the motor races have been heard. Now will come the winter sports; the ring of steel on ice, crack of the hockey sticks, rushing skurry of racing skaters will probably be heard soon.

One of the North Shore Chicago stations has been making plans to place a microphone in the Lincoln park bird house where there is a constant jamboree of raucous cawing, twittering, screeching and jabbering of every variety of the creatures of the air. It may not be beautiful but it will be realistic and may, perhaps, be set off by some real canary warbling. The microphone might even be carried to the lion house at feeding time where a roaring may be heard that never can be imitated by any man-made instrument.

WHAZ Enlarges Studio to Accommodate Symphony

TROY, N. Y.—Rensselaer Polytechnic institute WHAZ studio on the top floor of the Sage Electrical laboratory at the crest of the campus has been enlarged to double its former size and greatly improved. The enlargement was necessary to accommodate the students' symphony orchestra, one of the important student musical organizations of the country, numbering 44 members.

Toronto U. Quartet Aids in Encouraging Better Music

TORONTO.—For the purpose of encouraging good music, and also to develop superior Radio programs, an agreement has been entered into by the Syndics of Hart House, University of Toronto, and the Radio department of the Canadian National Railways, as a result of which the Hart House string quartet will visit studios of the company, and from them broadcast special programs.

No New Licenses Given Stations in Two Weeks

Department of Commerce Evidently Has Clamped Down Lid

WASHINGTON.—With the passage of two weeks without the licensing of a new broadcasting station, strength has been added to indications that the department of commerce has clamped down the lid for the time being at least.

The policy of the department seems to be that a mighty good reason for its existence will have to be provided by a proposed new station before a license will be granted.

Notwithstanding this policy and the recommendations of the fourth national Radio conference, applicants continue to pour in for licenses for new stations.

WEAF'S PIANOS GIVEN CONSTANT ATTENTION

Four Instruments of Station Get Weekly Going Over

NEW YORK.—There are many aspects of Radio broadcasting which rarely, if ever, come to the attention of the listeners but which are important factors in the enjoyment and reception of the programs being broadcast.

A case in point is the care which the studio staff of WEAF takes in keeping their four pianos tuned and in correct pitch. The pianos of WEAF are tuned regularly each Saturday, their tone is regulated once a month and constant vigilance exercised as to pitch. After a year's service, they are returned to the factory for complete and thorough overhauling of the hammers and action.

Minstrel Shows Are Popular

DENVER.—KOA officials express the belief that they have found the champion program for broadcasting—nineteenth century minstrel shows. This deduction is made following three minstrel performances given as a test feature.

PROGRESS IN PROBE OF ALLEGED TRUST

QUIZ STOCK OWNERSHIP OF RADIO CORPORATION

Federal Trade Commission Uncovers Stockholders in Testimony of Officials of Leading Companies

WASHINGTON, D. C.—During the course of hearings upon which to build a groundwork for its case against the Radio Corporation and others united in an alleged Radio monopoly, the federal trade commission, through its chief counsel, Edward L. Smith, brought out recently that the General Electric company owns 273,032 shares or 24 per cent of the common stock and 9 per cent of the preferred stock of the Radio Corporation.

The officials of the American Telephone and Telegraph company, the Westinghouse Electric and Manufacturing company and the United Fruit company were also examined.

Uncovers Stockholders of R. C. A.

It was testified at the hearings that the International General Electric company, which is the foreign selling organization of the General Electric company, owns 12,416 shares of preferred Radio Corporation stock and 75,074 shares of common stock.

The Westinghouse Electric Manufacturing company now owns, according to the testimony, 57,760 shares of common stock and 50,000 shares of preferred stock in the Radio Corporation. These shares were formerly owned by the International Radio Telegraph company which has since been dissolved.

A witness of the United Fruit company testified that that concern originally purchased 200,000 shares of common stock and the same amount of preferred stock of the Radio Corporation for which it paid \$1,000,000 cash. The common stock has been sold, it was stated, but the company now holds 18,000 shares of preferred stock of the Radio Corporation.

THE LITTLE AMERICANO
(Continued from page 5)

"My daddy." All thoughts of candy and other reward were forgotten. The woman dissolved into the darkness and the tall man gathering the lad into his arms entered the house. An hour passed. All lights were out in the doctor's hacienda. The tousle-headed singer was tucked into his little bed and far away in dreamland astride the toy horse that he hugged to his breast, he was cantering, perhaps, with the wise men over the desert sands. The doctor, exhausted from a tiring trip into the foothills to attend the ailing parent of a Yaqui chieftan had fallen asleep in his chair. Crack! Bang! Bang! Three rifle shots barked in quick succession down at the end of the narrow street of adobe huts. Quickly followed a shrilling screech of savage yells. Horses galloped by. More rifle shots. Cries of pain and anguish. A smell of smoke. Flames! Topolobampo had suffered for the last time from Jose Garcia's murderous band. Aroused by the noise and the acrid smell of burning timber, Dr. Glenn struggled into full consciousness and a realization that he was being held down in his chair by four shadowy forms with clanking spurs. He was helpless. Thongs held him so that he could scarcely move. The leader told him to remain quiet and his home would remain unmolested. Morning came with the skies still streaked with smoke from the smouldering embers. Out of 350 souls who had come from San Francisco two years before but 150 remained alive. Four days later a steamer floating the beloved Stars and Stripes appeared in the bay. And last to leave Topolobampo was the faithful doctor and the little singer of that terrible Christmas eve 30 years ago.

Roses bloomed again in San Joaquin valley where Doctor Glenn had taken up a ranch. The boy had grown to promising youth. Another Christmas tide. A brother from San Francisco was coming home. Wilfred was happy. He went into the orange grove where he had a secret trysting place with the little wild things of nature hidden away in the crotch of a sturdy tree.

At last the great day came. All the neighbors assembled in the community church to hear "that oldest Glenn boy" sing. And they were not disappointed. Never before had they heard "Hark! the Herald Angels Sing" as they did on that day.

In the afternoon the family gathered around the piano and everybody sang. Wilfred was almost afraid to let his voice go full strength for fear it would drown out that of his wonderful brother.

But the brother purposely diminished his own voice. He was being treated to a happy surprise. "Wilfred, old man, you have a voice. You are a singer. You must have it cultivated at once. You are going back with me and enter the conservatory." Wilfred could not believe his ears. His BROTHER had said that. Nothing on earth could have made Christmas happier for him that year.

And after all that is the "happy ever after" of this story. It isn't just a make believe story. It really happened, you know. Wilfred did go to the San Francisco conservatory and of course he came out a great success.

It was about the time of the earthquake and shortly thereafter he went to the inevitable East where his great bass voice made the vaulted chambers of the Cathedral of St. John the Divine ring with song so vibrant it rivaled the deep notes of the mighty organ itself.

People crowded to get in. Not half those who clamored to hear him were able to come near enough. So the phonograph companies sent his voice all over the world on their records. He traveled the country over in grand opera. His voice opened the famous Capitol theater in New York.

And now he is on the Radio. Listen in at WEAf during the Eveready hour (read the Radio Digest program pages for the exact time) and you will hear Wilfred Glenn, the boy singer of Topolobampo, the youth of the San Joaquin orange blossoms, the opera star and the Radio star.

Tune in WEAf or one of the links of its great chain for a million people may hear him sing now and they will hear a Christmas message as it was taught by the mocking birds and the thrushes.

Certainly! And they are very happy in their home on Long Island. Yes, there are two little ones and dad says they have the gift.

KLX DUCKS CHINA BOYS
(Continued from page 4)

"Hongkong, China, or I'm a son-of-a-cockeyed crocodile!" You exclaim. Just as you are trying to get long distance to notify Secretary Hoover at Washington of your marvelous achievement you get another shock. Smashing through the obvious discord of a slant-eyed laundrymen's convention a clear, stentorian voice in unimpeachable English, says something like this:

"Just KLX putting on its frolic for all good Lake Merritt Ducks."

No wonder! So it's ducks broadcasting, huh!

You keep on listening and soon discover that the Tribune in Oakland, California, is headquarters for a wide-awake Radio club known as the Protective Order of Lake Merritt Ducks. That its purpose is "fun, sport and amusement." And down under the applesauce and persiflage there is a real object, good natured and perfectly acceptable propaganda to join hands through the air to protect the wild fowl from ruthless and useless slaughter.

They call themselves the Lake Merritt Ducks because Oakland has a little haven where wild ducks come for refuge during the open season. The ducks have learned this sanctuary and come back year after year to paddle around until the game laws sheath the gun again. Then they fly away—fly away to come again another day.

All ducks have bills. All of the duck vocal expressions are heard through their bills. Thus it is with the Protective Order of Lake Merritt Ducks. They have two bills—Bill Seroy and Bill Royle who make most of the noise for the Lake Merritt Ducks.

That's what you heard when you thought you had tuned in Station KI-YI, broadcasting from Hongkong, China. Their programs always start with that sort of static dialogue.

"So far, so good, but," you ask, "how

come all this China boy jabber?" You tell 'em—mebbe hatch-um quick from hard shell China egg; all-ee same much fowl talk by pidgin Engleesh.

There you are, there you are—you never can tell. The Oakland Tribune never has explained. It may be a complex brought on during adolescent childhood. Bill Seroy, according to well founded tradition, was born into a family that had two Chinese cooks at Bakersfield. He was brought up on chow mein and egg foo yong with chop suey between meals. Lem croaked at him in one ear and Lo gargled at him in the other. What could one expect? Is it any wonder Bill Seroy turned out the most loquacious pidgin English expert in the country?

As for Bill Royle—that was another case of early environment. While still an impressionable youth he was a member of the Portland, Ore., police force and assigned to Chinatown. Perforce he was thrown into continuous contact with a stream of visiting tourists who know the Chinaman best through the comic sections and for that reason had their pidgin English polished to the n-th degree. From

(Continued on page 12)



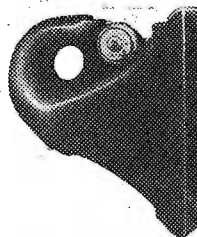
Patented Nov. 18, 1924

Windsor Loudspeaker Console

For EVERY Radio Set

A stunning piece of furniture that restores order in the room where you have your Radio! No more cluttered table-tops, nor litter of equipment under-foot.

No unsightly horn in evidence, either! This console has its own loudspeaker, in-built. It's out of sight, but with very apparent tonal superiorities. For it has the highest-developed type of unit. With horn built of special non-vibrating, extra-hard material. Produces clear non-vibrant tone.



Non-Vibrant Horn

The clearest tone producer on the market. Made of special composition which defeats vibration.

There's ample room for everything: space for A and B wet batteries—or battery eliminator—and for a big charging outfit, too.

Finished in mahogany, or walnut color. Dainty design of parqueterie on two front panels. Top, 33 in. x 18 in.

Additional pattern No. 128 (Special for Radiola No. 125) in two-tone finish. Top, 21 in. x 31 in. Fitted with doors for access to control switches of combination eliminator-charger.

The price, forty dollars, is for the complete console and includes the loudspeaker horn and unit. Thousands of dealers are showing this artistic addition to home radio equipment.

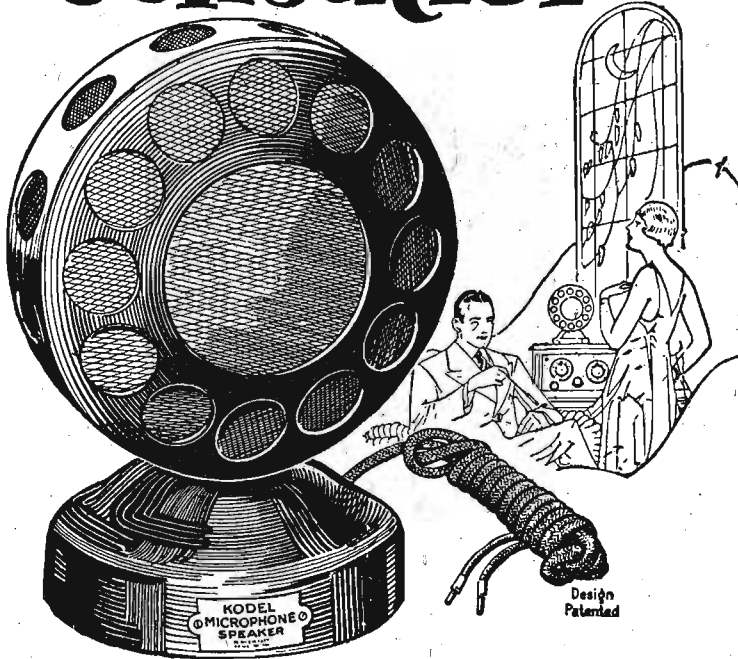
Rear View—Set Hooked Up



Price \$40 West of Rocky Mts., \$42.50

Windsor Furniture Co. 1434 Carroll Ave. Chicago, Ill.

Loud Speaker Sensation!



The KODEL MICROPHONE Loud Speaker

THE Loud Speaker that has the whole country talking. An exact replica of the microphone used in broadcasting stations.

The super-sensitive tone unit with the unique construction of the new snail-shell horn inside the microphone case, produces a veritable deluge of volume -- loud -- clear -- every note, every sound as pure and rich as when it enters the broadcasting microphone in the studio.

See the new Kodel Microphone Loud Speaker—hear it—at any radio dealer's. Two Models for your selection—one contains the highly efficient Kodel Junior unit, the other, the super-sensitive Kodel Giant unit.

\$15 and \$20

Write for descriptive literature

THE KODEL RADIO CORPORATION
Owners of Broadcasting Station W K R C
509 E. PEARL STREET CINCINNATI, OHIO

DEALERS: Watch for the KODEL double-page advertisements appearing every other week in LIBERTY MAGAZINE.

Charges A or B Batteries 3 Times as Fast



The New 5 Ampere GOLD SEAL HOMCHARGER

NOW you don't have to wait for days while your batteries charge. The new 5-ampere GOLD SEAL HOMCHARGER charges A or B batteries three times as fast as old-fashioned 2-ampere chargers -- It fully charges the average radio battery **OVERNIGHT!**

There are no bulbs to break, no acids to spill, no extras to buy -- It is trouble-proof, shock-proof, fire-proof. Any radio dealer can show you the new 5-ampere GOLD SEAL HOMCHARGER.

Write for FREE booklet "The Secret of Distance and Volume in Radio"—16 pages of helpful radio information.

\$19.50

Manufactured Only By
The Kodel Radio Corporation
Owners of Broadcasting Station W K R C
509 EAST PEARL ST. CINCINNATI, O.

KWWG AT BROWNSVILLE

(Continued from page 6)

Miss Florine Pierce renders invaluable service as accompanist on the Baldwin grand piano, besides being assistant program director.

Now, KWWG does not live for Brownsville alone. KWWG broadcasts in the interests of the entire Lower Rio Grande valley—a veritable big town, with a population of 135,000, stretched out over an area 64 miles long by 30 miles in width. One concert each week is given by Brownsville talent; the other two programs from other valley communities. A feature of each program is an address by some public-spirited person, setting forth advantages of his particular section.

The following cities of the valley have given most enjoyable programs, representing a mighty fountain of entertainment ready to be tapped at all times for the pleasure of untold millions: Mission, the home of the grapefruit; McAllen, Edinburg, Pharr, San Juan, Alamo, Donna, Weslaco, Mercedes, Stuart Place, Raymondville, Harlingen, San Benito, Rio Hondo. Programs from Houston (Gulf Coast Lines) have also been given; talent from Matamoros, Mexico, has also been represented. From the Fort Brown Military Post at Brownsville, the Twelfth Cavalry band under Director George A. Horton, has been the recipient of well-earned applause; Sergeant J. R. Callahan being an especially popular trombone soloist.

As noted above, KWWG is new. Many interesting innovations are planned; possibly the studio personnel will be augmented in the near future. A novel character, indigenous to this section of the country will be brought out and developed, in an effort to further individualize KWWG.

Let us digress from the path usually followed in a magazine devoted strictly to radio and answer the query most often asked of KWWG—"Just where is Brownsville?" Brownsville, a modern city of 18,000 is situated near the mouth of the Rio Grande, opposite the town of Matamoros, Mexico. Its geographical location may be further defined as being over 400 miles further south than San Diego, California, and on practically the same parallel of latitude as Key West, Florida. The Lower Rio Grande valley is really the delta of the Rio Grande; the rich soil deposits of the river have built up the land, giving it great fertility and suited to almost an unlimited variety of crops unequalled anywhere in the world.

Due to the proximity of the Gulf, a constant sea breeze tempers the heat of the southern sun, so that it is very delightful in summer. The average temperature in winter is 65 degrees. Read

that again, you who shiver and shake. Date palms, from which golden clusters hang temptingly, orange trees, lemons and grapefruit dot the land. More vegetables are produced than in any like given area in the United States.

Over the desk of the obliging manager of the chamber of commerce, G. C. Richardson, hangs a motto which reads: "The world is always looking for men to do things that have not been done." In our opinion, a generous number of those sort of men have already found their way to the valley—and there is room for more. The writer can only add, after a most enjoyable trip there: "Kum to the World's Winter Garden"—you'll want to stay!

WEMC ACHIEVES FAME

(Continued from page 7)

E. Fetzter, chief engineer, was sent to Europe last summer to study the high-power stations of England, Germany, France and Italy. He came back ready to begin work in the construction of a new transmission house and a station that would incorporate the best factors of all that he had gleaned abroad. That station now is almost completed and those who have never had the luck to cross the Radio Lighthouse beams before will be able to do so this winter. There are new studios nearing completion and plans are being made for a broader and even more helpful arrangement of programs.

Probably the most outstanding feature of this noteworthy station is the Friday evening program of old-fashioned hymns, as the announcer states, "which our grandmothers used to sing." These are sung by the Lighthouse choir and later comes a ration of manna from the Bible, "The Bible that our grandmothers used to read." And somehow heaven seems a little nearer when you spend an evening with this lighthouse crew. Sunday morning and Sunday evening comes the regular Radio chapel services. The Rev. W. R. French gives an earnest Bible talk in the morning and Rev. John Knox, famous evangelist, speaks at night. There is special singing by Miss Martha Hutchinson and Ernest Hurd.

But the programs at the Radio Lighthouse are not exclusively limited to the religious atmosphere. The Chameleon trio, the Hoot Owl quartet and the Collegian trio provide excellent features. Dr. Birt Summers, director of the school of music, provides a wide variety of talent for the week-day programs with the Music Makers on the air Mondays. Educational features are on the air with the music Wednesdays.

Paul N. Pearce, a member of the teaching staff, is the station manager. He arranges the programs, supervises the voluminous mail and directs the studio. Mr.

Pearce and John E. Fetzter constitute the announcing battery of the station. John is known to his listeners as "J. E. F., engineer-announcer," and Mr. Pearce signs off as "P. N. P., director-announcer." Miss Lillah A. Beamer is the secretary of the station. C. F. Clark and Charles Klinck, are student operators.

Among the Birch Hall feminine entertainers are Miss Ruth Nelson with her violin and Miss Clotilde James, pianist. Miss Letha Wenke sometimes assists at the microphone as announcer. Professor T. H. Barritt of Washington, D. C., and former KDKA artist, is occasionally heard at WEMC with various instruments.

And everybody at the Emmanuel Missionary college puts his heart and soul into the Lighthouse. It is more than a medium of entertainment for them. It almost might be called a part of their creed of doing unto others, of carrying a message to those who are seeking just that kind of a message. The have struck on a name that could scarcely be more apt. Who can ever estimate the comfort that far-reaching beam of light may carry to storm-tossed, world-weary souls who long ago have forgotten their Bible and the songs their mothers used to sing? Wait and watch for the WEMC announcements when it will again go on the air with its new high-power station and you will undoubtedly be well repaid with exceptional entertainment.

KLX DUCKS CHINA BOYS

(Continued from page 10)

the eastern tourists he learned his China boy talk, yes indeed.

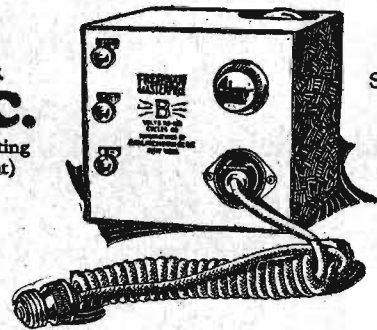
And then, somehow through the strange vicissitudes of this life below, they both took a leaning toward the air. Royle got his start when the war broke out. He became a pilot in the flying corps. Later he fought it out on the vaudeville stage—sometimes with chop sticks and sometimes with a cartridge belt loaded up with burnt cork. With kinky hair or a queue he was a scream. Seroy is a Radio manufacturer's agent in Oakland, and Royle, too, is now in the Radio business as a branch manager of the Gillfillan Brothers.

Fate, disguised behind a long, yellow bill and in front of a short, stubby tail and standing on two flat, web feet led these two gentlemen into the studio of KLX which eventually became the nesting pond of the Protective Order of the Lake Merritt Ducks. They have made one of the most distinctive hits in Radio.

Everybody tunes in when they are on the air because it's going to be a merry hour. Our picture shows Royle as a black duck and by the expression on his face it probably is fortunate for Bill Seroy the broom isn't a baseball bat. Anyway, the listener gets in on what a black duck thinks about when his progress is interrupted by a yellow one.

YOU
don't need
"B" Batteries
if you use the
FRESHMAN MASTER "B"
Battery Eliminator

FOR
A. C.
(Alternating
Current)



SIX INCHES
SQUARE
WEIGHS
7 POUNDS

This marvelous device absolutely eliminates "B" batteries

With the Freshman Master "B" Eliminator your set will always be supplied with constant and uniform power. Noiseless in operation; your reception will not be marred by the snap and crackle due to chemical action in "B" batteries.

The list price of the A. C. Model Freshman Master "B" Eliminator is \$20.00. However, a tube is required to rectify the alternating current into the required direct current for radio operation. And, as we desire to furnish the best rectifying tube that is obtainable, in our opinion, Freshman Master "B" Eliminators for alternating current are now furnished with R. C. A. Rectron UX-216-B Tubes.

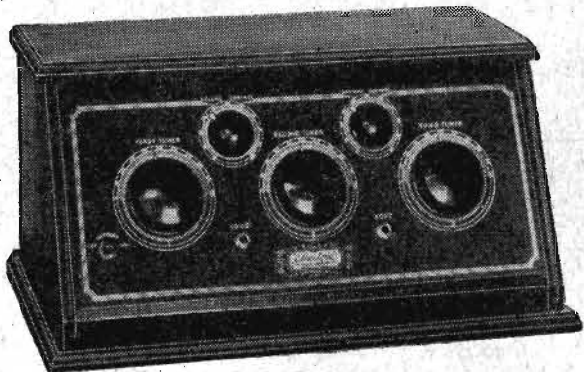
**FRESHMAN
MASTER "B"
ELIMINATOR,
R.C.A. Rectron
UX-216-B Tube**

\$27.50

Sold by Authorized **FRESHMAN** Dealers Only

Write for 24-page illustrated booklet, full of useful information for all radio fans.

CHAS. FRESHMAN CO., INC. Freshman Building, New York
2626 W. Washington Blvd., Chicago



**A
Gift
out of
the
Ordinary**

**Cleartone Five Tube
MODEL 100**

NOT "how many can we make," but "how well can we make them," is the dominating thought where Cleartone sets are built. Each set is treated as an individual creation rather than one of the many.

What wonder then that Cleartone sets reproduce with unusual clarity of tone. That they possess remarkable selectivity, range and volume. That they are encased in cabinets of exquisite design.

Everybody prefers the individual, distinctive, hand-wrought gift. For this reason the Cleartone Five Tube Set will bring more pleasure on Christmas morning than could any ordinary set.

Last Minute Shoppers!

If your dealer does not carry Cleartone, wire us for immediate delivery.

Price \$85.00 with Radiotron Tubes. Tubes include either five UX 201A, or four UX 199 and one UX 120 power tube. Use with either dry cell or storage batteries.

THE CLEARTONE RADIO COMPANY
2435 Gilbert Avenue Cincinnati, Ohio

CLEARTONE Complete RADIO SETS

MALE QUARTETS COMPETE AT WOC

Tuesday, December 22

WBBM, Chicago, Ill. (226), 4-6 p. m., Harry Sosnik, Sandy Meek; Arnold Stephenson; Sidney Nierman; Harold Moravo; Valentio orchestra; 8-9, Harry Sosnik, Sandy Meek; Moulton orchestra; Phil Fleming; Jean St. Ann; Christian A. Grim, Bob York; 9-10, vocal ensemble; Utilities Craftsman glee club; 10-12, Tip trio, Pete Kules, Zelig sisters; Vorris Worthley tenor; Burmeister, Piascone, Hawaiian guitars; Jorge Marbach; Maurice Silverman; Dave Handler, violinist; Moulton orchestra.

organ; Clement Laszkowski, tenor; Bob Mokrejs, pianist; George Allen, tenor; 10-1:30 a. m., Bernie Cummins' Town club orchestra; Husk O'Hare's Coconut Grove orchestra; Capitol theater program; Bill Hay, bass; George Allen, tenor; Harriet Lee, contralto; Herman Sinaiko, violinist; Bob Mokrejs, pianist.

training exercises; 7:45, Pep class; 8:15-8:30, health training exercises; 11:30-1 p. m., luncheon concert; 4-5:30, concert orchestra, Hotel St. Francis. Vinton LaFerra, conductor; 5:30, "As a Woman Thinketh," Louise Landis; 6-7, dinner concert, Sherman, Clay and company; 8, first concert, thirty-second season, "The Oakland Orpheus," male voices; Edwin Dunbar, Crandall, director; Bessie Roland, accompanist; 9:30, auction bridge feature; 10-11, dance music program, Hotel St. Francis.

Wednesday, silent night for: CHIC, CKNC, CNRA, CNRC, CNRE, CNRN, CNRR, CNRT, CNRV, KFAU, KFDK, KFQC, KFQM, KLDL, KOB, KTAB, WBAI, WBBR, WCBW, WCFB, WDFW, WFLA, WGBS, WHAR, WHAZ, WIP, WJAZ, WMC, WQAI, WOAW, WOI, WORD, WPG, WRC, WROE.

Eastern Time Stations

CFCA, Toronto, Can. (356), 7 p. m., Earlscourt band of Salvation Army; 9, musical program, direction Augustus Bridle; 11, Gilbert Watson's orchestra. Pavilion restaurant.

Index to Classical Concerts

Table with columns for Eastern, Central, Mountain, Pacific, and dates for Saturday, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday. Includes station call letters and times.

Wednesday, December 23

Headliners Today

Table with columns for Eastern, Central, Mountain, Pacific and list of headliners with station call letters.

HARP MUSIC YULETIDE GIFT OF WHB

Wednesday, December 23

Sam Siegel, mandolinist; 9:15-9:30, talk, Dr. Vize-... WOC, Washington, D. C. (463.5), 10 a. m., women's...

Central Time Stations

CNRW, Winnipeg, Man. (384.4), 7:30 p. m., Aunt Aimee's bedtime story and Santa Claus; 8, musical program...



The lovely harp music which has been pleasing fans listening to WGY, Schenectady, comes from the skillful fingers of Margaret DeGraff, above.

Florence Behrend, soprano; Frank Greif, tenor; 9:10, Orliole orchestra; Florence Behrend, soprano; Frank Bordner, baritone; 11-1, Orliole orchestra; Irene Beasley, the girl from Dixie...

wbistler; Smith Sisters; Cole and Kirkwood; 9-11:30, dance program, Cotillion ballroom. WBO, Chicago, Ill. (226), 2-4 p. m., shut-in program...

WMAQ, Chicago, Ill. (447.5), 12:45 p. m., farm school; Chicago Association of Commerce Luncheon; 2, Shut-in program; 4, recipes, E. O. Miller; 4:30, pupils, Cosmopolitan School of Music...

Mountain Time Stations

CFAC, Calgary, Can. (435.8), 4 p. m., Red Cross address; 8-9, studio program. KFWA, Ogden, Utah (261), 4-5 p. m., organ recital...

Pacific Time Stations

KFDJ, Corvallis, Ore. (282.5), 7:30 p. m., musical selections; 7:45, 'Financial Preparedness for the New Year'; Emma S. Wolf; 8-8:15, 'What is your Best Color?'



Heavenly music from golden harps will float upon the ether Christmas Eve. A quintet of harp players, Velma Beard, Marjorie Carpenter, Una Miller Briefer, Eva Beard and Ruby Beard will visit WHB, Kansas City. They will play old time Christmas carols and classical favorites. This program brings Yuletide spirit into the home.

Wednesday, December 23

Fairmont hotel orchestra; 8-9, Atravet Kent artists, Ernest Ingold, Inc. director; 9-10, dance program, Goodrich Silvertown Cord orchestra; 10-11, Waldemar Lind and the States restaurant orchestra.
KTAB, Oakland, Calif. (240), 9-9:30 a. m., prayer service, Rev. G. W. Phillips.
KWSC, Pullman, Wash. (348.6), 7:30-9 p. m., faculty program; Mrs. Herbert Kimbrough, vocalist and pianist; "Washington's Representatives at the National Club Congress," Edwin White, club specialist; "Who Should Stay on the Farm," Neil W. Johnson, book reviews, Alceo Lindsey Webb.

Thursday, December 24

Headliners Today

Table with 4 columns: Station, Time, Program. Includes WBEB (272.6) Special Christmas program, WHAS (399.8) Special concert, WIP (508.2) Ancient Christmas carols, etc.

Thursday, silent night for: CHIC, CKNC, CNRA, CNRE, CNRO, CNRR, CNRT, CNRV, CNRW, CNRB, CNRE, CNRF, CNRG, CNRH, CNRI, CNRJ, CNRK, CNRL, CNRM, CNRN, CNRO, CNRP, CNRS, CNRT, CNRV, CNRW, CNRX, CNRY, CNRZ, CNR1, CNR2, CNR3, CNR4, CNR5, CNR6, CNR7, CNR8, CNR9, CNR10.

Eastern Time Stations

Table listing radio stations and their programs across various cities like Toronto, Pittsburgh, New York, and Cleveland.

AN EVENING AT HOME WITH THE LISTENER IN IN EASTERN TIME

Main radio schedule table with columns for Station, Location, Met., Saturday, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday.

of Philadelphia Institute of Music; 10:05, "Believe in and Invest in Philadelphia," member of the Philadelphia Real Estate Board; 10:15, Christmas carols, Eastern State Penitentiary; 11, Pagoda cafe orchestra.
WJAR, Providence, R. I. (305.9), 1.05 p. m., Joe McNamara and his Twin Elm orchestra; 8, Civic Christmas Eve celebration; 9, Robert W. Powers, Hudson-Exeter orchestra.
WNYC, New York, N. Y. (340.7), 6-6:30 p. m., Olcott Vail and his Hotel McAlpin string ensemble; 6:30-7, Frank Gebbia and his Red Lion Inn orchestra; 7-7:15, Violet Kaye, the Happy Girl; 7:15-7:30, Face Institute program; 7:30-8:00, Violet Kaye, the happy girl; 7:30-8:00, Lanson's orchestra; 8:00-8:30, Snedden Weir, baritone; 8:30-9:15, Cinderella dance orchestra; 9:15-9:30, dramatic recitations, Horace J. Taylor; 10-10:15, talk, "How to Drive Automobiles," Harry T. Rainey; 10:15-11:30, "Ernie Golden and his Hotel McAlpin orchestra."
WNYC, New York, N. Y. (526), 7-7:30 p. m., dance program; 7:35-8, dance program; 8-9, program of Christmas music; 10:10-10:30, "The Message of Christmas," Dr. Sydney Lissner.
WOO, Philadelphia, Pa. (508.2), 11 a. m., grand organ; 12 m., luncheon music, Golden's Crystal tea room orchestra; 4:45, grand organ and trumpets; 7:30, dinner music, Hotel Adelphia roof garden orchestra.
WOR, Newark, N. J. (405.2), 8-8:15 p. m., talk, Dr. Little; 6:15-6:30, sport talk; 6:30-7:30, Hotel Shelton orchestra.
WRC, Washington, D. C. (468.5), 10 a. m., Women's hour, WJZ; 12 m., organ recital; 1 p. m., William Spencer, Toppan's Hotel Mayflower orchestra; 6, Hotel Hamilton orchestra; 7, Southwestern talk; 7:10, Sidney Seidenman's Shoreham hotel orchestra; WJZ; 8, Christmas carols, choir of St. John's church, WJZ; 9, Royal Sadon orchestra, WJZ; 10, Meyer Davis, "Swanee" orchestra; 11, organ recital, Otto F. Beck; 12, midnight mass, St. Patrick's church.
WTAG, Worcester, Mass. (268), 10:30 a. m., musical selections; 10:45, talk by Marjorie Woodman, Sherer staff nurse; 12:05-2 p. m., luncheon music, Will Hardy's orchestra; 4:30, Radio entertainment for indoor sports club; 5:15, "Finkle Tenkale Story Teller"; 7:45, nature talks, Esther Cunningham; 8:30-9, "The Larkinites"; WEAF; 8:30-9, "Pop" concert; 9:10, "Cluquet Club Entertainers"; WJAF; 10-11, "Goodrich Zippers."
WTAM, Cleveland, Ohio (389.4), 12:15-1:15 p. m., lunch hour; 6-7, dinner hour music, Carl Rupp and his Hotel Shelton orchestra.
WTIC, Hartford, Conn. (475.9), 6:30 p. m., Hub restaurant trio; 7:30, talk; 10:30, special program of Christmas music, organ recital, solos, vocal and instrumental; 11:15, Christmas carols on chimes.
WWJ, Detroit, Mich. (352.7), 9:30 a. m., "Tonight's Dinner" and a special talk by the woman's editor; 12:05 p. m., Jules Klein's Hotel Statler orchestra; 3, Detroit News orchestra; 6, dinner concert; 8, concert, WEAF; 11, Christmas carols from St. Paul's Episcopal cathedral.

Central Time Stations

Table listing radio stations and their programs across various cities like Chicago, Detroit, St. Louis, and New York.

Radio Digest Illustrated

Reg. U. S. Pat. Off. & Dom. of Canada

Published by the
RADIO DIGEST PUBLISHING CO.,
(Incorporated)
510 North Dearborn Street
Chicago, Illinois
Telephones: Superior 7323, 7324, 7325, 7326, 7327

E. C. RAYNER, Publisher

Eastern Office, Park-Lexington Building, 247 Park Ave.,
New York. Telephones: Ashland, 8144, 8145, 8146

Member of the Audit Bureau of Circulations

241
PUBLISHED WEEKLY

SUBSCRIPTION RATES

Yearly in U. S. and Possessions and Canada, \$5.00
Foreign postage, \$1.00 additional. Single copies, 10 cents.

Vol. XV Saturday, December 19, 1925 No 11

Christmas and Radio, Our Loves

CHRISTMAS! What a magic word that is! How we used to thrill over it and the wonder of Santa Claus. Grown-up, we still thrill—not so much now from the anticipation of a visit from the fine, old gentleman, but from the warm, good spirit which seems to settle down and permeate all mankind.

"Peace on earth, good will to men."

Christmas, and Radio. Since broadcasting has become popular the two words have become closely allied. Hundreds of stations—located everywhere—reach out to the barren places, the waste lands, with their messages of good cheer and service to all mankind.

None but a few of the many hundreds of stations are making a return on their investment in the form of tangible profits. The great majority of broadcasters depend for their existence on the good will of the public; the good will that the stations themselves build by their foundation of service to the public.

Some broadcasters, it is true, are lacking on some score, be it poor programs, transmission, announcing or whatnot. But even the inefficient ones are trying to do their best. Perhaps they are failing somewhat. What of it? When one tries to serve the public, one does a great good.

Scrooge, of Dickens' "Christmas Carol" fame, didn't have a model Christmas spirit, but we all felt sorry for him. He did try.

Radio as a maker of homes, keeper of the hearth, educator, minister, entertainer and provider of necessary news, has proven itself indispensable during the last four years. It is truly a wonderful invention, worthy only of Santa Claus.

Christmas, and Radio—two things we all love.

Give Christmas to Supervisors

THE inspection department of the Radio section of the department of commerce is a wonder department. If the nation's taxpayers could actually visualize how far a dollar stretches in the administration of Radio, they would be astounded.

We find now, however, after investigating carefully the needs of the Radio supervisors, that the Radio section is very badly cramped in its activities because it has not enough funds. As a result listeners in wonder why there is so much interstation interference, and why some of the broadcasters wander so far off their assigned wave lengths.

The Radio section is stretching its last dollar as far as it will go, but it won't go far enough. The inspectors, of which there are entirely too few, because of lack of funds, cannot cover the large areas embraced by each of the nine inspection districts, because of lack of funds for traveling expenses. They cannot check up on the wave lengths of the broadcasting stations and other Radio stations in their districts without precision receiving and wavemeter instruments and more help, which they do not have, because of lack of funds.

Because of lack of funds, Radio reception is not what it should be.

What do you say, Mr. Taxpayer? Will you back up Radio Digest in its effort to secure an appropriation this year of \$500,000 from congress to meet the expanding needs of the Radio section of the department of commerce? Will you—dear reader—this minute take pen in hand and write your two senators and one representative asking that at least one half million dollars be set aside for Radio?

That's only 10 cents out of the yearly taxes for every receiving set in use, you know. Write the letter, NOW!

The Dove in the Ether

PEACE is assured in the future when broadcast diplomacy becomes the order of the day, says C. W. Horn, Westinghouse official, in an address. Woodrow Wilson had the same vision, but that was before international broadcasting was known. His was only built on the basis of open diplomacy. But broadcast diplomacy—wonder? Perhaps the scientists, who in the past have invented terrible instruments of warfare, suffering and deaths, have brought out a counter force in the invention and development of broadcasting.

RADIO INDI-GEST

Choirs Invisible

Voices from eternity
Floating in the air;
Songs from souls immortal,—
Singing everywhere.

Choirs are invisible
Chanting Christmas song;
Hearts lost in reverie,—
Far from mortal's throng.

Beside the dying embers
Of December fires;
Music in Radios,—
Ere my heart expires.

Voices from eternity
Assuring us hope;
Speak of life eternal,—
Beyond human scope.

RHEA SHELDON.

A Bit Late

Dear Indi: This is the winter of cold weather and likewise aural appendages. It is also the Radio season, is it not? They why not combine a pair of ear muffs and a set of Radio phones and tune in on something hot?

MACARONI.

Good idea, Mac, but some cartoonist beat you to the idea. What we need now is a pair of phones one can wear in the inside of hunting boots to provide warmth through the receiving of red hot Charleston tunes.

Crazy Quilt Poetry

(With Thanks to Bertie, the Buccan-ear)

Listening in on the Radio
To stations all over town,
I heard of several people
Whose "Sweeties turned them down."

For me love has no interest
In fact, I do not care
But tell me, please, in the present case
Just who was given the air.

F. F.

The answer must be, "Yes, Sir, That's My Baby."

Helping the Third Trombone Player Through the Graveyard

Dear Indi: Please hand the Third Trombone Player the following epitaphs with my pious compliments and tell him to go to it, but make it "Louder and Funnier."

(1)
Here lies the body of Luther McLester,
He erects his antenna without an arrester.

(2)
Here lies what's left of Roland G. Squires
Who strung his antenna across high-power wires.

P. S. There's a sermon in the above that's short and snappy! H. F. B.

Please do not ask the gentleman with the slip horn to play louder. We once slid a mean brass in a band ourself and the leader used to tell us, "Der big woof is nix sehr gud on der trumboon, make it soft and pretty, like summer dunder."

Dying Jazz

Discordant jazz is dying fast,
And on the trash heap being cast,
But in its place come songs and tunes
We have not heard for many moons.

For this relief much thanks we give;
Once more it seems worth while to live.
We hope that with jazz-dying groans
Will also die all saxophones.

GEORGE.

Out of the Fog

Dear Indi: Driver of large motor lorry tied up by a little two-seater in the streets of dear old London: "Hi there! Can't you get your bloody crystal set out of the way and let a six-valver past?"

LONDON BOBBY.

And this is the way they would say it on one of Chicago's busy loop streets:

"!!*!\$*&! Say bo if you don't get a little DX on that blooper of yours, I'll cut yer antenna, blow yer tubes, short your groundline, and run my super-het all over you!"

Downfall of Jazz

"William Stoess," says the Crosley Weekly, "studio director of Crosley WLW superpower broadcasting station, traded an old saxophone for a 1917 model automobile. Somebody got stung in the deal."

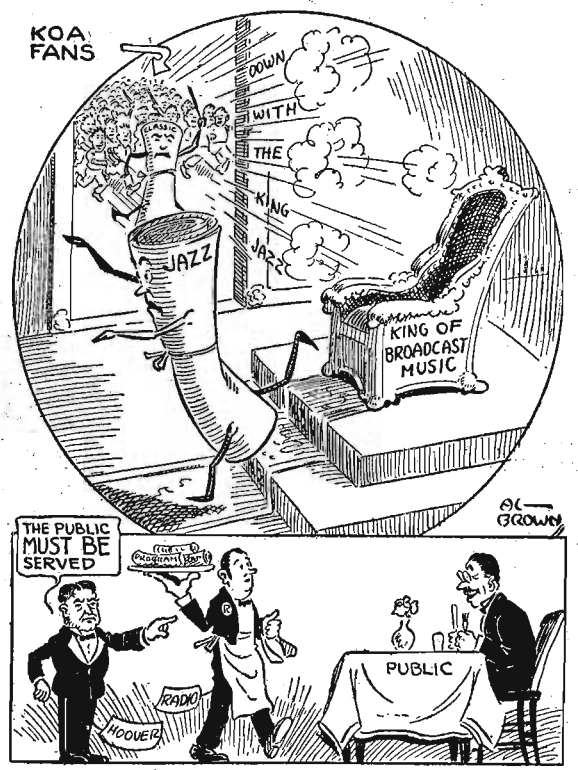
The foregoing, tells a sad story. Imagine the neighbors of the man who originally owned the auto: just getting used to being awakened every morning by the machine backfiring in the alley and now having to rearrange their schedules so they can stay awake until the new old saxophone quits moaning at 2 A. M.

WAIVES TEETH PULLING, BECOMES TRUMPETER; AND IS NOW RADIO IDOL

—From KYW News Notes.

He had to be where the howls were loudest!

News of the Week



Condensed

BY DIELECTRIC

There are several "little symphony orchestras" spread around among the broadcasting studios and the majority of them are well worth hearing. One of them to receive but meager mention heretofore comes in for recommendation to you who enjoy good programs well played. The little symphony orchestra at WLS, Chicago, comprises musicians capable of rendering classical music in the approved fashion, which they did in the course of a program the other evening, presenting a serenade by Moszkowski and a Tchaikowsky waltz. These two numbers were especially good.

What were your reactions to the broadcasting of Evangeline as presented during the Eveready hour in the studio of WEA, New York? Had you any difficulty in picturing to yourself the action, locale and personalities of the principles in this stirring drama of life? The resort to chorus or instrumental music in parts was highly effective and the solo parts were very well done. Basil fairly towered beside the beautiful form of Evangeline, so well were their voices suited to the characters. Nor did anyone suffer from the few occasions when McNamee relieved the reader of the evening whose hoarseness was quite apparent. On the whole that was a memorable performance of an American classic.

Station WCX, Detroit, has no apparent difficulty in arranging dance programs that satisfy most listeners, in fact the music is quite comparable to any heard these days. Some of us who may listen to the station, however, are liable to find the numbers to follow each other with more of an intermission than we like. Recently the announcer emphatically stated at one point in the program that they would not slow up at all, then proceeded to entertain us with silence for a while. This may not be the usual custom and certainly should not be, but it has happened too often.

Stop off on your next trip around the broadcasting station circuit to listen to the Wardman Park hotel trio, whose concerts are quite acceptable. They entertain from the studio of WCAP, Washington. You will find their selections to be varied, with as much attention given the lighter works as those requiring more knowledge of music in the abstract.

Roanoke, Va., has a transmitting station, WDBJ, you may or may not have heard. At any rate, the director of that station may as well shake his fist at Dielectric along with the rest. There certainly are some in the Radio audience largely dependent on this station for their entertainment. It is for their benefit that the suggestion is made that the station call be slowed up considerably, with long waits eliminated after the numbers. A saxophone solo of the "Evening Star" song and a group of old familiar songs rendered by mixed voices proved to be the better parts of an otherwise drab program. Let's hope we get the call hereafter.

Football has taken its exit until next season when we shall hear reports again of the big contests on the gridirons east, west, north and south, but before we sign off that subject I wish to mention a program arranged in the studio of KDKA, Pittsburgh, when Lehigh university occupied the preferred position before the mike. Those boys certainly emphasized sports as related to the life of college students in talks which attempted to show how effectively one was prepared for the sterner duties of business after successfully occupying some position on a college team.

Straight-8: Outside Aerial Tuned R. F. Super

Part I—The Circuit and the Parts Required

By A. Christen and Jacques Fournier

THESE HAS, for a long time, been a demand for a super-heterodyne receiver that could successfully be used with an outside antenna. Practically all supers that are presented the set builder are for use on loop only and those which include a means of connection to antenna and ground are woefully deficient in the element of selectivity. The well-built loop operated super-heterodyne does wonderful things, cuts through a maze of local stations with clean precision, and brings in far away stations with pretty fair consistency. The volume on these DX-stations may, however, be clear and enjoyable one evening but weak and fading the next. The owner of such a set feels, logically, that if he could just pick up a little more energy the "happy hunting ground" would be attained.

The first solution of this difficulty was the addition of an antenna coupler in front of the usual "mixer" or first detector; by connecting the variable condenser across the secondary, the primary consisting of six to twelve turns coupled to this secondary. Three factors made this solution unsatisfactory to users: a single tuned circuit at this point was not enough, the couplers were high in losses,

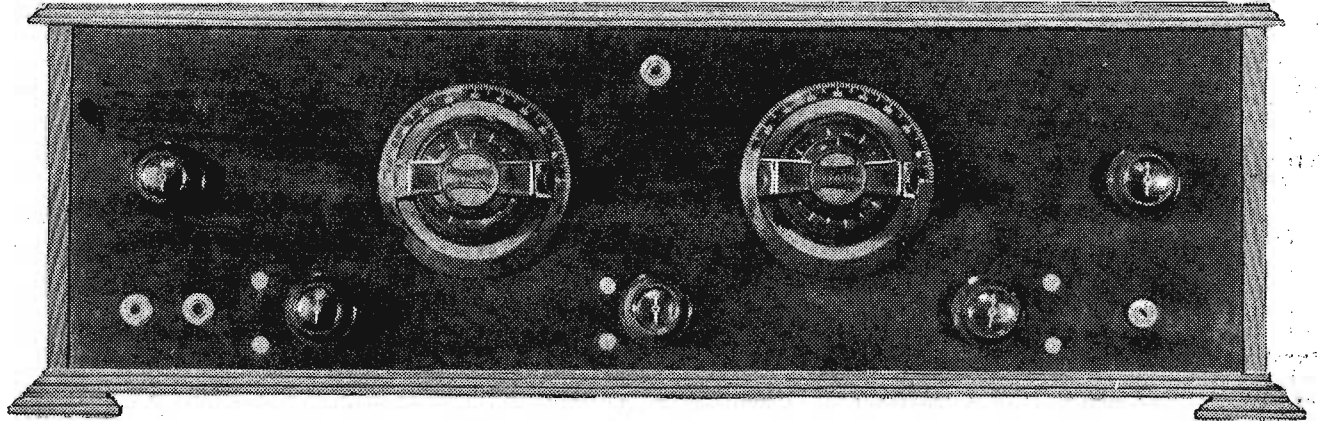


Figure 1

power Radio telephone transmitters. V is an oscillator tube in which the grid and plate circuits are coupled together to produce oscillation. The microphone M is connected through the power source D to the primary winding of a telephone

transformer (which constitutes the heterodyne modulation), if the frequencies of the incoming signal and the oscillator tube are close, the output will consist of beats of a frequency that is the difference between the two. This same beat note frequency may be had whether the generated frequency is greater or less than the frequency of the incoming program.

If desired, the tube V1 could be made regenerative by insertion of a feedback

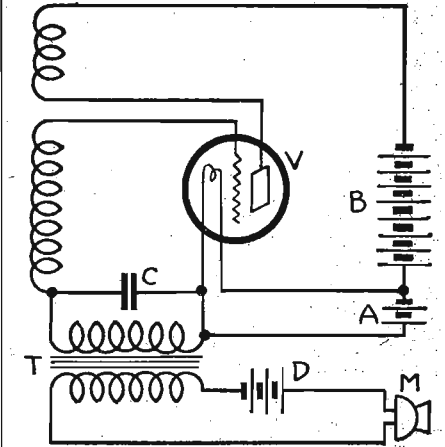


Figure 2

coil in the plate circuit coupled to L2 but we do not recommend this. In order (Continued on page 24)

LIST OF PARTS

2 Orthometric Cond., .0005 mfd.	Karas Electric Co., Chicago	\$14.00
4 Victoreen No. 170 R.F. Trans.	George W. Walker Co., Cleveland	28.00
8 Clar-a-tonè A type Sockets	Benjamin Elec. Mfg. Co., Chicago	8.00
1 Pair Benjamin Brackets	Benjamin Elec. Mfg. Co., Chicago	.70
2 Carter Imp 400-ohm Potentiom.	Carter Radio Co., Chicago	2.50
2 Carter Imp 30-ohm Rheostats	Carter Radio Co., Chicago	2.00
1 Carter Imp 10-ohm Rheostat	Carter Radio Co., Chicago	1.00
2 Carter Model 104 Jacks	Carter Radio Co., Chicago	2.00
1 Carter Model 101 Jack	Carter Radio Co., Chicago	.70
2 Meloformer Audio Trans.	Robertson-Davis Co., Chicago	8.00
3 Amperites for A tubes	Radial Company, New York City	3.00
1 Formica Panel, 7x24x3/16	Formica Insulation Co., Cincinnati	3.36
1 Formica Sub Base, 7x23 1/2 x 3/16	Formica Insulation Co., Cincinnati	3.30
1 Cutler-Hammer Lock Switch	Cutler-Hammer Mfg. Co., Milwaukee	.60
1 Daven Leakandenser, No. 24	Daven Radio Corp., Newark, N. J.	1.00
1 Set Special Diamond Coils	See Article For Manufacturers	3.50
1 Set Walnut Binding Posts	Walnut Electric Mfg. Co., Chicago	.80
1 Potter .5 mfd. Bypass Cond.	Potter Mfg. Co., North Chicago	.90
1 Erla .002 mfd. Fixed Cond.	Electrical Research Lab., Chicago	.35
1 Cabinet, 7x24	Make carried by Dealer	9.00
2 Micro-Dials	Jewett Radio Co., Pontiac, Mich.	7.00
Miscellaneous, such as Bus Bar, Spaghetti, Screws, etc.		
Total Cost		\$101.71

Suggested Accessories

1 Prest-O-Lite Storage Battery	Prest-O-Lite Co., Indianapolis	
2 Eveready No. 486 B Batteries	National Carbon Co., New York City	\$11.00
1 Eveready No. 771 C Battery	National Carbon Co., New York City	.60
1 Balkite Trickle Charger	Fansteel Prod's Co., North Chicago	10.00

and the coupling between primary and secondary was far too tight, or close. This third point could not be altered because, if the primary or antenna circuit were removed more than one-half inch from the secondary, too little energy got through to actuate the mixer tube.

Christen Explains Circuit

In the Armstrong super-heterodyne, the first tube is a mixer and, by means of a pick-up coil, the energy from the antenna circuit and the energy from the oscillator tube are mixed and passed on to be amplified at a lower frequency. In the ultradyne receiver, the plate of the first tube is supplied the energy from the oscillator and, with the energy of the incoming signal, produces a beat note which is of a lower frequency that is passed on to be amplified.

Although the Straight-8 receiver is also a super-heterodyne, it does not work on the same principle as the others. Figure 2 shows the modulation system called "grid control method" often used in low-

transformer T. The secondary, connected in series with the grid circuit of the oscillator, is shunted with a bypass condenser C as otherwise it would present a very high resistance to the radio frequency currents.

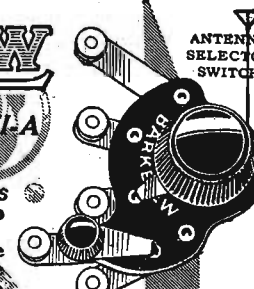
When the microphone is spoken into, the variations in the primary circuit produce induced voltages in the secondary of the transformer, and these voltages, being impressed on the grid of the tube, change the amplitude or swing of the radio frequency alternations. Thus, in the plate circuit, we have a radio frequency output modulated by speech.

Heterodyne Modulation

Now suppose the phone transformer is replaced by a radio frequency transformer, the primary of which is supplied with the energy from an antenna tuned to a broadcasting station (see figure 3). As in the former circuit, this current acting on the grid of the oscillator tube will modulate the plate current in accordance with the music or speech. Further (and

BARKELEY


Attachments for Radiola III and III-A



ANTENNA SELECTOR SWITCH

The full range of antenna adjustments can be made by simply turning the two knobs and without loosening a nut. Remove the knurled nuts, slip the switch on the binding posts, and replace the nuts. The antenna wire attaches to the one binding post on the rear.

No. 624
Price 50¢



FOUR PHONE POST

This post will take any number of head sets from one to four and all in series. It is equipped with prongs that push through the phone holes in the face of the panel.

No. 605
Price \$1.00

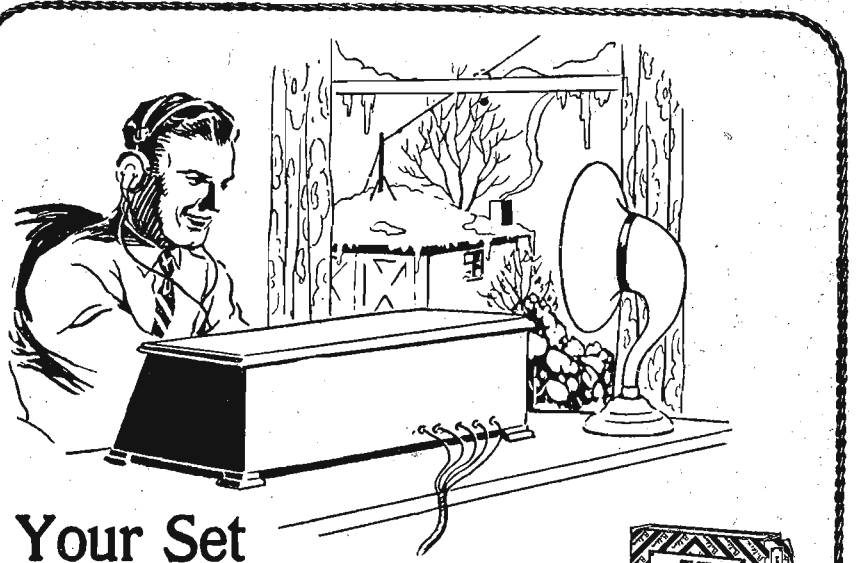
The Barkeley Electric Mfg. Co.

Middletown, Ohio, U. S. A.

NEW YORK, 157 Chambers St.
BOSTON, 31 Bedford St.
WASHINGTON, D. C., Mills Bldg.
ATLANTA, GA., 180 Spring St.

CHICAGO, 15 S. Clinton St.
DENVER, Denham Bldg.
MINNEAPOLIS, 1017 Lumber Ex.
SEATTLE, 1041 Sixth Ave. S.

SAN FRANCISCO, 75 Fremont St.
LOS ANGELES, 443 S. San Pedro St.
TORONTO, 20 Bloor St. W.
MONTREAL, 296 St. Paul St. W.



Your Set Needs a Beldenamel Aerial and a Belden Battery Cord

A Belden Radio Battery Cord makes a compact, neat installation of the battery wiring between the A and B-batteries and the receiving set. The cord contains five wires, each color-coded for easy identification of the circuits. The wires are all rubber-covered and securely encased in a firm brown glazed braid.

No more accidental short-circuits between loose wires, when you use a Belden Radio Battery Cord. It saves tubes and batteries. It eliminates the fire hazard that is present when poor wiring is used.

A Beldenamel Aerial is a stranded aerial wire, each strand being coated with several layers of baked Beldenamel. This coating prevents oxidation and corrosion of the copper conductors, and thus insures a low aerial resistance, even after the Beldenamel Aerial has been in service for a long time.

Bare copper wire rapidly corrodes and increases in resistance. Beldenamel cannot corrode. For this reason, it is endorsed by leading radio engineers as the best aerial. Install a Beldenamel Aerial for permanence, volume, and distance.

Mail the Coupon for Free Illustrated Booklet

BELDEN MANUFACTURING CO.
2310H South Western Ave., Chicago

Please send me your booklet entitled "Helpful Hints for Radio Fans."

Name.....

Address.....

Belden

STRAIGHT-8 SUPER-HET

(Continued from page 23)

to obtain the same amplification over the whole wave length range we have increased the number of turns on L3 and used a potentiometer P1 to avoid oscillation on short waves. The tube V1 might also be neutralized by the Hazeltine process or its capacity compensated by any of the numerous bridge arrangements. Again, if one prefers, a C-R-L unit of 200,000 ohms can be inserted in the B return lead as in Mr. Fournier's Fireside set.

Our aim has been to realize in

is a filter and the secondaries must be tuned with capacities to resonance. Personally, I prefer the latter units and older Digest readers may recall the four filter super described last spring. The Victoreen intermediate transformers are air core and tuned, the accuracy of this being guaranteed by the makers to be 1/3 of 1 per cent.

Meloformers Are New

The Meloformers are something new to readers of Radio Digest and their construction will be a distinct shock. All one's predetermined ideas of correct design are jolted. There is no large rectangular cross section core, no center leg

mechanical strength and electrical properties are surpassed by no other material available. Important from the appearance standpoint, the luster of its finish will be there years from now as beautiful as it is when the panel is put in. Since Straight-8 is about the last word in receivers and is not likely to be replaced by anything for a number of years, this permanence of the panels is important. The walnut markings used on the panel of my Straight-8 are most realistic and it takes close inspection to determine that the panel is not really wood.

The coils are the only units incorporated that are not standard on the market

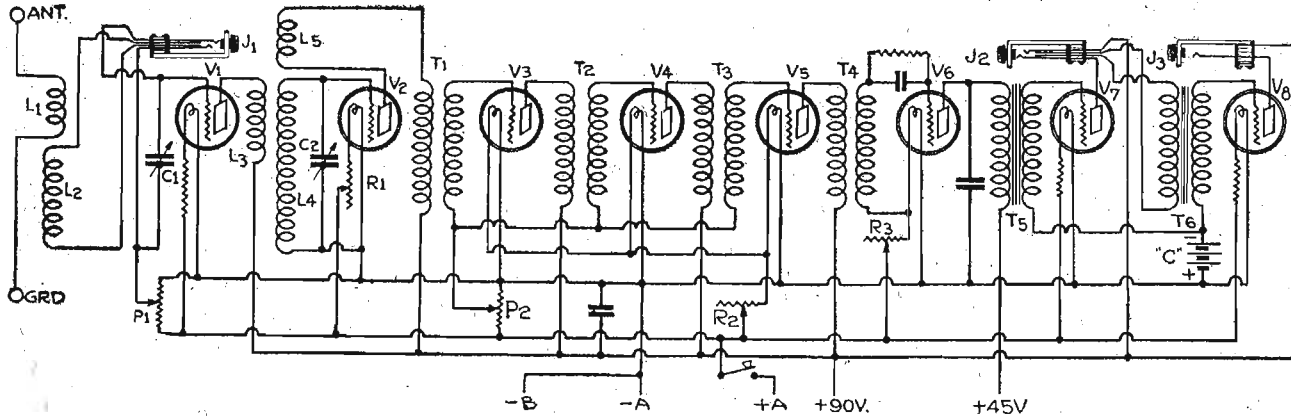


Figure 4

Straight-8 a perfect selectivity when using an outside antenna, without at the same time diminishing equally the strength of the apparatus. Those who will construct this receiver strictly along these lines will find themselves able to do that which neither they nor their friends have been able to do before. The home builder who has already constructed a super will have no difficulty with Straight-8. It is but the work of a few hours to transform one already built. He who is not so familiar with this type of set, but desires to join the ranks of those who are owners of a "Rolls Royce of Radio," will have less difficulty with Straight-8 than any other.

Fournier Chooses the Parts

The development of this system which he chooses to call "hyperdyne" is the work of Mr. Christen, as is the design of the coupling coils used. This set won second prize in the Radio Digest contest last spring and, if performance alone had been considered, would probably have won first. The designing of a receiver of this type which Radio Digest readers might build, and the description of the building, is up to me. Straight-8 is the development, in standard parts, of the original "hyperdyne" and it performs fully up to the standard set by the original. I feel sure that the home builder likes to be let behind the scenes in the designing of a set and the use of various pieces of apparatus from all the parts on the market, so I am going to take some space to go into this.

with huge winding. Instead, there is a solid iron core made in spool shape on which the primary and secondary are randomly wound with over a mile of wire. A shell 1/4 inch thick covers core and windings so that the wire is embedded in a solid mass of iron—shielding to the nth degree. I'll admit I was one of those who scoffed at first and said it was impossible—yet these little units reproduce with a fidelity that is amazing and there is no discussion possible against the facts of performance. Although this feature is not utilized in Straight-8, it is perfectly possible to use three of these units with as many tubes and get tremendous volume without howl.

The front and sub base panels are Formica. Experience has shown that its

and Radio Digest has arranged for two different concerns to supply these, one in the East and one West. In Chicago, the McConnell Cable & Specialty Co., 424 South Clinton street, have built units exactly according to the specifications given below and can ship you a set of four coils for \$3.50. In the East the F. W. Sickles company, Springfield, Mass., are also prepared to ship these coils on order.

Coil Construction

Should you be in a position to wind your own, the procedure is as follows: The form consists of a wood or fiber cylinder 2 inches in diameter and 1 inch long. Around the outer surface drill 15 holes equidistant apart and 1/4 inch in diameter. For insertion in these holes, 15

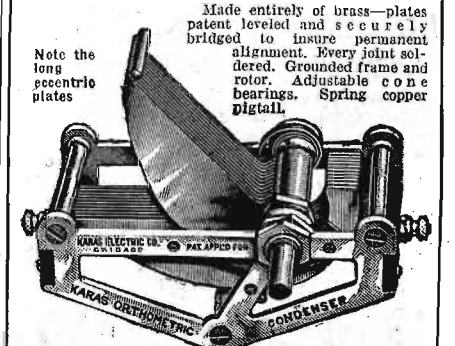
(Continued on page 26)

Straight Frequency Line Tuning

with

KARAS Orthometric Condensers

Specified for the Prize Winning "Straight-8" Super, described in this issue by Christen and Fournier.



How They SIMPLIFY the Tuning of Any Radio Set

Ordinary Condenser Arrangement of Wavelengths
Ordinary straight capacity condensers crowd 70 of the 100 wavelengths into the first 30 points of the dial.

Straight Wavelength Condenser Arrangement
With straight-line-wavelength condensers 57 of the 100 wavelengths are crowded into the first 30 points on the dial.

KARAS ORTHOMETRIC CONDENSER Arrangement of Wavelengths on Dial
Karas Orthometric Condensers insure absolutely equal dial separation of all wavelengths, 200 to 600 meters.

If your dealer hasn't secured a stock of Karas Condensers

Order on this Coupon!

Most good dealers everywhere, sell Karas Orthometric Condensers. If your dealer happens to be one who hasn't secured them, we will supply you direct on our 30-day Money-Back Guarantee. Just fill in and mail this coupon at once. Send no money. Pay your postman on delivery.

SIZES AND PRICES	
23 plate, .0005 mfd.....	\$7.00
17 plate, .00037 mfd.....	6.75
11 plate, .0025 mfd.....	6.50
5 plate, .0000972 mfd.....	6.50

Karas Electric Co.,
4049 N. Rockwell St., Chicago

Please send me..... Karas Orthometric Condensers, size..... at \$..... each. I will pay the postman the list price, plus postage, on delivery. It is understood that I have the privilege of returning these condensers any time within 30 days if they do not prove entirely satisfactory, and you will refund my money at once.

Name.....
Address.....
Dealer's Name.....
If you send cash with order, we'll send package postpaid

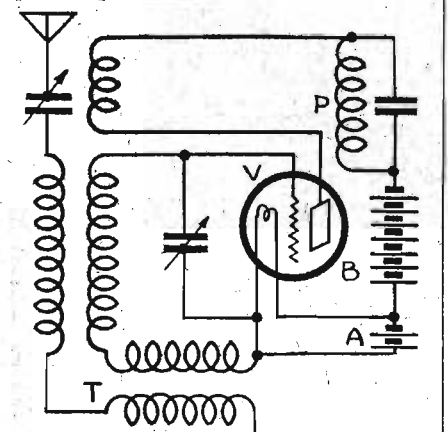


Figure 3

Karas Orthometric condensers have been chosen for this receiver for two reasons. Naturally, efficiency was considered first but, after this had been narrowed down to several makes, shape was next in importance. We have plenty of panel space lengthwise and are trying to keep this set within reasonable limits as to depths. Karas takes up some room back of the panel but makes up for this in being very shallow. From the efficiency standpoint it is truly a straight line frequency condenser, is made of brass throughout, and rigidity and alignment have been taken care of. The rotor is provided with a strong flexible copper pigtail, in preference to bearing contact, and the bearings are such that these condensers turn easily and smoothly, without sticking.

There are two types of intermediate transformers available; iron core and air core. In the system using the first named type, three transformers are provided with small laminated iron cores, which has certain advantages but broadens the tuning, and a filter or air core, tuned transformer is necessary. In the system using the air core units, each transformer

Genuine Fansteel Balkite Battery Charger

\$1.00

down!

No Bulbs
Noiseless

On Easy
Monthly
Payments

For Radio and Automobile Batteries

Radio Fans! Auto Owners too. You may now own a Genuine Fansteel Balkite Battery Charger on a most amazing, easy payment offer. Only \$1.00 with coupon below and we will send it to your home on approval. The Balkite charger will charge the ordinary 6 volt radio "A" battery, "B" batteries (of the lead type) or automobile batteries from 110-120 AC, 60 cycle current. Has no bulbs, vibrators or moving parts; absolutely noiseless. Will charge your battery while radio is in use without creating disturbance in set. The Balkite charger has nothing to adjust, break or get out of order. Requires no attention except filling with distilled water. Never deteriorates. Will charge even a completely discharged battery. Simple—efficient. Measures 8x6x6 1/2 in. Shipping weight about 22 lbs.

30 Days Trial—\$2.50 a Month

The Balkite comes to you completely wired, ready to attach to your light socket and battery. No extras to buy. Use it whenever necessary for 30 days. See how much it saves in battery charging cost. See how simple and easy to use. After 30 days trial, if you're not convinced that you need the Balkite Battery Charger, send it back at our expense and we'll refund your \$1 plus transportation charges.

If you decide to keep the charger, start making the small payments of only \$2.50 a month until you've paid the total price of only \$19.50. That's the price others ask for spot cash. We give you the lowest cash price on easy monthly payments you'll never feel. The money you save in charging your battery at home will almost take care of the payments on this offer.

Send Coupon Now

Don't miss this opportunity to get the famous Balkite Battery Charger at the rock bottom cash price on small monthly payments. Send only \$1.00 with the coupon now, while this offer lasts. Satisfaction guaranteed. Order by No. Y8306NA, \$1.00 with coupon; \$2.50 a month; total price \$19.50.

STRAUS & SCHRAM
Dept. R-4419 Chicago, Ill.

STRAUS & SCHRAM, Dept. R-4419 Chicago

Enclosed find \$1.00. Ship special advertised Balkite Battery Charger. I am to have 30 days free trial. If I keep the charger, I will pay you \$2.50 monthly. If not satisfied, I am to return the charger within 30 days and you are to refund my money and any express charges I paid.

Balkite Battery Charger, No. Y8306NA, \$19.50.

Name.....
St., E. F. D. or Box No.....
Shipping Point.....
Post Office..... State.....

Applied ABC Principles of Radio Receivers

Part I—In Which You Become a Train Dispatcher

By Carl Patterson

TO THE greater part of the American public, Radio is among life's deep mysteries—one of several which we just accept as contributions to our entertainment and happiness—content to let it give forth music, humor or knowledge, without thought of the "why" behind it all. Every day 12,000,000 people listen to all or part of a broadcast program that may emerge from the loud speaker with close fidelity to the original rendition, or may be blurred, distorted and screechy. When Radio broadcasting was a new-born child we were content to listen to it in any form and marvel at the wonder of it all—"nothing in between." Now, however, the thrill has worn off and Radio has, for most of us, been reduced to the commonplace. And we expect the obedience to our will or whim that we get from other instruments with which we are more familiar.

The babe has grown—grown to a size where it can take its place, in might at least, with older and very powerful industries. In its ability to take its place in any and all society and mix well it is still the child and we should treat it with some consideration and much patience. Its advance notices are frequently somewhat misleading and, as is the habit with publicity men, apt to be a little exaggerated.

Any point in the United States, North America or the world is not at one's finger tips with any set. You cannot just touch a lever or knob and listen to a soprano, violinist or dance orchestra—anywhere—that you happen to know is broadcasting at the moment. That is a sweet dream that will undoubtedly come true at a not far distant date—the child is learning every day—but you cannot do it now.

You can, though, get hours of worthwhile enjoyment from Radio as it now stands—providing you will coddle it just a little—will try to understand its moods and disposition. Many have tried to explain, in simple words, the complex make-up of the prodigy, so that you, Mr.

Average Set Owner, can handle this youngster. It will be my object in this series to try and get behind the panels and cabinets for you, with similes to everyday matters, and give you a new picture of young Mr. Radio.

Enlarge your perspective, for the moment, beyond the walls of your room, the home you occupy so snugly, the city in which you live, and picture a great railroad system—imaginary of course—with all lines leading to your neighborhood. Roads lead out in all directions to all the

such as you wish and getting them onto your unloading track one at a time.

Looking at Radio in this way, you at once wonder why there have to be so many lines, why there must be so many trains, why the system must be so complicated. That is a problem you cannot, individually, do anything to alter. You and a million others, all faced with the same difficulty, might raise your voices in one great protest and secure a remedy. Otherwise, it is up to you to settle your own difficulties and learn Radio

broadcaster sends out hundreds of thousands of identical trains simultaneously but only one interests you.

To help you sort out your trains from all the stations, unload them without damage and handle the contents to your satisfaction, many types of receivers have been developed. They are available under many names, in an amazing variety of shapes and sizes, yet in one respect they are all alike. Each contains a unit essential to unloading the trains which is called a "detector." This may be a small piece of mineral resembling a piece of coal or precious ore, and it may resemble an electric light bulb, but it is somewhere in every set to enable you to take the program off the train. What then happens to the train is of no importance, it disappears after the voices and music are removed.

Since long distance Radio trains cannot have coaling points on the route, they are pretty well depleted in energy when they reach you. Very likely they can just get into the outer yards and would never make the final track through the maze of switches if not given new fuel. For that purpose, some sets are provided with bulbs for the purpose of refueling the train desired, before it is unloaded, and these the Radio man terms "radio frequency amplifiers" or "R.F. stages." It should be kept in mind that these serve only to refuel the train (our carrier wave) and, properly handled, do not affect the contents.

Such bulbs are found in four tube (bulb) sets, five tube sets and many of six tubes. There are occasional combinations where they are found in three tube outfits, but that is a special case to be considered later. If a receiver has seven, eight or nine tubes, you know it has these refuelers, but here they are, in effect, refueling trains of your own that go out and help a very exhausted train that might otherwise never get even to the outer limits of your yards.

This year, all receivers worthy of the name, and costing from about \$20.00 up, (Continued on page 26)

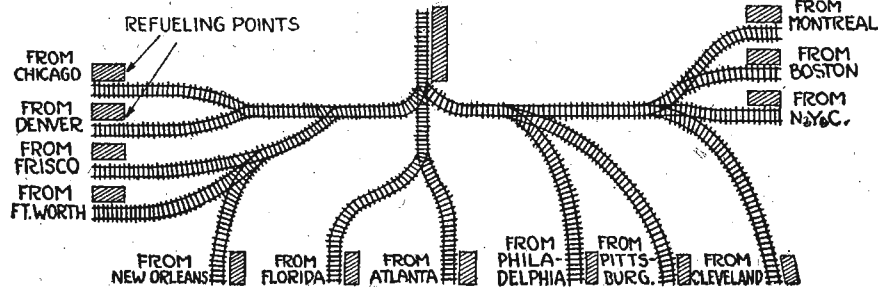


Figure 1

great cities, Chicago, St. Louis, New York, San Francisco, New Orleans, Denver. In some cases you have several parallel lines to the same metropolis. In addition, you have scores of other tracks radiating out to smaller, but just as important points, such as Schenectady, Troy, Columbus, Louisville, Lansing and Davenport.

Around your home you have a complicated network of switches and yards, into which all lines merge, several lines combining first into one, then combinations joining to cut down the total and, at last, one single unloading track and platform. You stand then at a great terminus of lines, peculiar in that all trains come in and none go out—peculiar also in the fact that you cannot telegraph to distant points and order trains started as you wish; they are all rushing toward you and you have the problem of accepting

railroading. As our laws stand at present, the department of commerce cannot refuse a license to broadcast and we have, more and more, the division of time in a locality on each wave channel. Getting back to our railroad, a line is operated by one lessee for an hour or two and then, for awhile, by another user.

To understand something of the underlying principle behind Radio, let us take our railroad comparison yet further. A broadcasting station starts a train, which you desire to get safely to your terminus. Now a railroad does not move trains just for the pleasure derived—neither does a broadcaster. It is what the trains carry that counts. The broadcaster sends a train that is called a "carrier wave"—very apropos in view of our comparison—and on this carrier wave is loaded a shipment of music and messages. True, the

TONE

Full, sweet, mellow and natural, without the slightest indication of distortion, is another achievement that is making the APEX SUPER FIVE the most popular of all receiving sets.

VOLUME

That supplies dance music or entertainment without any loss, is a feature for which the APEX SUPER FIVE is world famed.

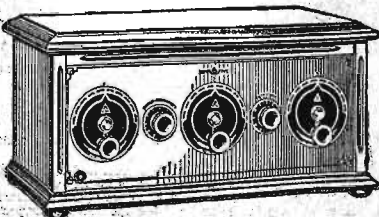
DISTANCE

Lends added enjoyment to radio with an indescribable fascination of tuning-in far away stations, which is always possible with the APEX SUPER FIVE.

Ask your dealer for a demonstration. Your eyes and your ears will tell you that APEX stands at the high point of perfection in both performance and appearance. \$60—without accessories.



SUPER 5



APEX ELECTRIC MFG. CO.
1410 W. 59th St. Dept. 1205-A
CHICAGO



New Standards of AUDIO AMPLIFICATION provided

by entirely new SCIENTIFIC methods used in constructing the

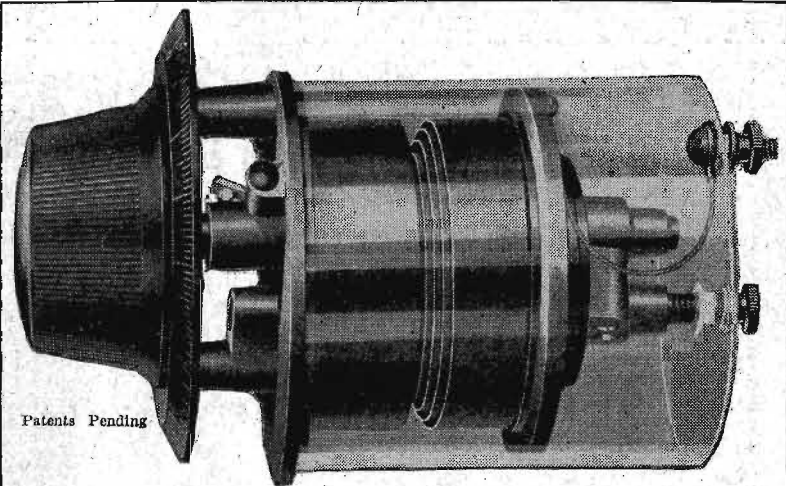
MELOFORMER

Messrs. Hansen and Fournier used MELOFORMERS in their Straight-Eight Super described in this issue of Radio Digest.

DISTORTION is not necessary, perfect reproduction is possible—let the MELOFORMER prove it.

\$4.00 Each

ROBERTSON-DAVIS CO., Inc.
412 Orleans Street CHICAGO



FURNELL stands alone in SLF condensers

BASED on an entirely new and simplified principle—the Furnell is the most practical and efficient condenser ever designed for Straightline Frequency tuning.

The Furnell replaces open multiple plates with two shielded plates, each coiled in the form of an evolute. Assures clean-cut separation of stations, tone clarity and scientific precision heretofore impossible. Dust-proof, moisture-proof, damage-proof.

Each condenser complete with special 4-inch Bakelite 360 degree Dial and enclosed in a transparent Dust-proof case.

Exclusive Sales Franchises Available to Reputable Jobbers in Locations Still Open
Write for Literature

THE FURNELL MANUFACTURING CORP., 24 W. SCOTT ST., NEWARK, N. J.

FURNELL

360° TAPER COIL CONDENSERS

APPLIED RADIO A-B-C'S STRAIGHT-8 SUPER-HET

(Continued from page 25)
provide a means of putting the voices and music onto a loud speaker. Whether refueling tubes are incorporated or not, the program would be so faint after being unloaded by the detector, that it could be heard only in a pair of head receivers. Means must be provided for strengthening the program (not the carrier remember) so that it will actuate a speaker and, for this purpose, two or three tubes identical with the refueling tubes and that used for the detector or unloader, are provided. These, to the Radio world, are called "audio frequency amplifiers." It is not a difference in construction or appearance of the tubes but one of use. So much for the bulbs or tubes.

We have not as yet considered anything that will help you stop unwanted trains in your switchyards and bring through the trains carrying the load desired. This series of operations, by the way, is known as tuning. Its counterpart in railroading includes the switch towers and their operators, the telephoning back and forth from these towers to the central office, and the green and red lights notifying when to go and stop. In our Radio set we have apparatus paralleling all this, which is controlled from the front of the panel with you as the central office—the train dispatcher. It is up to you how well the trains come in—whether those that have come a long way are properly refueled—whether those still full of energy because from nearby points are kept out until wanted—whether they are unloaded as carefully as they should be.

If you have an average three tube receiver—and note I say average to distinguish such a set from the special type called reflex—you are not particularly well equipped to handle much traffic. Such a set, however, does not have refueling tubes and many exhausted trains disappear at your outer yard limits. Thus there are not as many trains to handle with your limited switching arrangements. Only one of the group of switches and derailleurs is provided before the unloading platform—and this is called the detector.

(The various types of sets available and what you can do with them and why will be continued by Mr. Patterson next week. Suggestions for improvement of equipment and pointers on train dispatching will follow in natural order.—Editor's Note.)

(Continued from page 24)
rods of wood, bakelite or brass (preferably the latter) should be cut 3 inches long and so they will slide in and out of the holes fairly easily. There should be just enough "stick" so they will not drop out without pull. Each coil is started by securing the wire, number 20 dcc., to one of the pegs close to the core, then passing on one side of two pegs, then on the opposite side of the next two, and so on around and around until the proper number of turns have been put on.

Four coils, consisting of five windings in all, are to be used. Coil L1 has 10 turns, L2, has 52 turns, L3 has 25 turns. The coils L4 and L5 are wound together. L5 is at the center and contains 25 turns; outside of it wind L4 with 45 turns. At the finish of each winding, it can be secured by wrapping the wire twice around the last peg. To give each coil its necessary rigidity it should be given two coats of special varnish before removing from the form.

This varnish can be any of the Radio cements on the market or can be made by dissolving photographic films (from which the gelatine has been removed) in acetone. If more readily available, celluloid can be dissolved in acetone; however, I would suggest the use of any of the prepared cements on the market. For mounting, I have used 1/16-inch fiber sheet cut into small elongated triangles, the point of which is inserted up into one of the diamond shaped openings with a base width of about 3/8 inch. Small right angle brass brackets, secured to this broad base portion, enable one to readily secure the coil as to be shown later. As purchased from McConnell these coils are equipped with the mounting just described.

(In the next issue, Mr. Fournier will continue the construction of Straight-8 with the drilling of the panel and sub base, and the assembly on them of the parts listed.—Editor's Note.)

would have to lay off on that night but he has to now wherever they have local silent nights.

And would it be impossible to force all 100-watt or smaller stations to broadcast only in daylight hours? They cannot expect to get very far anyway except in some freak reception cases.

Would appreciate your opinion on the above.—F. W. K., Portland, Ore.

Just One Word

You have accomplished some splendid results for Radio listeners. Here is something that will be of as great benefit as anything you have done.

Make it a rule for every announcer to announce his station, instantly, at the close of each number. For instance: "WOK—Chicago." Nothing more, nor less.

Announce the letters slowly, and clearly.—E. S. L. St. Louis.

Music Hungry Westerners

A recent copy of the Digest expressed the desire to know how the Atwater Kent

Sunday evening programs were being received and I take this opportunity to express the sentiments of my household.

My command of the English language is not sufficient to express how much we enjoy these programs. We live 300 miles from the nearest city that could afford to have these artists. It has been a number of years since either of us have been privileged to hear real artists.

We also appreciate the pictures of the artists as published in your magazine, while hearing them it is not a difficult thing to imagine one sees the artists also. Extend our appreciation to these artists from some music hungry westerners.—Mr. and Mrs. G. C. B., Long Pine, Neb.

Just What Was Needed

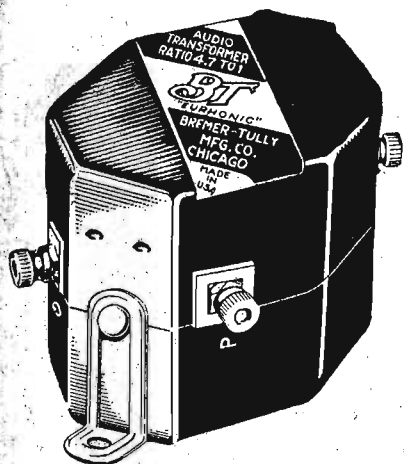
Your article on "Race Track" announcing was good. Just what we needed. Have already congratulated Henry Field of KFNF and Billy Knight of WIL on their change of pace. Please get Dielectric a two tube super-heterodyne so he can reach more points.—V. K. Y., St. Louis.

The Reader's View

We'll Leave It Up to Hoover

As I believe you are trying to get the viewpoint of all Radio listeners, I want to tell you mine. I would really like to know why we cannot have "time zone silent nights"—the crystal set owner

The Season's Biggest Hits



2.2 to 1.....\$5.00
4.7 to 1.....\$5.75

B-T Torostyle Transformer

There are many "toroids,"—but only one B-T Torostyle,—invented and patented by Harry A. Bremer, whose Nameless and Counterphase Circuits are acknowledged triumphs.

The B-T Torostyle R. F. Transformer is the heart of the Counterphase.

B-T 9-color writing diagrams have never been approached in Radio. They are included with Kits or sold separately for 75c.

5-tube Counterphase Kit \$28.50
6-tube Counterphase Kit \$38.00

An excellent 4-tube set using Counterphase principles is described in January Radio Age.

"Better Tuning" 9th Ed. gives complete Hook-ups, instructions, tuning information. Postpaid 10c. Circulars free.

BREMER-TULLY MFG. CO. CHICAGO
532 S. Canal Street

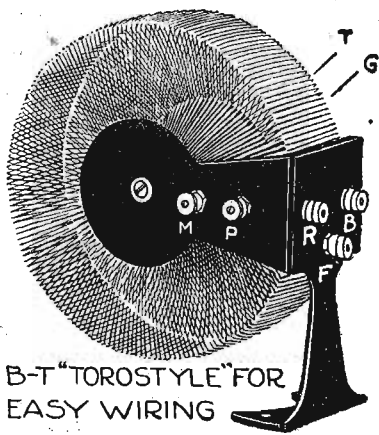
B-T

AUDIO TRANSFORMERS

No B-T product ever became such an instant national success,—and B-T have never marketed any but successful products.

B-T Reputation is your best insurance

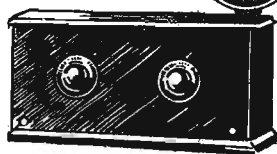
Insist on EUPHONICS



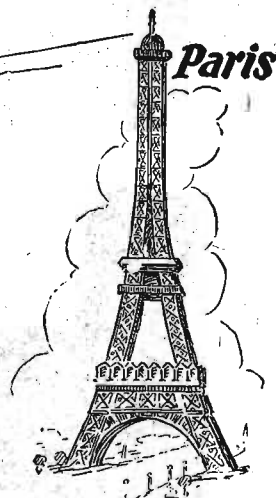
B-T "TOROSTYLE" FOR EASY WIRING

3-Styles, individually or in Counterphase Kits

Cadiz, O.



Verified Reception from Paris by Cadiz, Ohio, Radio Fan



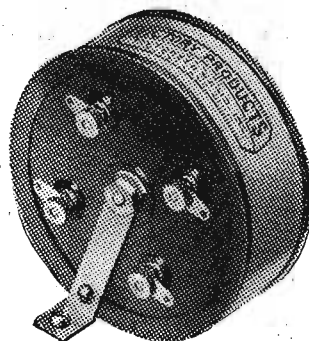
Coast to Coast On a Loop
is easy with a

Victoreen Super-Heterodyne

4—No. 170 R. F. TRANSFORMERS at \$7.00 each and

1—No. 150 Oscillator Coil at \$5.50

Constitute the Heart of the Circuit



No oscillations, howls or squeals—no matching of tubes.

Complete parts to build the "Victoreen" can be purchased of your dealers for between \$50.00 or \$75.00—depending on quality of material selected.

Ask your dealer for free "Victoreen" folder which contains hook up and complete information, or write us direct.

Victoreen No. 170 R. F. Transformer—Neat and Compact 3" in diameter, 1" thick.

THE GEORGE W. WALKER CO.
6548 Carnegie Ave. Cleveland, Ohio

Branch Sales Offices Are Located at

- 50 Church St., New York City
- 719 Raymond St., Philadelphia, Pa.
- 1823 Wall St., Dallas, Texas
- 910 Terminal Sales Bldg., Seattle, Wash.
- 200 Sugar Bldg., Denver, Colo.
- 383 Brannan St., San Francisco, Calif.
- 508 So. Dearborn St., Chicago, Ill.
- 45 Ruggery Bldg., Columbus, Ohio
- 443 So. San Pedro St., Los Angeles, Calif.
- 332 St. Catherine St., W., Montreal, Que., Can.

OPERATING AND TROUBLE SHOOTING

OPERATING and Trouble Shooting, is a Radio Digest feature the purpose of which is to give practical information on the operation, care and cure of simple troubles in every kind of receiver. Standard Radio receivers of wide distribution and use are studied from the standpoint of instructions for installing and connecting, tuning and operating, and remedying little difficulties. The suggestions below, if executed faithfully, will make winter broadcast listening yield all there is to yield to the reader and give your set a fair chance to show its worth.

For the Owner of a Jewett Radio Receiver

THE Jewett is a 5-tube receiver of exceptionally handsome appearance and embodying all the latest refinements known to a set of this type. Two of the dials customarily found on a 5-tube receiver have been combined by ingenious arrangement exclusive with the Jewett, so that on the front of the panel there are only two tuning dials, the meter, the filament switch and a volume control. The control which regulates the brilliancy of the filaments in the tubes has been placed inside the cabinet, and once it is set at the voltage specified by the Jewett company it may be left alone. There are two methods incorporated to improve the selectivity in a congested territory where difficulties might be experienced in sepa-

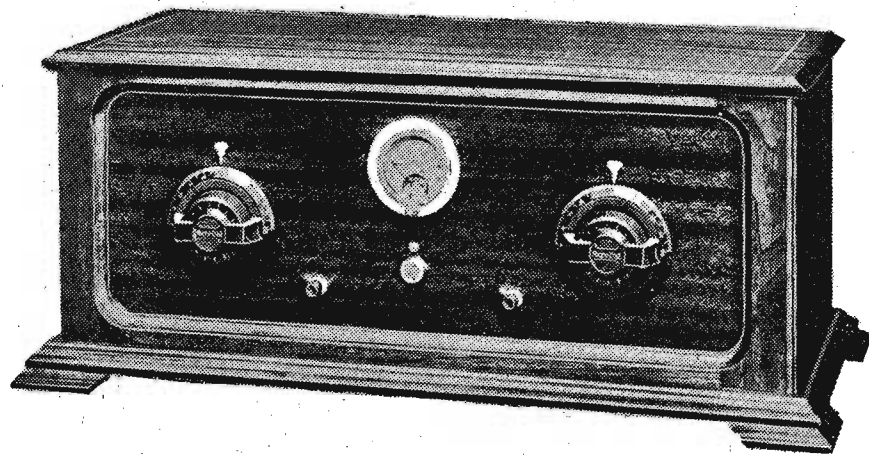


Figure 1

rating a number of powerful locals or eliminating a single powerful local.

The Jewett company has taken exceptional care that the beautiful finish on the cabinet of this receiver shall not be damaged in transit, and when you come to unpack this set, a suggestion may not be amiss. The writer found that the best way to get this set out of its container was to place the container on its side and remove the heavy, corrugated board pads at both top and bottom. You can then push the set through from one side or the other and remove the protecting layer of paper.

The receiver should be placed as close to the point where the aerial and ground enter the room as is possible, so that these leads may be kept short. The loud speaker may be placed on the same table with the set, or, if the speaker is provided with a felt base, it can be placed on top of the receiver cabinet. The batteries are presumably going to be placed on the lower shelf of the table or within some sort of a cabinet below the set, but they cannot be placed beyond the length of the cord provided with this receiver. The cable tips are clearly marked for con-

nection to the batteries, and little difficulty should be experienced in hooking up this set. The Crowe cable marker labeled "A+" is to go to the positive terminal of a 6-volt storage battery, and this terminal can be identified on the battery either by the letters POS. or a touch of red paint on the terminal itself. The wire identified with "A-" is to go to the other terminal of the storage battery.

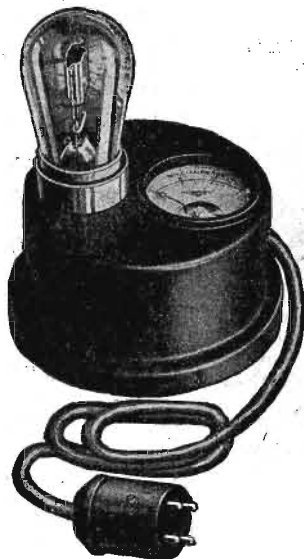
The B battery should consist of two 45-volt units, either dry cell or storage battery. The wire from the set, identified as "B-," should go to the negative terminal on one of the 45-volt units, and the plus terminal of the same unit should be connected to the negative ter-

terminal of the second unit. The positive terminal on the second unit is to be connected to the remaining wire from the receiver, contained within the cable, and identified as "B+."

The antenna lead-in is to be brought into the rear of the cabinet through the hole nearest the left end, and the binding post for its connection will be found at the left end of the shelf. The ground connection is brought in through the second hole from the left for connection to the large nickel binding post about midway of the rear edge of the shelf, close to which there is the letter "G" engraved on the shelf. The cord from the speaker is brought in through the third hole and the tips are inserted in the two little nicked jacks right close to the ground binding post. It makes no difference which speaker tip goes in which jack, as the Jewett circuit makes this of no consequence.

Five tubes of the "A" type are required in this receiver, and they can now be inserted in the sockets by pushing each one down gently and then giving it a slight twist to the right. The small control knob near the bottom and to the left of set should now be turned to the right, and the five tubes should light up. The pilot light provided in the exact center of the set should also light. The rheostat for regulating filament brilliancy is found at the left end of the shelf inside the receiver and, if all tubes do not light up when the filament switch on the panel is turned, rotate the rheostat knob with a right, that is, a clockwise motion. This should cause the tubes to light, presuming the storage battery is charged.

(Continued on page 28)



No. 107

JEWELL JUNIOR TUBE CHECKER

"Test your tubes at home"

Your set is no better than the poorest tube in it. With a Jewell Junior Tube-Checker you can test your tubes at home and thus save a lot of trouble and disappointment.

Send for special circular No. 735. Order from your dealer.

JEWELL ELECTRICAL INSTRUMENT CO.

1650 Walnut Street—CHICAGO

Swooping Down on Static

As an eagle swoops down on its prey, devouring it hungrily, so does

AERO-LOOP

devour static, consume interference, and swallow up regenerative squeals.

Unleash the hidden power in your radio set! Give it a chance to perform at maximum efficiency.

Attach this "loop-within-a-loop." The inside loop is stationary, acting as a booster, while the outer loop is adjusted by rotation.

Used with—or to replace—outside antenna.

Ask your dealer. If he does not carry it yet, we will ship direct, express prepaid, on receipt of price. Be sure to specify the set with which it is to be used and please give your dealer's name.

Sells for **\$12.50**

Write now for Descriptive and Diagramatic Booklet. Your Copy Mailed Free.

MANUFACTURED BY
Utt-Williams Electrical Products Co.
Santa Ana, California



Beautifully finished in mahogany
Dimensions
30 in. x 8 x 7 in.



SCOTT SALES COMPANY
National Distributors

443 SOUTH SAN PEDRO ST. - LOS ANGELES, CALIFORNIA

THE JEWETT RECEIVER

(Continued from page 27)

At the bottom of the meter, and included as part of it, there is a small switch which can be pushed to the left or right. You should now turn this small handle to the left. This will enable you to read on the scale the voltage being supplied the tubes, and the rheostat should be adjusted until the scale shows 4.8 volts. The receiver is now ready for operation.

will, however, also have the tendency to decrease the volume, and a compromise position should be found where sufficient volume is still heard from out-of-town stations yet you are able to go through the local broadcasters.

The small control knob near the bottom of the front panel and to the right of the set is a sensitivity and volume control. When this is turned to the right, both the range and volume are increased, but, if it is turned too far, distortion will

at which a number of stations were found on the dials, and may make tuning somewhat easier for the reader when first looking for stations. The relation of dial number 1 to dial number 2 will vary with each antenna installation, and it will be noted that, with the conditions stated above, dial number 1 ran about eight points below dial number 2 throughout the scale.

There are a number of suggestions which the writer would like to give the newcomer in Radio to keep this set functioning at its best. A storage battery is tested with a device called a hydrometer, which can be purchased for about \$1.50 at any Radio or automobile supply store. One of the caps on the storage battery

should be removed for testing, and the small tip of the hydrometer is inserted through the hole into the liquid. The rubber bulb is pressed and then released, which will draw liquid up into the large glass portion of the hydrometer. Within this glass cylinder there is a small float with a scale reading from 1100 to 1400. The battery is fully charged when the surface of the liquid within the hydrometer is at 1300 to 1325 on the scale, and the battery is considered discharged when the reading is 1100 to 1125. It is better practice to charge the storage battery often, and keep it close to the fully charged point, than to try letting the battery go too long at a time and compensat-

(Continued on page 30)

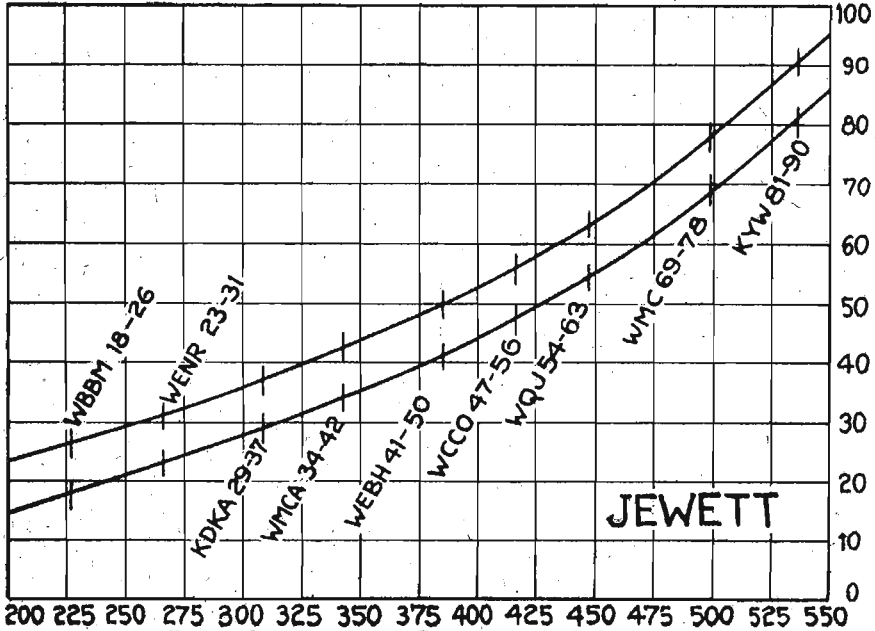


Figure 2

but before going further it might be a good idea to test the B batteries, which can be done by turning the meter switch to the right. The upper scale on the meter should indicate between 88 and 100 volts. The two dials should be turned together, with a hand on each, so that the numbers can be kept approximately together.

With as many stations as there are now, there should be no difficulty in finding a station, but if you have difficulty at first you will find a selectivity control within the set in the front left-hand corner. This is marked "broad" and "sharp," and it may be that this control happens to be in the sharp position, which will make our preliminary tuning a little difficult. Turn this selectivity control into either of the positions identified as "broad," and rotate the dials slowly over the scale once more, keeping the dial readings approximately the same, and a station will be heard; in fact, you will probably hear several. If you are close to a number of highly powered stations you may have difficulty in separating them.

If this proves to be the case, open the link connector at the left end of the set, inside, which automatically places a small fixed condenser in series with the antenna lead. It will have the effect of shortening your antenna and increasing selectivity. Should you still have trouble, the selectivity control should be moved over toward the "sharp" position, which will probably eliminate this difficulty. It

creep in. The best operating point for this control can quickly be found.

If your antenna and lead-in combined have a length of more than one hundred feet, it will certainly be necessary to leave open the link referred to above. Probably the better antenna for use with this set would be one in which the antenna proper, and the lead-in, have a combined length of about seventy feet, which would permit operation with the selectivity control on the broad position and the link either open or closed, depending on the proximity of powerful stations.

Once you have a distant station tuned in to maximum strength and clearness it would be a good idea to try switching the tubes around in their sockets to find those which function best as amplifiers and detector. This will require slight readjustment of the sensitivity control on the front of the panel, and a combination of tube positions will be found which gives the maximum in volume and tone quality.

The Digest laboratory in which this receiver was tested is exceptionally close to three powerful broadcasters, and is considered a difficult location. With an antenna and lead-in of a combined length of eighty-five feet the receiver was operated with the link open and the selectivity control on the line dividing "broad" and "sharp." The tubes, which were not new, were operated on a meter reading of 5.1 volts, and the B battery showed a voltage of 87. The chart which is included with this article as figure 2 shows the points



Fred W. Stein.

Steinite Low Loss Interference Eliminator
No Radio Set Complete Without It

Select stations at will. With music and voices crowding the air the average set fails to bring in the desired stations properly. The Steinite Interference Eliminator shuts out local and other interference. You get one station at a time, the one you want, and tune in loud and clear. Operates on any set—attach to aerial wire and to set—no changes—no extra tubes or batteries. Greatest Dollar Value in Radio Today. Over 150,000 Sold



Improved Results with Tube or Crystal

Try entirely at my risk the wonderful improvement this inexpensive little device will make in the reception of your set. Improves results on both crystal and tube sets that use any kind of aerial except loop antenna. Clears up reception wonderfully, increases volume, and partially absorbs static. Money-Back Guarantee.

Mrs. Famous 1,500 Mi. Steinite 1-Tube Set, \$6; Long Distance Crystal Set, \$6; Steinite Crystal 50¢—Three for \$1.

Steinite 5-Tube Set \$29.75
FREE Descriptive Literature on request.

\$1 Postpaid If you are not delighted with results you get your dollar back

Put this interference eliminator on your set and note amazing improvement. No tools needed—install in a moments time. Connect with set and follow simple instructions. Money back promptly if not delighted. \$1.00 postpaid anywhere in U. S. when cash with order.

References: Exchange National Bank, Atchison Savings Bank. Order today—a dollar bill will do.
STEINITE LABORATORIES, 161 Radio Bldg., ATCHISON, KANSAS

Send for this **RADIO BOOK FREE** 1926 Catalog of Everything New in **RADIO** at a Big Saving in Price

The World's Largest Exclusive Radio Mail Order House Will Send You This Wonderful Book FREE

64 illustrated pages containing thousands of bargains in radio sets, semi-finished sets and radio kits of all styles, sizes and approved circuits. Beautiful models of the very latest designs and types. Elaborate console models with loud speakers built right into cabinets of genuine mahogany and walnut. ALL SETS GUARANTEED.

Our line includes all popular sets, such as Superheterodyne, Neutrodyne, Ultradyne, Reinartz, Regenerative, Radio Frequency, Browning-Drake, Reflex and all other latest circuits. Kits, sets and parts manufactured by all well known manufacturers, such as: Frost, Howard, Baldwin, Brandes, Western Electric, Columbia and others.

Our Guarantee
Every article exactly as represented. Every article is tested before shipping. Complete satisfaction or money cheerfully refunded.

Don't Buy Anything in Radio Until You Get Our Big Money Saving Catalog
RANDOLPH RADIO CORPORATION
The Largest Exclusive Radio Mail Order House in the World
159 N. Union Ave., Dept. 188, Chicago, Ill.

Our Catalog
Includes complete list of broadcasting stations and general information and facts about our free service division. Our radio engineers will help you solve all your radio problems. Send your name and address on a card or in a letter. We will send catalog FREE.

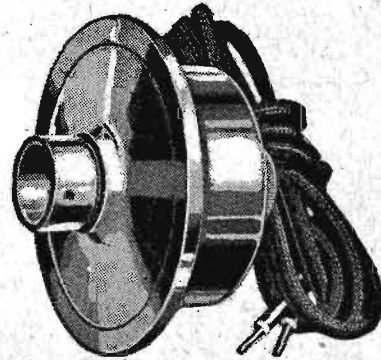
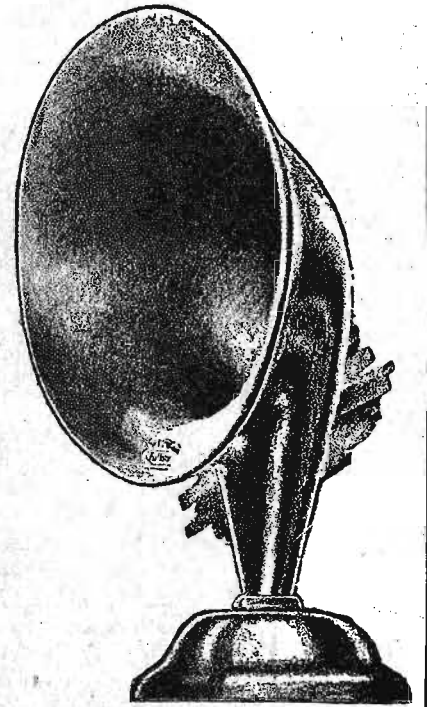
BIG PRICE REDUCTION

Fultone
Trade Mark

THE FORD of LOUD SPEAKERS
\$6.50

Fultone Loud Speaker has conclusively proven to the radio world that a reproducer could be made and sold at \$6.50 which would handle music or speech in volume as perfectly as any speaker at any price. The horn is solid, non-ringing and wide-throated enough to handle the powerful reproduction from superheterodyne or reflex. The adjustable diaphragm permits matching Fultone to any receiver and "B" battery voltage.

Either speaker or unit will be shipped on a satisfaction or money back basis on receipt of price in money order or currency. The coupon is provided for your convenience in ordering if your dealer cannot supply you.



Fultone
Trade Mark

LOUD SPEAKER UNIT
\$3.00

Its large diaphragm and bobbins of fine wire are protected from injury by a back of which adjustment is made by

This unit is the secret behind the unparalleled success of Fultone Speaker. Enclosed is \$..... for which ship me () Fultone Speaker..... () Fultone Unit at once, my money to be refunded if I am not satisfied and return this merchandise within 5 days.

Tear Off, Fill in, Mail Now

HALL & WELLS, Inc. 128 N. Wells Street, CHICAGO, ILL.
NAME.....
ADDRESS.....
CITY AND STATE.....

Use on Your Phonograph
Edison Adapter.....25c
Columbia or Pathe.....30c
Brunswick.....30c

HALL & WELLS, Inc.
128 N. Wells St. Chicago, Ill.

Counterphase: Perfect Bridge Tuned R.F. Set

Part IV—Adjusting and Tuning

By James McDonald

TURN rotor plates half way in on the rear trimmer condenser attached to the twin condenser at the left; then turn the rotor plates of the rear trimmer on the right twin condenser to the same position. This is the permanent setting for the rear trimmer condensers. Adjust the dials so that both read 100, with condenser plates fully in and flush with the stator plates.

In connecting the accessories to the set we will consider the receiver from the front. The first binding post (at rear left corner) is for the antenna lead-in, the next is for ground wire. The third post (first of the group of six) is to be attached to the plus terminal of a 6-volt storage battery, while the fourth is to be connected to the minus terminal of the battery. Insert the tubes in their sockets; rheostat should regulate brilliancy of all tubes, when turned, and "on-off" switch should flash tubes on and off when snapped.

Now remove all tubes and disconnect the storage battery. Connect the plus terminal of the storage battery to both the fifth and sixth binding posts; connect the negative of storage battery to the third binding post. Insert all tubes. The filaments of the tubes should not light. If any filament shows brilliancy, a wrong connection or a short circuit is indicated at some part of the B plus wire or apparatus connected to it.

Final Connections

Assuming that the tubes do not light on this test, we are ready to connect all the accessories. The storage battery should be disconnected from the way in which you just had it, and the plus terminal is to be connected to the third binding post. At the same time connect the negative terminal of one of the B battery units to this binding post. The negative terminal of the storage battery is to be connected to the fourth binding post. While doing this, connect also the positive terminal of a 4½-volt C battery. The positive terminal of the B battery unit, already partially connected, is to be attached to the fifth binding post and also to the negative terminal of the second B battery unit. The positive terminal of this second B unit is then connected to the sixth binding post, which will give 90 volts difference between the third and the sixth binding post. An Eveready C battery is provided with two negative terminals, one identified by a 3 and one by a 4½ mark. The 3 (volt) terminal is connected to the seventh binding post on the set, and the 4½ (volt) terminal is connected to the eighth or last binding post.

You can now replace all tubes and turn the filament switch to the "on" position. The rheostat should be adjusted for medium brilliancy of the tubes, and then the loud speaker or phones can be plugged into the first stage jack. Place the selectivity switch, at the left end of the front panel, on the seventh point, the volume control at the center of the panel at the zero position, and then rotate the selector dials very slowly, maintaining about the same scale reading on both until a signal is tuned in. The Mikro-Mike condensers should be adjusted so that the pointers are about half way down.

Now tune in a comparatively weak signal and then reduce the brilliancy of the tubes with the rheostat (at the right end of the panel) to that point which gives best results. The volume control can be rotated to the point which gives the loudest clear signal. Then plug the loud speaker into the second stage jack, which is that in the lower right corner. The volume should be greatly increased. Adjust the selectivity switch to various points from 1 to 8, retuning slightly on each new position. The volume will be decreased on points 1 and 2, but tuning should be much sharper. The greatest volume will be found on points 7 and 8.

Sensitivity and Volume Control

This control operates throughout about one and a half turns. You will note that in the half way position between extreme adjustments this control snaps into a neutral or zero position. The knob on the volume control should be attached with the arrow pointing directly up when control is in neutral. The B-T dual control consists of two separate resistance units, one of which operates in the Counterphase balancing circuit. As the second resistance is increased, volume and sensitivity are decreased. Always adjust this control to secure clear signals. Operate tubes at lowest brilliancy consistent with satisfactory results. Increasing brilliancy only increases the volume up to a certain point, and shortens the life of the tubes.

Adjustment Method Number One

The Mikro-Mike or Counterphase condensers must each be carefully adjusted, starting with number 3, next to the detector. A long sharpened wooden rod may

be used to adjust these MMF condensers. Tune in a strong signal near 40 on the dials. Remove tubes 1 and 2. Tune signal carefully, using trimming knobs for maximum volume. Set volume control at 0 (midpoint). Rotate selector 2 (right condenser) back and forth across signal and an oscillation beat or whistle will be heard, as signal is brought in and out of tune, or oscillation may be indicated by a click. When Mikro-Mike condenser number 3 is properly adjusted, oscillation will not occur and no beat or whistle will be heard. Therefore, rotate adjustment screw of the Mikro-Mike slowly until no beat is heard when crossing signal with selector 2. Continue turning adjustment screw until beat is heard again. The proper adjustment is half way between the point where oscillation stops and point where it is again heard. Adjust Mikro-Mike to this middle position and leave permanently at this adjustment.

Replace tube number 2 and adjust Mikro-Mike condenser number 2 in same manner except that selector 1 (left condenser) is rotated across signal to detect oscillation beat or click.

The third step is to replace tube number 1 and adjust Mikro-Mike condenser number 1 in same manner as number 2.

As the point of adjustment is quite sharp on numbers 1 and 2, it will be necessary to proceed slowly, always making certain that station is tuned to maximum volume, as the Mikro-Mike adjustment will change the tuning slightly.

Method Number Two

Disconnect antenna, operate tubes at normal brilliancy, with volume control at zero or neutral. Adjust selectors at reading of about 75.

Rotate selector number 2 (right dial) in and out of resonance and a "click" will be heard as it is brought into tune, and again as it is brought out of tune. The first "click" indicates that the tubes have gone into oscillation, and the second indicates stopping of oscillation as selector is rotated out of tune.

Count divisions on dial between first click (start of oscillation) and second click (stopping of oscillation).

The Mikro-Mike is properly adjusted when the divisions of selector rotation between clicks is smallest. Therefore,

adjust each Mikro-Mike until clicks occur as closely together as possible when selector is rotated in and out of tune.

If these clicks are not heard, adjust trimmer condenser knobs until they are heard. Keep trimmer knobs closely tuned, because adjustment of Mikro-Mike condenser slightly detunes stages. Rotate Mikro-Mike screw very slowly and carefully.

Starting with the neutralizing condenser nearest the detector tube (number 3), slowly turn the adjustment screw so that the indicator moves downward. If the separation of oscillation clicks on the controls becomes less, adjustment is being made in the right direction, and should be continued until the separation between clicks reaches a minimum. If it is found that when the Mikro-Mike indicator is adjusted downward the number of scale divisions between the oscillation clicks does not decrease, the indicator should be moved up until the click band narrows as previously described. This operation should be repeated on the second and third R.F. stages. If instructions

(Continued on page 30)

Be a RADIO EXPERT

They Earn \$50. to \$250. a week in Radio—most fascinating work on earth



Learn Quickly And Easily At Home This Practical Way

Train At Home For A Big-Pay RADIO JOB

Radio today is urgently in need of trained men—Radio Experts. Astonishing opportunities—thousands of them—have been opened up by enormous strides of the Radio Industry. That's why it's easy to make big money in Radio—\$50 to \$250 a week. Here's a field that is teeming with opportunities and room for expansion—a brand-new, wide-awake, and uncrowded industry. If you're earning a penny less than \$50 a week, clip coupon now for Free Book and proof.

Your Satisfaction Guaranteed

Master Radio Engineers will show you how to qualify, quickly and easily at home, for Radio's fine jobs. We guarantee to train you successfully. You don't risk a penny, for we will gladly return every cent paid in tuition if upon completion of course you aren't absolutely satisfied. Back of this guarantee stands all the resources of National Radio Institute, U. S. Government-recognized and the oldest and largest Radio home-study school in the world.

Age or Lack of Experience No Drawback

You don't need experience before taking this course, and common schooling is enough. Our tested, practical methods make learning clear and easy—the most natural thing on earth.

Famous Course That Pays For Itself

Spare time earnings are easiest in Radio-receiving sets everywhere nowadays. In every neighborhood there are scores of jobs you can turn your hand to in an hour or so after supper. Right at the start of your course we give you practical, money-making lessons which teach you how to do this work, then how to get it—so by our practical plan you can make your course pay its own way while you're studying.

Get All The Facts At Once

Astonishing facts on the marvelous new industry of golden rewards—Radio—the fastest-moving, live-wire line. Free Book puts all the facts before you. No obligation. Send coupon for it now.

NATIONAL RADIO INSTITUTE
Dept. 555-OB, Washington, D. C.

N.R.I. TRAINED MEN ARE SUCCEEDING BIG



Operates WMAQ
"Accepted a position with Chicago Daily News—Station WMAQ. My income practically doubled," thanks to your fine course." Keith Kimball, Chicago, Ill.



Gets Big Job
"Just been made Sales Manager of this Radio concern—a big raise in pay. Regret I did not take course sooner." R. E. Jones, Bay City, Mich.



"Your course so completely covers Radio it is worth \$40 a week more to anyone in the electrical line. Since graduation have averaged \$50 to \$80 a week more." Preston Fowler, Gordon, Nebraska.



"My charges for consultation now \$2.50 per hour. This course is worth to me at least \$50,000." R. W. Blackhill, Brooklyn, N. Y.

LARGEST RADIO SCHOOL IN THE WORLD
ORIGINATORS OF RADIO HOME-STUDY TRAINING

Get This Book
"Rich Rewards in Radio"—most amazing book concerning Radio ever written, will be sent to you promptly when you send the coupon. **ACT NOW.**

You Can Do What Others Have Done
Why go along at \$15 or \$25 or \$35 a week, when thoroughly-trained Radio Experts earn a hundred or more in the same six days? What this training has done for hundreds of others, it can do for you. Send coupon at once.

Radio Needs Trained Men

MAIL THIS COUPON

NATIONAL RADIO INSTITUTE,
Dept. 555-OB, Washington, D. C.

Without obligating me in any way, send your Free Book "Rich Rewards in Radio"—also full information on your practical, home-study Radio course.

Name

Address

Town State

"COUNTERPHASE" SET

(Continued from page 29)

have been properly followed, the best possible results will be obtained from the set.

In actual tuning, complete suppression of oscillation is brought about by adjustment of the volume control, and close adjustment of Mikro-Mike condensers is not imperative, but is desirable for maximum results. Always turn trimmer knob number 2, when adjusting Mikro-Mike number 3, and trimmer knob number 1 for Mikro-Mike numbers 1 and 2.

Use of Tuning Controls

Selectors 1 and 2 are used to tune the receiver to the same frequency as the signal to be received. For strong signals, close tuning is not necessary and it may even be desirable to rotate selector 2 slightly out of resonance to prevent overloading. However, weak signals require very close adjustment of selectors for maximum volume, and volume may be considerably increased by means of the "trimmer" knobs.

Strong local signals may often be improved by rotating selector 2 slightly out of tune to prevent overloading. Always operate at lowest volume consistent with size of room. Volume or sensitivity may be increased by rotating the dual resistance control. Increasing the sensitivity beyond a certain degree causes the circuit to go into oscillation. This is indicated by a "click," oscillation beats, whistles, or distorted signals. Always reduce sensitivity below this point.

When tuning weak signals, use both hands, tuning each control and its trimmer carefully. Then adjust sensitivity control carefully for loudest clear signal.

Keeping Circuits "In Tune"

When searching for weak, distant stations, it is necessary that all tuned circuits be kept in resonance, otherwise the station may not be heard; that is, it may be passed by. To keep the circuits resonant—in other words, tuned to the same wave length when the tuning controls are rotated—is difficult unless you are systematic.

A simple rule is to follow the outside sounds or noises; there is always a certain amount of static present. If your tuning controls are kept together, these sounds can be heard as you turn the dials, although there may be no station signal. Keep your circuit resonant so that these static noises can be heard as you go up or down the scale, and you will locate the dial readings of practically all stations within range.

By recording dial readings, these stations may be located thereafter without difficulty.

The necessity for keeping tuned circuits closely in resonance is one of the reasons "single control" methods do not give satisfaction. Some stations may come in just right, but many others can only be approximated.

Shielding

When operating a receiving set very near one or more powerful stations, it is highly desirable to shield the receiver

in order to obtain maximum selectivity, because the wiring in the set, the battery leads, and the tuning apparatus pick up and deliver, directly to the detector, sufficient energy to produce an audible signal, regardless of tuning. To obtain full selectivity from a receiver it is necessary that the signal be delivered to the antenna post of the set only, so that undesired signals may be rejected by the various tuned stages.

The stray pick-up can be largely overcome, if you find it too objectionable, by lining the inside of the cabinet with aluminum, copper, brass or any metal, of about 24-gauge thickness. The parts of lining should be soldered together or have thorough connections throughout. All necessary holes should be as small as possible. A sheet of metal should be placed to cover the entire back of the panel with good connection to other lining. Holes in panel shield should be sufficiently large to prevent contact with shafts or mounting bushings of any apparatus.

Place a thin plate of insulating material between metallic apparatus and shielding plate when mounting to prevent short circuits, except where frame of apparatus is connected to same wire or lead as shield.

(CONCLUSION)

THE JEWETT RECEIVER

(Continued from page 28)

ing for this weakness by increase of the rheostat within the set. The meter can be made to show 4.8 even if the battery is low by turning the rheostat, but, as just stated, it is much better practice to charge the battery oftener and change the rheostat less.

The B batteries, if of the dry cell type, need not be changed until the meter on the panel shows that they cannot supply better than 70 volts. If your B batteries are of the storage type they should be re-

CARTER
Latest Improved
Radio Parts
For All Circuits
Carter Radio Co.
300 S. Racine Ave. CHICAGO

Ready Reference
RADIO LOG

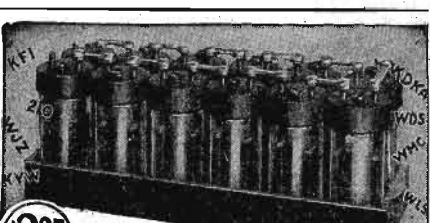
Corrected to Nov. 25. Every 500-watt and larger station in U. S. listed. Also large stations in Canada, Cuba, Mexico, etc. Cross indexed by call letters, kilocycles, meters, dial readings, cities and station owners. Second edition. Most practical log on market. Wrap 25c coin in paper, with name and address. Stamps not accepted. Mail to J. Wayne Andrews, Box 830, Oklahoma City, Okla. Dealers—write for special quantity prices.

New Perpetual Log

SEND NO MONEY
10 Radio booklets bound as one, 64 pages valuable information necessary to enjoy your Radio. Beautiful cover. Loose leaves for inserting revised pages. We print new pages as changes occur in wave lengths, owners, addresses, calls, etc., and as new facts and discoveries are secured. We ship the latest edition. A few features of this "up-to-the-minute" book are log holding 504 stations (4 dial settings). Dictionary Radio Terms, Tuning Suggestions, Trouble Finders, Trouble Preventers, Repair Hints, Station List numerical by wave lengths—both meters and kilocycles, List alphabetical by states and cities, List of Owners and addresses, Answers to Questions, etc. So convenient. Worth many times small cost.

Large Colored RADIO MAP FREE With First Order
Send no money. Pay postman \$1 after revisable Radio Book and FREE map arrive. Postpaid if pay with order. Money refunded if not delighted. Order today—NOW. Radio Printers, Dept. 8419, Marengo, Ill.

Send no money. Pay postman \$1 after revisable Radio Book and FREE map arrive. Postpaid if pay with order. Money refunded if not delighted. Order today—NOW. Radio Printers, Dept. 8419, Marengo, Ill.



WORLD Storage "B" Battery

32 Cells Lasts Indefinitely—Pays for Itself
Economy and performance unheard of before. Recharged at a negligible cost. Approved and listed as Standard by leading Radio Authorities, including Pop, Radio Laboratories, Pop Sci. Inst. Standards, Radio News Lab., Luxor, Inc., and other important institutions. Equipped with Solid Rubber Case, an insurance against acid and leakage. Extra heavy glass jars. Heavy, rugged plates. Order yours today!

SEND NO MONEY Just state number of batteries wanted and we will ship on order is received. Extra Offer: 4 batteries in series (96 volts), \$12.75. Pay expressman after examining batteries. 5 per cent discount for cash with order. Mail your order now!

WORLD BATTERY COMPANY
1219 So. Wabash Ave., Dept. 76 Chicago, Ill.
Makers of the Famous World Radio "A" Storage Battery
Prices: 6-volt, 100 Amp. \$11.25; 120 Amp. \$13.25; 140 Amp. \$14.00.
All equipped with Solid Rubber Case.

World STORAGE BATTERIES
Set your Radio Dials at 210 meters for the new 1000 watt World Storage Battery Station, W.B.C., Chicago. Watch for announcements.

charged when the meter shows that they have run down to 80 volts.

Among other things, we tried this receiver on B battery eliminators and found that it could be used successfully with the Philco, the Balkite, the Cooper, the R.C.A. and the Freshman.

If the above suggestions as to battery care are kept in mind, and you will learn to tune carefully, you should have little trouble with this receiver; but if anything goes wrong, do not try to have it fixed by any local "expert." You will have much more satisfaction in the long run if you take this up with your dealer and, if he can make no suggestions, have him send it back to the factory for examination, and, if necessary, repair.

("Operating and Trouble Shooting" next week will be devoted to the study of another standard receiver. The Isolodyne, Dayfan, Apex Super Five, Stewart Warner and Erla sets will be among the first to appear.—Editor's Note.)

Where you see these signs in circuits—use
Potter Condensers
BY-PASS
At your dealer's
Potter Manufacturing Co., North Chicago, Ill.

GO into the RADIO BUSINESS
We specialize in Equipping New Dealers with entire stock—advice free.
Send for Our Radio CATALOG & BARGAIN LISTS
Wholesale Only
MANHATTAN RADIO COMPANY
112 Trinity Place New York City

Big Money in Radio

Demand for high pay radio men is so great that a big Kansas City wholesale concern is now fitting men free to get into the radio business for themselves and make \$60 to \$200 a week without any capital invested. Select territory open. Send today for free catalog and amazing offer. Write direct to Mr. H. J. Saizow, Standard Radio Co., 1440 Walnut St., Kansas City, Mo.

FAMOUS "COAST TO COAST" MIRACO GUARANTEED
RADIO'S-Factory Prices
Powerful, New Multi-tube Miraco gets long distance on loud speaker. Set, ONLY \$27.35
SEND FOR SPECIAL OFFER!
Users everywhere report Miraco radio gets long coast to coast; outperform sets as times as costly. Many hear foreign countries. Radio's best testimony of users convince you. (AGENTS) FREE Literature on (DEALERS) latest 1 to 5 tube model. Write! Also new low prices. **MIRACO RADIO GETS 'EM COAST TO COAST**
MIDWEST RADIO CORPORATION
Pioneer Builders of Sets
437-A E. 8th St., Cincinnati, Ohio

New Radio Game

More fun from your radio for the whole family. You get 168 beautiful copper etched American, Canadian, and European radio stamps (8 colors) each with call letters of a station FREE with Ideal 48-page Radio Album and log. Size 8 1/2 inches. Heavy covers. Each person takes turns getting stations and putting proper stamps in album. An interesting game. Album and stamps become permanent record of stations received. You and your family and friends will enjoy it. Send for one TODAY.

Send No Money
Pay Postman \$1 after album and FREE stamps arrive. We prepay postage if you prefer to pay with order. MONEY REFUNDED if not DELIGHTED. Send order today—NOW. Postal will do. IDEAL CO., Dept. 8419, 366 Wrigley Bldg., Chicago

Detector and Amplifier
Types SSP-201A, SSP-199, SSP-12
Bakelite Base
Silvered and Blue

THE ELIXIR OF Set LIFE

Just as the heart is the most vital organ of the human body—the tube is the most vital part of the radio set. The Simplex Super Power Tube performs its function in the radio set with the same sensitiveness, accuracy and regularity as a healthy heart in the human body. Rejuvenate your set with the Simplex Super Power tubes, they mean longer life and better reception.

PRICE—Silvered tube.....\$2.00
Blue tube.....2.50

GUARANTEE: Your dealer is authorized to exchange or return money for any defective tube within ten days.

Titania Manufacturing Company
Makers of the
"SIMPLEX SUPER POWER" RADIO TUBES
105 West 40th Street New York City

Non-Microphonic Mounting

A vibration proof tube socket mounting for multi-tube sets may be made by first mounting the sockets on a strip of bakelite or wood of suitable size. A hole should be bored in each of the four corners. Next, four spiral springs should be made of piano wire or other suitable spring wire to measure 5/8 inch at the bottom and 1/2 inch at the top. The socket mounting strip is then fastened down by a screw at each corner, the spring being placed around the screw between the strip and whatever it is fastened to. The screw is tightened to the point where it does not give too much or too little, and will still act as a shock absorber, yet is not wobbly.—William J. McDonald, Farmington, Minn.

GET THIS BIG RADIO CATALOG FREE
Simply send name TODAY for big 64-page book explaining liberal proposition paying agents \$60 to \$100 a week, and how to make money from latest radio goods.
Live dealers and agents wanted
Standard Radio Co., 1442 Walnut St., Kansas City, Mo.

MIRACOSTOL
A Practical Combination Tool in compact form. Wrench, Insulation and Wire Cutter, Wire Stripper and Spanner, Metal Buret, etc. Necessary to every radio fan, mechanic, electrician, autoist, etc. Beautiful leather case with each Master Tool. SPECIAL INTRODUCTORY OFFER. Send only 50c for your MASTER TOOL. Money back without question, if you are not delighted. Address Mr. Fox, Ross Merchand Corporation, P. O. Box 10, Station I (Eye), New York, N. Y.

EKKO BROADCASTING STATION STAMP ALBUM

Official Stamp at Over 400 Stations

A permanent, authentic means of recording all stations you hear. Squares for more than 650 stations. Proof of station, proving you heard it, with 10c to cover cost of verification. They send you beautiful engraved verified stamp showing call letters. Almost all, over 400 stations, distribute Ekko stamps. Album is 9 1/2 x 11 inches, handsomely bound in two-color board cover, 96 pages. Start your collection now. Sent postpaid on receipt of price.

MONEY BACK IF NOT SATISFIED Price \$1.75
THE EKKO COMPANY
940 Harris Trust Building CHICAGO

ARE YOU THE MAN

to be first in your town to sell and demonstrate POWEROLA, the famous 5 tube NO-BATTERY ELECTRIC LIGHT SOCKET RADIO RECEIVER (not an attachment), universal for D.C. or A.C. (100-115 v., 40-60 cycle), now sold and demonstrated by THE NEW YORK EDISON CO., public utility companies and radio, electric and music dealers everywhere. Absolutely dependable, fully guaranteed, powerful, practical, perfect in performance.

Are You the Man Who Sees Opportunities Ahead for Real Money Making?
Write for literature, terms and prices at once.

You, Too, Can Make Powerola

Send \$1.00 for wiring designs showing parts used and how to make any set or circuit (one to eight tubes) operate satisfactorily from A.C. or D.C. current.
POWEROLA RADIO CORP.
Dept. R.D., 1845 Broadway New York

Televocal QUALITY TUBES

Technical Triumph Fully Guaranteed

Televocal Corp
615 A Fifth Ave. New York

CLASSIFIED ADVERTISEMENTS

PATENT ATTORNEYS
PATENTS. Booklet free. Highest references. Best results. **WATSON E. COLEMAN**, Patent Lawyer, 644 G Street, Washington, D. C.

RADIO
Long Distance Radio \$2.95. Lambert's newest crystal success. No tubes. No batteries. No grief. Always ready. Works 600 miles. Fully guaranteed. We pay postage. Order direct from this ad. Leon Lambert, Wichita, Kansas.

TELEGRAPHY
Telegraphy—Both Morse and Wireless taught thoroughly. Big salaries. Wonderful opportunities. Expenses low; chance to earn part. School established fifty years. Catalog free. Dodge's Institute, Sixth St., Valparaiso, Ind.

ELIMINATE! STATIC!

Enjoy perfect reception regardless of weather conditions. The Static Eliminator—the newest and most startling thing in Radio—cuts out practically all static without loss of volume!

And in addition it will help increase selectivity, tune out local stations, sharpen signals, remove noises, lessen interference and prevent re-radiation! The ideal Christmas Gift to your radio.

Use it with any receiving set—simply hook up to your aerial lead-in and enjoy perfect reception unmarred by static.

\$1.00 Postpaid

STATIC ELIMINATOR COMPANY
615 United Bank Bldg. Cincinnati, O.