

Wiring of Grand Prix Eight Tube Super-Het; Six Tube Fireside Drilling Layouts; Life Story of Bert Davis; Fiddlin' John Carson; WSM and WQJ Pictures

# Radio Digest

EVERY WEEK **Illustrated** PROGRAMS **TEN CENTS**

REG. U. S. PAT. OFF. & DOM. OF CANADA

Vol. XV

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By Radio Digest Publishing Co.

SATURDAY, NOVEMBER 7, 1925

No. 5

## GRANT NEW TUBE PATENT

### GIVE SHUBERT PLAY OVER RADIO AT LAST

'STUDENT PRINCE' IS FIRST OF THEIRS TO GO ON AIR

Other Productions of Same Firm May Be Heard if Box Office Gains Thereby

NEW YORK.—Messrs. J. J. and Lee Shubert will find a more welcome place in the hearts of thousands of Radio fans following the WJZ and WGY broadcast last Sunday evening of "The Student Prince," a Shubert production and New York's favorite operetta.

It is a history-making event that such prominent theatrical producers as the Shuberts have now made available a Radio interpretation of one of their productions, thus giving a delightful stimulant to microphone programs. After being withheld from Radio for over a year, other Shubert productions may follow

(Continued on page 2)



### GIVE 17-YEAR MONOPOLY TO DR. LANGMUIR

Principle of "Hard" Tube Is Basis of General Electric Engineer's Protection

SCHENECTADY.—A basic patent for the modern vacuum tube, used extensively in Radio, has just been granted the General Electric company by the

(Continued on page 2)

Beautiful to look upon and beautiful to hear is Thora Martins, former artist at WHT, the Mid Continent Broadcasting chain, Chicago station. Here she is smiling, below, as her voice smiles over the mike.



Center is Beatrice Kay, leading lady of "Rose Marie," who proved popular in a recent WLIT Morning Glory concert. Right, Vera Webster, pianist, heard from WEAJ.

### "Postman Dan" Joins KDKA Dad Winkum

Three Specialists in Kiddie Entertainment at Pittsburgh Now

PITTSBURGH.—Daddy Winkum and his famous rhyming machine, and Uncle Ed with his amusing trips to the zoo, visits to the country, and similar excursions, are back on the air again, along with a newcomer to entertain the children, Postman Dan, who will conduct the KDKA mailbox.

Daddy Winkum, one of the most popular children's Radio entertainers, is broadcasting from Westinghouse Station KDKA twice a week, on Monday and Friday nights, during the children's hour from 7:30 to 8 o'clock, eastern time.

### RADIO REPORTERS CHECK RECEIVING

Station WHT Maintains Staff of Expert Receptionists Scattered Over Country

CHICAGO.—A staff of Radio reporters, or expert receptionists, located in every large city, is being organized by Station WHT through its engineering research department, in charge of Chief Engineer Reeve O. Strock, for compilation of technical data to aid in correcting faulty transmission and to insure uniform quality of reception throughout the dominant broadcasting range of the station.

Each WHT reporter forwards a weekly report to the research department.

### GIVE NEW TUBE PATENT

(Continued from page 1)

United States patent office. This tube was invented by Dr. Irving Langmuir, assistant director of the General Electric research laboratory, in 1912, but because of contests the patent was not granted until now.



Irving Langmuir

The tube is characterized by its hard, constant vacuum, by its freedom from visible discharge and other gaseous effects when B voltages from 30 to 135 are applied, and by its steadiness and reliability in operation. It can be made in large sizes operating with 50,000 volts and upwards, as well as in the smaller sizes such as are used in the ordinary home Radio receiving sets.

Prior to Dr. Langmuir's invention Radio and X-ray tubes were of what is now known as the soft variety, that is they glowed and acted erratically and unreliably except when used on exceedingly low voltages. Dr. Langmuir's invention, by removing this severe voltage restriction, has made possible practical Radio.

#### Patent Long in Coming

The patent application has had an eventful career. Following his invention of the new tube in 1912, Dr. Langmuir spent months in thoroughly testing the invention. He filed his application in the patent office in Washington in 1913 and made the invention known to the world by papers read before scientific societies and by descriptions of the tube in scientific and popular publications. The new tubes were used for Radio work by the French army early in the war and were soon in regular use in Radio and X-ray work in this country.

The patent application, however, did not enjoy such immediate success. The patent office examiner passed the application for issue in 1916, but this action was revoked before the patent was issued in order to permit another person who had in the meantime applied for a patent on this invention to contest Dr. Langmuir's right to a patent in what is called an interference proceeding.

#### Patent Is Contested

On the declaration of the interference Dr. Langmuir's opponent attempted to show that the invention was not patentable. On account of the unusual importance of the invention the patent office departed from its usual practice and permitted elaborate testimony to be taken on the question of patentability, including even testimony, taken in England, on behalf of Langmuir's opponent of a world-famous British scientist.

After the United States went into the war the secretary of navy requested the commissioner of patents to suspend proceedings because the full time of both parties was required upon war work of great importance to the government. After the war testimony was resumed, and the merit of the invention was eventually sustained by the patent office, after an attack for which there are few precedents in vigor or in skill. Thereupon the contest became one to determine whether Dr. Langmuir or the later applicant was the first inventor, and more testimony had to be taken by both parties to establish their dates of invention. The examiner of interferences adjudged Dr. Langmuir the first inventor. On appeal to the Examiners-in-chief the decision was again in favor of Dr. Langmuir.

#### Goes Through Courts

On further appeal, the assistant commissioner held in favor of the later applicant. But on still further appeal to the court of appeals of the District of Columbia, the assistant commissioner was reversed and the court, agreeing with the examiner of interferences and the examiners-in-chief, found that Dr. Langmuir was the prior inventor. The appeals, though diligently prosecuted, were not terminated until June, 1925.

Dr. Langmuir is a world-known scientist and inventor.

The application of Dr. Langmuir's vacuum tube invention to X-ray tubes was the invention of Dr. William D. Coolidge, another world-known scientist-inventor working in the research laboratory of the General Electric company at Schenectady. The Coolidge X-ray tube, embodying the inventions of Dr. Langmuir and Dr. Coolidge, is now in operation in all hospitals and X-ray laboratories.

### SHUBERTS GO ON AIR

(Continued from page 1)

the path in the ether into millions of homes. The broadcasting of "The Student Prince" is regarded by the Shuberts as Radio's "trial run" and the results obtained, reflected in public opinion and box office effect, will determine how the wind blows for the morrow.

## PATRIOTIC PROGRAM FOR ARMISTICE DAY

### MANY STATIONS PLAN BIG CEREMONIES FOR NOV. 11

Ten Bands to Play Over WOR—Bugle Calls from WEAF—Play from WHT

RADIO really began as a world institution immediately after the guns on the Western front were silenced by the armistice of November 11, 1918. From the chaos of barbarism brought on by the greatest war of modern history, sprung one of the most effective instruments for world peace ever known to history—Radio. Hence it is fitting that many programs on Armistice Day should be planned for observance of the occasion.

Nearly every American station and some in Canada will have Radio services some time during the day. Among the stations sending out advance notices of Armistice Day programs are WOR, WEAF, WHT, CKNC, WEEL, WLW, WBZ, WIP, CNRO, WLS and KGW. WRC, WGY and WJZ will be linked for a special program. Others are preparing features that will be announced over the air.

#### Big Newark Celebration

In the East, WOR, Newark, will make the largest military gathering of the day when it picks up the ceremony in the town of Montclair, N. J., where the townspeople will dedicate a marble shaft to the memory of those who made the supreme sacrifice.

The ceremony which is attracting nation-wide attention, will be attended by high officials of the Army and Navy, as well as leaders in political, civil and industrial life. One of the impressive features of the program will be band selections by the combined musical units of at least ten army posts of the Second corps area.

More than a quarter of a million people are expected to attend the ceremonies, and participate in the singing of the "Battle Hymn of the Republic," said to be a favorite with the men overseas during the war. They will be accompanied by the combined efforts of the bands, numbering nearly 1,000 musicians.

#### Taps from WEAF

From New York city, Station WEAF will broadcast a special memorial program arranged by the League of Remembrance. The program starts at 10:35 eastern time in the morning and ends in two minutes of silence at eleven o'clock, the hour that meant so much to the boys in the trenches seven years ago. Preceding the two minutes of silence, Captain Chester Matheson, solo cornetist of the Salvation Army band, will sound the bugle call "Assembly" and at 11:02 will close the ceremony with "Taps."

American Legion posts all over the county have been notified to tune in on WHT, Chicago, where Pat Barnes, chief announcer, will reproduce his famous wartime play which was written at the request of General Perishing to depict the true American spirit in France. This play, "A Buck on Leave," was shown all over the U. S. army area overseas and was then replayed in the principal cities in the United States. A special cast, selected and directed by the author, will put on the Radio version.

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Radio Digest, Illustrated, Volume XV, Number 5, published Chicago, Illinois, November 7, 1925. Published weekly by Radio Digest Publishing Company, 510 N. Dearborn Street, Chicago, Illinois. Subscription rates, yearly, Five Dollars; Foreign Postage One Dollar additional; single copies Ten Cents. Entered as second class matter at the post office at Chicago, Illinois, under the Act of March 3, 1879.

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## Looking Ahead

**What Makes Them Popular—the Lullaby Boys of WLS?** Ford and Glenn are great applause drawers. Their audience includes babes in the cradles and elders in easy chairs. See next issue for a full page picture of this famous team.

**Opera Stars You Have Heard on Sunday Night** will be pictured in a full-page group next week. The six Atwater Keut-WEAF chain concerts, which will have then been given, are milestones in the path of musical progress of broadcasting. You'll want to frame this picture.

**CYL, Mexico City, Is Different.** So different is this Mexican exponent of broadcasting that it will pay you to learn Spanish so as to appreciate CYL fully. See and read about CYL next week.

**The Eight Tube Grand Prix Super-Het** will receive its finishing touches next issue when Mr. McDonald tells how to adjust, tune and operate it.

**Six Tubes of Perfect Reproduction** and exceptional selectivity are contained in the "Fireside." Wiring instructions, in detail like those given for the Grand Prix this week, will be outlined next issue.

**Operating and Trouble Shooting**, of course, will be a study of another standard receiver.

**The Advance Programs** for the broadcasters are being increased in length and number. Their handiness is being improved, thanks to suggestions from subscribers, until this section of each week's Radio Digest is most important to good listening. By the way, did you notice Part VI of the broadcasting station directory on page 31? Every station is listed in order of wave length.

Newsstands Don't Always Have One Left

WHEN YOU WANT

# Radio Digest

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## WJZ COLLEGE GIVES EXTENSIVE COURSES

### NEW YORK UNIVERSITY TO MIKE IMPORTANT TALKS

Philosophy, Psychology, Pure Sciences and the Latin Classics on Schedule for Winter

NEW YORK.—New York university, pioneer in Radio education, opened the third year of its "Air College" October 19, broadcasting directly from classrooms in Washington square here, through Station WJZ, Radio Corporation of America.

Outstanding features of the "Air College" for 1925-26, as announced by the bureau of broadcasting, include a course in Greek and Roman classics and their influence on modern life, and a systematic program of lectures following standard university practice.

#### Pioneer Will Participate

The first semester of the "Air College" will consist of fourteen weeks of lectures by seven members of New York university faculty. They include Dr. Herman H. Horne, the first university professor to broadcast directly from his classroom, and who was featured during the opening year of the "Air College."

New York university will go on the air at Station WJZ from 6:30 until 7 o'clock this year, instead of from 8 until 8:15, the time formerly set for the "Air College."

#### Philosophy Monday Evenings

Professor Charles Gray Shaw will deliver lectures on philosophy on the following Monday evenings:

November 9, "The Problem of Beauty, Not the Beauty Shoppe"; November 16, "The Problem of Religion or Would You Believe It?"; November 23, "The Philosophy of Radio."

Professor Herman H. Horne will continue the series with the following:

November 30, "Who Is the Patriot?"; December 7, "How to Be Happy"; December 14, "Do All Things Change?"; December 21, "What Is Pragmatism?"; December 28, "Is Consciousness Behavior?"; January 4, "Is Man Free?"; January 11, "Is Man Immortal?"; January 18, "Who Is God?"

#### Pure Sciences on Tuesday Evenings

Professor H. Horton Sheldon's Tuesday lectures on the pure sciences will include:

November 3, "Inside the Atom"; November 10, "The Nature of Sound and of Light"; November 17, "The X-Ray"; November 24, "Ultra-Violet and Polarized Light"; December 1, "Light and Color"; December 8, "Heat and Temperature"; December 15, "Resonance and Radio Reception"; December 22, "The Nature of Energy"; December 29, "Sound, the Voice and Musical Instruments."

Professor James E. Lough will speak conclude the series with physics lectures on January 5, 12 and 19, 1926.

#### Psychology on Wednesday Evenings

Professor James E. Lough will speak on psychology, his subjects including:

November 4, "Mental Levels and the Limits of Ability at Each Level"; November 11, "Mental Ability and Skills Necessary for Success in Various Professions"; November 18, "Psychology of Advertising"; November 25, "Psychology of Selling"; December 2, "Psychology of Management"; December 9, "Psychology of Study"; December 16, "Character and the Unconscious"; December 23, "Character and Physique"; December 30, "Control of Emotions"; January 6, "The Use and Misuse of Memory"; January 13, "Individual Differences and Adjustments"; January 30, "The Mind of the Future."

#### Greek and Roman Classics

Professor Ralph V. D. Magoffin will take up the Greek and Roman classics on Thursdays under the following headings:

November 5, "The Value of Greek and Latin for Culture and Discipline"; November 12, "How Much Greek Can Be Learned Over the Radio?"; November 19, "Greek and Roman History in Their Relation to Modern Times"; November 26, "Roman Architecture, Science and Engineering"; December 3, "The Poetry and Philosophy of Greece"; December 10, "Roman Writers of Comedy"; December 17, "Greek and Roman Life and Manners"; December 24, "Greek and Roman Money and What It Tells"; December 31, "The Roman Epic"; January 7, "The Greek Theater and Modern Representations of Greek Plays"; January 14, "A Glance at the Caesars"; January 21, "Greek and Roman Literature as an Influence on Subsequent Literatures."

#### Our Economic Organization

Professor Reid L. McClung on Fridays will deliver the following lectures in the economic course:

November 6, "Market Price Making"; November 13, "Money"; November 20, "Banking"; November 27, "Business Cycle"; December 4, "Foreign Trade"; December 11, "Tariff Problems"; December 18, "The Trust Problem"; December 25, "The Labor Problem"; January 1, "The Railroad Problem"; January 8, "Immigration"; January 15, "Taxation"; January 22, "Social Unrest."

# 'PHONOGRAPH GIRL' LAUDS RADIO AS AID

## AILEEN STANLEY PRAISES BROADCASTING ABROAD

Stage and Record Companies First Opposed Her Part in Air Programs; Different Now

LONDON.—Aileen Stanley, "the Phonograph Girl," who has just arrived here from America, declared emphatically in an interview that Radio was unharmed financially to the stage as a whole or to the drawing power of individual artists.

"On this question of whether Radio lessens the pulling power of the stage or hurts the sale of phonograph records," she declared, "I would like to put my little 'no,' or rather a great big 'NO!'"

"I have broadcast in almost every large city in the states, and I was really one of the first to make that same experiment about five years ago. At that time the theatrical managers and phonograph recording concerns were very much opposed to Radio; they said it kept people out of the theater and hurt the sale of records. At last they gave me permission to broadcast as an experiment, and it proved the best exploitation I have ever had.

### Sale of Records Increases

"The sale of my records increased by leaps and bounds, and as for my drawing power at the theater, that also was increased, and in regard to those new 'friends of the air' who came to the theater (and they did come) it seemed as though I could pick them out from the stage. There is a staunch bond of friendship between the artist of the microphone and his silent audience of the air.

"I am not a bit sorry I got on the band wagon alongside of progress. I give three hearty cheers for Radio."

## CATCHES WGY TEST SIGNALS ON RECORD

SCHENECTADY, N. Y.—Requests of WGY for reports on reception of its superpower signals brought many unusual reports. Many listeners submitted curves and detailed reception records that are of special value to the General Electric engineers. H. N. Elwell, an experimenter of Norfolk, Mass., recorded both the 50- and 2½-kilowatt transmissions on dictaphone records and sent them to WGY where they may be rebroadcast later.

## McNAMEE'S LETTERS REQUIRE NO ADDRESS

NEW YORK.—Among the thousands of letters received by Graham McNamee, 1925 gold cup winner, following the broadcasting of the World's Series, one of the most interesting from the point of view of novelty was the one that a western fan addressed to him by pasting his picture, clipped from Radio Digest, on the outside of the envelope. Although there was neither name or address, the letter reached the King of the Air at WEA.

## NEW YORK-PARIS STAR ON WEA



Above, May Peterson, lyric soprano of the Metropolitan Opera of New York and the Opera Comique of Paris, recently heard in recital over the WEA chain in the Atwater Kent series. Miss Peterson, made her operatic debut in Vichy, France, joining the Metropolitan company on her return to America. She is the daughter of an American clergyman and a credit to the United States from a musical standpoint. Left, Fanny Schnitger Martin, outstanding young contralto, who sings from WOC on November 7. Right, Norinne Gibbons, heard regularly from WKRC on the Post-Wurlitzer Monday night popular hour, which has won the dials of music lovers by the high quality of the programs presented.



# UNION CALLS STRIKE AGAINST KHJ PLANT

## MUSICIANS BOYCOTT RADIO WITHOUT GIVING NOTICE

Daggett Says Action Is Unwarranted, but Will Not Affect Programs in Any Way

LOS ANGELES.—Labor has made another raid on Radio! All members of the Musicians' Protective association, lodge No. 47, Los Angeles, by order of its board of directors, have been notified that giving service over Station KHJ on or after October 15, will subject the offender to fine or suspension.

The Los Angeles Times, operating KHJ, was not notified of this decision by the union, the information coming to them when musicians who had received the notices, called to apologize for the action of their governing union. So far it cannot be found out what basis the musicians' union thought it had in calling this boycott on KHJ, other than the fact that the Los Angeles Times has always fought for an open shop in Los Angeles, and for years has been labor's bitter enemy in the southwest.

### KHJ Only One Hit

Other Los Angeles stations are not effected, KHJ being singled out alone.

"Uncle" John Daggett, director of KHJ, in a statement made just prior to leaving on the Hawaiian trip with the Los Angeles chamber of commerce, said:

"Most of the musicians effected are not in sympathy with this action, and in fact, have told us they are opposed to it, but are forced to accede or lose the privileges of union membership. For them we sympathize, but KHJ does not intend to submit to any action of this nature, unwarranted and unAmerican as it is, and we will expect relief through the courts, based on the fact that this order is in restraint of trade and in violation of the laws of the United States.

"The order will in no way effect the programs from KHJ as Los Angeles is plentifully supplied with musical talent of all kinds, only a portion of which claims membership in the Musicians' union. We expect to fight this out to a finish to determine whether or not a broadcast station must submit to domination by a small group of men, not musicians themselves, who want to tell us how we must run our station.



## TEACH ASTRONOMY BY NOVEL RADIO METHOD

### Canadian Station CKY Broadcasts Weekly Star Talks

WINNIPEG.—Love sick swains and maidens who are want to gaze long and tenderly at the summer stars may combine a bit of science with their romancing if they will tune in on Station CKY, here on Friday nights and listen to the star talks.

One important constellation is discussed from this station each week and at the conclusion of the talk a group of figures is broadcast, which when plotted on squared paper, will represent the constellation for the next week's talk.

Instead of using the Greek alphabet, as true astronomers do, English letters are used to designate the stars on the "graph." A feature of the charts being broadcast by CKY is the fact that each constellation is shown as it will appear to the night following the broadcast and at a time likely to be convenient for observation.

Those who have the inclination and who happen to live near here are permitted to view the heavens through a telescope by arrangement with the station. Parties are being arranged in groups of ten and

## New Stations

Florida's land boom is accompanied by the building of new broadcasting stations. Clearwater, Fla., is to have a 500-watt broadcaster. This station, owned by the George H. Bowles Developments, will be heard under the call WGHB. The wave is 266 meters. Another 500-watt station has been added to Iowa's quota. KSO is the Clarinda, Iowa, station operated by A. A. Berry Seed company. 242 meters is the wave.

Other stations licensed last week are: KFYD, Muscatine, Iowa, 250 watts, 256 meters; WBT, Charlotte, N. C., 250 watts, 275 meters; WABI, Bangor, Maine, 100 watts, 240 meters; WMAL, Washington, D. C., 15 watts, 212.6 meters; WWAQ, Houghton, Mich., 250 watts, 263 meters; KFOJ, 10 watts, 242 meters.

The Toulouse, France, station known as Radio-Toulouse, has altered its wave length from 273 to 432 meters, as it was found that the previous wave led to interference with various other stations.

no charge is made for the privilege. Squared paper is furnished to the students by the station and in the future CKY intends to broadcast many other interesting diagrams in addition to the astronomical charts by means of the "graph" system.

## Old KPO Still Heard; Is KFPG, Hollywood

### Veteran 'Frisco Transmitter Is Moved Down Coast

LOS ANGELES.—A good transmitter, like a good word, seems to go on forever. Those fans within the range of the old 500-watt set of KPO and who regretted its passing will be glad to know this old reliable of transmitters has been sold to station KFPG, K. M. Turner Radio corporation of Hollywood, Calif.

KFPG has been on the air sometimes as a class A station on 100 watts power, 238 meters, but recently switched over to the 500-watt set. KPO's old set was first rebuilt to a standard Western Electric set and it comes on the air again under the new call of KFPG with a bass note range down to 16 cycles.

This makes the fifth first-class station in Hollywood.

## Bar Sopranos from Mike of Station WBBM as Unsited

CHICAGO.—Soprano voices have been barred from the programs of Station WBBM here.

An order that no more sopranos be booked and that those now singing intermittently before the station's microphone be dropped, was issued to the program staff by Charlie Garland, program

The fight between the union and KHJ has long been brewing. Not long ago the union demanded that the men playing in Leighton's cafeteria orchestra be paid an additional 35 per cent because they were broadcasting at the same time they played in the dining room of the cafeteria. The same request was made of Art Hickman's Biltmore hotel concert orchestra hut as the latter was playing its half hour for Radio only the hotel management took the orchestra off the air. Leighton's paid the increase and stayed on and later received order to increase the players' rate to 50 per cent additional because they were on the air one hour instead of half hour.

Public opinion seems to be strongly against such domineering and unfair action against KHJ and thousands of letters have been received stating they are for the station in this fight.

director. Garland said the action was taken "because soprano voices have proved unsuitable and unentertaining for Radio."

# Radio Made "Fiddlin' John Carson" Famous

"RADIO made me. Until I began to play over WSB, more than two years ago, just a few people in and around Atlanta knew me, but now my wife thinks she's a widow most of the time because I stay away from home so much playing around over this part of the country," says John Carson, Blue Ridge mountaineer fiddler and eight times champion of Dixie.

Fiddlin' John was born and "jerked up" in the moonshine fastnesses of Fannin county in the heart of the Blue Ridge mountains. He has been fiddling since he was big enough to hold the instrument under his chin, and his mountain cabin was the scene of many a jolly party with young John occupying the spotlight and supplying the music for the festivities.

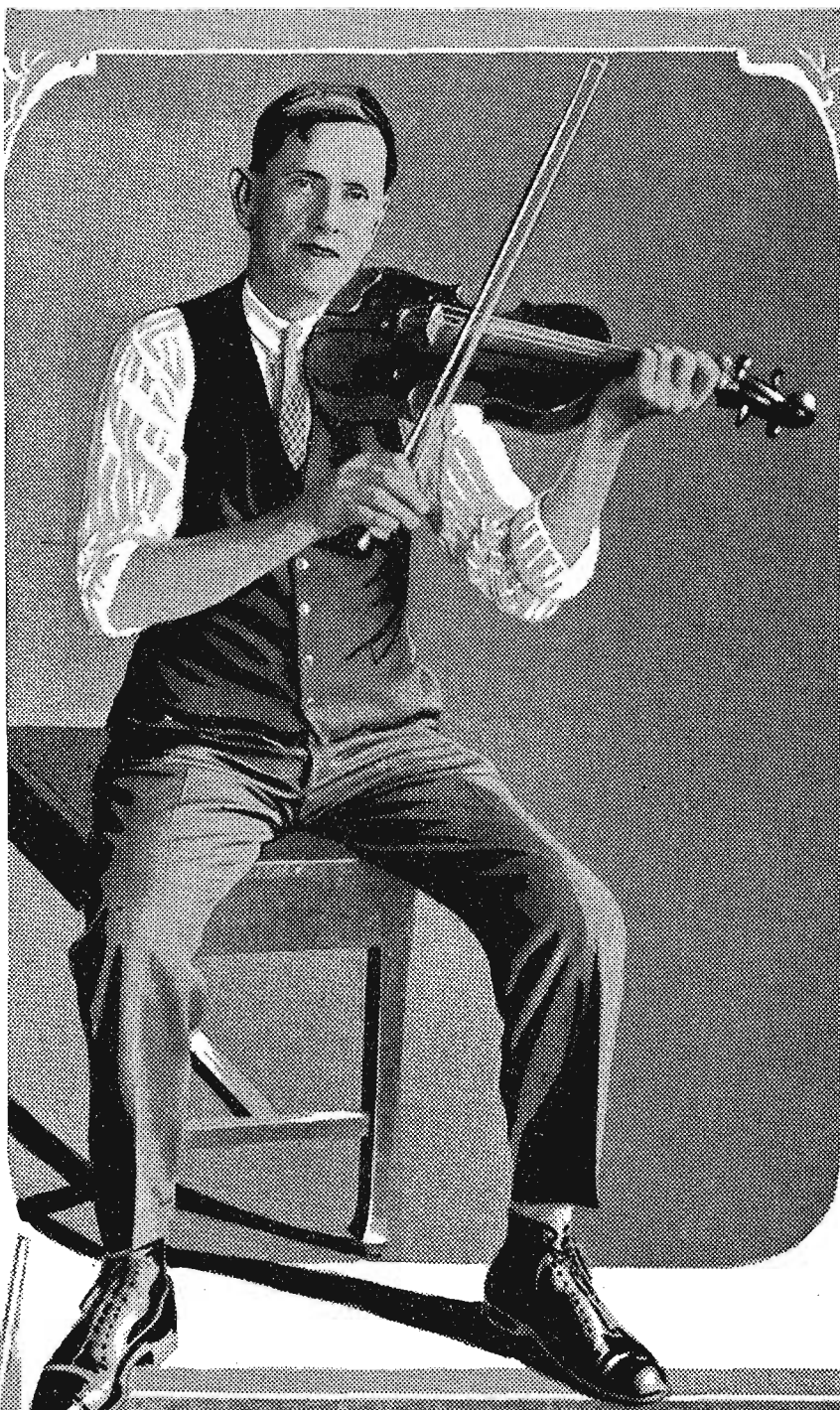
Those days seem far past, and today as he nears the 60-year mile post, Fiddlin' John is one of the most famous and one of the most popular Radio entertainers in these United States.

One of the most interesting memories in the vari-colored career of the Fannin county virtuoso, is the fiddling contest at which the mountain boy outfiddled Governor Bob Taylor of Tennessee. This contest was the big event of the year. "Fiddlin' Bob," as he was popularly known, was recognized for his skill with the fiddle, and few had ever been found who were near enough his equal to make a competition interesting.

BUT on this momentous occasion, a new adversary was discovered. A hardy mountaineer was entered in the contest, who was the pride and hope of his friends who had come along with him to lend any moral support they could. The contest went on and it was a thrilling battle between the two favorites—Gov. Bob Taylor, and the unknown mountaineer. Then the finish and young Carson was declared winner and thereafter became known as Fiddlin' John, while Governor Taylor was so delighted with the young fellow's playing that right there on the spot, he bestowed his fiddle on the proud victor.

After that it was but a step to other things. The Old Fiddlers' convention, at which Dixie's champion is determined, is a yearly event in Atlanta, and to this came Fiddlin' John, fresh from his first victory. And against hundreds of seasoned exponents of old time fiddling, John was declared champion of Dixie. Not only that but eight times he won, the longest period of time any one man has ever been known to hold the Dixie championship.

Then after awhile came Radio, and Fiddlin' John came up to the Atlanta Journal's broadcasting station to play on a program. He made an instant hit, and before the concert was half finished the



telephones in the Radio department were ringing constantly and furiously bringing in clamorous requests and telegrams came pouring in from the outside. The homely, old-fashioned backwoods tunes had awakened memories and the love of the "old-timey" that is dormant in all of us, and the unseen listeners were eager for more. That night marked the beginning of the Blue Ridge fiddler's Radio career. Since then he has given hundreds of concerts at WSB's studio and always the announcement of his appearance has insured an audience of interested listeners.

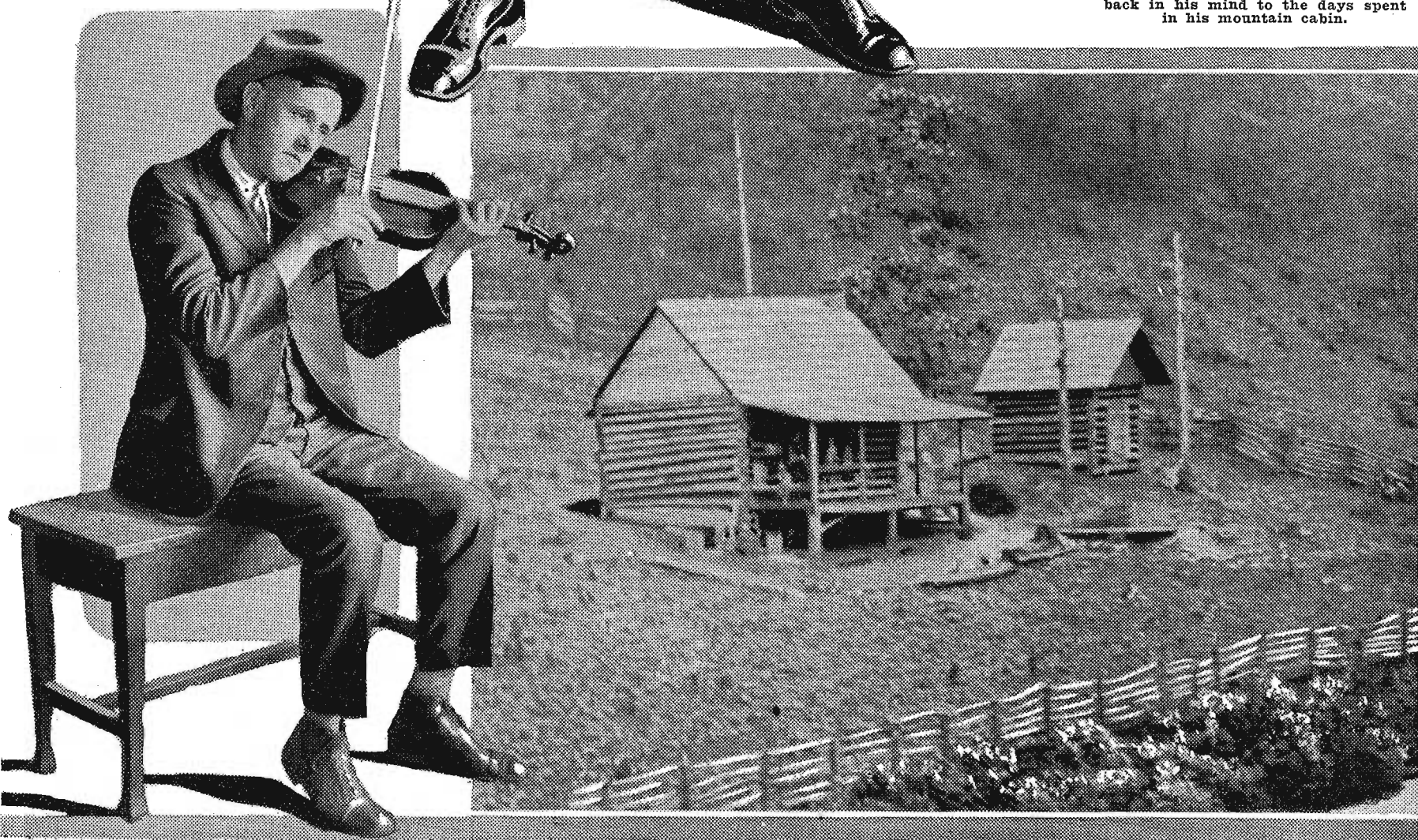
THEN after a few months, the Okeh phonograph company, which has drawn upon WSB's supply of talent for a goodly amount of material, recognized in Fiddlin' John Carson a valuable attraction, and without loss of time, contracted with him for a series of his characteristic native airs, and sent him to New York city to record them on the waxen discs. John remembers vividly his trip, which was his first, to Broadway, where he says he walked all day and never saw a soul he knew.

In between times, the Dixie champion is kept busy filling engagements in various parts of Tennessee, the Carolinas, and Georgia. County fairs, country dances, city entertainments, banquets; in fact, practically every conceivable kind of entertainment seeks his services. On his almost too infrequent return trips to Atlanta, he renews acquaintance with his countless Radio fans, who are always delighted to hear him back on the air.

The Fannin County Kubelik, though nearing the sixty mark, is still hale and hearty, "tough as a knot on a pine log," doesn't look a day over forty, and is good for fifty years more, so he says.

FIDDLIN' John's greatest experience was his debut behind the footlights. The Lyric theater, one of Atlanta's biggest and most popular playhouses, was to give "Mrs. Wiggs of the Cabbage Patch." To make the play true to form, a real honest-to-goodness, backwoods fiddler and a dancer were needed, so Manager Monty Salmon, who is a real Radio fan, immediately fastened on Fiddlin' John Carson as the one to fill the required role. He then suited the action to the word, got in touch with WSB, and landed the mountaineer fiddler, and his young daughter, who is an expert buck and wing dancer. Reports and box office receipts testified at the end of the week, to the tremendous drawing power of the popular Radio entertainer and all parties, most of all, Fiddlin' John, declared themselves more than satisfied with the results.

Below, "Fiddlin' John's" wistful look was probably brought on by a flash back in his mind to the days spent in his mountain cabin.



# Bert Davis, the Roaming "Clown of the Air"



## Radio's Original Comic

By O. N. Taylor

VERY few people are famous because they came from certain cities, but many a city is known to the world by the men it has sent out into that cruel place. In this case, that of Bert Davis, the "clown of the air" and Radio's own original comic, Spencer, Massachusetts, comes in for credit. When "that Davis kid" ran away from that town at the tender age of 12 little did the city father's suspect that someday, Spencer would be heralded as the birthplace of the first man to make hundreds of thousands of people laugh at the same time.

It was a circus that lured Young Davis from the old New England homestead and with this circus the adventurous boy filled the important positions of acrobatic clown, high diver, and side show barker. This last named position gave him entertainment characteristics that are with him today in his Radio fun making.

Bert stayed with the circus until his progressiveness in the art of entertaining nearly netted him his last press notice—that which goes under the general obituary headline. It happened this way. Bert was doing the everyday high dive into a four foot tank of water from a tower ninety feet high. While this was not the easy thing in the show business, it was quite a common feat. The young daredevil, always looking for the new thing in entertainment then, as he is now in Radio, decided that the crowds would get more of a thrill out of him looping the loop in a hollow ball than they would out of the diving.

But the first day of this stunt was the last, and incidentally nearly the last day on earth for Bert. The loop was erected and he ascended the incline to the ball. After grace- *Continued on page 8*

Bert Davis has tried about everything there is to try. He has done high diving; he has looped the loop inside a rubber ball; he has been connected in some capacity with every branch of the amusement industry and now we have him in the wilds of an imaginary African jungle, hunting elephants (or is it a bear) from the back of his trusty steed.

# WSM, at Nashville, "We Shield Millions"

**W**SM, "We Shield Millions," the 1,000-watt broadcasting station of the National Life and Accident Insurance company, Nashville, Tenn., which was dedicated with a magnificent continuous program Monday, October 5, 1925, which lasted from 7 p. m., till after 2 a. m., is the completed dream of the big insurance company executives who, when planning the erection of the National's beautiful home building, included in their plans the erection of one of the finest broadcasting stations in the country.

Following the completion of the National building first steps were taken toward the building of the powerful station and Vice-President Edwin W. Craig was commissioned with the task of gathering together the best ideas of the Radio stations then successfully broadcasting and incorporating them in the station that Nashville can boast of as one of the very finest in America.

As there were no exclusive class B wave lengths obtainable, through the courtesy and cooperation of Station WOAN, Lawrenceburg, Tenn., which was operating on 282.8 meters, arrangement was made by which Station WSM could divide time on the air. WSM subsequently operates for the present every Monday, Wednesday and Saturday from 6:30 to 7:30 p. m., with dinner music from one of the hotels, and from 10 to 11 with a studio concert, and on Sunday alternates with morning services from the First Presbyterian church one week, and the night service the next week.

An interesting point about WSM is the fact that, although the studio is situated on the top floor of the National building in the heart of Nashville, the transmitter and towers are located at an especially selected site some two miles distant from the business district. Here Thomas L. Parkes, engineer, and his bride of three months live and take care of the main portion of the equipment.

Jack DeWitt, operator, is stationed in the control room, which adjoins the studio, and operates the speech-input system. Three special lines connect the studio and control room, with the transmitting room. One is for regular programs, one for emergency programs and one a private telephone line between the

two technicians. WSM's studio is beautiful, with walls and ceiling draped in rich wine-colored velvet, a fitting setting for the handsome ebony Steinway grand piano. Floor lamps, a gorgeous crystal chandelier, and a lovely announcer's table, complete what is surely one of the most beautiful studios in the country. WSM's director is Miss Bonnie Barnhardt, nationally

known as the "Lady o' the Radio," who was formerly connected with Station WSB, Atlanta Journal, Atlanta, Ga., in the capacity of program director, bedtime story teller, staff musician and editorial writer. She is now executive head of the big Nashville station and also essays the jobs of program director and Radio editor. Jack Keefe, popular Nashvillian, is WSM's announcer and studio director, and is likewise a splendid entertainer.

One of the biggest features which marked WSM's debut into the Radio world was the daily broadcast of the play-by-play detail of the World Series. Every Saturday afternoon WSM also gives its vast daylight circle a minute account of the Vanderbilt football games, broadcast direct from the stadium. This feature is tremendously popular with Radio fans and congratulatory messages by the thousand pour into the station.

Every evening at about 7 o'clock, Miss Bonnie Barnhardt comes on with her famous "Hello Kiddies," and tells WSM little folk and grown-ups all about Peter Rabbit, and Reddy Fox, and all the other little creatures of the Green Forest and Green Meadows. Miss Bonnie's bedtime club was first organized at WSB, Atlanta, and has countless members. These and many more new ones are rapidly joining the new circle started at WSM, Nashville. Special songs for the kiddies, and other appropriate attractions feature the children's period, which comes during the intermission of the dinner hour from 6:30 to 7:30 each evening WSM is on the air. Reports from practically every state in the Union, and Canada and Cuba, were received on WSM's inaugural broadcast.

One of the biggest features of WSM's opening program Monday, October 5, was the presence of a group of Radio celebrities, including three of the world's most popular announcers, headed by Lambdin Kay, "the Little Colonel" of WSB, the "Voice of the South"; Leo Fitzpatrick, now of WJR, Detroit, Mich., the "Merry Old Chief" formerly of the Kansas City Nighthawks; George D. Hay, the "Solemn Old Judge" of WLS, Sears-Roebuck, Chicago; Major D. B. Carson, commissioner of navigation, of Washington, D. C., and Major Walter Van Nostrand, supervisor of Radio of the fourth district, Atlanta, Ga.

The famous announcers trio were in full charge of WSM's inaugural program and alternated at the microphone, giving the Radio audience tuned in for the inaugural broadcast, a bill of superlative entertainment.

WSM studio is in the National Life and Accident Insurance building, at Nashville, Tenn.



Above, Jack Keefe, cheerful announcer. Large photo, section of the studio with crystal pendant chandelier.

Bonnie Barnhardt, director of the station, is known from coast to coast as "The Lady o' the Radio."

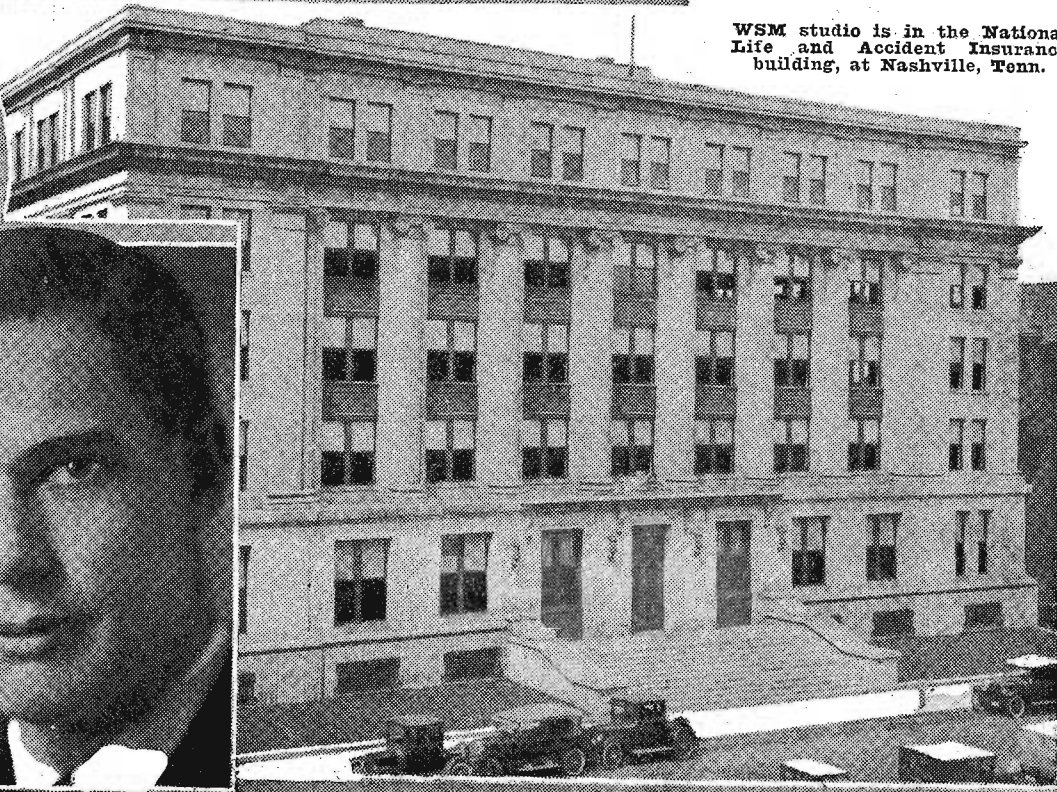
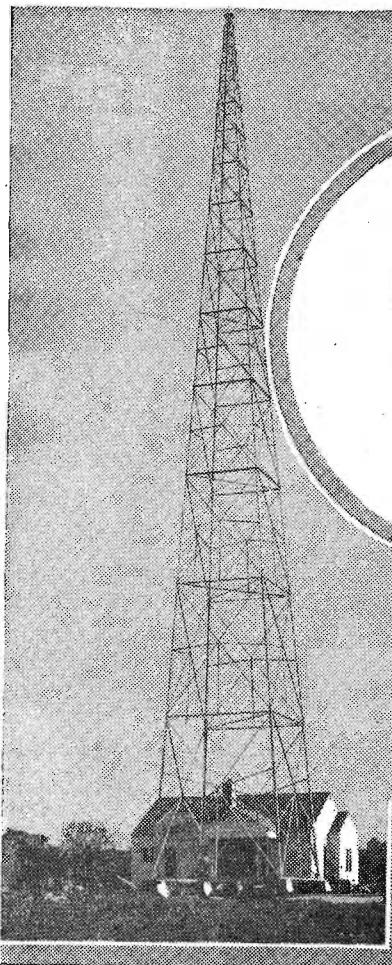
Edwin W. Craig, vice-president of the National Life and Accident, at the microphone is pictured to the left.



Right, famous Radio stars, guests at WSM. Lower, left to right: Bonnie Barnhardt; Lambdin Kay, WSB; Leo Fitzpatrick, WJR; George D. Hay, WLS; Edwin Craig. Top, Mrs. Leo Fitzpatrick; Bill Craig, WSM; Jack Keefe; Major Walter Van Nostrand.



Above, Jack DeWitt, popular "ham" operator on the input board. Left, the transmitter house and towers. Right, Thomas Parkes, resident engineer.



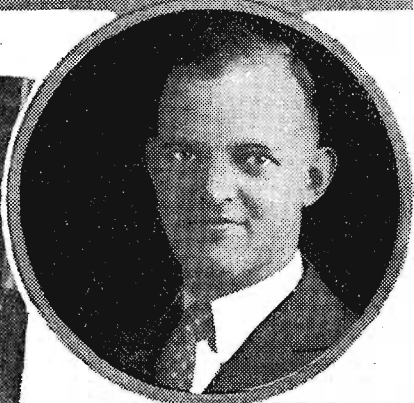
# WQJ, "Surprise Station" of Rainbo Gardens



Jerry "Chi-CAW-go" Sullivan, snappy square-syllable announcer of WQJ.



Ralph Williams and his coterie of instrumentalists who help to make Rainbo Gardens famous. A. F. Rader (above), one of the founders of the Calumet-Rainbo broadcasting station and right, R. J. Engler, chief engineer.



Florence M. Jasper (above), program impresario of Rainbo artists. Rose Vanderbosch (right), piano accompanist, and below, Fred Mann, president of the Rainbo Gardens company.



Jerry (top) confiding his diary secrets to "Mike" in the studio as it is seen through the plate glass windows from the Radio room at Rainbo Gardens.

*WQJ—Chi-CAW-go—U. S. A.  
Out in the air and everywhere  
We're on our merry way.  
Wherever you may be, just listen in with glee.  
You can't go wrong, you'll hear a song;  
A band will play and I must say  
You won't regret, you'll not forget—  
The time—the place—the fun.  
Join in our call, and hear it all,  
Until the rising sun—*

THE foregoing does not seem so catchy in cold type, but when it is sung from the Calumet Baking Powder-Rainbo Gardens Station WQJ by Jerry Sullivan, it constitutes a cheerful and compelling invitation to linger awhile and be entertained by the many pleasing numbers always on the program.

Every time you hear Chi-CAW-go at the end of a Radio announcement you can be assured that it is Jerry Sullivan at the WQJ microphone. The name of the Windy City has been pronounced many different ways since the Indians around old Fort Dearborn used it to describe the odor of the wild onions found at the river mouth, but Jerry's way is in a class all by itself. Individual to say the least.

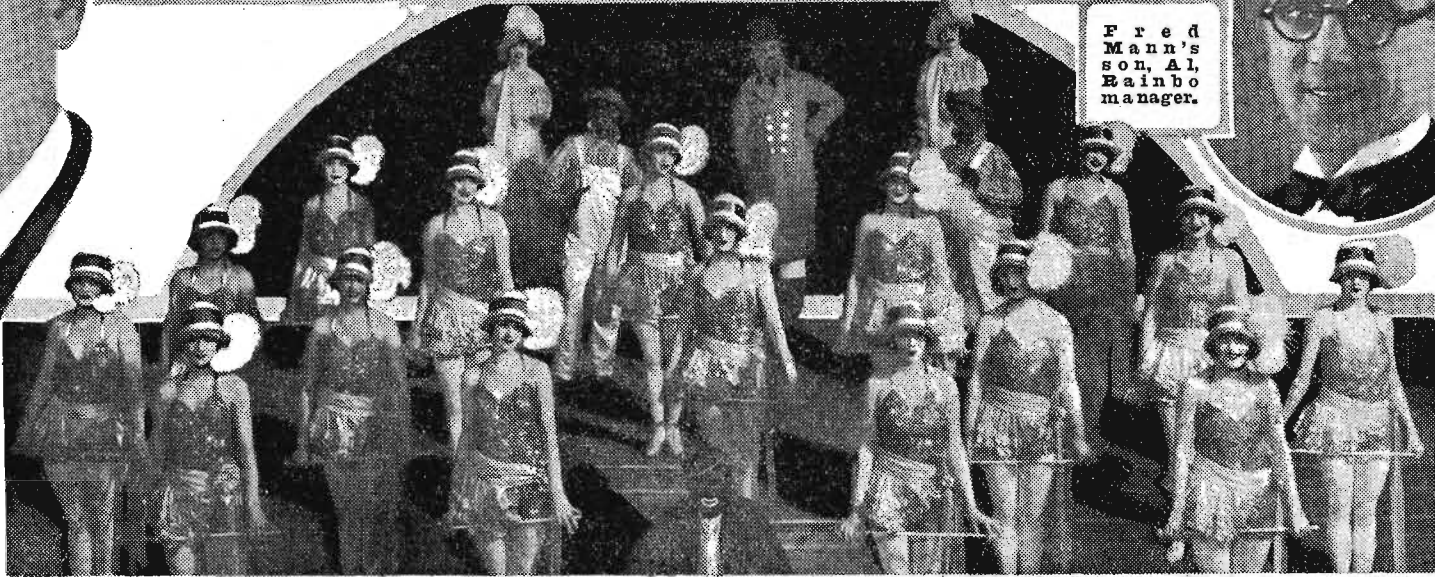
"Give the public what it wants" was the policy adopted by WQJ when it put its inaugural program on the air May 22, 1924, and

"WQJ" might stand for "With Queen Jazz" for surely this is her royal court—too bad radiant beauty won't Radio through the tubes.

it holds today. Programs depend on this policy, the public tastes being determined by the wishes of the Radio audience telephoned, telegraphed, mailed, or voiced personally to the station. In this way the studio personnel is assured its programs will please the majority. The staff includes Mr. Sullivan, director and announcer; Robert J. Engler, chief broadcast engineer; Theodore Wang, assistant engineer; Rose Vanderbosch, pianist; Florence M. Jasper, corresponding secretary and Kaffee Klatsch hostess, and Ruth Marek, assistant.

On the nightly programs, Ralph Williams and his Rainbo Gardens Skylarks play the peppiest kind of jazz, with the director doing his own announcing. This is broadcast from either the indoor or outdoor gardens, either of which will seat five thousand people with dance floors large enough to accommodate them all. Musical bits from the Rainbo shows are also given to the invisible audience, the only thing not going over the mike being the beauty of the Rainbo girls. The leading artists from the bill also take part in the studio broadcasts along with the popular Radio performers always listed on the program. The studio is on the second floor of the gardens' building, being separated from a special Radio dining room by a large plate glass window which enables the diners to see the artists broadcast.

(Continued on page 8)



Fred Mann's son, Al, Rainbo manager.



# How Can We Improve Radio Broadcasting?

THE National Association of Broadcasters is doing more work than any other one agency to improve Radio in all its branches. It is working on definite projects which will tend to wards bringing relief to Radio and understanding between those in the broadcast world. Frank W. Elliott, vice president and general manager of the Palmer School of Chiropractic, owners of Station WOC at Davenport, Iowa, was elected president of the national organization at the recent fall meeting. At the same time Powel Crosley, president of the Crosley Radio Corporation, which owns and operates Superstation WLW at Cincinnati, was elected one of the two vice presidents of the same group. Radio Digest has communicated with these two gentlemen and it presents their views on the question, "How Can We Improve Radio Broadcasting?" herewith.

By Frank W. Elliott  
General Manager Palmer School, WOC  
President National Association of Broadcasters



Dr. Frank W. Elliott

depaid for the demands made upon them. This feature should be recommended to congress for consideration.

8. YOUR eighth question cannot be answered, or put into effect without proper consideration of number seven, for the reason that the department is handicapped by lack of funds and equipment necessary to police the air, and insist upon stations maintaining their assigned frequency.

9. AFTER proper allocation of wave lengths are made for the existing stations, there will be no need for separate allocation for entertainment. Superpower broadcasting stations and those using increased power (five kilowatts or more) should be given sufficient separation to work efficiently at all times. Greater power than five kilowatts causes little or no disturbance when proper bands are assigned.

## THE CLOWN OF THE AIR

(Continued from page 5)

fully making a bow he entered the ball and waved a flag through a hole to signal that he was ready.

The assistants gave the ball a shove and it rushed down the incline with its human burden. But instead of looping the loop the ball jumped the incline and rolled down hill into a river half mile away. When assistance arrived the young performer was nearly drowned.

So Bert Davis left the circus.

We next find him, still in the callowness of youth, riding horses on the big circuit tracks and frequently doing what the Prince of Wales has been doing ever since the war. Davis took his quota of spills and then left the tracks to become an actor.

From then on until the movies sounded the tocsin on the blood and thunder of the "ten-twenty-third" melodramas, Bert played character parts in "opery" houses all over the country. He left the stage of drama to grace that of vaudeville in the winter and in the summer he followed the dusty trails with carnival caravans.

But Radio was springing into importance in the world of amusement and the ever progressive entertainer heard the call of the microphone. In March 1923, he forsook the old favorite haunts of the big top, the footlights, and the flaming torches, and went on the air. He is there today, nightly delighting thousands of people with his amusing dialogues and clever comic song variations.

Bert Davis is one of the few that can take a song and put in original variations that make it better than it was originally. It is impossible to tell you were he can be heard regularly, because regularity is the one thing that bothers Davis the least. The old tramping urge is with him yet. This week he may be heard from WQJ, Chicago and next week one of the eastern stations may be his stage. His Radio equipped automobile is his private car and his route list may be found in the program pages now and then.

As the minstrels of old, Bert Davis roams the country in search of those needing and wanting a bit of good entertainment. All the world is his stage.

## SUGGESTED QUESTIONS

1. What is the future of the small station? Daylight broadcasting? Relay night broadcasting? Or will that be unnecessary on account of the superpower stations? Will the small station be forced off the air by program competition?
2. What type of programs (include various classes) are destined for the future? Of entertainment programs, what kind would you consider the best? What of the "continuity" or "presentation" program? Are you opposed to state and federal censorship of Radio programs? Why?
3. Will toll stations be the answer to "Who's to pay?" We must consider that large business enterprises, who operate their own stations, are really doing toll advertising on an exclusive scale, unless these big firms allow a certain part of their time on the air to be leased by other firms or individuals. Will superpower growth cause the toll station to be the sole survivor of the American system? What about taxing Radio manufacturers, or by a public receiving license fee as in England?
4. Shall broadcasting stations be limited in number by some licensing plan based on priority and ability to serve, or some similar device? The Kintner plan has been proposed as a means of limitation. What is your opinion of this plan?
5. Do you favor appointment of an unbiased, non-partisan broadcasting control board, in which the public, the broadcasters, the Radio industry and the government shall be represented, which board shall have the power vested to settle all differences pertaining to broadcasting and the interpretation of present or future Radio legislation? How should such a board be appointed? Define the board's power.
6. Do we need new or amended Radio legislation? What should this include?
7. The Radio section of the department of commerce last year was given \$125,000 with which to work. The department, according to an estimate, employs 70 persons. Trips of supervisors and their assistants all over the country must come out of this appropriation as well as the 70 salaries. No money is left for instruments—the most necessary equipment for the supervisor. Does the department need more money? If the government wishes to reduce taxes, why not apportion the inspection costs wholly or partly, to the various stations?
8. The piezo-electric crystal is an unswerving guide which holds a station on its assigned frequency. Why not adopt it as requisite of every broadcasting licensee? The bureau of standards could test each one to see that it was ground to the exact licensed frequency, and the cost—not large, being well under one hundred dollars—could be borne by each station. If not each station, why not make it a requisite of every station having a power exceeding 250 watts?
9. What do you think of allocating certain wave bands to international superpower broadcasting and reception?

By Powel Crosley, Jr.  
President Crosley Radio Corporation  
Vice-President National Association of Broadcasters

1. THE small station activities will undoubtedly be confined to a more and more restricted area as time goes on. It will serve its local community in daylight as well as at night. The small station, as a rule, cannot afford to prepare the type of programs that a large station can deliver, so that its audience, in all probability, will be more restricted. I feel that no one has a desire to eliminate the small station, but a fundamental law governs such things—the survival of the fittest. A station depends upon good will as a reason for its existence. With a constantly diminishing audience who prefer to tune to better programs, its value becomes smaller. Its owners are the only ones who can judge when its value ceases to justify its existence.

2. PROGRAMS must always be designed to please all classes of people. The popular type of programs are best; not necessarily jazz, but popular as differentiated from classical. As public appreciation for better music grows, a larger percentage of people will prefer classical music. Undoubtedly Radio has educated thousands in the appreciation of better music. I do not believe in any form of state or federal censorship of Radio programs. The public should be the judge. Programs must be designed to satisfy the greater portion of the public. Poor programs, undesirable programs, will not create good will, therefore, no Radio station can present them.

3. I DO not believe in any method of taxing Radio manufacturers or taxing the public. I believe that good will alone is sufficient to maintain a broadcasting station. I am heartily in favor of a broadcasting station dividing its expense with others who will contribute for a certain amount of time. This service provides better programs and reduces the cost to the owner of the station.

4. BROADCASTING stations should be limited by some licensing plan based on priority and ability to serve. We have always favored such a plan, and recommended it over a year ago. There are, unquestionably, too many broadcasting stations today, and it is now absolutely necessary that something be done to recognize the rights of the stations who have been and are now serving.

5. I FEEL that it is necessary to have some control of the air vested in proper persons who are capable of actually controlling the situation.

6. IT IS essential that some laws be passed governing Radio now. The department of commerce has done a good work, but they are lacking in authority to properly control the situation; unless something is done the already chaotic condition of Radio will become much



Powel Crosley, Jr.

worse. We need improvement in present conditions very badly, and the prevention of things going from bad to worse.

7. I FEEL that whoever has charge of the control of broadcasting—whether it be the department of commerce or some new especially created department—should have ample money to do its work, also proper instruments and equipment should be furnished. There is no department of the government which is closer in touch with the real public welfare and service, and that expense should not be stinted. The government can well afford to appropriate the necessary amount of money, not only to the proper control of broadcasting stations, but, if it ever becomes necessary, to the actual expense of broadcasting. This money should come from general taxation rather than from any form of special tax.

8. I AM thoroughly in favor of using an oscillating crystal to hold a station on its assigned frequency. We have been using one for some months now; few stations have them. The Radio inspectors are not even equipped with any accurate form of frequency measurements. Every station should be equipped so that its wave length will not vary.

9. THE idea of allocating certain wave bands to international superpower broadcasting stations is excellent, but until superpower is developed further is not essential.

## WQJ, RAINBO GARDENS

(Continued from page 7)

It is in this room that the popular Saturday afternoon Koffee Klatsches are held.

Although the writer has been invited to attend a Koffee Klatsch by one of the charming hostesses, inasmuch as he is of the other sex, and has been told that he will be the only one of his kind in the dining room, a second hand description will have to suffice here.

This Saturday afternoon feature was instigated by the ever-active Jerry Sullivan shortly after the station's birth. The Koffee Klatsch is a musical program for the ladies. Memberships to the Klatsch are open to listeners, who upon request, are mailed invitations to one of the public affairs, held in Mann's Rainbo Gardens Radio room. Three hundred women are invited weekly and coffee and cake is served to these guests of the Calumet Baking Powder company and the Rainbo Gardens Station WQJ.

Jerry Sullivan, composer of many songs, also has an array of exclusive artists around him, including Bert Davis, the Melodians, Clarence Theders, the West Brothers, Clement Laskowski, Maria Dneprova, the Fontella trio and Hal Lansing, ukulele player.

According to Jerry Sullivan, WQJ can truthfully be called the "surprise station of the air," because you never know what is going to happen. The consensus of opinion of the listeners who have written the station thousands of letters is that they tune in and stay tuned until the station signs off with Jerry singing:

"So, dont go away—this much I have to say  
Just set your dial—and stay a while—  
With WQJ—Chi-C-I-W-go.



## NEWS BRIEFS FROM THE BROADCASTERS

### U. S. ARMY BAND REGULAR OVER WRZ, WJZ, WGY

Trumbull of KYW to Travel—KHJ's Uncle John Home Again—CKY's Announcer at WQJ

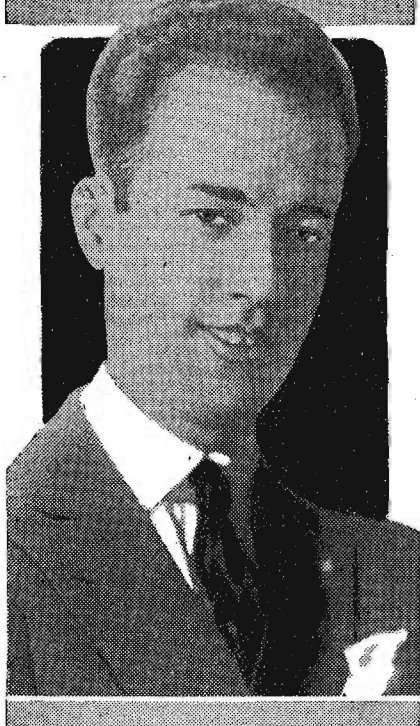
Those who appreciate good band music, will hearken to the announcement that the United States Army band is to broadcast concerts every Thursday night at 8:15 p. m., eastern time, through WRC, WJZ and WGY. Captain J. S. Standard is the leader of the army band which, in official circles, is known as Pershing's Own.

Wishing to visit some of the distant points that his voice has reached during his two years of service at the KYW microphone in Chicago, Chief Announcer Logan (Steve) Trumbull, recently signed off and left for an extended journey through the West and possibly the South Seas. Mr. Trumbull will devote much of his spare time to playwriting, an art in which he has had quite a bit of success.

Uncle John Daggett and the party of KHJ musicians who were selected by the L. A. chamber of commerce to accompany them on their Hawaiian trip, returned last week in time to attend the Halloween party given for the kiddies at KHJ, Los Angeles.

The Radio Digest Silver Cup Canadian

### DIXIE PAPPY LEAVES VAUDEVILLE BEHIND



The vaudeville stage lost another of its popular artists when Eddie Malle, known to thousands of patrons of the two-a-day shows as "Dixie Pappy," forsook the footlights to become announcer at Station WCAU, of the Universal Broadcasting company, Philadelphia.

### ARTISTS OF NOTE NEXT OVER CHAIN

John Powell, Pianist, Eva Gauthier, Soprano, Give Sixth Atwater Kent Program

NEW YORK.—John Powell, celebrated pianist, and Eva Gauthier, soprano, will be the distinguished artists in the sixth "Atwater Kent Radio Hour" to be presented on Sunday, November 8, at 9:15 p. m., eastern standard time, from the studio of WEAU. Their joint program will be broadcast by WEAU, New York, N. Y., WEEL, Boston, Mass., WCAP, Washington, D. C., WJAR, Providence, R. I., WGR, Buffalo, N. Y., WCAE, Pittsburgh, Pa., WSAI, Cincinnati, Ohio, WWJ, Detroit, Mich., WOC, Davenport, Iowa, WCCO, St. Paul-Minneapolis, Minn., WTAG, Worcester, Mass., KSD, St. Louis, Mo., and WFL, Philadelphia, Pa.

In this series of concerts, Reinold Wernrath, American baritone, Toscha Seidel, Russian violinist, Mme. Louise Homer, Metropolitan contralto, Salvatore de Stefano, Italian harpist, Olga Samaroff, pianist, and May Peterson, Metropolitan soprano, Mary Lewis, Metropolitan soprano, and Paul Kochanski, violinist, have entertained the Radio audience.

## JACK TELLS MIKE ABOUT WILLS



Although Jack Dempsey signed articles agreeing to fight Harry Wills, in Miles, Michigan, C. G. Livengood, announcer of the South Bend Tribune station, rushed the champion to the microphone of WSBT in Indiana, where Jack first broadcast the news.

announcer, D. R. P. Coats of CKY, Winnipeg, visited Chicago last week and was heard from WHT, WLS and WQJ.

WAHG, Richmond Hill, N. Y., plans an unusual series of great artist recitals. Famous organists will be heard at this station Friday nights. The first artist to be heard was Chandler Goldthwaite, who played last week.

"The Merry Old Chief" of the Jewett Jesters immediately found himself in a friendly locality when he started to conduct the Jester program, Monday, October 12. These informal Radio parties are conducted every Monday, Wednesday and Saturday by the Merry Old Chief from 11:30 p. m., to 1 a. m., eastern time. His policy in these entertainments is the same as that which prevailed in the old Night-hawks at Kansas City.

A musical novelty written for Radio, "Fun in a Schoolroom," will be presented by KGO, Tuesday, November 10, on the latter part of the evening program. Carl Anderson will direct the production. The comedy drama, "Her Temporary Husband," will be broadcast in its original stage form, Thursday evening, November 12.

Hugo Riesenfeld and his orchestra are once again the Sunday afternoon feature at WJZ, New York. These concerts which are given at 12:30 p. m., eastern time, are given from the Rivoli theater, which is particularly adapted to Radio transmission.

Fans listening in to KFAB, Lincoln, Nebr., were given a special treat during the dinner hour music Monday, October 26, at this station. Members of the Duncan sisters, Topsy and Eva show, including Marvel and Thelma White, Kentucky quartet, and the Old Fashioned Girls, appeared before the microphone.

Another new attraction has been added to the daily program of Station KPO. Three talented young vocalists, Art Kahn, Dick Dunn and Harold Couden have been formed into a trio named the "Twilight Boys," and are appearing regularly during the children's hour. Children's songs are the specialty of the group.

The Pennsylvania male quartet, a regular WLIT feature, has just been chosen the winner of the "Barber Shop Ballad" quartet contest conducted by Keith's the-

## KFNF AIDS STUDY OF AIR USING BALLOONS

### SHENANDOAH STATION ASSISTS RUBBER COMPANY

Liberates 300 Gas Bags in Tests to Learn More of Directional Air Currents

SHENANDOAH, Iowa.—Three hundred sounding balloons, ranging in sizes from two to three feet in diameter and inflated with hydrogen gas, were liberated from Shenandoah, Iowa, on November 3. This marked the beginning of an experiment arranged by the B. F. Goodrich Rubber company in cooperation with the Henry Field Seed company's station here, KFNF.

The purpose of the experiment is twofold. First to study the directional features of different atmospheric levels for aeronautical information and second to study these currents with respect to their possible influence upon Radio broadcast reception.

#### To Gauge All Levels

The balloons used in the experiment are of the same type government meteorological experts use in taking altitude tests of atmospheric conditions. They were inflated at varying pressures predetermined to gauge the altitude at which each balloon was to travel.

Tags attached to the balloons give specific instructions. These instructions, together with the announcements that have been and will be broadcast daily from KFNF, are expected to obtain full cooperation of those persons who find the balloons. The report of location and time of finding the balloons is important.

The return of these tags will enable the completion of records which can be studied by both Radio and aeronautical engineers.

ater in Philadelphia. Another WLIT quartet, the Adelphi Melody four, competed against the Pennsylvania male quartet for final honors.

Western composers who have striven without success for recognition, will be given an opportunity to have their works introduced to the public through Radio, it was announced recently by Marshall W. Giselman, KPO organist. Mr. Giselman, at his Sunday recital over KPO, will play from manuscript one new number during each of his programs, together with a short outline of the new composer's life and work. Manuscripts and sketches should be mailed to Giselman in care of KPO, Hale Brothers, San Francisco.

## WHAT DO THE BIG TERMS MEAN? ASK A TECHNICIAN

By James H. Galbraith  
WHAT is all this talk about "phase difference," "high frequency resistance," "straight line frequency," and so forth that we hear Radio engineers discuss and advertising copywriters using and abusing to tell the public of the merits of their wares? Where do these terms originate and what do they mean?

If you ask William W. Harper, consulting engineer specializing in high frequency measurement, he'll tell you more than you can digest at once sitting.

"In the first place," says Mr. Harper, "it isn't properly 'straight line frequency.' It should be known as 'straight frequency line.'"

I was trying to learn more of the science of Radio measurements and had decided to interview him at his well-equipped laboratory where the products of many firms are subjected to rigid tests for modifications and improvements in designs.

Queer looking instruments in orderly arrangement were atop every bench.

"The reason the term 'straight line frequency' is a misnomer is easily evident. A condenser is a device having electrical capacity. It has no property of frequency. It may have, however, a straight frequency line characteristic when employed to tune a coil having the correct electrical dimensions."

"And, incidentally," Mr. Harper continued, "the frequency line characteristics have no bearing whatsoever on the selec-

tivity a receiver has to offer. Selectivity is really proportional to the quotient of the reactance over the resistance in the tuned circuits of the receiver, if that means anything to you."

The writer shook his head apologetically, but did not request a more simplified explanation. "And what is phase difference?" he asked.

The measurer of such things had a ready answer. "Phase difference," he said, "is the numerical expression of the merit of various Radio components, such as coils, condensers, and the insulating materials employed. It enables the user to predict the degree of selectivity and responsiveness of a receiving set in which these parts are used. Many of the instruments you see here are employed to ascertain phase difference."

The writer asked if the term "power factor" wasn't somewhat like phase difference.

"Yes," replied Mr. Harper. "In fact, power factor is the expression of phase difference in percentage. Phase difference is an angular relation and is expressed in degrees. The power factor is probably more descriptive because it represents the amount of energy lost."

"One more question," the writer said. "What do you mean by high frequency resistance?"

"High frequency resistance in a receiver is that property which tends to prevent the reception of a signal and impair the selectivity. It should be as low as possible. It is measured in ohms over

the frequency range which the receiver or component is expected to span."

Thus closing his interview, the writer took his leave, deciding after all that perhaps there was something besides hokum in the large technical terms which many Radio writers, manufacturers and advertising copywriters will probably continue to use and misuse.

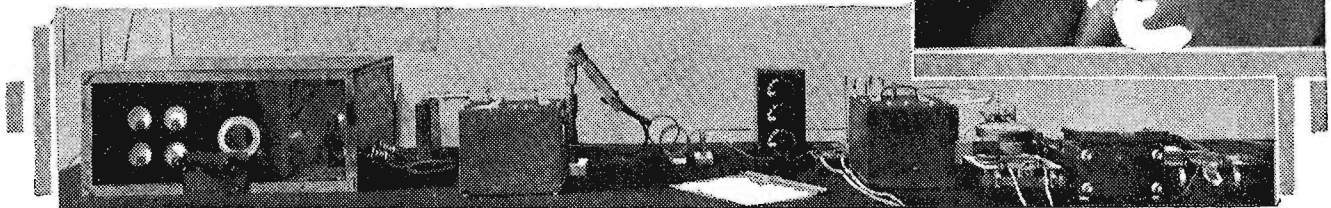
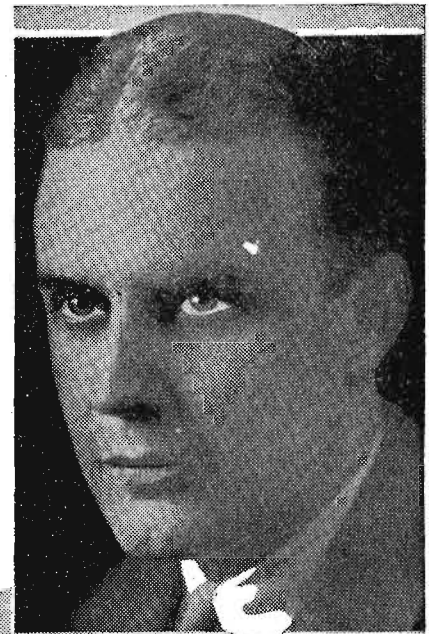


Photo shows high frequency measuring table, with equipment used in measuring the electrical efficiencies of Radio coils, condensers, and insulating materials (as bakelite and hard rubber). "Power Factor," or phase difference, are determined to indicate the merit of these components. Left, screened in, is a 20-watt radio frequency oscillator. Next to the right in order are a precision standard wave meter, a delivery coil, the latter coupled to a coil under test, a decade resistance box, standard variable air condenser, thermogalvanometer (with glass for reading), and several meters at right. The latter are not of the common variety but take peak vacuum tube voltage measurements. Right insert, William W. Harper, consulting engineer.

**FOLLOWING SPORTS THROUGH MIKE**

**SERIES BROADCASTS WASTEFUL?—MAYBE!**

**ECONOMIC LOSS OF TIME QUESTION IN DOUBT**

Many Work on Half Day Schedule So They Can Listen to Description of Ball Games

SCHENECTADY, N. Y.—Do the World Series baseball games result in economic waste? The correspondence of WGY during and following the 1925 baseball championship indicates a suspension of useful, productive effort from two to four o'clock every day of the series.

For example, housewives admitted that they limited the fall cleaning to half days and industrious, plodding farmers reported that they abandoned fall plowing at noon to hear Graham McNamee's colorful description of a ball game.

The size of the radio audience during the series is anybody's guess but no guess can be made on the basis of the number of radio receiving sets for in city and country groups of from two to three people to two or three hundred listened to the output of single receivers.

**Not a Total Loss**  
It is not just to charge the listening time of all people as a total loss, for radio does permit some to continue with their work without loss of interest in the subject broadcast. One housekeeper reported that she did all her mending during the baseball series but admitted that there were times when the needle would not behave.

**Football Broadcasts**

- Saturday, November 7  
Chicago-Illinois, KYW (535.4), WGN (370.2).  
Harvard-Princeton, WEZ (333.1), WCAE (461.3), WCAP (468.5), WFAF (491.5), WGY (379.5), WJAR (305.9), WJZ (454.3), WSAI (325.9), WTAG (268), WTIC (475.9).  
Iowa State College-Grinnell, WOI (270).  
Minnesota-Butler, WCCO (416.4).  
Montreal-Argonauts, CFCA (356).  
Northwestern-Michigan, WBBM (226).  
Ohio State-Indiana, WEO (293.9).  
Pennsylvania-Haverford, WIP (508.2).  
Pittsburgh-W. and J., KDKA (309.1).  
St. Mary's-Multnomah, KGW (491.5).  
Washington-Stanford, KFOA (454.3).  
Wisconsin-Iowa, WSUI (483.6).

The work of the World Series announcer is best summed up by a Potsdam, N. Y., woman who wrote: that two women are doing their fall housecleaning on a half-day schedule, two farm women at that, he may be sure he is doing his job well."

"When a man can tell news, especially about the baseball game, so interestingly

**Close Sayville Navy Station**

WASHINGTON, D. C.—Announcement has been made by the navy department that the naval radio station at Sayville, L. I., has been ordered decommissioned and its traffic routed through a new 20-kilowatt tube set at Arlington, Va. The Sayville station, taken over from the Germans during the war, handled the Navy traffic with San Juan and Porto Rico on an arc set.

**Indians Follow Sports Through Microphone**

Yakima Tribesmen Enjoy Broadcast of World's Series Games

PORTLAND, Ore.—Poor Lo has succumbed once more to the white man's inventions—this time the Radio.

During the recent World's Series a group of members of the Yakima tribe on the reservation across the Columbia river in central Washington listened in to broadcast returns of the game. As Pittsburgh or Washington diamond gladiators played to their satisfaction grunts of approval rose from their backers among the crowd.

Some of the members are not versed in the language of the white man so one, better trained than his fellow tribesmen, took down the play-by-play description in shorthand and then translated it in intervals of silence to those who could understand only the Yakima jargon.

Several of the Indians, well versed in America's national game, kept intelligent box scores of each game, changing the figures accurately with each play.

**New Baltimore Station to Have Unique Studio Staff**

BALTIMORE, Md.—WBAL, the new Baltimore station recently built by the Gas and Electric company here, has gathered together an unusually talented staff. Frederick R. Huber, director of broadcasting, has chosen Stanley W. Barnett of WOC for studio manager. Gustav Klemm, one of the program supervisors, is a native of Baltimore and conductor of the Park band. George Bolek, the other program director, is also a well-known musician. James E. Wilkinson, who has a fine baritone voice, is the announcer.

**WOC GIVES FOOTBALL RESULTS OVER RADIO**

Davenport Station Will Mike Play-by-Play Results

DAVENPORT, Iowa.—Station WOC, the Palmer School of Chiropractic here, has received permission, experimentally, from the Associated Press to broadcast play-by-play reports of football games in cooperation with the Davenport Democrat and Leader. As the plays are received, on the A. P. wire behind the scoreboard at the office of the Democrat, they will be repeated by the WOC announcer into the microphone, and thus carried into the ether to football fans everywhere.

Inasmuch as Station WSUI, the State University of Iowa, on the same wave length as that used by WOC, will be broadcasting the game that will be played at Iowa City on November 7, WOC must perform be silent on this date. The following, therefore, are the dates of the games which WOC will broadcast:

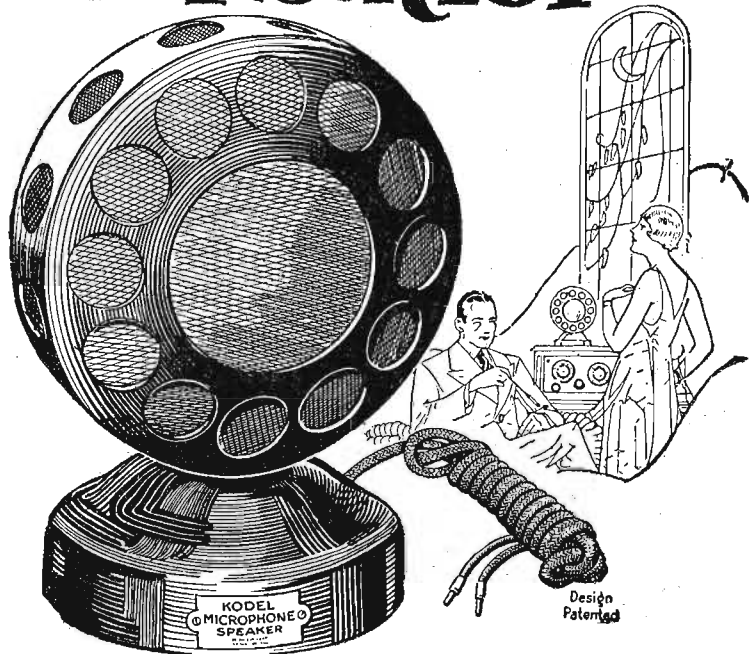
- November 14—Iowa at Minnesota.
- November 21—Iowa at Southern California.

The kick-off is scheduled in each case for 2:00 p. m.

**Dedicate New WBBM Studio with Big Surprise Program**

CHICAGO.—WBBM, Atlans Brothers station here, opened a new studio last week which will divide air time with the Broadmoor hotel and Stewart-Warner studios. The North Side Realty company is sponsoring the studio which is located at 77 West Washington street. The opening program presented many surprise features. Vaudeville entertainers, several making their first other appearances, gave a riotous evening's program.

**Loud Speaker Sensation!**



**The KODEL MICROPHONE Loud Speaker**

**T**HE 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 Kodol Microphone Loud Speaker—hear it—at any radio dealer's. Two Models for your selection—one contains the highly efficient Kodol Junior unit, the other, the super-sensitive Kodol Giant unit.

**\$15 and \$20**

Write for descriptive literature

THE KODEL RADIO CORPORATION  
Owners of Station WKRC  
509 E. PEARL STREET CINCINNATI, OHIO

**charges A or B Batteries 3 times as fast**

IT takes only one-third as long to charge your batteries as it did with last year's slow 2-ampere chargers. The new 5-ampere GOLD SEAL HOMCHARGER charges 150% faster - - - fully charges the average battery OVERNIGHT!

The new 5-ampere GOLD SEAL HOMCHARGER charges A or B batteries - - is trouble-proof, shock-proof, fire-proof; there are no bulbs to break, no acids to spill, no extras to buy.

Any radio dealer can show you the new 5-ampere GOLD SEAL HOMCHARGER—or can get it for you.

THE KODEL RADIO CORPORATION  
Owners of Station WKRC  
509 EAST PEARL STREET CINCINNATI, OHIO

**The New 5 Ampere GOLD SEAL HOMCHARGER**



**Free**

Write for interesting 16-page booklet "The Secret of Distance and Volume in Radio" contains information for better radio operation.

# 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 Super-Zenith VII, VIII, IX and X

**T**HE panel and apparatus of Super-Zenith II form the basis around which the other three models in the Zenith line are built so the following data on this set will be found of equal value to the owner of the larger models. Super-Zenith VII is probably the largest cabinet receiver on the market, as the apparatus has not been crowded together and there are large compartments at each end for the batteries. This set is a tuned radio frequency receiver, incorporating two stages of radio frequency amplification, a detector and three stages of amplification at audio frequencies. Much interest has been aroused in Radio circles in this set as it is the first time that a receiver has appeared for use by the Radio public in which variable coupling in the R.F. transformers has been tried.

The unique and different factors are not all within the cabinet as inspection of figure 1 will show. At the right end of the panel there is an engraved scale which indicates the settings of the pointer Da, which settings are controlled by the knob identified by the letter D. The usual construction is to have a large dial which can be turned by means of a smaller vernier knob, but in this case all control of Da is done through the knob D. The other tuning control is the indicator Ga and Ja, the setting of which is varied by the knob GJ.

The rear view of this panel is shown in figure 2, and study of this illustration will show the reason for the peculiar identification lettering of the controls. The variable condenser D is on the shaft of the pointer Da which is adjusted through knob D. Behind knob D on the front of the panel will be found a knurled disc which is the control H, by which the capacity of the small condenser H as shown in the rear view, may be varied. The two condensers G and J in figure 2 are controlled through cords by the knob GJ, the settings for which are shown by the pointer Ga-Ja; thus two condensers are controlled simultaneously by means of a single knob.

Figure 3 is presented for those who are familiar with schematic wiring diagrams, and the various parts used and shown in figure 1 and 2 may be readily found in figure 3. For control of efficiency of the first tube, a variable high resistance unit is inserted in the plate circuit of the first tube and identified by the letter E. M is the rheostat by which the brilliancy of the detector tube can be varied, while L is a stage control switch which permits of ready change from one to two or three stages of audio frequency amplification. Considering now figure 3 it will be noted that signals come into the primary of the fixed coupler C and the turns in use in the primary can be varied by means of the different connections to binding post B.

A small loading coil is shown at A, which may be cut in or out by the switch identified as A. The secondary of coupler C is tuned by condenser D and from this tuned circuit signals pass to tube U. Tube U is coupled to tube V by means of the tuned R.F. transformer F. The primary of

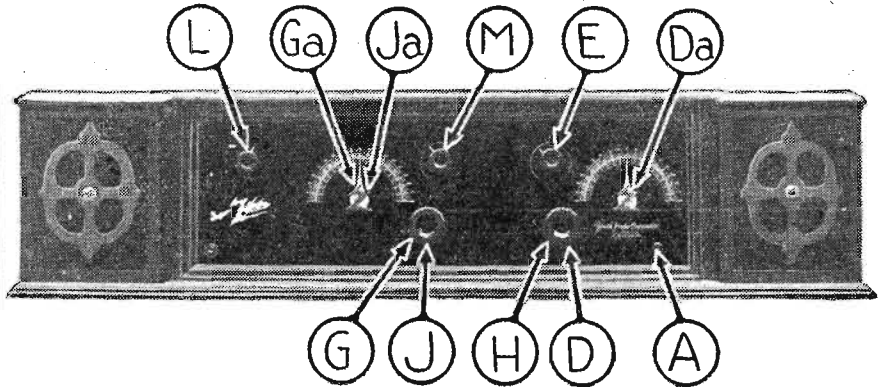


Figure 1

transformer F is attached to the shaft of condenser G and is rotated with respect to the secondary simultaneously with condenser C. Tighter coupling between primary and secondary is possible at higher wave lengths than can be used at lower wave lengths, and this primary is adjusted so that its position approaches a right angle with respect to the secondary as the rotor plates of condenser G are turned out of the stator plates. Signals then go to tube V and then to transformer I in which the same feature of variable coupling is found as is used in transformer F. Transformer I feeds into the detector tube W. The grid leak for this detector tube may be identified in figures 2 and 3 by the letter K.

There are no rheostats in this set for any of the amplifier tubes as fixed ballast resistances are employed to keep the voltage supplied the filaments of the amplifier tubes at the correct value. The three stages of audio frequency amplification appear at the right end of figure 2, the tube sockets X, Y and Z being the first, second and third stages respectively, while transformers N, O and P are used in that order.

A jack, not shown in figure 3, is furnished, allowing the use of head phones for tuning. The method of changing from phones to loud speaker is entirely automatic, merely removing the phone plug

puts the loud speaker into operation, plugging in the phones puts them into operation and disconnects the loud speaker. Switch L is used to increase and decrease the amplification as desired. This is an improvement over the old plug and jack system employed in the majority of other Radio receivers. Until one has become thoroughly accustomed to the set it is suggested that head phones be used in tuning the receiver. After the operator has had sufficient experience in tuning, the majority of stations may be tuned in directly on the loud speaker.

Knobs D and GJ are the two tuning controls. By their use the desired station is tuned in. Low wave stations transmitting on 200 to 300 meter waves will be found on the lower left hand side of the scale, stations of higher wave lengths will be found as the pointers are advanced to the right. It will also be noticed that controls D and GJ will have practically the same setting when tuning in a station. For example, if a station is being received with pointer Da at 65 on the scale, Ga-Da will likewise be at approximately 65.

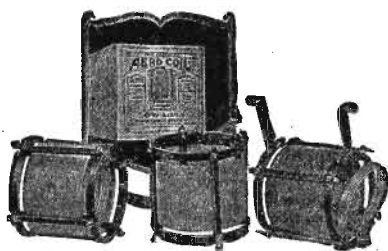
Control E, the resistance, will necessitate a little practice before its use is thoroughly understood. It should be turned to the right until a hissing sound is heard, at which point it should be turned back until the sound just disappears. In other

(Continued on page 12)

## Why Radio Digest specifies Aero Coils in the new "FIRESIDE" set

(Here is the answer to SELECTIVITY with VOLUME in tuned radio frequency receivers)

It is easy to obtain selectivity with most any kind of parts, at the expense of power. The problem has been to obtain selectivity and volume; selectivity to tune out powerful locals—and, power to bring in distant stations loud and clear when the locals are tuned out.



The Kit you need for the "FIRESIDE" No. TRF-120—Price \$12.00

permits the windings to be entirely "dopeless" and evenly spaced, the Aero Coils used in the "Fireside" have a lower high frequency resistance and distributed capacity than any other type of inductance ever devised. Laboratory test shows that Aero Coils should be more selective and more powerful than any other coils. Use tests prove that they are!

### HOW IT IS DONE

The answer is, reduce the high frequency resistance and distributed capacity of the coils used for amplification at radio frequencies—and, tune the coils with condensers of approximately the same resistance!

The amazing selectivity, the way the "Fireside" tunes the most powerful locals in and out on a "knife's edge"; the tremendous volume with which this wonder set brings in the most distant stations, and the bell-like clear tone of the receiver are due primarily to the ideal characteristics of the Aero Coils comprising the radio frequency amplifier!

Because of their 95% air dielectric and their patented construction which

ful than any other coils. Use tests prove that they are!

Obtain a set of Aero Coils from your dealer or direct from the factory. The Kit you need for the "Fireside" is TRF-120. The price is \$12.00.

### Other Aero Coil Units

- R. F. Regenerative No. RFR-110 . . . . . List \$11.00
- 3 Circuit Tuner No. CT-80 . . . . . List \$ 8.00
- Wave Trap Unit No. WT-40 . . . . . List \$ 4.00
- Oscillator No. OS-55 . . . . . List \$ 5.50

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# AERO COIL

LOW LOSS  
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## BIG PRICE REDUCTION

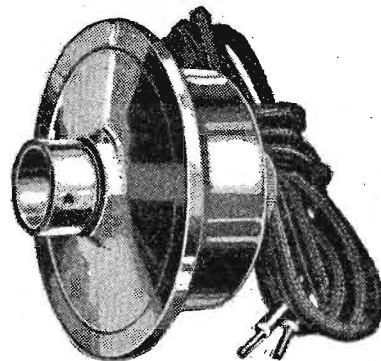
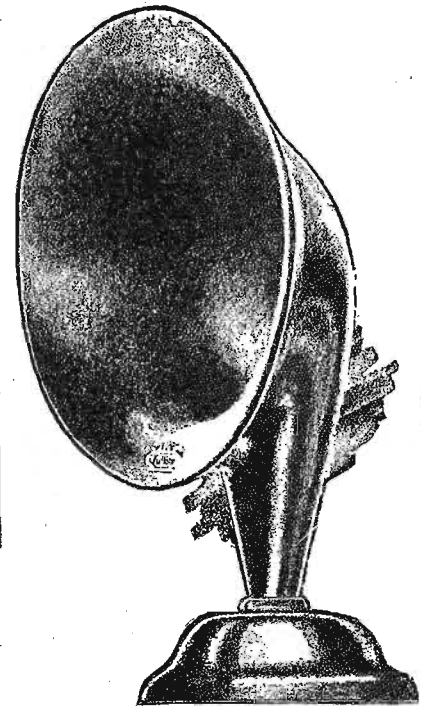
# Fultone

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

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LOUD SPEAKER UNIT  
\$3.00

Its large diaphragm and bobbins of fine heavy nickel-plated case through the means of a special key. The pole pieces are not made from a solid piece of iron but are assembled from 15 laminations of carefully chosen steel.

Use on Your Phonograph  
Edison Adapter.....25c  
Columbia or Pathe.....20c  
Brunswick.....30c  
**HALL & WELLS, Inc.**  
128 N. Wells St. Chicago, Ill.

This unit is the secret behind the unparalleled success of Fultone Speaker. Fine wire are protected from injury by a back of which adjustment is made by

**Tear Off, Fill in, Mail Now**

HALL & WELLS, Inc. 128 N. Wells Street, CHICAGO, ILL.

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.

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**OPERATING AND TROUBLE SHOOTING**

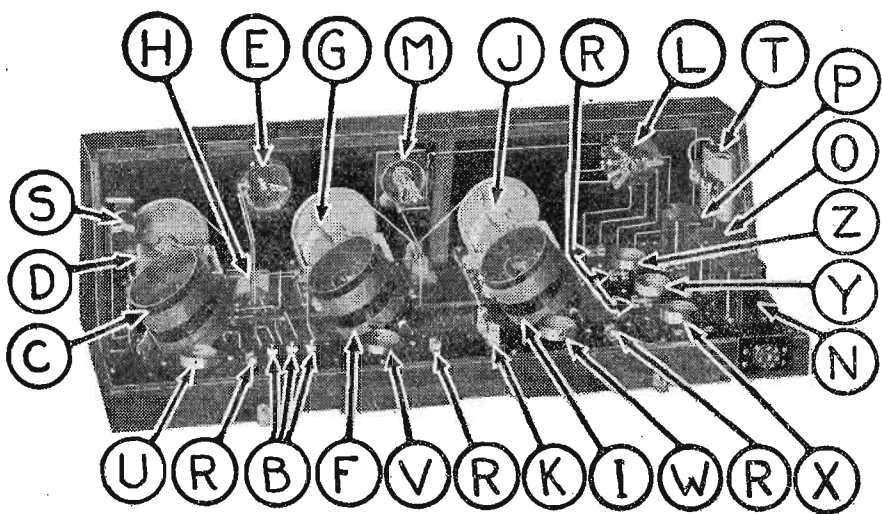


Figure 2

(Continued from page 11)

words, it should be kept as far to the right as possible without causing distorted signals. The operator can readily recognize this point when a station is tuned in, by turning the control E completely to the right and then bringing it back until a point is reached where the signal is perfectly clear.

To tune, start with D and GJ at zero on their respective scales and the vernier H midway between its left and right hand stopping points. Move GJ slowly to the right and simultaneously swing D pendulumwise to the right, that is, swing it back and forth slowly over a range of three degrees on either side of the position maintained by GJ. The proximity of a station broadcasting at the time, will be indicated by a hissing or rushing sound as D passes a particular point. Adjust GJ and D to the loudest point of the sound, then release D and operate GJ and the vernier knob H simultaneously as follows: Move vernier H slowly back and forth, at the same time moving GJ slowly back and forth over a range about one division on either side of the point where the loudest signals are heard. This should clear up the reception. In the event that it does not, controls GJ and D should be slightly readjusted and the vernier H operated as before. This will bring in the station

clearly, and the readings on the scale may be marked down on a log card for future reference. Should it be desired to retune a station at a future time, it is only necessary to place the pointers at the positions on the scales indicated by the log card and then adjust the vernier H.

To get the utmost out of the receiver the following readjustments may be made after the station has been tuned in as outlined above. Turn control E completely to the right and then gradually bring it back to the point where the voice of music clears up. The best suggestion for using this control is to keep it as far as possible to the right without impairing the quality of the program being received.

After a station is tuned in, remove the headphone plug from the jack in the lower left hand corner of the panel, whereupon the signal will be heard in the loud speaker which has been connected to two posts marked "loud speaker" at the rear left-hand corner of the sub base, inside the set. Should more volume be desired, turn switch L to position 2, while turning it to point 3 will further increase the volume.

Considering now, the analysis of the set which formed the first part of this article, and considering also, the tuning procedure just concluded, it should be clear that one is endeavoring to bring three tuned cir-

(Continued on page 24)



# Real Progress in Radio

**Emphatically Yes!**

**Radio IS marching forward, this season as before. But it is marching in a new direction.**

**Quality of Reception.**

**That is the big, new theme. And the new Jewett Receiver is its inspiration.**

**At last Radio commands a Receiver that is truly a Musical Instrument, by a manufacturer of experience in the musical instrument field.**

**Mere words cannot describe this new Jewett Quality of Reception. You must hear and understand.**

**So just visit an authorized Jewett Dealer and let him prove to you that here is a new kind of Radio—so different from the old as to create new standards and ideals.**

**For the first time, B-Battery current and resulting distortion have been completely barred from the speaker circuit.**

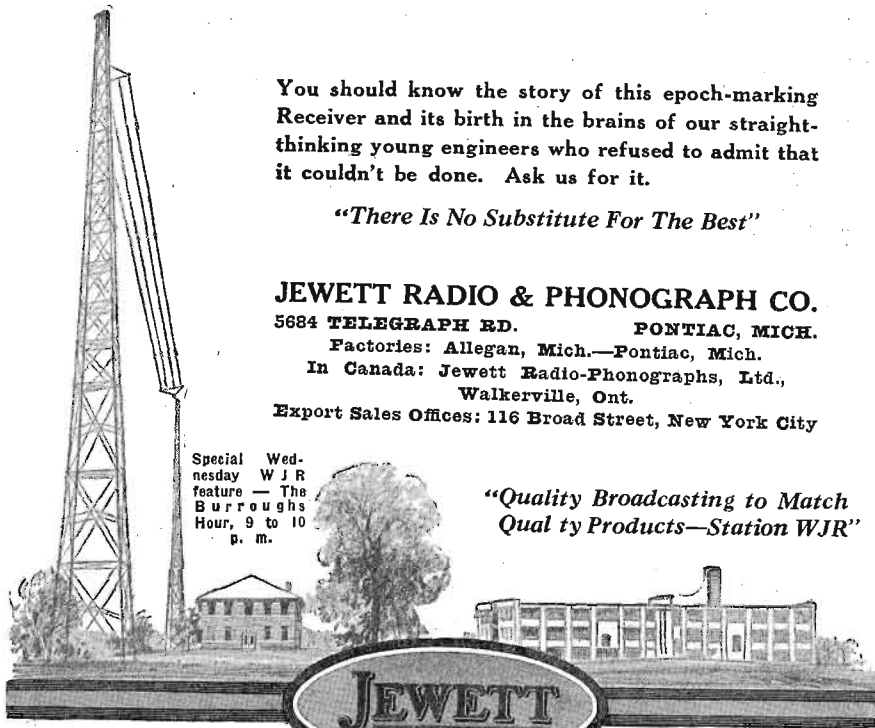
You should know the story of this epoch-marking Receiver and its birth in the brains of our straight-thinking young engineers who refused to admit that it couldn't be done. Ask us for it.

*"There Is No Substitute For The Best"*

**JEWETT RADIO & PHONOGRAPH CO.**  
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*"Quality Broadcasting to Match  
 Quality Products—Station WJR"*



# Building a Super?

## Ryan's Simplest Possible Super-het Manual

# 50¢

### Full Size Drilling Templates—Loop Aerial Construction

**A**NYONE who has built a crystal set or single-tube can follow Mr. Ryan's concise, simply worded instructions and enjoy the range available only from a super-heterodyne. Every wire, every lug, is placed by his directions and you cannot go wrong.

The construction of loop aeriels, storage "B" batteries, a charger and even the cabinet are gone into thoroughly. This manual covers the complete installation of a selective, quiet, long range Radio outfit. Send money order, stamps or currency to

**Radio Digest Publications**  
 510 N. Dearborn St., ~ Chicago



FANNY SCHNITGER MARTIN AT WOC



Catherine Jackson is one of the west coast's premier harpists. She is a popular guest at KHJ, Los Angeles.

Saturday, November 7

(Continued from page 13)

KPO, San Francisco, Calif. (428.3), 1-2 p. m., Rudy Seiker's Faimont hotel orchestra; 2:30, studio program; 3:30, Palace hotel concert orchestra, Cyrus Trobde, director; 6:35-7:30, Waldemar Lind and the States Restaurant orchestra; 8-12, Cabrera Cafe orchestra, Jack Conkley, director.

Sunday, November 8

Table with 5 columns: Station, Eastern 6 p.m., Central 7 p.m., Mountain 8 p.m., Pacific 9 p.m.

Sunday, silent night for: CHIC, CKNC, CNRA, CNRC, CNRE, CNRM, CNRO, CNRR, CNRT, CNRV, CNRW, KFAE, KFAU, KFMQ, KFOA, KFGP, KFWA, KMA, KOB, KSAC, KWSC, WAHG, WBAF, WCAU, WCC, WDAF, WEB, WFL, WGBS, WGPC, WHAD, WHAS, WHAZ, WJR, WKQA, WLIT, WMC, WOK, WOO, WOR, WORD, WRC, WSAI, WSMB, WTAM, WTIC.

Eastern Time Stations

KDKA, Pittsburgh, Pa. (309.1), 10:45 a. m., church service; 4 p. m., Dr. Charles Heintz, organist; 4:45, vesper service; 8:30, Pittsburgh Athletic Association; 7:45, church service.
WBZ, Springfield, Mass. (333.1), 10:55 a. m., services, South Congregational church, Rev. James Gordon Gilkey, pastor; Prof. Wilson P. Moog, organist; 24 voice choir; quartet; 8:30, special musical program, Steinyard Hall, WJZ; Walter Damosch, pianist-conductor; violin recital, Paul Kuchanski.
WCAE, Pittsburgh, Pa. (461.3), 8:45 p. m., Dr. S. P. Cadman; 6:30, William Penn hotel; 7:20, Capitol theater gang; 9:15, Atwater Kent.

WJZ, 7:30, Hotel Pennsylvania orchestra, WJZ; 8, vocalist, WJZ; 8:30, Steinway series, WJZ.
WIP, Philadelphia, Pa. (508.2), 7:15 p. m., evening service, Holy Trinity church, Rev. Floyd W. Tomkins, rector; 9:30, Ben Stadans and his WIP Little symphony orchestra.
WHAR, Atlantic City, N. J. (275), 2:15 p. m., Seaside hotel trio; 2:45, sermon, H. A. Durrell; 7:50, Chelsea Baptist church; 9, Seaside hotel trio; 11:15, Strand theater organ recital.

Central Time Stations

KFAB, Lincoln, Nebr. (340.7), 4-5 p. m., vesper service.
KFDM, Beaumont, Texas (315.6), 8-9 p. m., sacred program.
KFMX, Northfield, Minn. (337), 7-8 p. m., college vesper service.
KFNF, Shenandoah, Iowa (286), 10:45 a. m., morning worship, M. E. church; 2:30 p. m., Golden Rule song service; 3, Wheeler Evangelists; 6:30, Gold Rule circle; 7:30, Christian church services.

Mountain Time Stations

KOA, Denver, Colo. (322.4), 11 a. m., First Baptist church services; 3 p. m., organ recital, Clarence Reynolds; 7:45, services, First Baptist church.
KFWB, Hollywood, Calif. (252), 9-11 p. m., late news and Warner Bros. movie with Joe Martin's Pannous Studio Six orchestra; Roy Al saxophone sextette; Parks Sisters, vocal duets; Charles Beauchamp, tenor.
KGO, Oakland, Calif. (361.2), 11 a. m., service, Trinity Episcopal church, Charles P. Deems, rector; 2:30 p. m., KGO Little symphony orchestra, Carl Rhodenhamel, conducting; Arthur S. Garbett, Mme. Elfrida Wynne, guest artist; 7:45, Trinity Episcopal church services.

Pacific Time Stations

KFPG, Hollywood, Calif. (238), 8-9 p. m., KFPG concert hour, Turner orchestra, Georgia Starke, coloratura soprano.
KFWB, Hollywood, Calif. (252), 9-11 p. m., late news and Warner Bros. movie with Joe Martin's Pannous Studio Six orchestra; Roy Al saxophone sextette; Parks Sisters, vocal duets; Charles Beauchamp, tenor.
KGO, Oakland, Calif. (361.2), 11 a. m., service, Trinity Episcopal church, Charles P. Deems, rector; 2:30 p. m., KGO Little symphony orchestra, Carl Rhodenhamel, conducting; Arthur S. Garbett, Mme. Elfrida Wynne, guest artist; 7:45, Trinity Episcopal church services.

WORD, Batavia, Ill. (275), 10 a. m., hymns and sacred songs; 10:15, Bible lecture, L. M. Smith; 10:45, sacred duets; choir solos; 9 p. m., I. B. S. A. choral singers; 9:15, Bible lecture; 9:30, sacred musical program, John T. Read, director.
WOS, Jefferson City, Mo. (440.9), 9:30 a. m., Christian church; 7:30, Episcopal church.
WQJ, Chicago, Ill. (447.5), 9:30 a. m., People's church; 3-4 p. m., Margot Hayes, contralto; Medora Walker, violinist; Senora Alvarez, contralto; William Bresters, tenor; Saïda A. Ballantine, soprano; 8-10, Madeline Ruff, pianist; Everett G. Mitchell, baritone; Maria Dneprova, Russian soprano; Gertrude Hardeman, contralto; Fontella trio; Muriel Kenally, soprano.

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Headliners Today

Table with 4 columns: Eastern 9 p.m., Central 8 p.m., Mountain 7 p.m., Pacific 6 p.m.

Monday, November 9

Monday silent night for: CNRA, CNRC, CNRE, CNRM, CNRO, CNRR, CNRV, CNRW, CNRT, CNRF, CNRG, CNRH, CNRI, CNRJ, CNRK, CNRL, CNRM, CNRN, CNRO, CNRP, CNRQ, CNRS, CNRT, CNRU, CNRV, CNRW, CNRX, CNRY, CNRZ.

Eastern Time Stations

CKNC, Toronto, Can. (357), 8-10 p. m., Armistice day program; CKNC Little symphony orchestra, Charles E. Bodley, director; Madeline Bell, soprano; Lawrence DeLoz, tenor; Edgar Smith, bass; Dwight Willson, baritone; 10-12, Charles Bodley and his dance orchestra; Elsie Addison, contralto; Irone Jenks, Frank Welsman, pianists.
KDKA, Pittsburgh, Pa. (309.1), 6:15 p. m., dinner Gaudens; 7:45, "International Art," Honer Saint-Gaudens; 9, Spear's happy home hour.
WABC, Richmond, N. Y. (315.6), 12-12:55 p. m., musical program; 7:30-7:45, Tom Maurice E. Connolly; 7:45-8:15, Synchrophase trio; 8:15-8:30, Edgar M. Groen, baritone; 8:30-8:45, Von der Heide and La Ruffa, barjo and piano; 8:45-9, Horace J. Taylor, reader; 9-9:15, Joe Zimmerman, pianist; 9:15-9:30, Synchrophase trio; 9:30-9:45, Edgar M. Groen; 9:45-9:55, Joe Zimmerman; 9:55-10, time signals and weather report; 10-10:15, Von der Heide and La Ruffa; 10:15-11:15, Glenn C. Smith's Paramount orchestra.

orchestra; 8:45, health talk, WBAF; 9, WBAF A. and P. Gypsies; 10, American House Marlinda and orchestra.
WGBS, New York, N. Y. (315.6), 6-6:30 p. m., Uncle Gabe; 6:30-7:30, Premier club orchestra.
WGBU, Fulford-by-the-Sea, Fla. (278), 6:30-7:30 p. m., Blue Steele's Fulford-by-the-Sea orchestra; 10-11, Blue Steele's Fulford-by-the-Sea orchestra.
WGCP, New York, N. Y. (315.6), 3-3:15 p. m., Eva Rothenberg, pianologue; 3:15-4:15, Andy Pendleton's band; 4:15-4:30, Joe Ross, harmonica; 4:30-5, Uncle Robert and his pals; 5-5:15, Shirley Herman, songs; 7-8, Dominion Ginger Ale orchestra; 8-8:15, Silvio de Rienzo, pianist; 8:15-8:30, Ukulele Lon Hayes; 8:30-8:40, Gertrude Guarente, pianist; 8:40-9, Bob Ward and the three little Wards; 9-10, Strickland's orchestra; 10-11, Radio Shack hour; 11-11:30, Club Ritz orchestra; 11:30-12, Club Rodeo entertainers, 12-2:30, Comile's orchestra.

Mountain Time Stations

KOA, Denver, Colo. (322.4), 11 a. m., First Baptist church services; 3 p. m., organ recital, Clarence Reynolds; 7:45, services, First Baptist church.

Pacific Time Stations

KFPG, Hollywood, Calif. (238), 8-9 p. m., KFPG concert hour, Turner orchestra, Georgia Starke, coloratura soprano.
KFWB, Hollywood, Calif. (252), 9-11 p. m., late news and Warner Bros. movie with Joe Martin's Pannous Studio Six orchestra; Roy Al saxophone sextette; Parks Sisters, vocal duets; Charles Beauchamp, tenor.
KGO, Oakland, Calif. (361.2), 11 a. m., service, Trinity Episcopal church, Charles P. Deems, rector; 2:30 p. m., KGO Little symphony orchestra, Carl Rhodenhamel, conducting; Arthur S. Garbett, Mme. Elfrida Wynne, guest artist; 7:45, Trinity Episcopal church services.

Headliners Today

Table with 4 columns: Eastern 9 p.m., Central 8 p.m., Mountain 7 p.m., Pacific 6 p.m.

Monday, November 9

Monday silent night for: CNRA, CNRC, CNRE, CNRM, CNRO, CNRR, CNRV, CNRW, CNRT, CNRF, CNRG, CNRH, CNRI, CNRJ, CNRK, CNRL, CNRM, CNRN, CNRO, CNRP, CNRQ, CNRS, CNRT, CNRU, CNRV, CNRW, CNRX, CNRY, CNRZ.

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Deane H. Dickason, official lecturer of the Canadian Pacific World Cruises, will give a talk, "Round the World in Sixty Minutes," at KOA, Denver, Friday evening.













WGY IN HORIZONTAL RADIATION TRY-OUTS

SCHENECTADY STATION EXPERIMENTS IN SENDING

Uses Horizontal Antenna Alternately with Vertical One; Asks Listeners for Cooperation in Tests

SCHENECTADY, N. Y.—Tests to establish the value of horizontal radiation on broadcast wave lengths were made from the Radio development laboratory of the General Electric company, near here, Monday and Tuesday nights, November 2 and 3, according to an announcement by C. J. Young, of the Radio engineering department of that company. Both tests were conducted on superpower, 50 kilowatts, through WGY, using the normal wave length of that station, which is 379.5 meters. The listener had an opportunity to compare reception on both horizontal and vertical radiation on the same night. The schedule provided for a half hour period of broadcast entertainment on the horizontal antenna from 12 to 12:30 midnight, Monday and Tuesday, and from 12:45 to 1:15 on the vertical antenna, regularly used for superpower transmission. A period of fifteen minutes was required to change connections from one antenna system to the other.

Not Often on Broadcast Wave Much has been written during the past few months on horizontal radiation and there has been considerable speculation as to the advantages which this form of transmission holds. Practically all, if not all, experimental work with horizontal waves has been carried on with the very high frequencies of the shorter wave lengths, and much valuable data has been collected. Reports on short wave length demonstrations were necessarily few because of the comparatively small number of short wave sets in use. It is also pointed out that results on higher wave lengths may be directly opposed to the observations made on wave lengths from 50 to 150 meters.

Instituting these tests, Mr. Young is requested that all Radio listeners report on the quality, volume, comparative signal strength and the fading characteristics of both forms of transmission. Work in transmission development necessarily depends upon the cooperation of all those who are interested in improved broadcast transmission. Receiver development can be carried on in the laboratory but transmitter work makes the entire country a laboratory and every listener an experimenter. The reports received will be digested and expertly analyzed and it is hoped by this procedure to collect a vast fund of information which must ultimately advance the art of broadcasting. Sending out Radio power which vibrates parallel to the earth's surface is a comparatively new development. In earlier days it was assumed that an antenna which lay parallel to the earth's surface would neither transmit nor receive signals, and that is largely true of the long wave lengths which were used before broadcasting.

However, recent experiments made by E. F. W. Alexanderson, consulting engineer of the General Electric company, and by others, such as Dr. G. W. Pickard, have shown that short wave horizontal radiation may be more effective than the usual upright type of antenna.

Alexanderson's Theory Mr. Alexanderson's work showed that the short, horizontally polarized waves do not follow the surface of the earth like the low waves but are launched into space as though fired by a high angle gun and that they travel in a curved trajectory through the upper atmosphere. It is Mr. Alexanderson's theory that the wave on returning to earth is vertically polarized. It is impossible to state, thus far, what relation the discovery of horizontally polarized waves will have to the problem of the reduction of static, but it is probable that it will open up new possibilities for progress. There is the possibility that the fading phenomena are directly due to the change in the plans of polarization. Because of the high angle radiation of horizontal waves it is possible that with the use of high power, good, long distance reception may be secured without the production of overstrong signals in the immediate vicinity of the transmitters. In other words, it may shoot most of the energy into the air so that it will come down at a distance.

U. S. Has Twice as Many Stations as Rest of World

WASHINGTON, D. C.—According to figures which have been compiled by the department of commerce there are 277 broadcasting stations now operating outside the United States as compared with 563 stations operating in this country as listed by the Radio division of the department.

HAS FUNERAL FOR SILENCED SENDER

Portugal 'Ham' Burlesques Solemn Rites When Censor Bars Him from Air

LIBSON, Portugal.—A day or two after the last of the periodical attempts at revolution in Portugal, the police visited each of the five Portuguese private senders and informed them that amateur transmission would be forbidden in the future, "as in times of revolution, false news by this means might be sent abroad."

The amateur whose call number is PIAC, solemnly loaded his entire apparatus on a mock funeral carriage and, followed by his colleagues and friends as "mourners," conveyed it to a shop selling Radio apparatus on one of the main streets of Lisbon.

In the shop window a mock funeral chapel was erected. There on a black-draped bier lay all that remained of PIAC, with wreaths and burning candles. Following the continental custom of sending out heavily black-bordered death notices to friends, letters were printed and sent out, earning a whole crop of replies expressing condolences and heartfelt sympathy in this severe bereavement.

Check Up Wave Length with Bureau Test Call

Government Station on Air Twice a Month

WASHINGTON.—The bureau of standards transmits, twice a month, Radio signals of definitely announced frequencies, for use by the public in standardizing frequency meters (wavemeters) and transmitting and receiving apparatus. The signals are transmitted from the bureau station WWV, Washington, D. C., and from Station 6XBM, Stanford university, California.

The transmissions are by unmodulated continuous-wave Radiotelegraphy and the signals can be heard and utilized by stations equipped for continuous-wave reception at distances within about 500 to 1,000 miles from the transmitting stations. Information on how to receive and utilize the signals is given in bureau of standards letter circular No. 171, which may be obtained on application from the bureau of standards, Washington, D. C.

The schedule of standard frequency signals from both the bureau of standards and Stanford university is as follows:

Schedule of Frequencies in Kilocycles (Approximate wave lengths in meters in parentheses.)

Table with columns for Time, Nov. 5, Nov. 20, Dec. 5, Dec. 20, Jan. 5, Jan. 20. Rows list various frequencies and their corresponding wave lengths.

"WIRED WIRELESS" IS PROPERTY OF PUBLIC

Supreme Court Rules Squier's Invention Open to All

WASHINGTON, D. C.—The supreme court of the United States has refused to review the decision of a lower court in which it held that the American Telephone and Telegraph company has the right to use "wired wireless" through the patent of General George O. Squier, who at the time of his invention was chief of the signal corps of the United States Army.

The lower court contended that a patent taken out by an official of the government can be used by the public as public property, and not only by the government itself. In refusing to review this case the United States supreme court has upheld this opinion.

WWJ, Detroit Station Will Broadcast N. Y. Philharmonic

DETROIT.—Commencing November 7 WWJ, the Detroit News, will broadcast the New York Philharmonic orchestra once a month.

The first two concerts, which are November 7 and December 19, will be conducted by Willem Mengelberg. The last four, their dates being January 30, 1926, February 13, March 20 and April 3, will be led by Arturo Toscanini and Wilhelm Surtwalder. These dates all fall on Saturday beginning at 8:20 p. m. and ending about 10:30 p. m. eastern time.

AN EVENING AT HOME WITH THE LISTENER IN IN EASTERN TIME

Large table listing radio stations by location, call letters, and broadcast schedules for Saturday, Sunday, Monday, Tuesday, Wednesday, Thursday, and Friday. Columns include Call, Location, Met., and days of the week with specific time slots.



# Radio Digest Illustrated

Published by the Radio Digest Publishing Company, Inc.  
510 North Dearborn Street  
Chicago, Illinois  
Telephones: State 4372, 4373, 4374, 4375

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, November 7, 1925 No. 5

## The Shuberts Reconsider

THE SHUBERTS, Lee and J. J., are going in for Radio! Let's see—wasn't it just about one year ago that the Messrs. Shubert and William Brady were up in arms decrying with alarm the inroads which the popular thing of the day, broadcasting, was making on the theatrical profession?

Readers of this publication will remember how Equity and the two producers named were reading the riot act and asking divine guidance as to how to control this giant new amusement. The Shuberts and Brady insisted that Radio was hastening the day when the sheriff's notice would be posted on their doors and the auctioneer's hammer would be disposing of their useless seats.

Radio has never and will never do the harm to the legitimate stage that the managers have done themselves. Hundreds, yea, even thousands have turned from the brightly lighted theater lobbies after having heard, "Nothing better than fourteenth row" and have gone direct to their homes to tune in on a fair playing Radio program rather than patronize the ticket scalpers. This class of insects is the only known group of parasites that are encouraged by those on which they live. When the producers cleanse themselves of the scalpers they will have less to fear from Radio.

We always have contended that the presentation motion picture house, with seats selling (four or five times a day) for from thirty-five to seventy-five cents, was doing a great deal of damage to the weak and weaker drama and musical shows whose seats sell for from \$1.50 (worst seats) to \$3.50 and often more. The good motion picture, presented with first quality music and incidental, high quality, entertaining acts, is the most dangerous competitor Mr. Brady, Equity or the Messrs. Shubert can possibly have.

We still contend this to be true. Radio is a poor, struggling infant of an opponent when compared to the 1925 brand of silent drama. We wonder if the spoken drama and musical show profession members have looked the "movies" squarely in the face?

Radio has helped, can help, and will help the legitimate stage again to a firm footing. Radio can do very little for the motion picture, however, until Radio motion pictures—or Radio instantaneous vision, sometimes called Radio television—is perfected, or rather becomes popular with the public.

The Messrs. Shubert have recently recognized this truth. They permitted broadcasting of "The Student Prince." They are still being surprised with the public acclaim and box office support which the broadcasting produced.

The Shuberts also have come to Radio for their stars. The Misses Martens and Wilkens, "Melody Maids" team at WHT, Chicago, were given an audition and signed for a forty-week tour in a "Student Prince" road show.

We haven't heard the Equity or Mr. Brady calling out the militia of late, so we are inclined to believe that they too are converted to the large scope of broadcasting as an aid to their business. If not converted, perhaps this editorial will help them to see the problem in the same light the Shuberts have recently seen.

## The Modern Miracle

IF THERE is such a thing as "the modern miracle" it surely must be represented by the scene in which we have an old lady. She lives far from any relative who might be of any comfort to her. She is an invalid sitting in a wheel chair. A stroke of paralysis is her surety that she will never walk again. She likes to read but in the evening she tires of that. Her eyes are not as good as they used to be so that sewing is out of the question.

She is blessed, however, in a sense, with a Radio receiver that she has in her home. She loves beautiful music and when she would like a little entertainment all she has to do is turn a small knob and forget that she is unable to visit the theater, or the opera.

Our little old lady is happy indeed, pleased with something that is accomplished by modern genius, that we think nothing of. We take Radio for granted but not so her. She is ever thankful for this "modern miracle" which benefits her so much.

## RADIO INDI-GEST

### The Radio in Camp

A construction camp, when far from a town,  
Is a lonesome place when the sun goes down:  
For the day's work is done, the men all fed,  
And all but myself have retired to bed.

'Tis then that the Radio proves its worth,  
And livens me up with music and mirth:  
The loneliness goes as I listen and hear  
Both music and voices from far and near.

The folks in the cities who use it for fun,  
Have other amusements,—we have just this one;  
For out here it is newspaper, church and play  
And helps pass the long empty hours away.

GEORGE

The foregoing comes to us from those great open spaces where two tubes bring in real DX and a crystal set is out of luck. Our friend George lives in a railroad car hence no matter how large a set he uses, some manufacturer can claim wonders on it as a portable.

### LA GRAND TRIX

How to Get DX on a Crystal Set  
By PROF. SPOFFENHAUER

Expert on Sanitary Engineering and Belgian Lace Installation

1. Purchase a good crystal set, equipped with a cat's whisker made of gold-plated green cheese.
2. Take the purchased good crystal set, equipped with a cat's whisker made of gold-plated green cheese, home.
3. Set the good crystal set, equipped with a cat's whisker made of gold-plated green cheese, which you have bought and taken home, on a special Radio table made of mahogany veneered pine.
4. Cover the purchased good crystal set equipped with a cat's whisker made of gold-plated green cheese, which you have bought and taken home and set on a Radio table made of mahogany veneered pine, with a pine box heavy enough to hold the Grand Prix Super-heterodyne described in Radio Digest.
5. Turn to the articles by James McDonald and build the Grand Prix super-heterodyne, which you will then set upon the pine box covering the purchased good crystal set equipped with a cat's whisker made of gold-plated green cheese which you have taken home and set on the mahogany veneered pine Radio table and tune it for DX.
6. Tell your friends that you get DX every night on a crystal set. This is known as La Grand Trix.

### Tangled

Pa puts on his head set  
'An Ma puts on a pair  
'An the baby is delighted,  
In his big high chair;  
While Pa helps with the dishes,  
Midst wires everywhere.

RHEA SHELDON

### NO, JUST OUR VOICE

Dear Indi: Picked up your broadcast of Dixie Dee's poems over WBCN the other night and would have sent the following telegram: "LOUDER AND FUNNIER," but the office here would not accept it for transmission collect. What's the matter, is your credit bad?

By the way, Cap, why be so original in your praise?

### Not Even a Marine

London correspondence tells us that the microphone used by King George when his speeches are broadcast is made of solid silver. When it was displayed at the recent Radio show there it was guarded by a squad of detectives. During the New York show, the Gold Cup shaped like a mike, which was presented to Graham McNamee by Radio Digest, was on exhibition. There were no guards.

Remember when the cry used to be heard daily at the post office when the senior class of the correspondence school call for their daily lessons:

Pooh, Pooh, Harvard,  
Bah, Bah, Yale,  
We gets our learnin'  
Through the mail.

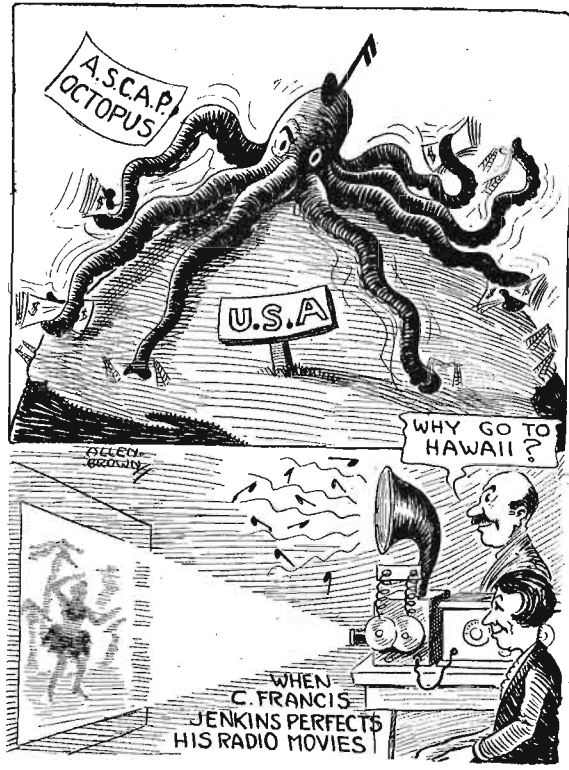
Now with the Radio colleges we should expect stirring cheers such as the following to ring out from under the antennas:

Tune 'em high, tune 'em low,  
Turn the dials! To school we go!  
It is found most everywhere  
The University of the Air.

### EXPERIENCES IN A RADIO LUNCHROOM—NO. 1

The morning was one of those real indigo ones, so we lay abed until the sun was well up in the sky. The clock told us that, Chicago skies being sunproof on weekdays. Then with that morning after taste in our mouth still lingering because we did not heed the wisdom of the ant and put away plenty of sarsaparilla for a blue morning, we hied out to the "Grecian Tea Room" around the corner for a "scupscoughee." While we were trying to balance ourselves on the stool in front of the porcelain slab used by the proprietor as a race course for his trained roaches and the customers as a place to park the "java and," we noticed the pitiful wall of an ill-tuned Radio. "Ah, ha," says we, "here's where we scoop Condensed and get material for a review of one of those programs for busy housewives." We did! The subject of the talk was: "Adenoids and Tonsils, the Cause of Morning Vomitting by Children." The coffee was a total loss!

## News of the Week



## Condensed

BY DIELECTRIC

There is at least one aged person (probably thousands more) who, after hearing the first of the Atwater Kent concerts, declared her youth restored and joy unbound. But the great boon bestowed upon the Radio public in the form of concerts by famous artists is not confined to the infirm; it's universal. Toscha Seidl performed difficult violin selections with apparent ease and gave to less spectacular works the richness of his artistry—not for hundreds of paid auditors in concert hall, but for all who could listen. It is evident no pains is spared in putting these concerts on the air to approach as nearly as possible perfection in transmission. Let's see what proportion of listeners in avail themselves of these opportunities to hear without charge the very best of artists and music. For several years my urgent plea has been for such Radio entertainment. Do we like it? Write now.

WTAM, Cleveland, holds to the virtue of diversified programs and with apparent success. One of their programs included flute solos of more than passing merit. This instrument is infrequently heard on Radio programs, although there would seem to be no reason for excluding it. Many beautiful effects are produced in its playing and there could be fair substitution for some of the hackneyed piano and song numbers presented night after night. Mr. McMahan's baritone voice added to a concert of general appeal and few would care to tune it out.

WMBF, Miami Beach, runs strongly to dance music presumably fitting the needs of their audiences, if a little tiresome to DX hounds. However that may be, they are guilty of one thing which the majority of broadcasters have overcome: the tendency of long waits between numbers. On this occasion of my listening to this southern station there were periods varying from a few minutes to more than five following the finish of a selection to the announcement. Fans like to know to whom they are tuned and only those who practice the regime of WHAS, Louisville, will continue in favor.

And now for a word of commendation for WOC, Davenport. Recently this station offered an orchestra program which was excellent in several particulars. The selections themselves were carefully chosen from the more lasting type of music and rendered in a manner to meet the favor of discerning listeners. Then for the station itself mention might be made of the fine modulation which insured reception of a high order.

There are tenors and tenors appearing before the mike of this fair land, for some of whom there might better be no expression made. WEBH, Chicago, entertained in their studio a tenor of very pleasing voice whose singing of songs of the popular type was rather agreeable. Later in the program we were entertained with dance numbers, that is those who wanted to dance listened while others moved on the dials.

There is no need for extensive comment on that portion of the programs from WLW, Cincinnati, which feature Isham Jones' dance orchestra. Suffice to say that this world-famous aggregation of psychoreau followers give pleasure to thousands of listeners whenever they play to the Radio public. Rhythmu has no more efficient exponents than they.

# Interesting and Simple Explanation of Radio

## Chapter II—The Ether, Wave Motion and Wave Lengths

By H. G. Tanner, Associate Professor University of Oregon

WHAT has been called space is frequently called ether. Ether is a better word to cover up our ignorance. It is what is left after things definitely proved to exist have been taken away. It may be considered as the ocean in which all matter (electricity) swims. To assume its reality is the only way transmission of light can be explained in harmony with other experiences. (Some very expert mathematicians are not hampered with the necessity of a physical explanation and to them the phenomenon of light is explained without the ether, but most of us have not climbed to their level as yet.)

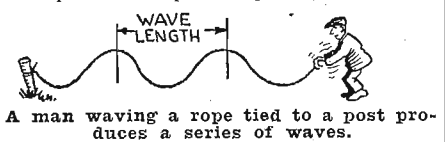
We know from experience that the beam of light from a flashlight is just as straight on a windy night as when all is calm. The air therefore has nothing to do with it. Furthermore we receive light from the stars whose distances are awe inspiring. Aviators and astronomers tell us the air extends but a short distance above the earth. If light were a stream of tiny particles, smaller than even the electrons, shot out from the flashlight or other source we would not need an ether to explain it. But everyone today who has studied it arrives at the conclusion that light is not materialistic in its nature but is a wave motion, and that is why we have to have an ether.

**Imagine Ether Made of Tiny Particles**  
We simply cannot conceive of this wave motion coming from the stars or other sources in nothingness, hence it is customary to assign what might be called a semi-material existence to the ether. For convenience let us imagine ether to be made up of particles extremely small compared to electrons. This would make the ether particle about the size of the mathematician's "point."

If light is a wave motion in this ether then Radio waves are also, because light waves and Radio waves are identical in every respect except size.

It will be easier to understand how ether waves are produced if one first refreshes his memory about other waves.

**Waved Rope Explains Wave Motion**  
Suppose one end of a rope be fastened to a post and a person quickly moves the



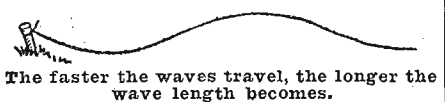
A man waving a rope tied to a post produces a series of waves.

other end up and down. A wave is produced which travels along the rope. Every time this is repeated a wave is produced, and if at regular intervals a series of waves occur. In this series the distance between the humps is termed the wave length.

Obviously, the faster one shakes the rope, the closer the waves will be to each other. Worded in technical terms, the higher the frequency (of production) the shorter the wave length.

This distance apart of the waves may be measured in inches, yards, miles, etc., but because of the very great convenience of the decimal (metric) system of measures, Radio wave lengths are expressed in meters. A meter happens to be equal to 39.37 inches.

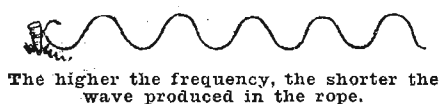
**Speed of Wave Travel**  
If one maintained the same frequency of production but changed ropes the wave length might not be the same. This is because waves travel faster in some ropes



The faster the waves travel, the longer the wave length becomes.

than others. If they traveled faster in the second rope they would be stretched out, so to speak, and necessarily farther apart (longer wave length).

To sum it all up, the higher the frequency of production, the shorter the

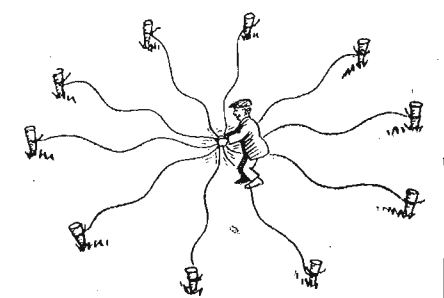


The higher the frequency, the shorter the wave produced in the rope.

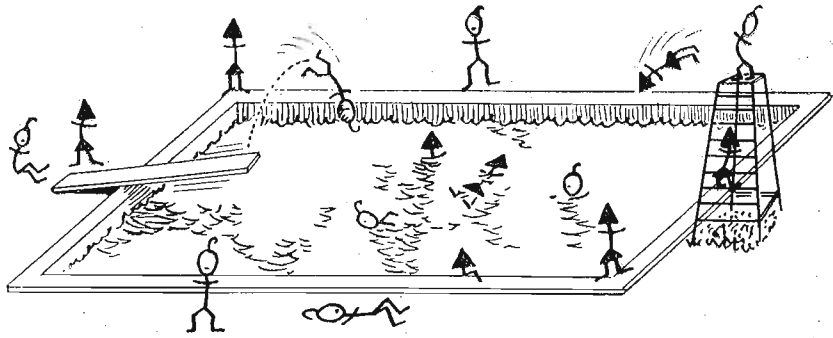
wave length; and the faster the waves travel, the longer their wave length. A given frequency may produce short waves in one medium and very long ones in another. In Radio, however, the speed is always the same, 186,000 miles per second.

**How Radio Waves Resemble Ropes**  
Extend the picture of generating waves in one rope to that of a person holding a great many ropes radiating in as many directions. Perhaps an even better illustration would be a person at the center of a large piece of canvas. Upon shaking it up and down waves would radiate from him in all directions.

Very much the same thing happens when a Radio wave is produced in the ether. Electrons are pumped by appropriate apparatus—a dynamo for example—from the ground up to the tip of the antenna. The next moment they and others of the wire are pumped back into the ground. These electrons in darting upward kick the ether behind them, and when they are suddenly called by the dynamo to return they kick the ether upward.



Man shaking series of ropes stretched radially, gives idea of Radio.



The ether may be considered as the ocean in which all matter (electricity) swims.

This action produces a wave in the ether just like a wave was produced in the canvas.

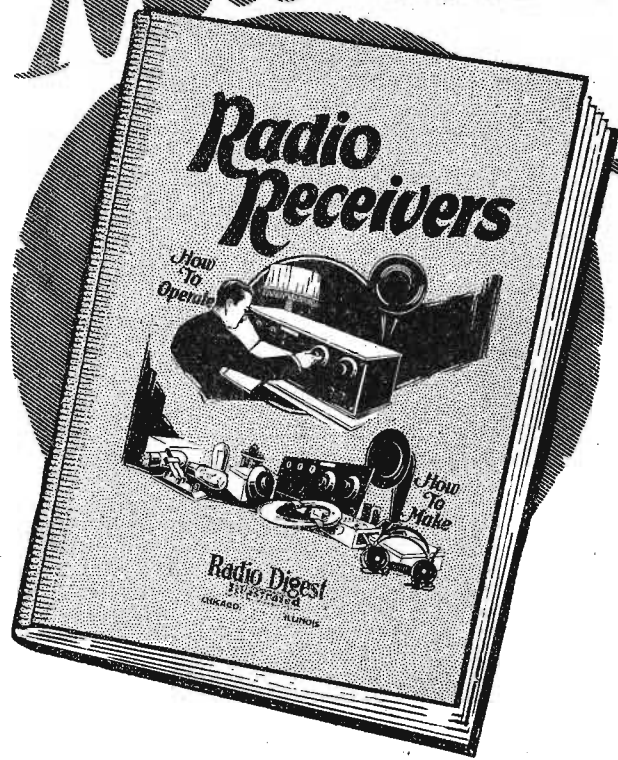
The ether, however, is not of two dimensions as is the canvas but extends to infinity in all three directions. The wave is therefore of a more complex character. For our purpose we may consider only one section of this wave and think of a plane or disc of ether extend-

ing horizontally from the center of the antenna. Let the electrons affect this plane as though it were the canvas.

**Dynamo Is an Electron Pump**  
As just mentioned a dynamo is an electron pump. If it be constructed so as to pump the electrons first in one direction and then in the reverse direction it is called an alternator.

(Continued on page 24)

# The New Radio Book



# HOW TO -

**Operate Sets  
Construct Parts  
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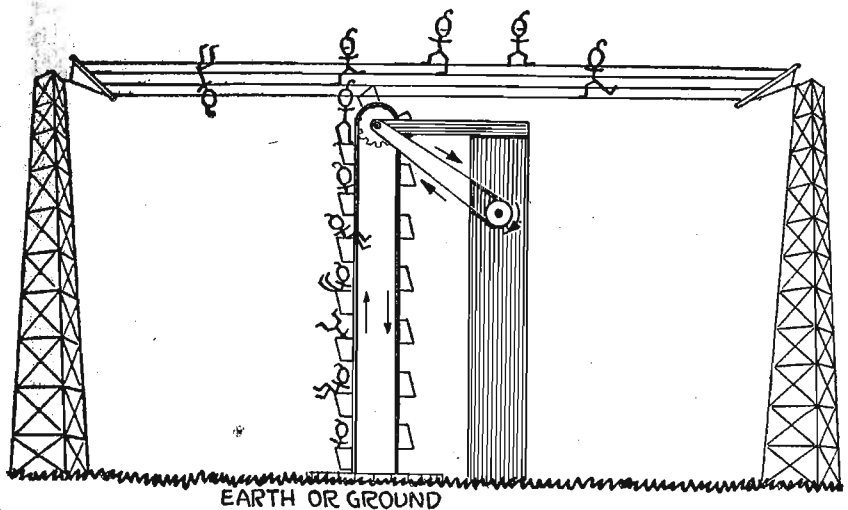
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## A DYNAMO IS AN ELECTRON PUMP



The dynamo is an electron pump. When hitched to aerial and ground it pumps electrons from ground to aerial. Let us consider the bucket lift above as a pump.

### EXPLANATION OF RADIO

(Continued from page 23)

Just as the rate at which the end of the rope is shaken determines the length of the waves in the rope, so also does the frequency at which the alternator reverses the electron current determine the length (distance apart) of the ether waves.

All waves travel in the ether at a speed of 186,000 miles per second. If the alternator produced a complete up and down stroke in one second the wave produced would be 186,000 miles long. (Two wave humps would be this far apart.) This is because the first edge of the wave would have traveled this distance before the last of it would have been formed.

A wave length of such huge dimensions is too unwieldy and impractical. A higher frequency must be used so as to crowd the waves together. Engineers have found that a frequency of at least 10,000 waves per second must be used, and even this produces waves, 18.6 miles in length.

Frequencies used by the broadcasting stations lie between 600,000 and 1,500,000. The wave lengths corresponding to these two frequencies are 500 and 200 meters respectively.

(In the third chapter of his series of articles, Mr. Tanner will tell how music is changed into ether waves. His simple analogies, based on commonplace things, will be employed again to bring the mysteries of Radio home to the non-technical reader.—Editor's Note.)

## OPERATING AND TROUBLE SHOOTING

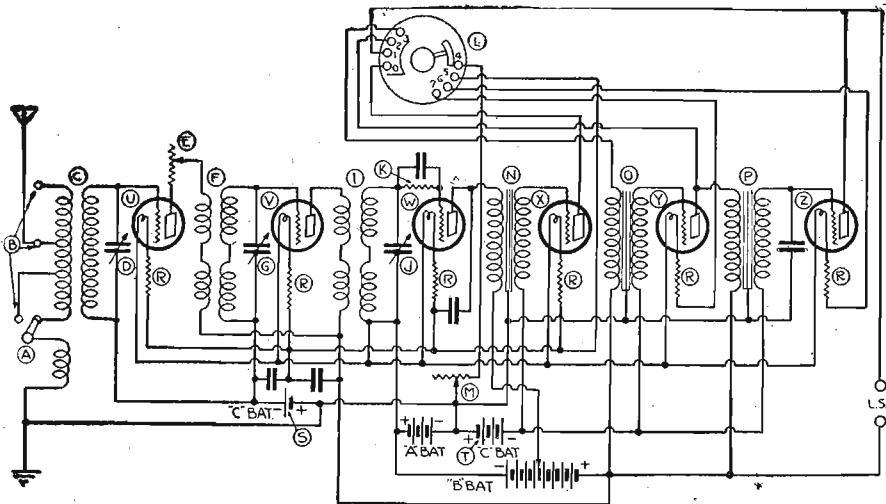


Figure 3

(Continued from page 12)

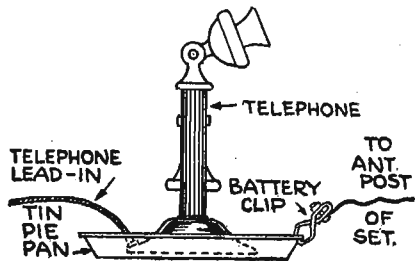
circuits to resonance on a single wave length so that the program being broadcast on that wave length will be heard with maximum volume and clearness, to the complete exclusion of all other signals. The tuned circuit consisting of condenser D and the secondary of transformer C is adjusted to maximum response to the desired wave length by knob D. The two tuned circuits, one of which consists of condenser G and the secondary of transformer F, the other consisting of condenser J and the secondary of transformer I, are brought to resonance simultaneously by the use of knob G.J.

Due to slight differences which are bound to occur in the values of the four instruments included in these two tuned circuits, the vernier condenser H is provided and connected across the larger variable condenser G. The tuning procedure outlined first brings the circuit including D into resonance with the circuit including J and, of course, into resonance with the program it is desired to receive. Adjustment of the small condenser H then brings the circuit which includes condenser G into exact resonance with the other two just mentioned. The control E enables the operator to keep the first tube U at maximum efficiency and, while there may seem to be a great many controls and that a person has only two hands with which to manipulate them all, one quickly finds that two are used for preliminary coarse adjustment, two are then used for fine adjustment and only one is used for the final setting to maximum efficiency.

(The next receiver to be considered for Analysis, Trouble Shooting and Operating, is the Freshman Masterpiece. Comment on these articles will be appreciated by the Technical Dept.—Editor's Note.)

### Pie Pan Antenna

The only parts necessary to construct this serviceable indoor antenna are a pie pan, nearby telephone, battery clip and from 10 to 20 feet of copper insulated wire. The battery clip should be clamped to the rim of the pan after spot on pan has been sandpapered or scraped for good contact.



Wire is attached to clip and the other end is connected to the antenna binding post of the Radio set. If wave length is too high or tuning is broad, insert a folded piece of newspaper or piece of cardboard between phone base and pie pan.—Wm. D. Cope, Los Angeles, Calif.

### Connect Plugs Correctly

When building a set, be sure to note to which side of the jacks you connect the plus terminal of the B battery. Then be just as sure to connect your phone cords to the plug so that the phone terminal marked with a colored thread will connect in the B battery plus in the jack. Both phones and loud speakers work much better connected correctly and the magnets do not lose their strength.



## Where is the difference in radio transformers?

THE audio frequency transformers in your radio perform a most important duty. They aid in increasing the volume of sound ... in building it up to the desired strength. BUT—

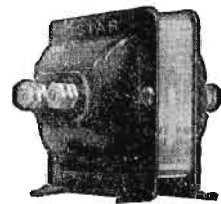
When sound is increased, the tendency is toward distortion. That's where the difference comes in transformers. Inefficient transformers will give distorted reception, just as a defective mirror will show a distorted image.

Whether you are building a set, or buying one, be sure about the transformers. No radio, remember, can be better than its transformers. A safe guide to follow is the Jefferson trade mark. You can depend on quality in performance when the name "Jefferson" is on the product.

Jefferson Transformers are made by transformer specialists—the world's largest manufacturers of small transformers. There is a very definite reason why leading radio engineers specify "Jefferson." You'll find it in the clear, sweet, life-like amplification which Jefferson Transformers give. Sold by the better dealers, used by manufacturers of high grade radio sets.

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# Fireside: 6 Tube Set of Perfect Reception

## Part II—Panel Drilling and Assembly

By Jacques Fournier

MY ATTENTION has been called to the fact that in the first article, which appeared last week, there is an inconsistency between the list of parts and that part of the article which appeared on page 46. In the list of parts there is a Daven Leakandenser unit and a Dubilier .001 mfd. fixed condenser while the article speaks of Electrad fixed condensers which do not appear on that list. There are two Firesides, identical in every way, except that the first one has Electrad condensers and a Daven grid leak, and it was from this one that I wrote these articles. The second one, in which I put the new Daven Leakandenser was in the hands of the technical editor for

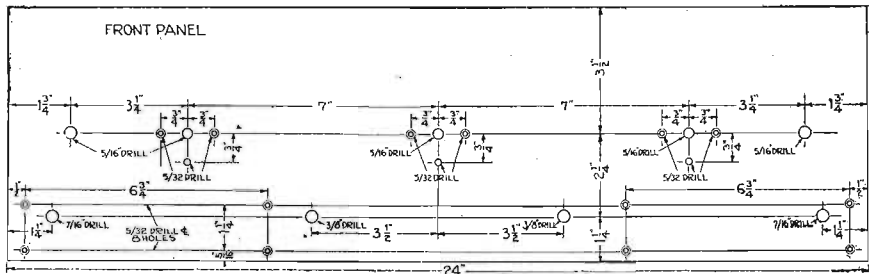


Figure 3

blueprint templates on receipt of 25c sent to Dept. 5, Radio Digest Publishing Co., 510 North Dearborn St., Chicago, Ill. We come now to the assembly of the parts that go on the front panel. The rheostats go on first, in the two holes  $3\frac{1}{2}$  inches each side of the center line and  $1\frac{1}{4}$  inch up from the bottom. One is rated at 6 ohms resistance and goes in the left side hole; the other is a 30-ohm unit and goes in the right side hole. If you have taken these out of the boxes and then cannot tell which is which, you will find the rating punched in one end of the fibre strip on which the wire is wound. Each is to be mounted with the terminals toward the center of the set.

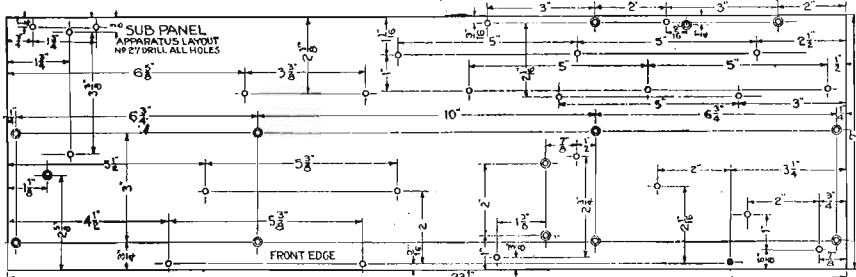


Figure 4

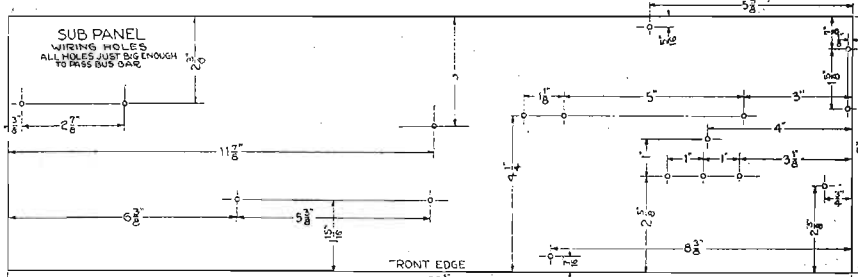


Figure 5

test and it was from this that he made up the list of parts. That being the case, we will build the second one in these articles, since presumably you purchased parts by the list.

With this article there are included the drilling layout of the front panel as figure 3, the drilling layout for instrument mounting holes in the sub base as figure 4 and the drilling layout for wiring holes in the sub base as figure 5. For those who have been readers of Radio Digest for some time, these should not present much difficulty, but for those to whom this work may be new, the following explanation of the use of these drawings is included. Each layout is to be enlarged to full size on a heavy piece of paper, taking care to get all dimen-

sions exact as, once holes are drilled, it is difficult to ream or file them so that machine screws may be put through instrument and panel.

When these have been enlarged, the three resulting drawings are known as templates. The drawing from figure 3 is to be secured on the face of the piece of bakelite to be used as front panel, either with metal or wood "C" clamps or a touch of paste in the corners. At each cross indicating a hole, a center punch and hammer are used to make a dent in the panel by punching through, after which the paper template is removed. Now from figure 3 you drill the correct size hole at each point. It is well to drill all first with a number 27 or 5/32-inch drill, after which the larger

drills can be applied as shown. In cases where you haven't the exact drill specified, use the next size smaller which you have, and ream to the necessary size.

It will be noted on the drawings for the apparatus mounting holes that some of the holes have two concentric circles around them. This indicates that such holes are to be countersunk. The same procedure specified for the template of figure 3 and the front panel is to be followed for figure 4 and the panel used as a sub base. Figure 5 shows the small holes to be drilled in the sub base through which wires pass from above to below it. Since there are, doubtless, many readers who like to build their sets but hesitate over their ability as draftsmen, Radio Digest will furnish full size

The C-R-L variable resistances come next, that marked for 200,000 ohms to be placed in the hole at the left end on the horizontal center line. The 500,000-ohm unit goes in the hole at the opposite end of the line,  $3\frac{1}{2}$  inches from the top edge and  $1\frac{1}{4}$  inches in from the right end of panel. The Yaxley switch then is placed in the 7/16-inch hole in the lower left corner and the Yaxley jack in the same size hole made in the lower right corner. The condensers, being the more delicate apparatus, have been left for the last. I found, when laying out this set, that the dial pin came right at the point on the panel and below each condenser shaft, where the lower mounting screw of

(Continued on page 26)

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LOOKING DOWN ON ASSEMBLED FIRESIDE 6-TUBE SET

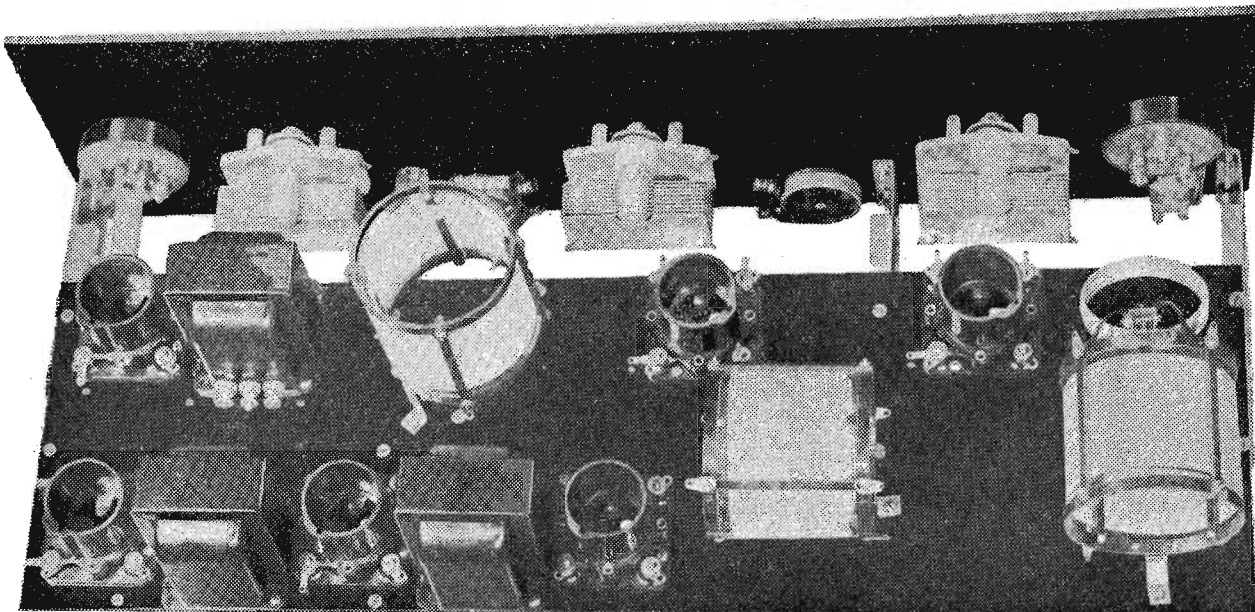


Figure 6

“FIRESIDE” RECEIVER

(Continued from page 25)

the condenser had to go. In mounting each condenser, then, put in the two screws which are on a line with the shaft just enough to catch the threads in the mounting pillars and then slip in the dial pin through the lower mounting hole and catch its threads in the lower pillar of the condenser. Then screw in the machine screws and the pin a little at a time, going from one to the other so they will all be tight at about the same time. With the rotor plates then turned so they are entirely enmeshed in the stator plates, slip the dials on the condenser shafts with 100 at the top. The slot on the smaller plate will then slip over the pin and the set screw can be tightened in each dial hub.

The two inner brackets are then mounted on the panel with their mounting flanges inward. The one to the left of the 6-ohm rheostat will have its flange at the top and pointing toward the right; that to the right of the 30-ohm rheostat has its flange toward the left. The outer brackets are then put on in the same way.

The sub base assembly now follows. Before mounting the coils, some alterations are to be made in the brackets supplied for them. Each of the nicked brass brackets is made with a curved lug at one end with two small holes for attaching the coil. At the other end is a right angle bend with a single hole for securing to the sub base. Four of these are used for mounting the antenna coupling unit at the rear left corner and the

first radio frequency transformer about 6 inches to the right and also at the rear edge. Considering the end of each bracket at which there is only a right angle bend, measure up 5/16-inch and bend again. The small square with the single hole, formerly intended for mounting to sub base, is then cut off. Our new 5/16-inch section is to be the foot of the bracket and a hole is drilled in its center with a number 27 or 5/32-inch drill. This operation will be made clearer by observation of the photograph reproduced here.

For mounting the third coil at a point behind the 30-ohm rheostat, a slightly different procedure is necessary. The foot of each bracket is bent and cut off as described above, but also the curved wing at the other end is bent to be in line with the long straight portion of the bracket. At one end of this third coil, it will be noted that the terminals are marked G and B. In the bakelite ring at this end there are two small bracket holes already drilled. On this same ring and diametrically opposite, drill two more very small holes the same distance apart. The two brackets just altered are then secured to this bakelite ring and the coil is mounted vertically with the small inner primary winding at the top.

The antenna coupling coil with variable primary is mounted on the two holes in the rear left corner 1 1/4 inches in from edge and 3 3/8 inches apart. The first radio frequency coil is mounted on the two holes which are also 3 3/8 inches apart but a little to the right of the first two and 2 1/4 inches in from rear edge. The next operation is putting in the Leakan-

denser unit on the under side of the sub base. Two countersunk holes are shown a little to the right of center near the front edge and 2 inches apart. Flat head machine screws are dropped through these and one of the clips provided with the Leakandenser is placed on each. Put a soldering lug on each and then a small hex nut. The third Aero coil, to be mounted vertically, is then put on.

The Benjamin sockets are placed next, as follows: That which will hold the first radio frequency amplifier tube goes squarely behind the variable condenser to the left, with its G and P terminals to the rear. The socket for the second radio frequency tube goes on the sub base just behind the left edge of the center variable condenser; G and P are to the rear. The third socket is placed at the rear edge of sub base just to the right of the second Aero coil with G and P terminals to the right. Two holes are provided by figure 4 for each socket.

Socket 4 goes 2 1/2 inches to the right of socket 3 at the rear edge of sub base and socket 5 is to be 2 1/2 inches from that to the right, at the rear right corner. In both cases G and P are to the right. The last socket goes in the front right corner with G and P to the right. Use a long screw in the hole on the left edge toward the rear and, on the under side, slip on one of the Daven resistor mountings with its terminals front and back.

Close to the rear edge and 4 3/8 inches from the right edge is a countersunk hole, through which drop a flat head 6-32 machine screw and, beneath the sub base, secure the 1.0 mfd. fixed bypass condenser with its terminals forward. In this position, the left hand mounting lug is used under the screw and nut just mentioned.

We now come to the Autoformers. One is placed between sockets 3 and 4 with terminals forward. Mounting holes are provided in figure 4 at the front right and rear left corners. Another Autoformer is now set between sockets 4 and 5, with terminals forward, and secured in place. The machine screws which hold our third Autoformer in place also hold two units on the under side. This Autoformer goes just to the left of socket 6 close to the front edge with terminals to the rear. Beneath it place a .5 mfd. fixed bypass condenser with terminals to the rear and so that its right mounting lug is around the screw close to the front edge that is holding Autoformer.

At the rear left corner of this Autoformer, a longer screw is used and, on the under side, the second Daven resistor mounting is secured by a hex nut, with terminals front and rear. Behind socket 4 and close to the rear edge of the sub base is a countersunk hole. Beneath socket 4 place a .5 mfd. fixed condenser with its terminals forward and its left mounting lug around a machine screw put through the hole just mentioned. Condenser can then be secured by a hex nut. The same procedure is then followed, using another .5 fixed bypass condenser and the countersunk hole behind socket 5. One short screw, with plenty of tightening on the hex nut, is sufficient to hold each condenser in place.

The last .5 mfd. fixed bypass condenser is put in place using the countersunk hole just to the front and left of the front mounting screw of the antenna coupling Aero coil. Terminals go forward and the left mounting lug is secured around the screw. Now go back to socket

(Continued on page 30)



THE SATURN CONNECTOR

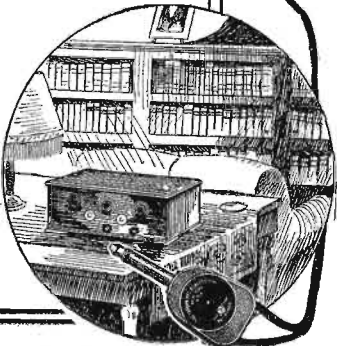
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The Saturn Plug is the Best Plug on the Market

Place your loud speaker in any room regardless of the location of your receiver. Hook up a Saturn Connector between them—it's done in a flash. The result—enjoyment of radio reception where you want it. Think of the convenience! Music with your meals, music in your bedroom, music in the sickroom, music anywhere. No assembling—just plug in the wires from your receiver at one end and from your loud speaker at the other end. A side snap releases the tips. No levers to pull or buttons to press. No loss of tone or volume—the Saturn Connector grips the wires with bulldog tenacity and releases them with ease. You'll want to have this modern radio convenience, also the wonderful Saturn Plug which gives the quickest and surest connection of any plug on the market.

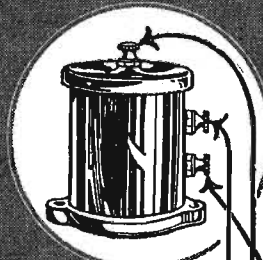
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New Radio Static Filter  
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Easily Attached

This new radio invention actually separates radio tones from static, clearing reception by detouring static.

Study the diagram shown at the side of this ad. It shows where the static and radio tones enter the Filter together. Inside the Filter, the static and radio tones are separated, the static being detoured to the ground through the "A" Storage battery. But the radio tone waves are filtered through entering the set purified, clearer and increased in volume.

Attach the Filter to any set—no matter what kind—note the reception—cut out the Filter—note the difference.

With the "A B C" Filter attached to your set, you hear music as it is really played by the artists—you hear the dramatic climaxes of speeches—you understand the market reports and other announcements. Distant stations are brought in easier, due to the increased volume.

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# The Grand Prix Eight Tube Super-Heterodyne

## Part III—The Wiring in 50 Operations

By James McDonald

**I**F THE instructions in last week's issue were followed completely, the entire panel assembly is complete, as is the assembly of the sub base. Our Grand Prix is now ready for wiring and this part of the work divides into an even 50 operations. Before starting, however, the soldering lugs should be put on all terminals, including those of the potentiometer and rheostat. Two are provided with the switch. Five dozen lugs are necessary.

Considering, first, the sub base assembly, the sockets will be referred to by numbers, 1, 2, 3 and 4 across the rear edge from left to right and 5, 6, 7 and 8 back across the front edge from right to left.

1. A wire is bent into a U-shape so that it can be laid on the lugs on the left front terminals of sockets 1, 2, 3 and 4, then forward and across the right rear lugs on 5, 6 and 7, then forward to the front right lug on socket 8. Solder to all lugs.

2. Another U-shape wire is bent to rest on top of wire 1 and connect to the right front lugs on 1, 2, 3 and 4, then forward and connect to the left rear lugs on sockets 5, 6 and 7 and the rear right lug on socket 8.

3. A wire is soldered to wire 1 midway between sockets 6 and 7 which goes straight forward to binding post 6 on the oscillator coupler, then down and slightly to the left to left terminal on rheostat. Solder to post 6 on coupler and to rheostat terminal.

4. Drop a wire through the hole by the left rear terminal on socket 5 and, about 1 1/4 inch below sub base bend it forward so it will connect to the right terminal on the potentiometer.

5. Put a wire straight across from the left terminal of the rheostat to left terminal on the potentiometer.

6. Put in a short wire from post 4 on the coupler, down and to left, to the right hand terminal on the rheostat.

7. A short wire about 1 inch long is next to connect right hand terminal on the rheostat to the left hand terminal on the switch.

8. Put in a wire from the right hand terminal of the rheostat, across to right behind potentiometer to rotor terminal of the right hand variable condenser C-2.

9. A wire is to be bent and inserted, from post 1 on coupler, back to edge of sub base and then to the left to the rotor terminal on the left variable condenser, C-2, then back to the rear Imp jack. Should be soldered at each end and to the rotor terminal.

10. Now place a wire from post 5 on the coupler, going 1/2 inch back, then to the right to the stator terminal on the left side of right hand condenser C-2.

11. Determine the point on wire 10 opposite the front right post on socket 6. Put in a wire from that point running straight back and up through the hole to that post on socket 6.

12. Run a wire from post 2 on the coupler, back and up through the hole for the left front post on socket 6, and solder to that post.

13. The next wire goes from post 3 on the coupler, back almost to the Multi-former then to the left between Multi-former and AT-2, to the B terminal at left end of Multi-former.

14. Loosen the nut on the rear ma-

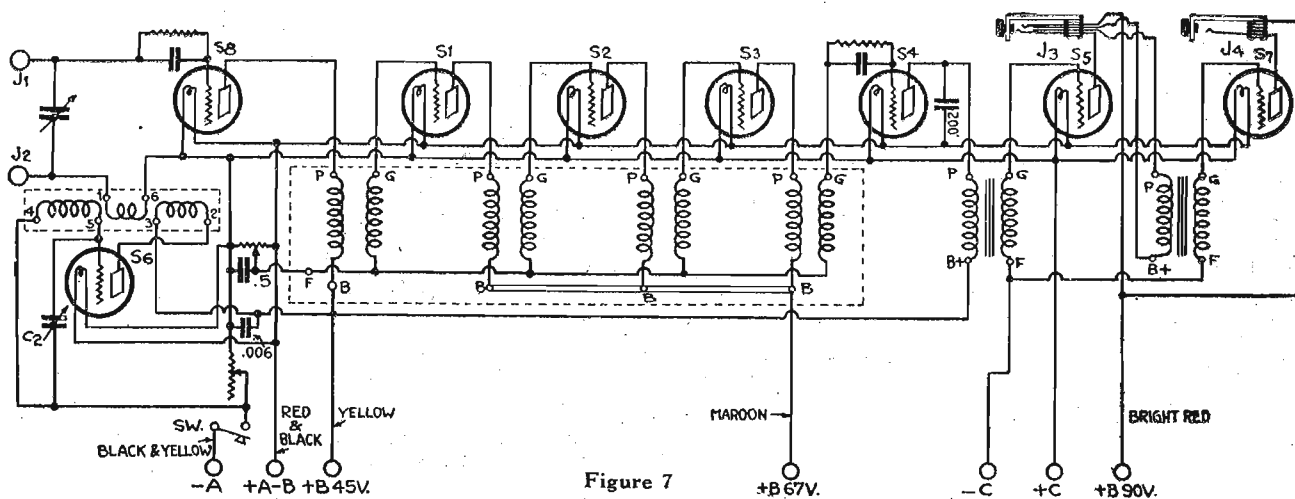


Figure 7

chine screw holding socket 6 and put in the .5 mfd. fixed condenser by slipping a mounting lug under the nut. Terminals are forward.

15. Connect a wire from the center terminal of the potentiometer to F terminal at the right end of Multi-former.

16. A short wire is now inserted connecting the right hand terminal of the .5 mfd. condenser to the nearest point of wire 15 just inserted.

17. The other terminal of the .5 mfd. condenser is to be connected to the left hand terminal of the potentiometer.

18. At the point where wire 13 passes under the front edge of the sub base, connect a wire which should drop 1 inch, then go to the right around front end of AT-1 to the B plus post on AT-1. This passes above wire 4.

19. Attach a 3/4-inch length to each end of the Dubilier type 601 fixed condenser of .006 mfd. capacity. One of these goes to the joint where wires 13 and 18 meet while the other goes to the left hand terminal of the rheostat.

20. Drop a wire from the left front terminal of socket 5, through the hole, then downward and to the right to the top spring on jack J-3.

21. A short wire is to run up from terminal G on AT-1 through the hole to G terminal, the right front one, on socket 5.

22. A wire from the second spring on jack J-3 goes back 2 inches, then to the left to the P terminal on AT-2.

23. From the third spring a wire goes back 1 inch, then to left to the B plus post on AT-2.

24. From the upper terminal of jack J-4 (at left of set) run a wire up through the hole by the left front post (P) on socket 7 to that post.

25. A wire is now put in straight across from the bottom spring on jack J-3 to the frame terminal on Jack J-4.

26. Run a wire from the F terminal on AT-1, back and downward 1 1/4 inch, then to left and then forward and down to F terminal on AT-2. (See photograph of wiring).

27. We complete the loop circuit by putting in a wire from the stator terminal on the left side of the left condenser C-1 back to the front Imp jack.

28. Insert a wire to go from P terminal

on AT-1, back and to the left, up through the hole by the rear right terminal on socket 4, to that terminal. This wire should be kept about 1/2 inch below sub base.

29. Solder one terminal of the Dubilier .002 mfd. fixed condenser to wire 28 about midway of its below sub base length; then run a wire from the other terminal about 2 inches to wire 4 where it bends upward.

30. Next wire goes from G on AT-2 to

the left 1 inch and up through the hole by the right front terminal (G) on socket 7.

31. Drop a wire from the rear left post on socket 8 through the sub base, back and to the right between sub base and Multi-former to the P terminal at the left end of the rear edge of the Multi-former.

32. The second post from left on rear edge of Multi-former is G; run a wire up (Continued on page 28)

**If** you are serious about this radio business, if you actually *want* real reception, if you really *wish* to slash through the conflict of nearby stations and nail the far-distant broadcaster—Then you *must* use

## AERO-LOOP

And when you *do* use it, you will find that results are far ahead of anything that we can say in cold type.

A "Loop within a Loop" is the secret. The inner loop is stationary, acting as a booster, while the outer loop is adjusted by rotation.

Used with—or to replace outside antennae.

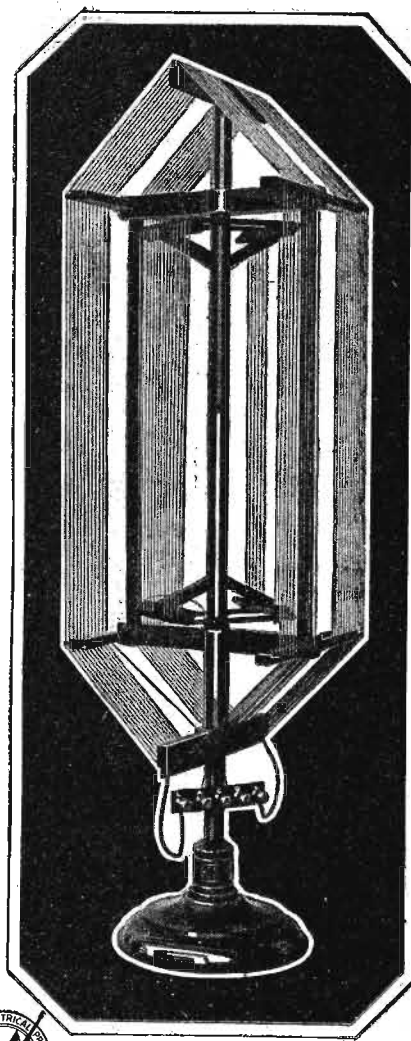
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Ask your dealer. If he does not carry it yet, we will ship direct on receipt of price. Be sure to specify the set with which it is to be used and please give your dealer's name.

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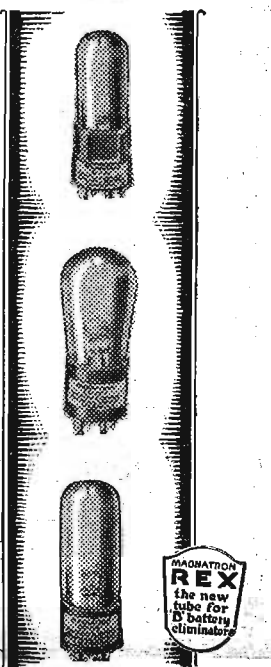
### Vigilance

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The Magnatron DC-201A, DC-199, and DC-199 (large base) now list for only \$2.50 each.

CONNEWEY ELECTRIC LABORATORIES, Magnatron Bldg., Hoboken, N. J. West Coast supplied from complete stocks carried by Pacific Radio Labs., 256 So. Los Angeles St., Los Angeles, Calif.

# MAGNATRONS



**WIRING PHOTO DIAGRAM FOR GRAND PRIX SUPER-HET**

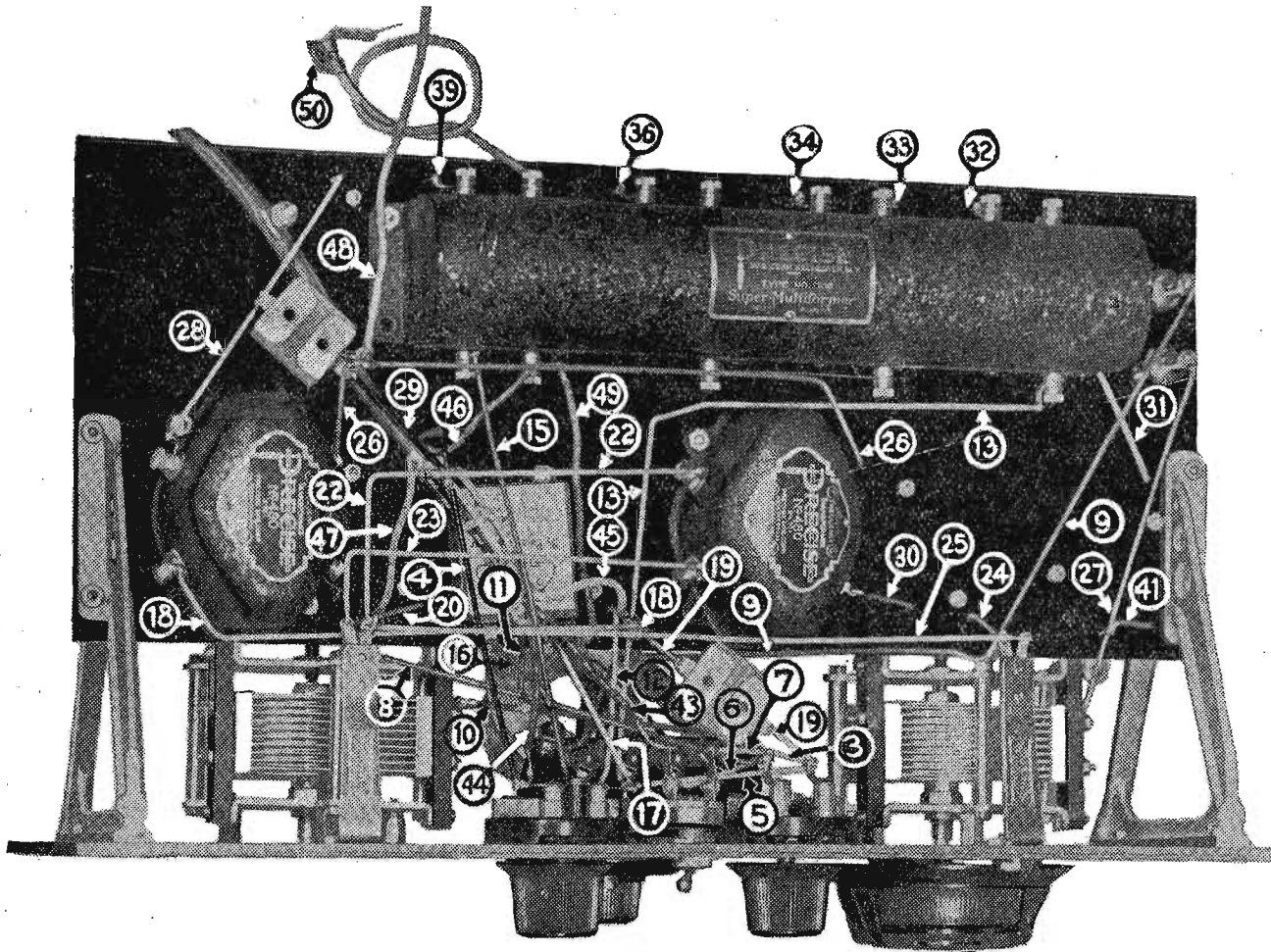


Figure 8

**GRAND PRIX SUPER-HET**

(Continued from page 27)

through sub base to rear left post on socket 1.

33. Next post is P; run wire up to rear right terminal of socket 1.

34. Fourth post is G; run wire up to rear left post on socket 2.

35. Fifth post is P; run wire up to rear right post on socket 2.

36. Sixth post is G; run wire up to rear left post on socket 3.

37. Seventh post is P; run wire up to rear right post on socket 3.

38. Take one of the Dubilier grid condensers and clips and set it vertically between sockets 3 and 4 with clips to left and solder the lower terminal to the lug on the rear left post of socket 4.

39. A wire connecting to the upper terminal of this grid condenser is bent 1/2 inch to the right and rear, then down through hole to G, the eighth post on Multiformer.

40. The other Dubilier grid condenser and clips is set vertically in front of socket 8 with clips to the front and a short 1/2-inch length of wire connects from

the lower terminal to the left to the front left post on socket 8.

41. Put in a wire from the upper terminal, bent to the left and slightly back, down through the hole provided, then to the right 1/2 inch to wire 9.

42. There is a countersunk hole to the right of socket 4. Put in a flat head 6/32 machine screw and on the under side piece of heavy strip brass about 5/16-inch wide and 3/8 inch long, in which a hole for the screw has been drilled in one end. The Belden cable is secured under this at a point about 4 inches back from where the braid ends. The end of the Belden cable is used, at which the separate leads are but 5 1/2 inches long. With a piece of heavy cord, cable the Red and Black, the Yellow and Black and the pure Yellow leads from the end of the outer braid, a distance of 2 1/2 inches.

43. Solder the Yellow and Black wire to the right terminal of the switch.

44. Solder the Red and Black wire to the right terminal of the potentiometer.

45. Solder the Yellow lead to the junction of wires 13 and 18 described under operation 18.

46. Cut off the Maroon wire so that,

from the end of the outer braid, it will just reach to the first B post at the right on the front edge of the Multiformer. Precise provides, with the Multiformer, a strip connecting this B with the next two in line.

47. Cut off the bright Red wire so that it just reaches the frame terminal, the lower one, on jack J-4.

48. Solder a 1-foot length of flexible wire to wire 26 where it bends to the left after extending 1 1/4 inch back from the F terminal on AT-1.

49. Solder a 16-inch length of flexible wire to the left terminal of the .5 mfd. condenser and run it out to the rear between the Multiformer and the sub base.

50. Recently, the Crowe Name Plate and Manufacturing company, of Chicago, have brought out some long needed little identification tags for leads. These are known as "Crowe Cable Markers." These find a perfect use here, as once the set is in the cabinet it might be hard to identify the various colored leads. Put the — A on the Yellow and Black; the + A on the Red and Black; the B45 on the Yellow; the B + on the Bright Red. Take the B — and scratch out the — sign; scratch in 67. This tag is then secured on the Maroon lead. Flexible wire 48 gets C — and wire 49 gets tag C +.

(The wiring of the Grand Prix receiver is now completed and the experienced fan can connect up the set and put it into operation. Those who have not set up and operated sets heretofore had best wait, however, for the connecting and operating article in next week's issue.—Editor's Note).

**Follow the Directions**

When constructing a new set from an article, whether published in Radio Digest or some other periodical, follow the data given to the letter. If you do not, and try to ring in some bright ideas of your own, neither the writer of the article nor the technical editor of the paper, can possibly answer questions on it. No home constructor can expect the technical staff of any paper to build up a special set with the variations made just to answer his individual problems. The writer of the original article did all the work once to present the data on a group of parts and a hook-up that it was known would work well.

Amplification is largely dependent upon the filament emission of the tubes. Weak filament emission gives amplifier weak signals.

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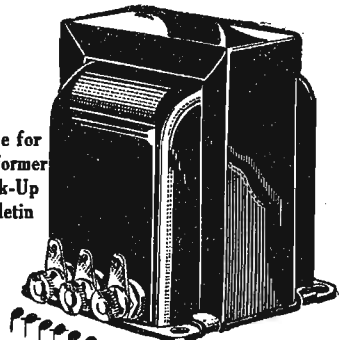
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Autoformer amplification is for those who seek the finest reproduction of programs to be had. May be used with any set in place of regular audio transformer hook-up. Full directions, with diagrams, supplied with each instrument. Autoformers are \$5 each. Sold by the leading dealers

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## Ten Dollars All That Maker Needs to Spend

This hook-up can be built for \$10.00 and what is more, it can get coast to coast reception almost daily. In fact, I picked up KFI, Los Angeles, a distance of 2,450 miles from my home on seven consecutive

### WORKSHOP KINKS EARN A DOLLAR—

THERE are many little kinks worked out at home that would aid your fellow Radio worker if only he knew about them. There are new hook-ups, new ways of making parts and various unique ways of operating sets that are discovered every day. Radio Digest is very much interested in obtaining such material. Send them in with full details, including stamped envelope, so rejected copy may be returned. The work must be entirely original, not copied.

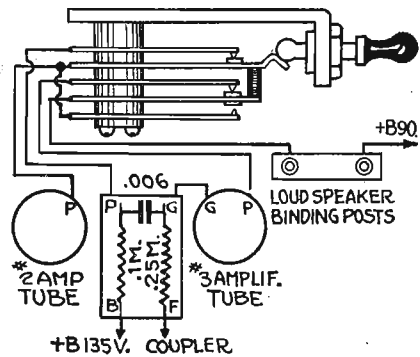
RADIO KINKS DEPARTMENT  
Radio Digest  
510 North Dearborn St., Chicago

nights; the hot spells that visit us in summer seem to take little effect on the set. Here are the particulars:

My aerial is 85 feet long and 38 feet high. The coupler is wound with 60 turns of No. 22 dsc. wire on a 3-inch coil with 6 taps taken off as shown. The rotor has 50 turns of the same wire on a 2½-inch

### Resistance-Coupled Stage Switch

When three stages of resistance coupled



amplification are used, the volume is often

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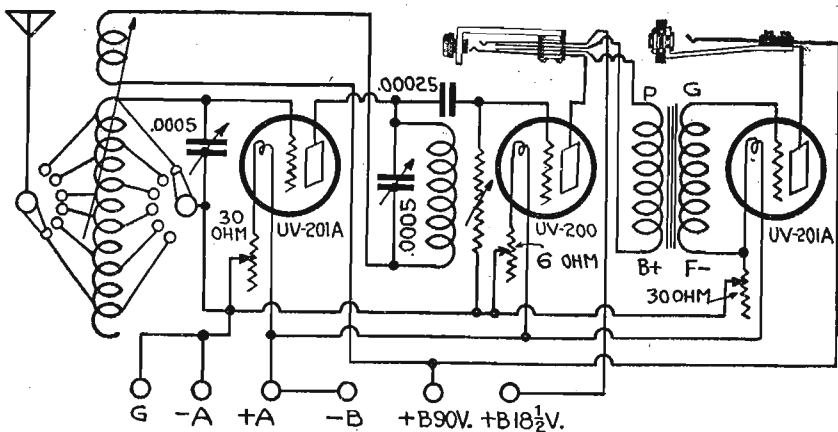
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### HOOK-UP AND DETAIL OF COIL TAPS



tube. The two variable condensers used are 23 plate with .0005 mfd. capacity. The radio frequency tuned impedance coil is 40 turns of No. 20 dsc. wire on 3-inch tube.

The taps in the hook-up number 12, only 6 coming from the coupler. This is explained by the smaller diagram. The audio frequency transformer is 6 to 1 ratio. If any difficulty is encountered by your readers they can write me direct.—John Mulliken, 128 Bates St., N. W., Washington, D. C.

too great from nearby high-powered stations, and as no way is provided for cutting in between stages as in transformer coupled amplification, the arrangement shown in the diagram was devised, for cutting down to the second amplifying tube. When greater volume is desired, the little wooden plug is left loosely in the jack. By merely pushing the plug in, the loud speaker is automatically connected to the plate of the second amplifying tube, the third resistor-coupler and tube being disconnected in the same operation.

A filament control jack was used for this purpose and the plug may be either a home made wooden plug or an old phone plug. This gives the set a sort of "soft pedal" control. The operator tunes in a

powerful station, finds the volume far greater than he needs, pushes in the little plug, and behold, the music is greatly softened.—J. F. Gardepe, Columbia, S. C.

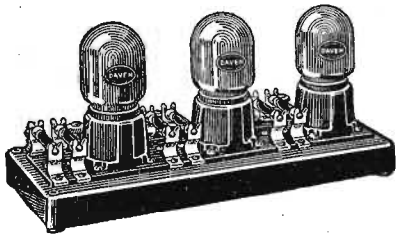
### Tool for Wire Skinning

If you are at loss for a good tool to use in peeling the insulation off of wires file a couple of notches in the blade of a common kitchen paring knife near the handle.

A hydrometer is used for testing lead-sulphuric acid storage batteries, but not the Edison nickel-iron type.



## What is a S-U-P-E-R A-M-P-L-I-F-I-E-R?



THREE stages of audio amplification—no labor of assembly—no distortion—perfect reception—quality of tone that cannot be equalled by any other method. That is a Daven Super-Amplifier.

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The explanation is that The Amplion was evolved by the actual originators and oldest producers of loud speakers. Long before radio attained general popularity, Graham loud speakers had been adopted—because of outstanding excellence—by the exacting British Admiralty and were in use on over 12,000 other ships of leading nations. The Amplion, introduced in 1920, was based on thirty years of successful experience.

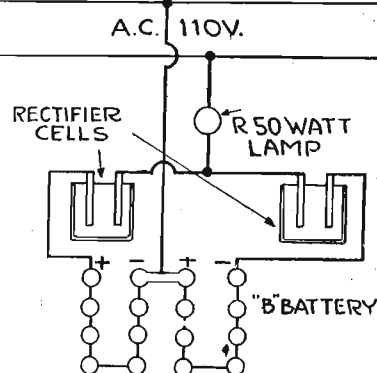
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### B Charger Hook-up

To charge B batteries I use two rectifier cells consisting of lead and aluminum plates immersed in a saturated solution of borax. The plates are about one inch apart and have one square inch of their surface immersed in the solution. You can get these plates from Curtis-Griffith Sales, 1109 Eighth Ave., Ft. Worth, Texas.

Run the alternating current through the cells for 20 minutes to frost (form) the



aluminum plates, then connect as shown in diagram. One side of the alternating current line goes to 50-watt lamp as resistance, then to the cells where the aluminum plate of one connects to the lead plate of the other. From the remaining lead plate connect to the negative end of B battery, from the remaining aluminum plate run a wire to the positive end of B battery. The last wire is to be run from center of B battery to the remaining alternating current wire.

This hook-up will charge four dozen cells at one time if necessary as the current is forced to alternate in the halves; that is, it goes one way one-half cycle and the other way in the other half cycle.—V. O. Humphrey, Gooding, Idaho.

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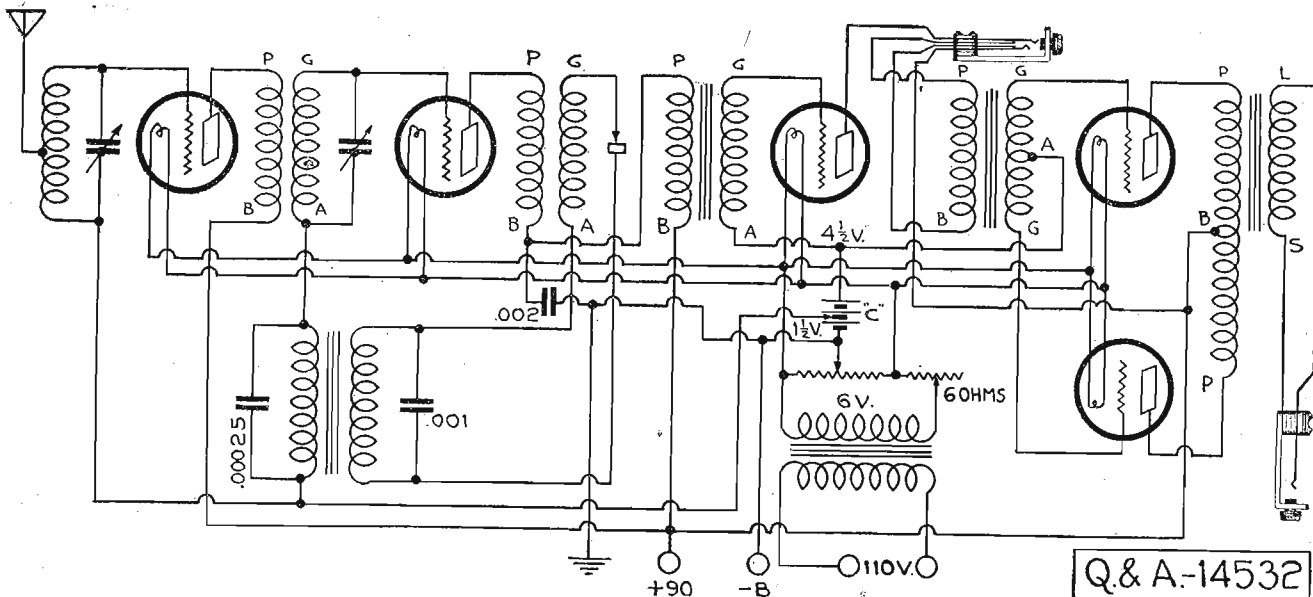
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# Questions and Answers



110 Volts A. C. on Erla Filaments (14532) LG, Detroit, Mich.

I am enclosing the diagram of my Erla five tube receiver. Will you please complete this diagram so that the filaments of the tubes are lighted from the 110 A. C. lines in the way described by a Mr. Cope in one of your recent numbers?

The diagram requested is shown here. You will note that there are two C battery voltages used; the R.F. grid returns are tapped in at 1½ volts. In the original circuit these returns were brought back to the negative filament line between the rheostat and the battery which put a grid bias of about 1½ volts on these grids. The ground connection now comes from the key wire to which grid returns, potentiometer arm and negative B must attach. With the exception of the filament circuits, no changes in wiring are necessary from the original hook-up.

**Best Audio Amplifier**  
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- (1) Two stages of plain transformer coupled;
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and one push pull; (4) one transformer and two resistance-coupled stages; (5) three stages resistance coupled.

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A.—You can secure these copies by ad-

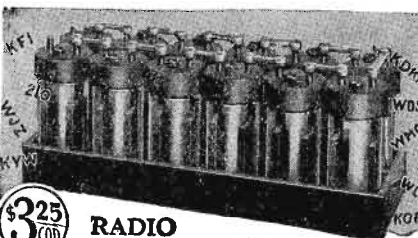
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In order to introduce his invention, the owner, Mr. Hick, offers you two \$1.00 Crystal Detectors for the price of one. Sell one, and put the other on your own set without cost to you. Just send name and address to Mr. Hick, Dept. 5, 1013 So. Wabash Ave., Chicago. Pay Postman \$1.00 (plus postage). Unless you are absolutely satisfied write Mr. Hick and money will be cheerfully refunded.



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dressing the circulation department and enclosing 10 cents for each one desired. In the March 23, May 16, and September 26 issues are articles relating to underground antenna systems, their installation and use.

When working about the set, always throw off the battery switch, or better, disconnect the A and B battery connecting wires.

Where you see these signs in circuits—use

**Potter BY-PASS Condensers**  
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**5 TUBE GUARANTEED RADIO** BIG POWERFUL **MIRACO ultra 5**

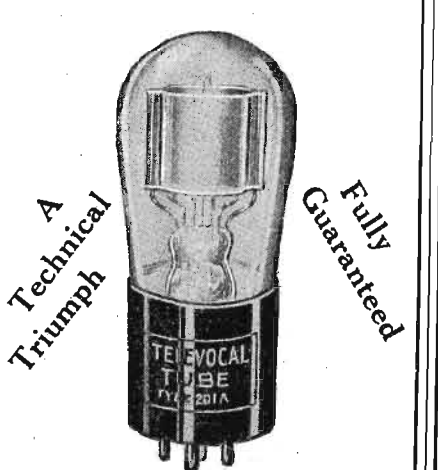
Users everywhere report it gets programs coast to coast, Canada to Gulf, loud and clear on speaker; outperforms \$100 to \$250 sets. Many \$59.50. Hear Europe, Mar. Various value. Let users' testimony convince you. Retail

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## TELEVOCAL QUALITY TUBES



**TELEVOCAL CORP'N**  
67-A Fifth Ave. NEW YORK

## "FIRESIDE" RECEIVER

(Continued from page 26)

3 and loosen the nut on the mounting screw in the right edge close to P terminal. Slip the bakelite terminal block of the Jones Cabelug on this screw with terminals to the front and using the left mounting hole. This unit was not put on sooner as the cable would have been in the way. It is, of course, on the under side of sub base.

Two holes are left, parallel to the rear edge, and close to the rear left corner. These are for the antenna and ground binding posts. With these put in, the assembly is completed. In the photograph, figure 6, these binding posts are not shown, but the holes for their insertion appear in figure 4.

(The wiring of the parts just mounted will be the subject of Mr. Fournier's third article to be in next week's issue.—Editor's Note.)

## Radio Map FREE

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New 64 page log. Corrected sheets may be secured as changes in calls, wave lengths, owners, addresses, etc. occur. Holds 504 stations. Shows 4 dial settings, remarks, etc. Tuning suggestions. Station list by wave lengths—by states, etc. Trouble preventions, trouble finders. Full of other valuable information. So convenient. Worth many times small cost. Just what you need. Enjoy your radio more. Only \$1. Pay postman after log and FREE map arrive. Postpaid if you prefer to pay with order. Money refunded if not delighted. Order today—now. **Radio Printers, Dept. 4418, Marengo, Ill.**

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The Towner Radio Mfg. Co., 2620-C Victor St., Kansas City, Mo., has manufactured a real Fixed Detector known as RADETEC which is Highly Successful in both Crystal and Tube Sets.

**Tested TO STAND TUBE VOLTAGE and lasts indefinitely.**

It is a Crystal Set in itself with greater distance Reception. Wonderful for Reflex—Save A and B Battery. Prolong Tube Life. Get better detection. Every one guaranteed. Money Back if not satisfied. Price \$1 Postpaid including Brackets for mounting. Some Dealer Territories still open. **WRITE TODAY.**

## Steinite LOW Interference Eliminator

**No Radio Set Complete Without It**  
Now you can select stations at will, cut out interference and undesired stations—tune in loud and clear. Wonderful results with any tube or crystal set using any kind of aerial except loop antenna. Partially absorbs static.

**\$1 Amazing Results, Better Reception Guaranteed or We Refund Your Post-Dollar.** Send paid. Order Today

**Select Stations At Will**  
Try this Interference Eliminator on your set—no tools—nothing to add—attached in 2 minutes to aerial. Doesn't disturb present log. Directions easy to follow. Two big banks testify to our reliability. Order today—dollar bill will do—we take the risk—money back if you say so.

**STEINITE LABORATORIES**  
Dept. 303 Radio Building, ATCHISON, KANSAS  
Write for complete Steinite Radio Literature—it's FREE. Most beautiful and least expensive radio sets in America.

## You Have Been Waiting for HARPER METALOID

**"The Original Canned Coil"**

**Shielded Tuned Radio Frequency Transformer**

It is the one thing you need to make your set more selective and more efficient. Lowest resistance of any shielded radio frequency transformer; effective electromagnetic and electrostatic shielding; reduces interference; prevents stray feed-back, allowing better control of regeneration. No critical angle for mounting. Suits all tubes. Mounting base 3½ x 4½.

From dealers or sent direct postpaid upon receipt of price and your dealer's name. Write for free technical circular by W. W. Harper, the designer.

**Price \$5.00**  
**CRIBBEN RADIO CORP.**  
971 Montana Street Chicago, Ill.



# The wonderful performance of these CROSLEY Radios will be duplicated this year—and with these New Prices they should be Radio's best value!

## Lives in Lawrenceburg, Ind.—Listens to U. S. with a Crosley 2-Tube 51.

"I received program under normal conditions from New England States including Canada, the Western Coast and as far South as Florida and Texas."

EDGAR F. FEIST,  
Lawrenceburg, Ind.

## Vermont Man Appreciates Selectivity of Crosley 2-Tube 51.

"KOA, Denver, Colorado, as you know is very close to WGB of New York City. Come in on my dial only one point from each other, yet I get no interference."

ALTON D. FARRINGTON,  
Putney, Vermont.

## Lives in the Heart of Chicago—Gets the Country's Best in Radio with a Crosley 2-Tube 51.

"E. W. Plauk of 5130 Sheridan Road, Chicago, sends a list of 46 stations he hears regularly outside of Chicago from New York City to Los Angeles, California, to which he adds, "all praise and credit to Crosley Radio."

## Vancouver to Torrington, Connecticut is a Short Distance for the Crosley 2-Tube 51.

"Following are only a few of the stations I have received: WBAF, Fort Worth, Texas; 6KV, Cuba; KOA, Denver, Colorado; WTG, Manhattan, Kansas; KPO, San Francisco; Manchester, England and Vancouver, for which I can furnish sworn statement if desired."

HARRIS C. RODSEFELLOW,  
Torrington, Conn.

## Crosley Trirdyn Has Brought Him 178 EKKO Stamps and KZKZ Manila, Philippine Islands.

"In all I have logged 208 stations and received 178 EKKO stamps. The farthest I have received is 7,000 miles, which is Manila, Philippine Islands (KZKZ). I have received one Alaska station and four California stations."

LEO CASSELL,  
Indianapolis, Ind.

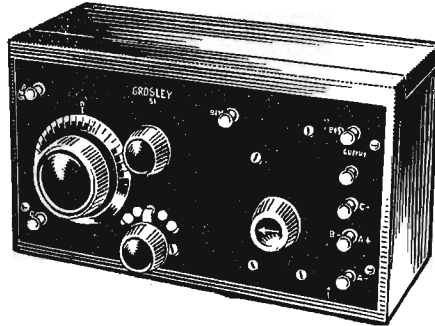
## Hot Weather Did Not Keep This Crosley Trirdyn Owner Home.

"During hot weather I bring in New York, Schenectady, Detroit, Omaha, Cincinnati, Cleveland, New Orleans, Denver, St. Louis, and Atlanta on any night. No matter how many stations are broadcasting in Chicago I can always pick up 10 to 20 outside stations on my set."

ORVILLE G. DAILY,  
Chicago, Illinois.

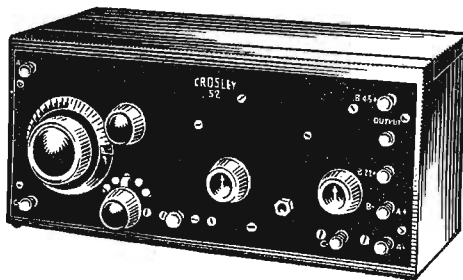
## CROSLEY 2-TUBE 51 REGULAR

This efficient little set uses any make of tubes. Nearby stations on loud speaker, long range on headphones.



Now \$14.75, was \$18.50

## CROSLEY 3-TUBE 52 REGULAR

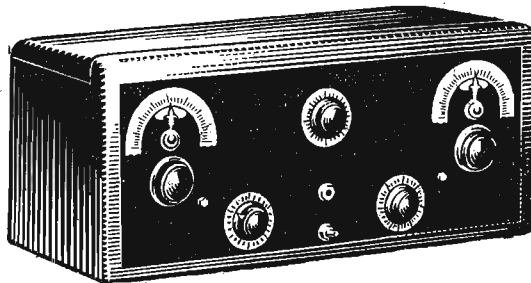


For a less expensive 3-tube set the Crosley 52 regular cannot be surpassed at the new low price.

Now \$25, was \$30

## CROSLEY SUPER-TRIRDYN REGULAR

In the Super-Trirdyn, 3 tubes do the work of 5. Matchless performance. Beautifully finished solid mahogany cabinet.



Now \$45, was \$50

THESE PRICES DO NOT INCLUDE ACCESSORIES. ADD 10% TO ALL PRICES WEST OF THE ROCKIES.

## Easy Tuning is a Feature of the Crosley Trirdyn.

"My little daughter, two and a half years old, is a real radio fan. For an honest fact, she can tune in the most powerful stations and get some music."

L. F. INFANGER,  
Rome, New York.

## 35 States in the Union Report to this Crosley Trirdyn Owner.

"Here is a list of States from which I have received verification stamps—from one or more stations in each state. I have also heard Scotland during international test."

JOHN H. PUTHOFF,  
Akron, Ohio.

## Low Power Stations Heard Across the Country with the Crosley 3-Tube 52.

"One big asset of Crosley '52' is its ability to pick up low powered broadcast. I have picked up KFON, Long Beach, California, and KFUM, Colorado Springs, Colo., both stations using only 100 watts and KFEL, a 50 watt station in Denver."

PHILLIP S. WILLIAMS,  
Bristol, Pa.

## Lives in California—Lists 35 Stations East of Rockies, Heard on Loud Speaker.

J. F. McGinley, living in Hallster, Calif., sends us a list of stations in the East including Ohio, Pennsylvania and New York, whose broadcasting he enjoys constantly on his loud speaker. He emphasizes the fact that he owns no ear phones.

## "Coast to Coast" Reception with a Crosley 3-Tube 52.

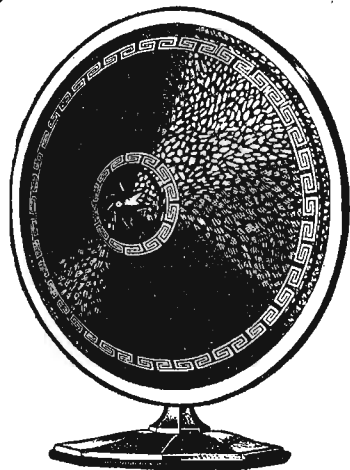
"I have a record of reception of practically all the large radio stations in this country and Canada from WBZ, New England, to WMBF, Miami, from Fort Worth, Texas, to CNRT, Toronto, and from CYL, Mexico City, to KGW, Portland, Oregon, and KFI, Los Angeles."

WALTER HAGERTY,  
Burlington, Iowa.

## Spruce, Michigan, is within Earshot of Europe with a Crosley 3-Tube 52.

"During the International test last year I heard the following stations clearly and distinctly: Paris, Berlin, London, Honolulu, and Porto Rico. 6 and 8 tube sets in my neighborhood don't begin to compare with my 'Little Wonder'."

ELLIS C. MARTIN,  
Spruce, Michigan.



## The Famous MUSICONE

This marvelous loudspeaker—well on its way to REPLACE HALF A MILLION HORN TYPE SPEAKERS by January 1st—substantially reduced because of assembly improvements developed by Crosley engineers. Reproduces all tones—without distortion. Crosley patented unit, not cone, secret of its amazing perfection.

Now  
\$14.75  
was \$17.50

# CROSLEY RADIO

BETTER • COSTS LESS

THE CROSLEY RADIO CORPORATION—Department 49—CINCINNATI