

RADIO

USE OF CHOKE COIL AND TRANSFORMERS

Latter Provide the Most Practical Method of Coupling for the Amateur.

Figure XXVIII shows the actual circuit of a three-stage resistance coupled amplifier. The output of such a circuit is K times K times K the input or assuming the amplification factor of each tube to be 10, the output would be 1,000 times the input. The resistance R is the coupling resistance whose function it is to transform the plate current variation to potential drops to be applied to the grid of the next tube.

The capacity C is simply a means of allowing the potential variations across the coupling resistance R to be applied to the grid of the next tube, yet not allowing the "B" battery applied to the plate circuit of a tube to be applied to the grid of the next. Because of using the condenser to what one might say, insulate the grid from the "B" battery potential, it is necessary to use a grid leak, to keep the charge which collects on the grid from becoming excessive and reducing the plate current to zero.

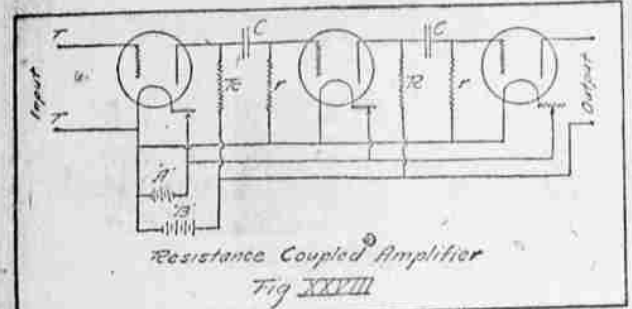
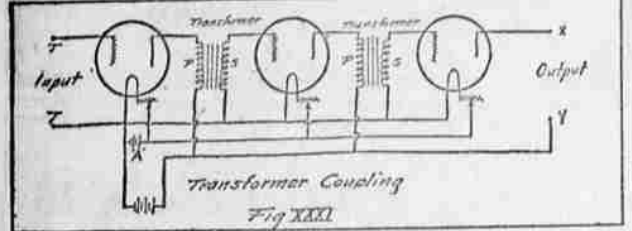
One of the chief disadvantages of the resistance coupled amplifier is that very high plate battery poten-

assigned for maximum power amplification, while at the same time the ratio of the transformer must be such as to deliver maximum potential to the grid circuit of the next tube.

The greatest advantages of the transformer method of coupling audio frequency amplifiers are the high degree of amplification, the relative simplicity of operation, and the low plate voltage required.

Chief among the disadvantages of the transformer coupled frequency amplifier is noise. Also the transformers amplify different frequencies to different degrees, which means that when this type of coupling is used for radiophone reception, the voice is distorted by the amplifying transformers. However, from a practical standpoint, the average amateur will have better results using transformer coupled audio frequency amplifiers than from any other method that can be used with the tubes and equipment now available.

The American amateurs have gone along the lines of regeneration and amplification of audible signals, as well as development of long-distance



tials are necessary. The amplification per tube of a resistance coupled amplifier is not as high as it is for some other methods but it is stable and does not distort the input as much as do some other methods which give greater amplification per tube.

Resistance-coupled amplifying may be used to amplify either radio or audio frequency.

A method of transforming the change in plate current of a vacuum tube to differences in potential is by means of a choke coil. A choke coil consists of a number of turns of wire wound up in a multi-layer coil and may or may not have an iron core. A coil of this kind offers a high impedance to the flow of alternating current, but has a relatively low direct current resistance.

The choke coil on account of having a low ohmic resistance, will have a smaller method of coupling, so that lower "B" battery potential can be used on choke coil coupled amplifiers and the batteries can be of smaller capacity.

The choke coil not only has inductance but a certain amount of distributed capacity. The distributed capacity of the coil plus the capacity of the plate with respect to the filament, together with the inductance of the coil, give to the plate circuit a certain definite period. That is, the plate circuit is an oscillating circuit whose resonant frequency is determined by the total capacity and inductance in the circuit.

If the choke coil be made variable, it will not only serve to transform the plate current variation with maximum plate potential variations, but it will also serve to tune out unwanted frequencies. When the plate circuit of the amplifier is tuned, the resonant frequency is amplified K times, but all other frequencies are amplified to a lesser degree.

Another and by far the most widely used method of coupling successive tubes in a cascade amplifier is by means of transformers. The transformer method of coupling amplifiers may be considered a development and a refinement of the single choke coil method. Coupling tubes by means of properly designed transformers will give a greater amplification per tube than any of the other methods.

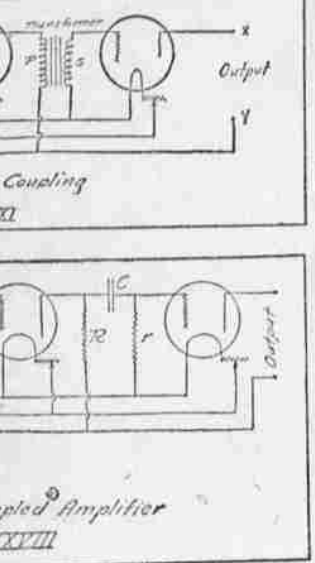
Figure XXXI shows the diagram of a three-stage transformer coupled amplifier, where P and S are respectively the primary and secondary of the coupling transformers. The transformer as a whole is so designed as to convert the plate current variations into maximum potential variations. The plate circuit of each tube which includes the primary winding of a coupling transformer must be

GREAT BRITAIN VS. AMERICA

Radio Amateurs of Those Countries Pursuing Distinct Courses in Development of Receivers.

Two separate and distinct courses are being followed by the radio amateurs of this country and Great Britain in the development of receiving apparatus for continuous-wave telegraphy and wireless telephony. Both courses are of the utmost importance to the art, and each will exert a great influence on the future of radio communication and entertainment.

The American amateurs have gone along the lines of regeneration and amplification of audible signals, as well as development of long-distance



reception on short waves by the super-heterodyne principle.

On the other side of the Atlantic the British amateurs, restricted in their hobby by ultra-conservative government regulations, have turned their attention solely to radio-frequency amplification. This has given excellent results on all long and medium wave lengths, but its success on shorter wave lengths has depended solely upon the expert handling of the operator, who has been compelled to use tuned coupling elements between each of the radio-frequency vacuum tubes.

It is too early yet to tell which of the two systems will ultimately triumph, but there is no doubt that the laurels at the present moment rest upon the American amateurs through the latest achievement of their leader, Armstrong, in the production of the superregenerative system.

SHORT FLASHES

The enormous popularity of radio has started out a new crop of solicitors offering the stock of tube companies with alleged glittering prospects. A general warning is being broadcast for those who are on the lookout for these smooth gentlemen.

A young lady sharp at Op-dekking, N. Y., recently heard through his net: "Come home with the car. How about it? I have to go to the store." Who can say that a set in the pasture will not soon catch the ears of milking time? "Come here!"

In making a regenerative set employing two vacuum tubes and a variable capacitor be careful not to get the instruments too close together. If they are, the set will howl. A set of this type should be mounted in a box not less than sixteen inches long.

Dr. John J. Curry, often referred to as "the wizard of the telephone," has had added to his many complimentary college degrees that of doctor of science, Yale university. Doctor Curry, who ranks as a brigadier general in the signal corps reserve, for S. A. was given this last honor for being a radio expert.

Sir Arthur Conan Doyle presides communication with the dead by radio within four years. Sir Arthur is firm in the belief that within that time two will have the direct communication that Edison hoped for, and that those who have passed beyond will have transmitters in the line of ether and all that will need will be the receiver.

Now Said Dearest.

The only said dearest to be seen in the British Isles is a small sandy island which covers a large area in Nairn and Elgin on the north side of the Moray Firth. Yet this country, only a few centuries ago, was rich, well-cultivated land.

Churches

All church notices must be in the hands of the editor by 4 p. m. Friday afternoon.

LATTER DAY SAINTS—Regular

services at the Tabernacle. Sunday school commences at 10:30 a. m. Sacramental services at 12:15 o'clock p. m. Mutual Improvement Association, Sunday at 7:30 p. m. Priesthood and Relief Society meeting at 7:30 p. m. Primary association at the tabernacle, Tuesday, for children, 4 p. m. Primary association on north side at the little chapel, for children, Thursday, at 4 p. m. Religion class at tabernacle Thursday at 2:30 and 4 p. m. Religion class at the chapel on north side at 2:30 and 4 p. m. Tuesday, Regular choir practice at the Tabernacle Thursday at 7 p. m. The public is cordially invited to attend any or all of our services.—David I. Steddy, Bishop.

First Church of Christ, Scientist—Corner of First and Washington. Sunday morning service at 11 o'clock. Subject, "Mind."

Sunday school at 9:45 a. m. Wednesday evening meeting at 8 o'clock. Reading room open to the public every Monday, Wednesday and Saturday from two to four. All are cordially invited to attend our services.

First Methodist Episcopal Church—"The Social Significance of Love" will be the theme presented in the sermon Sunday morning. The conference will open in Caldwell, Idaho. The attendance of members and friends is urged for the three Sundays remaining. Especially do we plead for interest in and attendance upon the Bible School. Let us close the year with credit to the church. Bible school at 9:45. Claude Cooper, superintendent. The Union meeting will be held in the Baptist church at the eight o'clock hour. Rev. O. W. Jones will be the preacher and Rev. A. R. Sitten will preside. All are cordially invited.—G. H. Quigley, minister.

The Salvation Army—Adjutant and Mrs. C. A. Peterson, commanding officer. Residence 1312 W. phone 295-W. Sunday morning at 11 a. m. the subject will be "The Fire of the Holy Spirit." Sunday school will be held at 2:00 p. m. and all the children are invited. Sunday evening at 8:00 p. m. "The Law of the Final Judgment" will be the topic. The public is cordially invited to attend these services. Week day meetings will be held on Tuesdays, Thursdays and Saturdays at 8:00 p. m. Come and bring your friends.

Zion English Lutheran Church will hold its services tomorrow at 11:00 a. m. at the City Park Pavilion. The services will consist of recitations and singing by the Sunday school and speeches by the Sunday school superintendent and by the pastor, Rev. R. Bogstad. The ladies will serve refreshments and the afternoon will be spent in a social good time. There will be no services next Sunday school in the Lutheran church on M street tomorrow. All are invited to the service at the City Park.—R. Bogstad, minister.

St. Peter's Episcopal Church—Corner 14th St. and O Ave. Aug. 20th is the 10th Sunday after Trinity. We have the usual regular services: Holy communion, 8 a. m.; church school, 9:45; morning prayer and sermon, 11 a. m.; and in the evening we unite in the Union service at the Baptist church, which will be conducted by the pastor, Rev. O. W. Jones, pastor of the Christian church will preach the sermon.—All are cordially invited.—Jas. W. Gunn, rector.

Christian Church—It's time to cast up accounts for the summer. Old Man Slumpski has been pretty much in evidence these past days, but is now beginning to feel his age and we are going to "bust him wide open" Sunday. Come and see the sermon. Preaching by the pastor at the 10 o'clock hour, but no evening service as we join in the Union service at the Baptist church.—O. W. Jones, minister.

COUNTY COURT PROCEEDINGS

At August Term, 1922

In re allowance of bills: Western Union Tel. Co., telegrams, \$1.31; La Grande Printing Co., supplies, \$9.30; Franklin Carbon & Ribbon Co., do, \$8.00; H. M. Hibbs & Carbon Co., do, \$12; Remington Typewriter Co., do, \$2.00; Franklin Carbon & Ribbon Co., supplies, \$30.00; Eastern Oregon Light & Power Co., light, \$17.70; City of La Grande, water rent, \$17.14; R. W. Leighton, sharpening mower, \$1.50; Burroughs Adding Machine Co., supplies, \$4.02; Fred Smith, plumbing, \$38.50; Mrs. A. E. Evans, office expense, \$5.00; Western Union Tel. Co., telegrams, \$2.21; Cousens Store, supplies for merchants, \$3.79; Anna Conrad, rent for office, \$11.10; H. Pearson, warehouse work, \$2.75.

Elgin Recorder, publishing Home Ind. Tel. Co., services, \$50.00; Hazel Parker, work clerk's office, \$24.00; City of La Grande, insurance, \$12.50; The Curry Press, supplies, \$378.32; Grande Ronde Hospital, hospital services, \$102.50; J. G. Snodgrass, supplies for indigent, \$106.68; Home Ind. Tel. Co., Co. nurse phone, \$4.25; Ed Cyr, auto repair, \$57.20; Thos. Driskell, warehouse work, \$11.50; C. A. Nicholas, do, \$1.00; Newell Book & Stat. Co., supplies, \$66.90; P. L. Lilly, do, \$1.50; Valentine Kramer, opening graves, \$12.00; Mrs. Albert Ohms, rent for indigents, \$10.00; Elmer Stoddard, do, \$24.00; J. J. Carr, part. on furniture for indigent, \$10.00; Standard Laundry, laundering for ind., \$11.30; Red Cross Society, care of S. indigents, \$107.95; Ash Bros., supplies for ind., \$1.65; Silver Grill, meals for prisoners, \$87.45; Ed Cyr, auto repair, \$33.60; Union Motor Co., do, \$161.92; Union Co. Library Assn., July expense, \$257.14.

ROAD FUND.

J. F. Birney, freight, etc., Grande Ronde Oil Co., supplies, \$233.13; Peenauhty Mach. Co., do, \$2.18; Russell Grader Mfg. Co., do, \$7.12; Union Hdw. Co., do, \$179.21; Grande Ronde Lumber Co., do, \$156.90; Palmer Lumber Co., do, \$112.81; P. L. Lilly, do, \$8.00; C. L. Kiddle, do, \$35.26; W. H. Bohnenkamp Co., do, \$11.60; Mitchell & Perrine, blacksmithing, \$9.20; W. L. Crandall, road work, \$19.00; M. L. Biedler, do, \$16.50; J. H. Delaney, do, \$14.50; Weatty Bros., do, \$70.00; W. H. Glenn, do, \$33.00; O. P. Kingsley, do, \$1011.10; Wilbur Burford, do, \$24.95; Archie Burford, do, \$13.05; G. R. Lindsay, do, \$5.98; Jack Elliott, do, \$22.45; Willis Wright, do, \$32.94; Otto Wolf, do, \$27.44; Marvina Wright, do, \$2.73; Fred Hager, do, \$20.93; Fred Hager, Jr., do, \$14.97; John Stroemer, do, \$19.43; Earl Phillips, do, \$32.43; Walter Geleher, do, \$17.94; H. Stove, do, \$29.94; M. Fitzgerald, do, \$29.90; J. R. Tucker, do, \$14.95; John Rollins, do, \$34.87; Geo. Loebl, do, \$64.87; Ed Phillips, do, \$2.99; Carl Fuller, do, \$5.98; Clarence Eckstein, do, \$11.96; Sommer Hotel, do, \$14.97; J. F. Birney, cash advance, \$9.31; J. C. Penney Co., supplies, \$10.84; Clint's Clothing, do, \$1.50.

ROAD BOND FUND

Curry Press, supplies, \$12.75; Frederick Post Co., do, \$17.09; La Grande Concrete Pipe Co., do, \$705.65; Grande Ronde Oil Co., do, \$149.99; John Mayfield, do, \$84.70; Peenauhty Mach. Co., do, \$31.51; N. K. West & Co., do, \$5.00; Donohue Furniture Co., do, \$84.29; Goodnough Mfg. Co., do, \$184.33; Clyde L. Kiddle, do, \$378.53; P. L. Lilly, do, \$16.44; J. W. Leighton, do, \$63.90; W. H. Bohnenkamp Co., do, \$955.62; Frank E. Smith, receiver, do, \$22.30; The Geo. Palmer Lbr. Co., do, \$143.54; Minum Lbr. Co., do, \$12.15; Grande Ronde Lbr. Co., do, \$300.77; Mrs. H. A. Watson, board of men, \$6.30; Pioneer Fir. Mill Co., sup, \$428.09; Imbler Fir. Mill Co., do, \$379.31; Elgin Fir. Mill Co., do, \$18.80; Layle B. Kiddle, do, \$331.78; Imbler Fir. Mill Co., do, \$47.89; M. A. Stillwell Meat Co., do, \$105.65; La Grande Grocery Co., do, \$468.33; Haz's Grocery, do, \$7.40; Clint's Clothing, do, \$26.32; J. C. Penney Co., do, \$16.76; Ray Fuller, do, \$42.00; Irene L. Osborn, do, \$24.00; H. H. Huron, do, \$125.00; D. A. Osborn, do, \$18.80; City Garage, do, \$4.70; Blue Mountain Garage, do, \$11.25; Union Motor Co., do and repairs, \$520.24; C. L. Squire Garage, do, \$45.75; La Grande Iron Wks., do, \$208.35; Mitchell & Perrine, blacksmithing, \$47.90; J. W. Berry, do, \$16.15; R. E. Coolidge, arbitrator, \$7.50; City Transfer Co., drayage, \$2.00; Oregon State Highway Commission, contract work, \$79.84; J. W. Soller, bridge work, \$287.85; J. A. Hawkins Co., road work, \$1178.22; Barr Bros., do, \$49.55; J. L. McKinnis, do, \$122.26; W. J. Vashinder, do, \$24.24; W. J. Vashinder, do, \$26.98; Tony Christensen, do, \$26.98; C. E. Thompson, do, \$33.94; The Baumgardner, do, \$16.08; A. L. Morris, do, \$11.14; B. H. Decker, do, \$4.97; B. H. Decker, do, \$4.97.

Chas. O'Hara, do, \$1.80; R. H. Decker, do, \$49.00; Orville Wright, do, \$80.35; Frank Henry, do, \$3.39; Jim Cripps, do, \$6.28; H. Caudel, do, \$4.49; Oscar Olsen, do, \$99.94; Mat Baonza, do, \$51.67; H. A. Newbill, do, \$9.41; Henry Paxton, do, \$5.82; Nick Heidenreich, do, \$14.74; Delbert Ricks, do, \$11.65; J. R. Robbs, do, \$3.70; T. Danna, supplies, \$250.00; La Grande National Bank, do, \$8.32; John Korrell, road work, \$10.56; Roscoe Furman, do, \$35.70; John Ricks, do, \$37.12; W. D. Kerr, do, \$32.86; Thos. Martin, do, \$12.15; J. W. Weiden, do, \$720.19; J. W. Weiden, road work, \$35.88; G. H. Buzzard, do, \$11.07; Mike Nelson, do, \$22.00; Ted Bright, do, \$6.57; Gladys Johnson, cooking, \$21.29; Lala Volsinkler, do, \$42.71; Chas. O'Hara, road work, \$59.55; Pete Dimech, do, \$12.00; Mike Basum, do, \$24.96; Jim Hyland, do, \$6.75; G. H. Buzzard, do, \$30.00; John Ragatz, do, \$6.00; Wm. Cudaby, do, \$11.95; Theo. Bright, do, \$7.50; John Huttie, do, \$45.52; C. E. Dobson, do, \$10.15; Chas. Livingston, do, \$42.57; Carl Anderson, do, \$10.00; Jack Hurley, do, \$19.36; Ed Newman, do, \$25.55; L. Compton, do, \$11.51; L. Wiseman, do, \$3.00; Jack Pulliam, do, \$25.00; Wm. Williamson, do, \$22.00; Wm. Cudaby, do, \$11.36; Ed Miller, do, \$29.20; Carl Anderson, do, \$1.50; Tony Emerson, do, \$2.99; Gerald Orahoad, do, \$64.40; B. J. Gibson, do, \$84.68; Harry Sandoz, do, \$21.60; A. L. Morris, do, \$81.18; Bert McAtee, do, \$25.85; O. A. Baker, do, \$31.86; J. B. Spencer, do, \$86.96; J. B. Spencer, do, \$58.41; John C. Wright, do, \$122.30; R. Ralph Clark, do, \$20.30; Earl L. Larson, do, \$14.16; Willard Stone, do, \$104.79; R. H. Davis, do, \$119.76; Charles Weagel, do, \$91.77; J. D. Plank, do, \$77.80; D. Ellsworth, do, \$11.96; Frank Weagel, do, \$24.38; A. Bacon, do, \$41.31; O. Christensen, do, \$8.97; W. Vernon, do, \$18.41; F. Gonzalez, do, \$64.76; O. Crowder, do, \$106.04; Jack Elliott, do, \$9.98; Bud Shafer, do, \$6.73; Jack Bishop, do, \$2.99; Ed Phillips, do, \$42.00; Carl Fuller, do, \$50.19; Clarence Eckstein, do, \$93.18; Sommer Hotel, do, \$3.50; J. C. Penney Co., supplies, \$10.84; Clint's Clothing, do, \$1.50.

ROAD BOND FUND

In re monthly allowance to various indigent persons: Allowed as follows: Jennie Byer, \$10.00; Jennie Cone, \$25.00; James Crowl, \$73.33; Nettie Dallen, \$15.00; Susan Enloe, \$15.00; Mose Gagnier, \$12.50; Catherine Herrmann, \$7.50; Amelia Hildebrandt, \$12.50; Hans Jensen, \$10.00; Chas. H. Jones, \$17.50; Nancy Lewis, \$10.00; Opal Meade, \$10.00; Almeda McCurry, \$27.50; G. W. Parker, \$10.00; Carloline Perley, \$10.00; Alpheus Patterson, \$10.00; Esther Powers, \$7.50; Margaret Pearson, \$10.00; America Robert, \$15.00; Mary O. Sage, \$12.50; D. W. Souder, \$15.00; Sarah Thompson, \$7.50; John Vans, \$10.00.

ROAD BOND FUND

In re approval of Windows' Pensions: Approved.

In re approval of County Treasurer's Report: Approved.

In re approval of monthly report of County Clerk for Seals Bounty Warrants: Issued: Approved.

In re the proposed County Road petitioned for by John B. Scott, et al.: Denied.

In re approval of bond of J. M. Hills as Constable of La Grande District: Approved.

In re application of Joan Labine for remittance of a lost warrant: Allowed and clerk directed to draw warrant on Road Fund in sum of \$15.90.

In re application of Mary Primm for County Aid: Continued for investigation.

In re application of W. J. Townley and of Sylvester A. Humphe for indemnity on diseased cattle: Allowed and clerk directed to draw

warrant in favor of W. J. Townley in sum of \$25.83 and in favor of Sylvester A. Humphe in sum of \$25.90, both on General Fund.

In re increasing allowance to Ruth Ryneason as County Aid: Increased to \$25.00 per month.

In re acceptance of the deeds of W. R. Ledbetter, et al., and John Asper: Deeds accepted and clerk directed to draw warrant in favor of W. R. Ledbetter on the Road Bond Fund in the sum of \$174.00 in payment of land and damages.

In re entering into a lease with Mary Taylor for gravel pit: Lease entered into and clerk directed to draw warrant on the Road Bond Fund in favor of Mary Taylor in the sum of \$500.00 and one on said fund in favor of Neal & Goss for cash paid out on lease in sum of \$195.00.

In re purchase of lot from J. A. Russell: Clerk directed to draw warrant on General Fund in favor of J. A. Russell for \$145.00.

In re payment of award of arbitrators in re claim of G. E. Cook:

Disipation for a Peon. On Sunday the whole family in Coz. Ben visits the nearest village to put in a gala day. Perhaps there is a religious festival in the morning; at any rate, there is a mass to be attended. Attention is given over to visits, with a woman and children usually come along, while the man of the house hangs around the general store or just sits at the center of interest. If he is feeling "flush," he treats himself in a can of evaporated milk, a great luxury, which he drains off through a nail-hole, just as if it were champagne.

The Gentle English Way. His voice stopped—exactly like when you hit a neighbor's gramophone with a well-aimed brick.—H. G. Wells, in the Magic Shop.

Time Passes--- BUT WE RENEW YOUR LAST FALL CLOTHES

It's a mighty welcome economy when you realize that we, as cleaners, can restore the clothes you wore last Fall and Winter and bring them back to their original newness.

In these days of thrift, such economy is truly well worth while. Not only will the savings be gratifying to you, but the method of putting new life into your garments will be satisfying as well.

Get the entire family's castoffs together from a year ago and let us estimate with you on the cost for cleaning and repairing. You'll then realize the great savings.

The Wardrobe

WOOD W. BERRY
—Dry Cleaning a Specialty—

The Hotel Oregon

BROADWAY AT STARK
PORTLAND, ORE.

While its convenient location in the heart of Portland's activities is an important asset—it is the atmosphere of comfort, courteous service and spirit of welcome which makes this a popular and famous hostelry.

YE Oregonophile

ARTHUR H. MEYERS MANAGER

SEND IT TO THE MODERN LAUNDRY

"Send your laundry to The Modern Laundry, Mary. They're efficient and dependable. I have been using The Modern for quite a while, and find them entirely satisfactory."

"I shouldn't know what to do without them."

MAIN 77

THE MODERN LAUNDRY