RADIO

AUDIO FREQUENCY AMPLIFIER UNITS

Construction of Two Is Described, With the Materials That Must Be Purchased.

Theoretically any number of transformer coupled stages of audio frequency amplification can be used. However, due to the amplification of static disturbances, power line induction, tube noises, etc., three stages are about the practical limit. If more than three stages are used the noises become so loud in comparison with the signal that it is difficult to hear the signal.

Since audio frequency amplifying transformers can be purchased at any radio shop and the simplest method of coupling, the construction of two audio frequency amplifier units will be described.

The first unit will be arranged to be used in conjunction with the vacuum tube receiver mounted on the eight-inch square horizontal base board, previously mentioned in this column. The

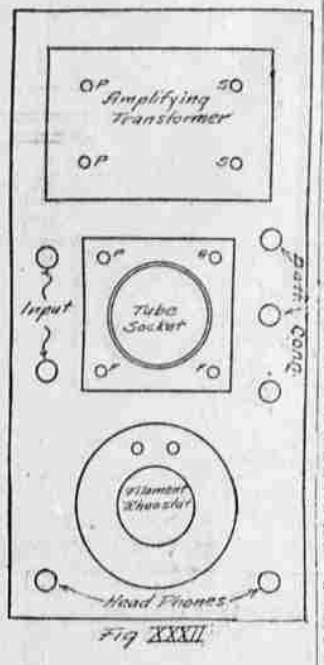


Fig XXXII

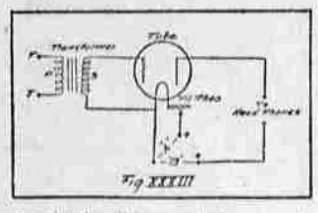


Fig XXXIII

second unit will be mounted on a vertical panel four inches wide and six inches high to "match up" with the six-by-eight vertical panel vacuum tube described recently in this column.

The following standard apparatus will have to be purchased at a radio supply store in order to construct an amplifier unit to be used in conjunction with either receiver.

One amplifying transformer, cost about $5.

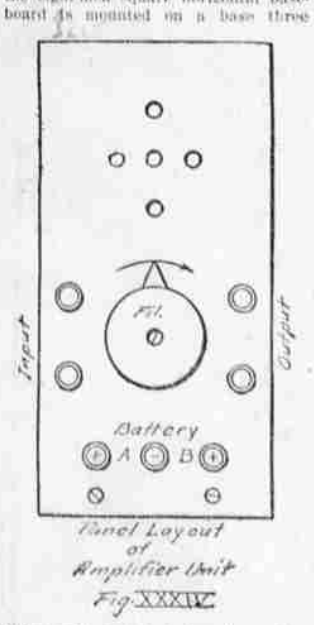
One vacuum tube (for amplifier), cost $6.50.

One vacuum tube socket, cost $1.

One filament rheostat, cost about $1.

Seven binding posts, cost about 70 cents.

The amplifier unit to be used with the eight-inch square horizontal baseboard as mounted on a base three



Panel Layout of Amplifier Unit
Fig XXXIV

inches wide and six inches long. The tube filament rheostat is mounted in the front, the amplifying transformers in the back and the tube in the center.

Fig. XXXII shows the relative position of the transformer tube socket and filament rheostat when mounted on the baseboard. A diagram of connections of the amplifier unit is shown in Fig. XXXIII. The input coming from the terminals of the receiver that were originally connected to the telephone receivers is connected to the terminals of the amplifying transformer. One side of the secondary of the amplifying transformer is connected to the grid, and the other side of the secondary to the filament and common battery lead. The filament rheostat is in series with the positive side of the filament. The plate terminal on the tube socket is connected to one side of the phone, the other side of the phone being connected to the positive side of a 45-volt "B" battery. Use a "hard" tube as an amplifier.

When using the amplifier unit for the first time, tune the receiver with the detector only. To connect the ter-

Amplifier Unit
Fig. XXXV

minals T-T from the amplifier unit in place of the phones in the plate circuit of the amplifier, adjust both the filament rheostats until the signal strength is maximum.

If it is desired to still further amplify the incoming signal two amplifier units can be constructed, the output of each unit being connected to the input of the next, and the phones being placed in the plate circuit of the last amplifier tube.

In constructing the second unit make the panel and the baseboard of the same thickness, kind of wood, and finish as used for the receiver. The panel should be four inches wide and six inches high, the baseboard three inches wide and four inches deep to "match up." Use the same kinds of binding posts and filament rheostat that were used on the receiver.

Fig. XXXIV is a plan view of the amplifier unit, and Fig. XXXV is an elevation of the front view of the panel. The diagram of connections is, of course, the same as for the previously described unit and is shown in Fig. XXXIII.

These amplifier units can be used in conjunction with any radio receiver. The same units connected electrically as shown in Fig. XXXIII can be mounted to suit the builders' own taste.

SEEKS STANDARD APPARATUS

National Radio Chamber of Commerce Is Negotiating With Federal Departments.

The National Radio Chamber of Commerce is negotiating with the various government departments, such as the bureau of standards, Department of Commerce, United States signal corps and United States Navy department, with a view to co-operating with these departments in the standardization of radio apparatus, methods of manufacture, methods of testing, etc. The National Radio Chamber of Commerce intends to work with these departments and assist them in their radio problems.

TIPS FOR FANS

A radio amateur in France has tough luck. He can't send at all and is not permitted to listen in on certain government transmitting stations.

A condemned murderer in a Boston jail is spending his remaining hours in the construction of a radio receiving set so that the inmates may enjoy programs during their hours of unemployment.

Despite all advice to the contrary, people still insist on using dry cells for the filament supply of vacuum tubes. The batteries will hold up for about five minutes and then they will slowly die down, until nothing at all can be heard.

Secretary Wallace has announced completion of plans for broadcasting weather, crop and market news by radiophone from Memphis, Tenn.; Jacksonville, Fla.; Roswell, N. M., and Milwaukee, Wis., thus giving the Department of Agriculture 41 stations throughout the United States from which agricultural news may be disseminated.

A radio aerial well grounded will take all of the joy out of lightning rod salesmanship. Run a No. 8 copper wire down from your lightning arrester, as specified by the new regulations of the underwriters' code compiled in Washington recently, and your home will be amply protected from lightning—if you have gone deep into the earth in making your ground.

Tea Drinking.

Perhaps the quaintest form of tea drinking is that practiced by the savage tribe in Tartary, in Central Asia. The leaves are first boiled in soda, then seasoned with butter and salt and then eaten.

Believed in Father.

"But, papa, why take my debts so tragically? I assure you, by hard work, strict economy, and the utmost self-denial you will succeed in clearing them off."—Munich Simplicissimus.

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. Steddard, Bishop.

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

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 welcome to attend our services.

The First Methodist Episcopal Church—In the forenoon, service the minister will preach on "The Most Valuable thing in All the World." At the eight o'clock hour the union meeting will be held in this church. The sermon will be preached by the Rev. Jos. W. Gunn, of St. Peter's Episcopal church. The pastor of this church will preside. Bible school at ten o'clock sharp. Mr. Claude Cooper, superintendent. A cordial invitation is extended to you to attend any or all the services of the day—G. H. Quigley, Minister.

The Salvation Army—Adjutant and Mrs. C. A. Peterson, commanding officers. Residence, 1312 W. phone. Sunday morning, 11 a. m., subject, "The Compassions and Sympathies of Christ." Sunday school at 2 p. m. The Sunday school time has been changed from 2:30 p. m. to 2:00 p. m., so as to not make it so late. Sunday evening 8 p. m., subject, "Does the Soul Sleep in the Grave With the Body?" Saturday evening the subject will be "From Jerusalem to Jericho." The public is cordially invited to attend these services. Week night services Tuesday, Thursday and Saturday at 8 p. m.

Presbyterian Church — The only medal ever won by Will Hays was for regular attendance at Sunday school. Can you qualify in the same class as this national figure? Come tomorrow at 9:45. Morning worship at 11:00, to which you are invited. The minister will preach. Union service in the evening at the Methodist-Episcopal church, the Rev. Jos. W. Gunn bringing the message. Stuart Bennett will be the soloist tomorrow morning, singing "The Lord is My Light," by Alitsen—W. C. Ross, minister.

Christian Church—Preaching by the pastor at the morning hour. No evening service as we will join in the Union service at the M. E. Church. Bible school at 9:45.—O. W. Jones, minister.

St. Peter's Episcopal Church—Corner 4th street and O avenue. August 12 is the 9th Sunday after Trinity. Services: Holy communion, 8 a. m.; church school, 9:45; morning prayer, and sermon, 11:00. In the evening we will join in the union service at the Methodist church, of which Rev. Geo. H. Quigley is the pastor. The pastor will conduct the order of worship and the Rector of St. Peter's will preach the sermon. At the morning service here Mr. John H. A. Bomberger, field secretary for the Brotherhood of St. Andrew, will give an address in place of the sermon. All are urged to attend.—Jos. W. Gunn, Rector.

RICH PRIZES ARE FOR THE GOLFERS

(By Associated Press)

NASHVILLE, Tenn., Aug. 12.—The fourth open championship of the Southern Golf association to be played on the Belle Meade course here September 28-30 offers probably the richest prizes of the season to professionals and promises to bring together the leading professionals and several of the best amateurs of America as well as representative British players.

More than seventy professionals have indicated their intention of taking part including Gene Sarazen of Pittsburgh, American and Southern open champion; Walter Hagen, British open champion; Joe Kirkwood, Australian open champion; Jim Barnes, American champion of 1921; Jock Hutchison, British open champion of last year; George Duncan and Sandy Herd, former British open champion.

Chick Evans, who has held both amateur and open American titles; Willie Hunter, former British amateur champion, and Frank Godchaux, New Orleans, runner-up in the Southern amateur this year, among the amateurs expected to play. Bobby Jones, Atlanta, who hold the Southern amateur title and was tied with John Black of Oakland, Calif., for second place in the American open, will be unable to contest because of matriculating at Harvard, while Black probably will be unable to make the trip from the coast.

The prizes offered for the tournament total $5,000 in cash for the professionals and plate for the amateurs. The prize list runs: first prize, $1500; second, $1,000; third, $750; fourth, $600; fifth $500; sixth, $300; seventh, $175; eighth, $150; ninth $125; tenth, $100; eleventh, $100; twelfth, $100. Other prizes include $50 for the professional turning in the lowest score for 36 holes; gold medal for the lowest qualifying score; medal for the amateur turning in the west score for 72 holes; medals for all amateurs finishing among first ten contestants.

Business Digest of Oregon

(Continued from page 2)

pound for their wool and 10 cents is now being paid freely for lambs. I know of one lot of lambs which were delivered a short time at Juniper, that brought $7.22 per head. Several deliveries of February lambs have been made where the lambs brought $7.60 per head. Our sheepmen, practically all, made some headway on this year's operations. The alfalfa weevil invaded this section last year and this spring a large acreage of alfalfa was plowed up and planted to potatoes and grain. The weevil doesn't appear quite as bad this year as it was last year but our hay crop here in the lower valley will be much below normal due to the decreased acreage. It has been estimated that there are from twenty-five hundred to three thousand acres of early potatoes in Malheur county. The prospects for a good potato crop is excellent and I understand offers of $1.10 per hundred, f. o. b. Ontario, have already been made. It now looks as though the potatoes would bring more money into this section next month when they will be marketed, than the alfalfa crop ever brought. A few people are of the opinion that the coming of the alfalfa weevil to this section will have much the same effect as the boll weevil had on certain sections of the South where the boll weevil forced diversification of farming. Last year a few people in this secton raised a small quantity of head lettuce. It sold readily and for very satisfactory prices and this year there will be from three to four hundred acres of head lettuce planted in Malheur county. A gross return of from $250 to $400 per acre for the head lettuce is expected, so that you can see the acreage of head lettuce will probably bring a rather large sum of money into the community. The outlook generally is very much better and there is a much more hopeful and optimistic attitude displayed by our citizens generally than was displayed six months ago. We have had a good liquidation and at the present time are in a position to take on a few good loans that we can count on being paid at maturity."

Dairying is Helpful.

Redmond—Guy E. Dobson, President, First National Bank of Redmond: "Crops on irrigated lands in this vicinity indicate an unusually good crop of hay and potatoes. The prospect for wheat and rye on the dry lands has been reduced very materially during the past two weeks of hot weather and it looks as though the yield in dry land sections would be below normal. We have a strong dairy interest in this section and of butterfat is very satisfactory and the dairy farmers are all making good profit on their operations. With the prevailing prices on farm products it looks as though most of our farmers would make a fair profit on this year's operations and that by the time they have been able to market their crops for this year the average farmer would be able to get back to a normal credit and regain his normal purchasing power. The price for wool and mutton seems to be very satisfactory and is such that the sheepmen are all making a profit and steadily improving their position, which is also true to a large extent of the cattlemen, although in a lesser degree. Due to the large percentage of the farmers in this district who keep a small dairy herd and the regular cream check which they have been receiving from their dairy products, general business conditions among the merchants have been very close to normalcy during the past six or eight months. The general sentiment in here is that by spring of next year this section at least will be back to a practically normal basis. One feature which we expect will have a stimulating effect on business in general during this coming year is the construction of the extension of the Tumalo Project on the west side of the Deschutes river, the construction of the North Canal on the east side of the river, and the development of about 12,000 or 15,000 acres more irrigated land in the Powell Butte section lying between Redmond and Prineville. It also seems probable at this time that there will be a considerable amount of railroad construction work initiated here during the coming year."

Broccoli Brings Money.

Roseburg—J. H. Booth, President, The Douglas National Bank: "Since the beginning of the publication of the Digest we have never had a pessimistic report to make concerning general conditions in the Umpqua valley. Money continues easy with us. Mercantile business is more active than during the spring months. In both the country and the different towns much building and improving is being done, more than for many years. Cold and unfavorable winter weather held down the acreage sown to hay and grain. This is now being harvested, however, and is of very good quality, but there will be little surplus for outside markets. Livestock prices have improved and created some profit in both cattle and sheep. Stock has generally been sold off or moved to summer range. Wool has practically all been sold or consigned for sale. Much has been held over for the past three years owing to the low prices that prevailed until this year. The last gaps in the Pacific Highway in this county are being closed by paving contracts now under way and this, with other state and county road work, particularly on the Coos Bay Highway, has made labor rather scarce for work in the grain and fruit districts. The broccoli crop turned out well and brought good prices. It has become quite a factor as a by-product on bottom lands as both soil and climate seem favorable for profitable growing of this winter cauliflower. Fruit crops are generally good. Apples not quite up to last year's production, with prices about the same as last season. The Bartlett pears have been contracted to Oregon canneries at $27.50 to $35 per ton. The prune crop is one of the best ever produced as to quantity. There should be fifteen million pounds of dried fruit. The growers outside of the State Association have mostly contracted to packers on a ten cent basis for 30-35 sizes. Thus far the extreme dry, warm weather of the past month seems to have caused little damage to fruit of any kind."

On Sound Basis.

Silverton—T. P. Risteigen, Cashier, The First National Bank of Silverton: "With reference to the local conditions in our city and community, will state that we consider them as quite satisfactory, although the grain crop and fruit crops are going to be very short, due to the continued dry and hot weather. Our berry crops were probably reduced by at least 50 per cent, and the grain crop by approximately the same as the spring wheat and oats will be very short and the winter grain not anywhere near what was expected. The lumber industry seems to be in a healthy condition and the camps and mills are operating to capacity whenever not hampered by the forest fires. So all in all, we consider ourselves on the sound basis and look for things to continue in the present trend and rather improved."

June Rains Fail.

Woodburn — Keith Powell, Vice-President, Bank of Woodburn: "We are hard hit by missing our usual June rain. Our late strawberries fell to a 30 per cent yield, raspberries were little, if any, and logans will be well under the usual average. Spring grain will not be cut at all in many instances. Fall grain should be fair. Our hay was good and our potato, onion and hop prospects are fair enough, given some moisture later. On the whole, however, our farmers are hurt rather badly, although we always get something. We expect a twenty per cent decrease in deposits."

Farmers Not Broke.

Independence—C. W. Irvine, President, Farmers State Bank: "Fall grain is a fair crop. Spring grain is no good. Small acreage, however, of spring grain. Hops, fruit and other crops look good. A good acreage of broccoli is being planted and it is a good crop here. To illustrate that our farmers are not broke yet, I was out to a farm sale the other day. The man giving the sale was out in need of money and offered October 1st settlement at 6 per cent. I settled for him and took one small note but all others said cash."

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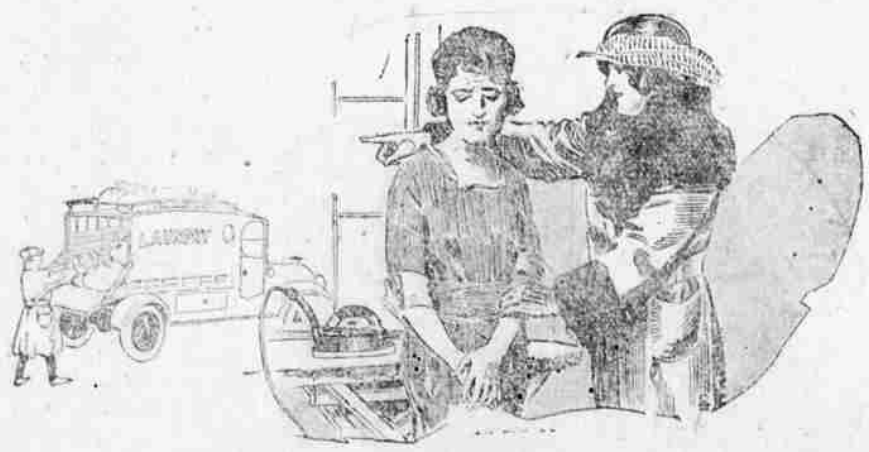

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