



Radio Topics

Push-Pull Amplifier (Part One) By R. M. SHERRILL (Radio Engineer)

Audio frequency amplification is a very important part of the radio receiving set. However, the greater the amplification obtained by this method, the greater the difficulties which must be surmounted to maintain the original quality of the signals.

The push-pull amplifier, as the following discussion will show, is a means of getting not greater amplification, but better amplification. The amount of ordinary amplification, which may be used, is limited by the amount of noise and distortion produced.

ment, these double frequencies are balanced out, and the currents of the original frequencies are passed on to the head phones or loudspeaker.

Transformers Are Paired

Two special transformers are required in the push-pull circuit. These transformers come in pairs and should be purchased together. The input transformer (I in diagram) has two secondaries connected together at one end. The two outside connections lead to the two grids, and the centre tap is the common grid-return wire for both tubes.

The output transformer (O in the diagram) is just the reverse of the input. It has two primary windings connected together at one end, and the secondary connects directly to the head phones or loudspeaker.

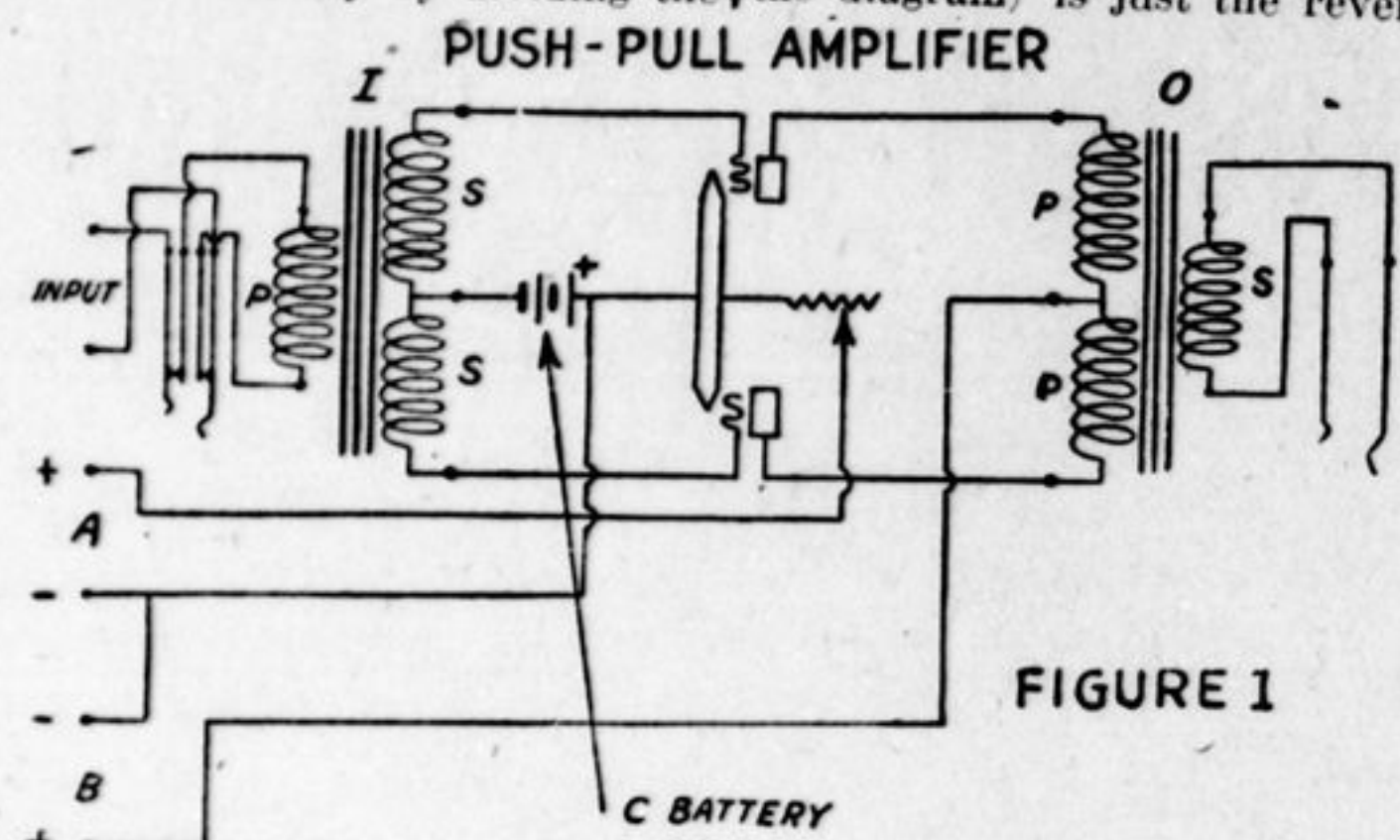


FIGURE 1

input to that one stage between two tubes. Thus each tube handles but half of the power that a single tube with the conventional amplifying circuit would have to handle.

There is another way in which the push-pull amplifier eliminates distortion. There is a tendency for amplifying tubes to produce small currents in the output circuits which have double the input frequencies in addition to the main currents of the same frequencies.

These double-frequency currents, or harmonics, are amplified from stage to stage until they are strong enough to spoil the original quality of the signals. In the output arrangement of the push-pull arrangement...

The C battery, if connected as shown, in the centre connection to the secondary of the input transformer, will furnish the necessary grid biasing voltage for both tubes. A 45 volt flash light battery will usually provide sufficient grid bias.

(Part Two of the description of the Push-Pull Amplifier continues with the panel layout and the details of the arrangement and connections. See the diagram of part one as a guide to be used in connecting the apparatus. See next week's paper.)

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RADIO QUESTIONS AND ANSWERS

Mr. Sherrill will be glad to help you solve your radio problems. Write him, care of The Durham Chronicle.

M. E. K. says: "On my single tube reflex receiver, the signals seem to be just about as strong whether the cat-whisker is touching the crystal or not. The crystal should make the signals stronger, should it not?"

hand near the tuning condenser causes it to whistle? Ans.—Shielding will stop this trouble, but first see if it cannot be stopped by grounding the shaft of the condenser.

Ans.—Yes. And when everything is adjusted and working properly, the receiver will "howl" when the contact is lifted off of the crystal.

D. E. R. wants to know: "Is there any objection to placing a variable condenser inside of the tuning coil in order to save space?"

R. S. asks: "Is it necessary to shield a receiver when putting your...

Ans.—Such an arrangement would operate but would not be very efficient or tune very sharply.

HOGS EAT LIVE SHEEP; SHIPPERS SUMMONED

Three Cases of Inhumane Cruelty at Union Stock Yards.

According to a dispatch from Toronto, the need which prompted the request of the Provincial Humane Society for a Government grant to permit the employment of more provincial inspectors was exemplified when the city police uncovered at the Union Stock Yards three of the worst cases of cruelty on record.

MARKDALE HENS ARE LEADING IN CONTEST

J. H. Dundas' Pen 25 Scored Highest Number of Eggs Eleventh Week.

In the great egg-laying contest which has been in progress at Ottawa under the direction of the Experimental Farm, Markdale poultrymen have made a good showing. This contest has been in progress for over three months, and J. H. Dundas' pen No. 25 scored the highest number of eggs for the eleventh week in all light breeds with no less than seventy pens competing, and with the lowest temperature experienced in Ottawa this year.

When Constable Alloway (405) of Keele Street station, on duty at the Stock yards, opened a C.P.R. car shipped from Staples, Ontario, he found that all that separated 14 cattle, two calves, 14 hogs and ten sheep were partitions made of sticks. After the hungry hogs had been beaten off from the sheep they were devouring alive, three sheep were destroyed.

In another case, a car was unlocked, and three sheep were found smothered. One other animal with broken limbs had to be destroyed. In another case, seven dead sheep and one crippled animal were found in a car. Summonses have been issued in each case.

Not Likely to Find Out "My wife," observed Henry Kleevan, "is one in a million. She gets up in the morning, milks seven cows and gets breakfast for ten hard-workin' men before six o'clock." "She must be a very robust woman," said the stranger from the city. "That's the funny part. She's sickly and delicate-like. If that woman was only strong, I don't know the work she couldn't do."

NEIGHBORHOOD NEWS

Interesting News of Nearby Towns Clipped From Local Exchanges.

Horse Brought 75 Cents

That a horse able to stand up and take nourishment should be knocked down to the highest bidder at a public auction for 75 cents and a milking cow bring but \$2, as occurred at Mr. Arthur D. Hall's sale near Eden Grove last week, is enough to make our Western readers think that Bruce has degenerated since they left their dairies and went to seek their fortunes growing No. 1 hard on the prairies.

The Family Herald's pathetic picture, "The Sale of Old Dobbin," has it over the farm, for what the agriculturist would lose money on, the manufacturer can work into a nice profit, and the stuff comes back to us in the form of leather and shoes, and glue that holds the family furniture together. Notwithstanding the low rate that the equine and the cow fetched, the sale on the whole, was a success, and Mr. Hall, who is coming into Walkerton to carry on his old trade as a watch-repairer, saw most of his stuff bring in a nice figure.

Constable Plays Good Joke (Mildmay Gazette) Last Sunday morning Edward Steffer drove to town to attend church, and left his horse tied in the Methodist Church sheds. After service he went for his horse, but was astounded to discover that his newly purchased rug was missing. He told his troubles to the constable, and that official promptly set about to discover a clue. He made a careful examination of the premises, and was about to depart when he noticed something in the back end of the shed that looked suspicious. There was a loose board, behind which the rug had been hidden and carefully covered up in the snow, evidently with the intention of returning under cover of night for it. Restoring the rug to its owner, who was delighted to recover his property, Constable Schmidt went home and got a worthless old rag carpet and placed it where the rug had previously been secreted. In the evening, he watched for the thief to come along for his stolen goods, but it was so cold in the shed that he couldn't stand it longer than 10 p. m., and finally went home. The thief came later, however, and took the "rug" away, as search of the shed premises on Monday morning. While the thief was not apprehended, the constable's vigil was rewarded, as a measure of honesty has not been gilt-edged, was seen several times passing the scene that evening, and his sneaky movements looked very suspicious. Any event, he will be watched pretty closely after this, and he can thank his stars that he escaped this time. There is no meaner person than the sneak who pilfers out of farmers' vehicles in the village sheds, and it is hoped that the clue gained by the constable may lead to his conviction.

Blaze Caught in Time

(Kincardine Reporter) On Wednesday, January 21, shortly after midnight, fire was discovered in the boarding room of the Circle-Bar Knitting Company. The alarm was promptly answered by the fire department, but owing to the fact that a sprinkler system had been installed, the blaze did not get much headway, and was soon extinguished. As it was, several thousand dollars damage was done by water and smoke. The public gathered in large numbers, and there was general elation when it was found that the fire was out and the danger of losing this thriving industry was over. The cause of the fire is unknown.

Hog Grading

(Kincardine Reporter) In the report of hog grading in Bruce from April 1, 1924, to January 8, 1925, it shows Bruce County shipped 55,089 hogs. Of these, 32,17 per cent were select, 52.47 were thick smooths, 2.7 were heavies, 6.48 were shags, 4.7 were lights and feeders. Of this number, Kincardine shipped 4,174, consisting of 32.5 select, 53.9 thick smooths, 2.4 heavies, 3.4 shags and 5 lights and feeders. Ripley shipped 3,268, being 31.6 select, 51.6 thick smooths, 2.5 heavies, 5.4 shags and 6.2 lights and feeders. Port Elgin shipped 4,487, being 32.2

selects, 50.6 thick smooths, 3.3 heavies, 1.8 shags, 9.8 lights and feeders.

Famous Fishing Cat Is Dead

(Paisley Advocate) There is an old saying that "the good die young." This may have been true of the human race in ages past, when a great deal less attention was paid to hygienic and sanitary conditions than there is in this century. However, the adage may still apply to the feline race. The average cat is credited with having nine lives, but Mrs. G. B. Irwin's fishing "Tom" sure died young. Following an illness of a few days, his claws were sheathed in death last week. Whether mourned by its kinsfolk or not, this phenomenal pussy will be missed from the home where it was an extraordinary member.

Founded Lucknow Sentinel

Mr. E. S. Caswell of Toronto writes the Lucknow Sentinel that Harry M. Hunt, who died recently in Winnipeg, was the founder of the Lucknow Sentinel. He thinks that in the second year of its existence Mr. Hunt had with him an assistant-partner his brother-in-law, Rev. Alfred Bowers. About 1875 the paper passed into the hands of a Kincardine man, David Boyd.

Piece of Tongue Lost

A little school boy in Smith Falls lost part of his tongue and suffered intense agony because he put his tongue on a piece of iron railing on a very cold day. He left part of his tongue on the iron railing.

DEBENTURES ISSUED FOR ROAD EXPENDITURES

Will Issue Debentures to Extent of \$80,000 to Pay Government for Roads Built.—Council Decided to Cut Down This Year to the Sum of \$40,000.

The final session of the Grey County Council took place at the courthouse on Saturday morning and was started at 9 o'clock so that the business could be dealt with in time to allow members to get home on the afternoon trains. There was plenty of business run off during the morning, and there were not very many dull moments. There was some opposition to nearly every by-law introduced, but on the whole, things passed quite harmoniously, and there was little real heated discussion. The council during the week has done its business with precision, and they showed themselves to be fair and broad minded not to think only of their own townships or municipality. In some of the sessions, there have been a few bit-bits affairs, but they were not lasting, and there were no grudges when the final adjournment took place.

There was a great difference of opinion as to whether debentures should be issued to the extent of \$80,000 to pay the large debt to the government of the province. Reeve Lemcke of Sullivan was very much against that plan, as he said that if the council continues to borrow money each year, they are going to be farther back all the time. However, it was quite evident by the attitude of the greater number of the members that they are in favor of that system, and a by-law was passed, without trouble, authorizing the treasurer to issue debentures for \$80,000.

NOT A "SQUEALER"

(Stratford Beacon-Herald) Charles Matthews is reported as saying that he is not going to divulge any inside story regarding bond deals. He is no squealer, he says. "I enter Kingston penitentiary with a smile, and I will leave it with a smile." Most people will probably find it difficult to see what there is to smile about, especially on the going in, but it is probable that many people will applaud him for not being a squealer; and yet when one comes to think of it seriously, there is not much reason for applause. If others were involved in the wrongdoing for which Matthews has been sent to prison, one might think that he would be worthy of applause if he revealed, rather than concealed what he knows. Is it not the duty of good citizens to co-operate for the enforcement of the law and the administration of justice completely and impartially? But undoubtedly there are many people who are moved to admiration for the man who refuses to tell, even when his refusal retards the administration of justice, rather than for the man who makes a clean breast of it, even when by doing so he serves the cause of justice and good citizenship. Such an attitude may seem natural, but it is none the less mistaken.

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RAZ-MAN

GUARANTEED REFILL For Sale by S. MacBeth and T. M. McFadden.

LEARNING TO WRITE

Not so many years ago, the man of letters was a man of learning, one of letters who had read widely and deeply, and had absorbed as much as possible of the best that had been thought and said in the world. Primed by this erudition, he then wrote out of his fulness for the benefit or entertainment of his fellows. There were exceptions such as Shakespeare of course, but on the whole, literature was the product of men of study.

In our time things are different. It is not learning so much as experience that nowadays taps the wells whence literary products flow. The prime requisite today seems to be to know life. Then literary gifts crowd home, trailing clouds of glory for the lucky litterateur. There seems to be more than a tinge of fatalism about it. It does not appear to matter in the least in what direction a man faces when he starts out in the world. If he is destined to write, he will arrive, in the end, at a publisher's office with his manuscript under his arm, and the publisher will receive him like a long lost brother. And the more wonderful and bizarre his experiences have been, the more of life he has seen. But if he has cultivated all the literary graces of all the ages and is without the knowledge of human nature that comes from rubbing shoulders with all kinds of men, he is nothing.

The Nobel prize for literature was awarded the other day to Ladislav Reyntom, a Pole, who is practically self-educated, and who has passed his life as clerk, telegraph operator, actor, railway agent, farmer and common laborer. Now, at 56, he finds himself placed in the front rank of the world's writers because of his four-volume novel, "The Peasant." A couple of years ago, the Nobel prize went to Knut Hamsun, a Norwegian, a former Chicago street car conductor, whose novel "The Growth of the Soil" has had a great vogue. And last year the Goncourt prize, the blue ribbon of French fiction, was awarded to a negro from one of the French African colonies.

Turning to English literature, there is John Masfield, a former sailor, whose poems carry the flavor of the sea and the gustiness of gales off the Horn. John Galsworthy writes society novels now, but once he carried a dinner pail and worked in an American carpet factory. H. G. Wells, as readers of "Mr. Polly" must remember, was a shop assistant. Thomas Hardy was an architect in his younger days, and one need not search far in his novels for evidence of hours with T-square and dividers. W. J. Locke is another novelist who can not conceal his architectural training. W. H. Davies, one of the Georgian poets of note, sought experience and contact with life by tramping the country, and in America, Vachel Lindsay did the same. Another American, a writer of "best sellers," who has learned to write by living is Sherwood Anderson whose recently published autobiography describes years spent on the race track, and the farm and in factories and military camps.

Possibly, however, the most striking example of a great writer primed by experience rather than by mere book learning is Joseph Conrad. Conrad was a Pole who began his literary career at about 35, after years sailing the seven seas on British merchant ships. His books are full of color and exotic atmosphere of the strange lands he visited as a sailor, and his plots have something about them of the inevitableness of the tides. There is nothing

MARRIAGE ANNULLED AFTER 10 YEARS BECAUSE OF RABBIT NATIONALITY

Because a rabbi who performed the ceremony was not a British subject, Mr. Justice Bruneau in Montreal superior court last week handed down a judgment annulling a marriage performed 10 years ago between Dame Sarah Klamer and Philip Lefschetz. Dame Klamer declared she had been married to Philip Lefschetz here on June 25, 1914, by Rabbi Yuleson of the Kadtscha congregation. The rabbi, it was alleged, was not a British subject when he performed the ceremony and consequently was not competent to keep registers of civil status conferring on him the right to perform a valid marriage ceremony.

To get things coming your way, it is first necessary to go after them.

RADIOS RADIOS

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NERVES AND FAINTING SPELLS

Sent Woman to Bed. Great Change After Taking Lydia E. Pinkham's Vegetable Compound

Sarnia, Ontario.—"After my girls were born I was a wreck. My nerves were too terrible for words and I simply could not stand or walk without pain. I suffered with fainting spells until I was no longer any good for my household duties and had to take to my bed. The doctor said I should have an operation, but I was not in a fit condition at that time. My neighbor said, 'Why don't you try Lydia E. Pinkham's Vegetable Compound?' I am sure it will do you good and will save those doctor's bills." So I was advised by my husband to try it after I told him about it. I am very thankful to say that I was soon able to take a few boarders for a while as rooms were scarce at that time. My baby is 17 months old now and I have not yet had an operation, thanks to your medicine. I have recommended the Vegetable Compound to a few people I know and have told them the good it has done me. I know I feel and look a different woman these last few months and I certainly would not be without a bottle of your medicine in the house. You can use this letter as you see fit, as I should be only too glad for those suffering as I have to know what has done for me."—Mrs. ROBERT G. MACGREGOR, R. R. No. 2, Sarnia, Ontario.

A recent canvass of women users of the Vegetable Compound report 98 out of 100 remarkable beneficial results. This is a remarkable proof of its merit. C

In any of his stories, however, more marvellous than the development of his own life.

Events ran pretty smooth Thursday morning's session, two hours that the men were well taken up with a business of one kind or another. Messrs. R. B. McKenzie was chair, and all the members present with the exception of Taylor.

A meeting of the Finance Committee was held after the session Wednesday afternoon with Liam Calder as chairman, a report was read at the session Thursday morning. The grants of money from Children's Hospital, Toronto Canadian Institute for the Deaf were both dealt with and the usual \$50 each, the County Treasurer printed.

Five by-laws were brought to the council during the morning all but one of these was passed without any trouble. Messrs. Hastie and Cole again held the positions. They were applicants. The usual sum paid the auditors, \$50, will receive ten cents a way for travelling expenses.

Each year there is a meeting of the County Council appointed Judicial Board of Auditors. Two were nominated. Gardiner was appointed over McDonald by a vote of 18 to 12. A usual squabble over the money to be spent on the roads in Grey County was finished and will not be finally until Saturday. Reeve William Calder opposed strongly the spending the amount of \$14,000 and that not more than \$12,000. He said that the roads never were the ones that always the most attention, and that money should not be spent without consideration of several other matters. He said he did not agree with the council and it is expected he will be no trouble on the morning when the facts will be sent to the members.

Four by-laws were passed at the afternoon's session. The council sitting for a couple of hours, but the business transacted of outstanding importance, laws, with one exception, a routine character. The by-law for the appointment of D. J. Gardiner of Holland Township, succeeding ex-Reeve Breeze of Chatsworth. The appointment to succeed the Messrs. Walter Hastie and W. R. Cole of Derby auditors, while a third Mr. Chisholm of the Thornbury School as a member of the entrance examiners for the fourth by-law providing for the dissolving of the High School in accordance with the action taken by the County of 1924 at the June session leaving it open for the opening of a continuation school place. These by-laws were passed without comment from the various hospital County requesting the make the usual or increase for the present year, also one from the head of the Salvation Army at Leamington for a duplication of \$100 made last year in a work in their maternity rescue work. These letters referred to the Finance Committee for consideration and report.

County Roads Reeve Holm of North presented the first report submitted on County Roads. It contained several important items which were finally adopted. There was some discussion of legal account which called for a suit for damages in which the County of Bruce was involved, and the suit made by Reeve Pottery. It might be good to have the County of Grey to take care of cases which from accidents which Grey County roads which Bruce County share and vice versa, and to meet with the approval of the council, and the appointment of a special committee with this matter was in the report, which was

To the Warden and County of Grey. Gentlemen: Your Committee beg leave as follows: That no action be

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