



Explanation of Regeneration

Constructional Details

By R. M. SHERRILL
(Radio Engineer)

Regeneration, as applied to radio, is the process of obtaining additional amplification from a vacuum tube by transferring some of the amplified signal energy from the output circuit back to the input circuit, where it causes the tube to produce still greater signal energy in the output circuit and so on.

The above process repeats over and over again each time releasing more energy in the output circuit. Thus the amplification obtained is very great, and one wonders what it is that limits the amplification obtained by this process.

Theoretically, all that limits the amplification by regeneration is the resistance of the circuit and the ability of the tube to handle the power. But, as every experimenter knows, the practical limit is reached when the tube starts to oscillate, which is long before the foregoing theoretical limits are approached.

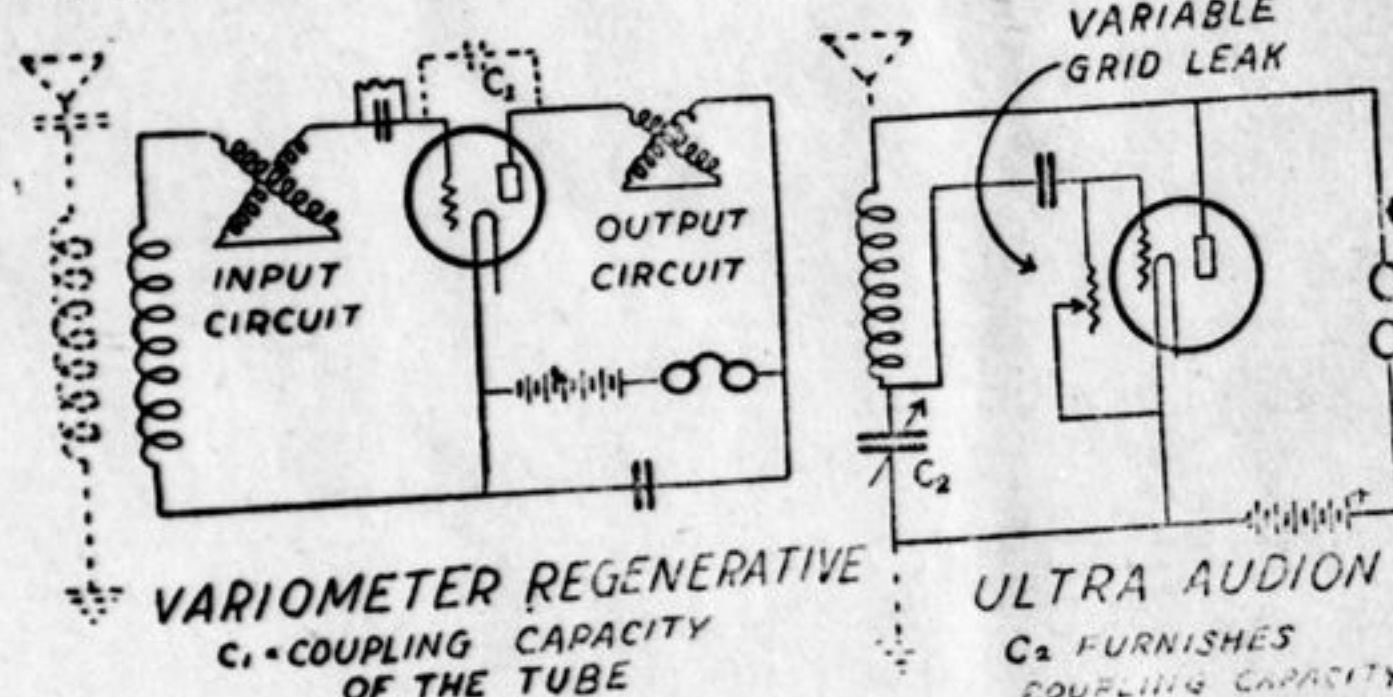
The Super-Regenerative principle brought about by Major Armstrong

in June, 1922, is simply a method of preventing the tube from oscillating, thus permitting the regenerative process to continue beyond the point where it was formerly stopped by oscillation.

The transfer of energy necessary to accomplish regeneration is brought about through the coupling and tuning of the two circuits involved. It may be magnetic or static coupling or a combination of the two. The magnetic coupling is the method employed in circuits using a "tickler" or similar arrangement.

Static Coupling

The static coupling is the method used in circuits like the variometer regenerative, and the Ultra-Audion. In the above mentioned variometer



REGENERATION

grid leak resistance.

Some receivers, (some types of the Ultra-Audion are good examples) have a tendency to oscillate all of the time, except when strong signals are tuned in. Such receivers re-radiate strongly and make considerable "whistling" in nearby receivers. In these sets, the regeneration is controlled but roughly by the condenser C2. The fine adjustment must be made with the filament rheostat and a variable grid leak. When the regeneration in these sets is not closely controlled, it actually decreases the sensitivity. Receivers using ticklers, variometers, condenser-tuned coils, variometers, etc., are generally more sensitive because they provide a finer regeneration control.

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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.

W. D. P. asks: "What is the proper C battery voltage for tubes using 135 volts on the plates?"

Ans.—The proper C battery voltage depends upon the type of tube and upon other things besides the plate voltage. A guess is that about 45 to 60 volts would be about right.

M. D. asks: "Is it safe to use a receiving set at the same time the A battery is being charged?"

Ans.—If the receiving tube filaments are not grounded, it will be safe to do it. If the filaments are grounded, there is danger, with some chargers, of burning out the filaments.

P. J. M. asks: "Is there any way in which I can make my crystal set louder by adding another crystal?"

Ans.—No.

SOUTH GREY DEBATING SOCIETY ARRANGES SCHEDULE

Series of Debates For Agnes Macphail Cup Is Arranged.

The executive of the Southeast Grey Debating Society met at the Department of Agriculture, Markdale, on Saturday afternoon, December 6. Although the weather was dull and the roads almost impassable, about seven of the directors were on hand from Normanby, Bennington, Glengarry, and Arden. After discussion of the rules, the teams which had sent their applications were considered, and a schedule arranged as follows:

Edge Hill vs. Onward.
Normanby vs. Rocky.
Rocky vs. Edge Hill.
Rocky vs. Onward.

The executive selected three subjects which are being submitted to the various competing teams. Although there is not a large number of competing teams, an interesting time and hard fighting is anticipated for the winners.

The winners in each Township are given a suitable medal, and the final winners a cup. These are donated by Miss Agnes Macphail, M.P.

Advertise in The Chronicle. It Pays.

OIL PROMOTER SKIPPED

(Warton Canadian-Echo)

Mr. D. J. Lee, claiming to be connected with the Mulberry Creek Oil Company which sunk a dry well at Spry last summer, attempted to float an Oil Company at Southampton. After spending considerable time trying to sell stock there, his success amounted to not more than \$15 or \$20 in actual cash, and the only persons affected are two merchants who traded, one a suit of clothes and the other a watch for stock, and the proprietor of the hotel where Lee stayed gratis. Lee then got out of town under cover of darkness.

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URGES LIGHTS ON ALL VEHICLES

Lightless Vehicles Have Taken An Appalling Toll of Life, Limb and Property.—Are Great Menace on Highways at Night.

At long last, it would seem, the lightless vehicle is to be prohibited from using the public highways of this province at night, and so, aside from the reckless or otherwise unfit, the greatest menace on the highways between dusk and dawn is to be eliminated. Hon. George Henry, who fathered the last bill to this end, has now the mandate of Ontario in support of this measure. For a decade and a half, he has had the active support of the Ontario Motor League in this humanitarian endeavor for during that time the Motor League has campaigned for the abolition of this all too prolific cause of highway fatalities and casualties.

Editorials on this subject have appeared in many of the newspapers of the province, and it is significant that without exception, they strongly support the proposal that all vehicles be required by law to carry lights at night.

The following excerpts from newspapers of the province are indicative of public opinion on this vital matter. In a lengthy editorial, the Brantford Expositor declared in part: "The numerous motor accidents that have occurred on the highways of the province at night on account of the absence of lights on vehicles, have called attention once more to the necessity of a law to compel all vehicles using the public highways during the hours of darkness to carry lights. The matter is of such vital interest to the public safety that it is almost inconceivable that the demand for such legislation has been so long disregarded. Experience has shown that it is not sufficient for the speedy motor cars to carry lights. It is very easy in the flickering shadows for the fast cars to run down an unlighted horse-drawn vehicle. The marvel is that drivers of horse-drawn vehicles are willing to venture on the roads without lights, thus disregarding their own safety."

"This is a matter that concerns the safety of all those who use the roads at night.

"The demand for this law in Ontario ought to be urgent and insistent until it is placed upon the statute books. The Ontario Motor League deserves all the help and commendation that can be given in its effort to impress the need of this law upon the Legislature of the province."

The Peterboro Examiner concludes an editorial on the subject with: "The Government should not let the next session go by without bringing down the much-to-be desired legislation. The bill is long overdue."

The Owen Sound Sun-Times urges editorially: "Everything that can possibly be done to make the roads safer for night travel should be done. Even if most are willing to take chances of being stalled into the ditch by a passing car, that has come suddenly upon them in the dark or on a foggy night, they should not be permitted to add to the risks of night travel to save the small expense of providing lights for their horse-drawn vehicles."

"The Wardens in counties in Ontario have been in conference with the Provincial Advisory Committee of the Provincial Legislature, and it has been agreed to advocate legislation providing that all vehicles using the highways at night shall carry lights. This should not require to be advocated. It is so evidently fair and indeed necessary, that the Legislature should take it up even if the Government does not introduce a bill. It has been far too long delayed already.

There is no argument that can be advanced for requiring autos to carry lights that does not equally apply to all vehicles.

In dealing with the proposal of the Wardens that the lights-on-all-vehicles law be initiated on the provincial highways, The Hamilton Spectator declares:

"What is good for the provincial roads is also good for the county and township roads. The menace is just as great on the one kind of thoroughfare as the other."

On this score the Peterboro Examiner states:

"While the necessity for such illumination is, no doubt, greater on more frequented highways, it is desirable, when introducing this legislation, to make it of universal application. There should be no discrimination of the kind in contemplation. The vehicle which makes use of the public highways ought to be equipped with proper lights, and the Legislature should promptly pass laws to that effect. Neglect to do so in the past has been responsible for many distressing accidents. There is no excuse for further delay."

The Hamilton Herald editorially remarks: "Everyone who has travelled on a provincial highway at night knows that safety calls for the carrying of lights on horse-drawn vehicles as well as on motor vehicles. On a dark night, it is often extremely difficult for the driver of a motor car to discern a vehicle ahead, going in the same direction if it carries no light; and the slower-going vehicle is in danger of being run down.

"Strangely enough, the reason why there is no law making it compulsory to carry lights on horse-drawn vehicles is that public opinion in the rural districts is strongly set against any such regulation. One would suppose that the farmers would favor it. But to carry lights would cost a little extra trouble, hence the objection.

"Objection could probably be removed by the adoption of a simple expedient. Let there be an amendment to the statute law, providing that in the case of a collision between a motor vehicle and a horse-drawn vehicle after dark, an action for damages will not lie if the horse-drawn vehicle carried no light at the time of the accident.

"That would convince the objectors of the expediency of protecting themselves."

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SIMCOE RESIDENTS SEE FIERY CROSS BURNED

Collingwood and Alliston Scene of Apparent K.K.K. Activities.—Treated Generally as Joke.

According to The Collingwood Enterprise, there was considerable excitement in that town on Tuesday night of last week when about 11 o'clock a fiery cross blazed up on the corner of Hurontario and Hunt Streets, known as Leach's Park. The cross, about eight feet high, was covered with coal oil and saturated with kerosene. The chief of police was early on the scene and made a thorough search of the surroundings but found nothing. It is generally supposed the fiery cross was the work of young boys. The Alliston Herald says that quite a little stir and excitement was also occasioned in that town about ten days ago when a cross was burned on the high land at the rear of the town water tank, but is not inclined to attribute it to the K.K.K.

Both papers scoff at the K.K.K. idea, saying that there is nothing in either Collingwood or Alliston for the society to work on.

BRUCE M.P. SPEAKS IN NEW YORK

James Malcolm Makes Plea for Development of St. Lawrence Waterway.

James Malcolm, M.P. for North Bruce, addressed the New York Canadian Club at a noon luncheon Saturday, and urged support for the St. Lawrence deep waterway project. Mr. Malcolm outlined the benefit which would be derived by the United States and Canada through in-

creased power and transportation facilities. As an example, he cited the success of the Ontario Hydro-Electric development and the resultant growth of industry in Central Ontario. The waterway, he said, had become an international necessity, adding, "If we are going to develop the central part of our two countries to the extent that it should be developed, we must support this great project."

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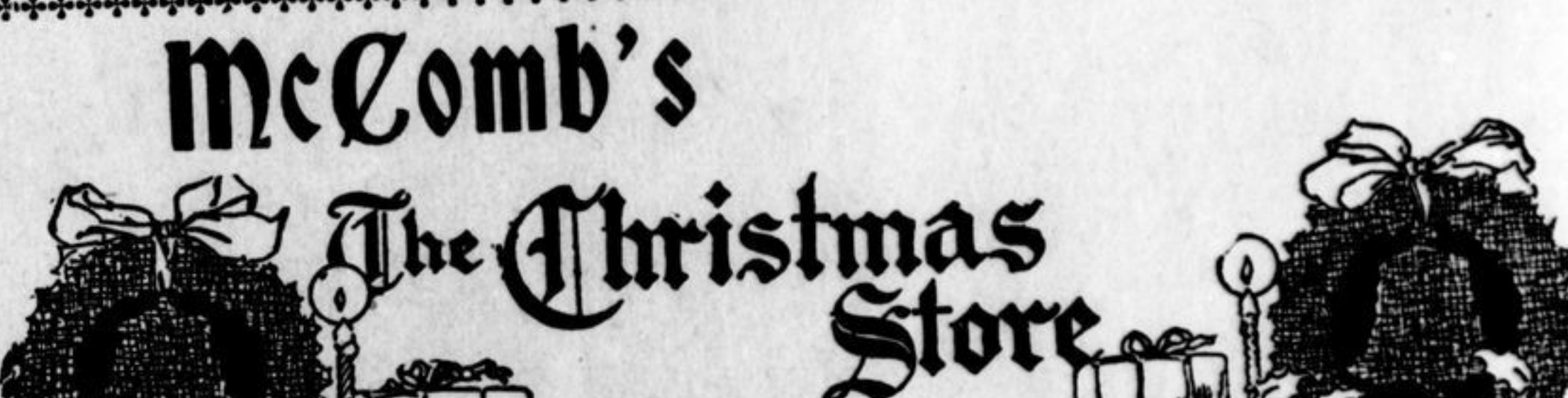
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Well—here's h your frame shakes (Copyright, 1924)

Flesherto

(Our own Corres)

The annual election the W.M.S. and Ladies Presbyterian Church to week at the home of Stewart as follows: W. Dent, Mrs. (Rev.) Har President, Mrs. G. J. Secretary, Mrs. J. J. Treasurer, Mrs. T. W. sionary Record, Mrs. G. Strangers' Secretary, Duncan, Ladies' Aid S. ident, Mrs. T. W. F. President, Mrs. Alfred retary-Treasurer, Mrs. bull; Visiting Committe Inkster and Mrs. D. M. societies had a success on Thursday evening. Mr. W. J. Meads, ex-amesia, who resides still interested in farm extensive breeder and Oxford Down sheep. M supplied us with figur his flock weighed rock stock scales at Flesher and we think there an in this locality who cat showing. One stock 300 pounds. One pair ewes weighed 480 pou other pair 450 pounds, ling ewe weighed 190 one pair of ewe lambs

An event of special ifowl supper and social e in by the members of 2855 and L. O. B. A. Cor No. 545 here, held in C on Thursday evening. After the splendid sup full Master Frank Dun chair and conducted program in his usual ner. A debate, which interesting and amusg, costs and games were e a fine exhibition of el was given by Mrs. W. lev. J. Harrower gave address, which was elful and highly worthy Mistress, Mrs. o gave an address in