



The Ultra-Audion Receiver

By R. M. SHERRILL
(Radio Engineer)

Another one of the radio hook-ups that has enjoyed a nation wide popularity is the Ultra-Audion circuit brought out by Dr. Lee DeForest. A receiver using this circuit is by no means recommended as ideal, but the chief advantages and disadvantages are pointed out, leaving the reader to judge its merits.

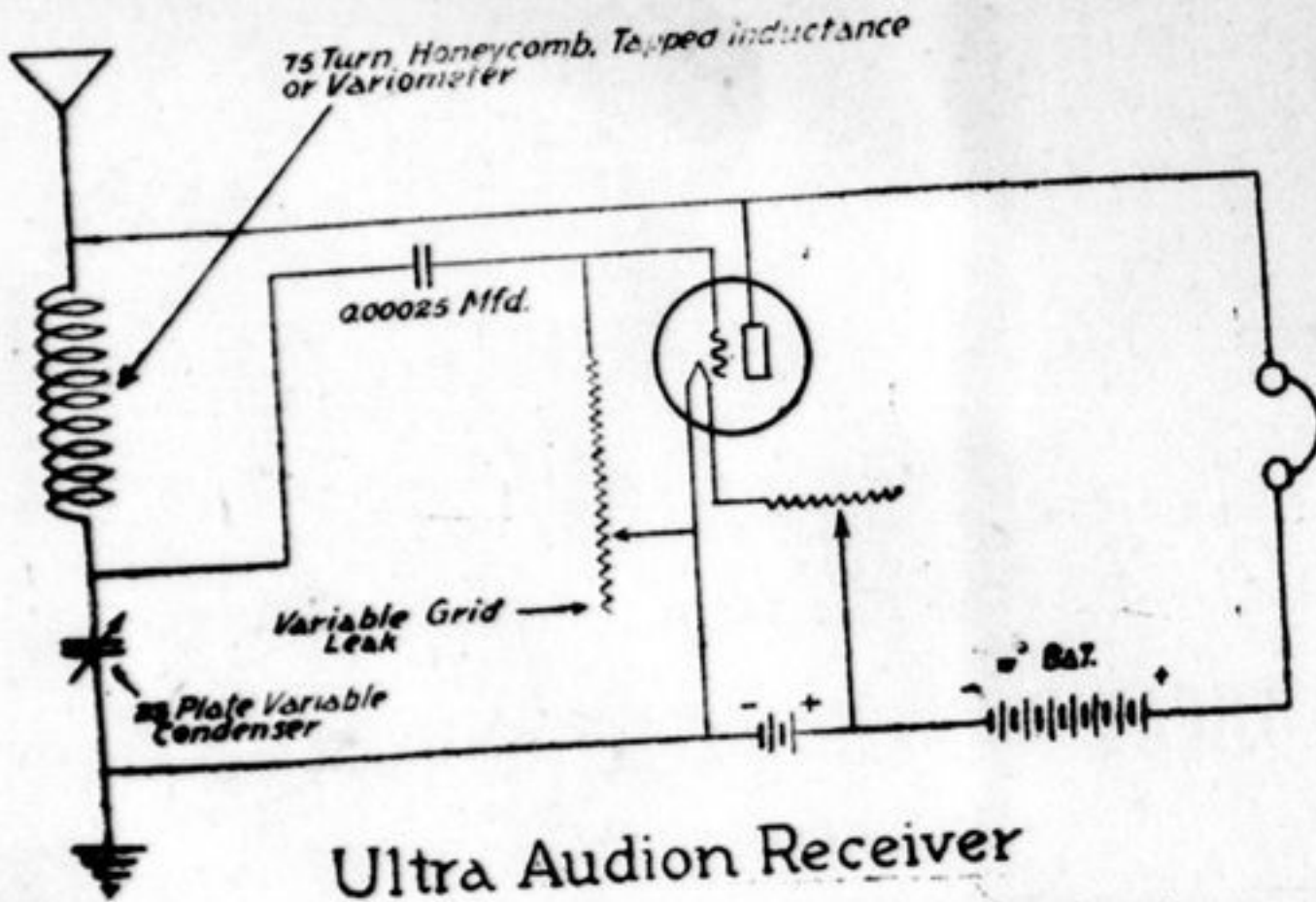
The Ultra-Audion receiver is one of the most simple to operate. It is regenerative but the regeneration is automatic instead of being controlled in the usual manner by a critical separate adjustment. Being regenerative, the set is quite sensitive, and with a good antenna and fair weather conditions should bring in stations up to a thousand miles distant. Other points in its favor are, that it requires but a small outlay of apparatus and that it is very easily assembled.

The two chief disadvantages to the Ultra-Audion circuit are its lack

proved by substituting for the honeycomb coil, 90 turns of 20 gauge DCC wire wound on a 3.5-inch diameter tube. This coil should be tapped every ten turns for the first 60 turns. Still better tuning may be obtained by replacing the honeycomb with a variometer.

As the diagram shows, the wiring is comparatively simple and is easy to follow in making the connections. It will be noticed that the grid leak is connected between the grid and the negative side of the filament instead of in the usual place across the grid condenser. The grid leak is connected in this way to give a better control over the oscillation of the detector tube. As suggested above, a continuously variable grid leak should be used in this place.

The panel arrangement, which will depend somewhat on the type of inductance chosen, is left to the reader. Using the honeycomb coil,



of selectivity and its tendency to radiate energy and thus interfere with others' reception. Both of the above points make this circuit undesirable for listeners located in or near thickly populated districts where there is likely to be much local interference. Another point is that it is sometimes hard to make the tube stop oscillating while receiving a phone station. This last point makes the use of a variable grid leak advisable.

Simple Construction

As shown in the diagram, a fixed inductance, which may be a 75-turn honeycomb coil, is used. The selectivity of the receiver may be in-

creased but for three controls on the panel: the condenser dial, the knob of the variable grid leak and the rheostat knob. If the tapped inductance is used, the switch lever and switch points will take up some of the additional room. The use of the variometer will, of course, add another dial on the panel. In the last two cases an 8x10 inch panel will provide ample room, and in the first case a much smaller one will suffice.

Any of the standard types of tubes will give good results with this circuit although the so-called storage battery tubes will usually give a little better volume than the dry cell type tubes.

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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.

R. K. asks: "If it would help, in the 3 circuit regenerative set that was described about a month ago, to use a small variable condenser across the secondary of the variocoupler?"

Ans.—A very small condenser might be used there, but it would be of no particular advantage.

A. P. P. says: "I am using a receiver which is a crystal and variometer combination, and have a lot of trouble keeping the crystal detector in adjustment. Would one of the fixed crystals such as are advertised for reflex sets do for my re-

ceiver?"

Ans.—Yes. Such a crystal would be suitable although a fresh crystal with your present arrangement might be more sensitive.

A. M. says: "We have just moved into an apartment and want to get our crystal set in operation again. Will another aerial on the roof have any effect on the two that are there now?"

Ans.—Your crystal set will not interfere with the other receivers although they may interfere with yours. Run your antenna, if possible, at right angles to the ones that are there now.

WINTER FEEDING AND HOUSING FALL LITTERS

(Experimental Farms Note). The fall-farrowed litter must be housed and fed under more or less artificial conditions in this climate during the winter. The rapidly developing pigs demand mineral matter for the building of bone and muscle, meal and other feeds in a relatively concentrate form, and also some form of succulence to assist in the normal functioning of the digestive organs. This is the opinion of W. G. Dunsmore, Animal Husbandman, who goes on to say: There are many mineral feeds available in both organic and inorganic forms, and these include charcoal, bone meal, tankage, wood ashes, bone black, ground limestone, earthy matter or sods, etc. These may be matted or hoppers, or if finely ground, may be added to the meal ration at the rate of a few pounds per hundred of meal. Succulence may be supplied to the hogs in form of roots, or potatoes if roots are not available. The potatoes give better results when boiled and mixed with meal. The roots may be pulped and mixed with the meal cation or fed whole, but for the younger pigs they should be pulped. A meal ration composed of equal

parts of shorts, middlings and finely ground oats is suitable for pigs if 2½ to 3 months of age when supplemented with about 3 per cent of linseed oil meal and skim-milk. A well developed pig of that age will consume about 1 pound of this meal mixture and 5 pounds of milk per day. Tankage or meat meal may be substituted for the milk at the rate of 6 to 8 per cent of the meal ration but seldom gives as good results. For older pigs a meal mixture composed of ground oats, 2 parts; shorts, 1 part; middlings, 1 part; bran, 1 part; barley, 4 part; and linseed oil meal, 3 per cent gives good results. A variety of meals is usually better than a single meal. An equal quantity of roots may be added to the meal ration after the pigs are 3 to 4 months of age but carefully avoid overfeeding.

In housing, the main features to keep in mind are cleanliness, suitable ventilation and the supplying of a reasonably dry sleeping berth. If this berth is situated in a shed or draughty building, it should be enclosed. Pigs will do better in a shed than in a dark, damp, poorly-ventilated corner of the stable even though the stable is considerably warmer.

Cramped quarters are to be avoided, as daily exercise is as desirable as proper feeding.

TEMPERANCE POLICY OF PREMIER LAUDED

Prohibition Workers Commend Hon. Mr. Ferguson in Resolution.

Enthusiasm was shown at a meeting of the prohibition workers of District No. 2, Northeast Toronto, held recently in the Sunday School room of Sherbourne Street Methodist Church, with Mr. Alex Mills, K.C., presiding. After short addresses by Rev. L. S. Albright and Frank D. Price, the following resolution, moved by Mr. Price and seconded by Dr. James E. Forfar, was carried unanimously:—"That we send a resolution to Premier the Hon. G. Howard Ferguson, expressing our approval of his prompt acceptance of the verdict in favor of the Ontario Temperance Act, given on October 23rd, his decisive statement of policy and his vigorous action to enforce the law as evidenced by recent 81,000 fines and jail terms, expressing at the same time our conviction that the Premier's pre-plebiscite policy of 'jail sentences and no fines,' is the only real solution of infraction of this law, and assuring the Premier of our sympathetic and active support in his task of enforcing the law."

Another resolution moved by Mr. George A. Rudd, and seconded by Dr. Forfar, was as follows:—"That a resolution be sent to the Prime Minister of Canada, Right Hon. W. L. Mackenzie King, urging him to take steps to stop the issuing of new licenses for breweries or distilleries in the Province of Ontario, to discontinue customs facilities for the export of liquor from the Province of Ontario into the United States (under prohibitory law), and the alleged export of liquor to Cuba, Mexico and the West Indies, but really transhipped to another point in Ontario, and sold at 'bootleg' in violation of the Ontario Temperance Act, and we specially urge this in view of the recent failures to convict exporters under Ontario law at Windsor, as reported in the press of November 13th and 14th."

Endorse Education

Other resolutions had regard to a three years' campaign of education of the young through the regular channels and existing organizations, as to the evil effects of alcohol on the physique and the mental and moral character; for amendments to the Ontario Elections Act to conform with the Federal measure in respect to the registration of voters, for the prohibition of the manufacture, and export, as well as the import of liquor in prohibition provinces, and for better regulations and restrictions as to liquor, which may be prescribed for medicinal purposes.

In addition to those named, some others who took part in the discussions were:—Mr. D. Eagle, Dr. Jas. Bray, Rev. G. W. Bishop, Miss R. L. Martin, Mrs. C. H. Beavis, Rev. John J. Ferguson. A small committee was appointed to properly prepare the resolutions and to see that they reach the parties for whom they are intended.

CHANGING SEED GRAIN

(Experimental Farms Note) A common question asked by farmers is, "Does it pay to change seed?" says L. H. Newman, Dominion Cerealist. The inference here is that where the same seed has been used on the same farm for a few years, it may deteriorate in its ability to produce a profitable crop. It is also a common belief that one operating a farm characterized by relatively light soil should obtain his seed frequently, from a crop which is produced on soil of a heavier character and vice versa. Some authorities have scoffed at the idea that a change of seed is ever necessary. They argue that seed grown year after year in a district must of necessity become acclimatized and better adapted to the soil conditions of that district. It is safe to say that many farmers have followed this advice to their financial loss. Investigation and observation have revealed the fact that it is not possible to lay down any definite rule as to when seed should be changed. It is obvious that certain circumstances may arise to make the change of seed appear imperative, even to the casual observer. For instance, a crop may be so badly damaged through lack of moisture or by some condition which has forced premature ripening, as to cause the resulting grain to be very light and poor. Under such circumstances, it would, of course, be folly to think of using this grain for seed. This, however, is an extreme case. The problem to determine is whether, under normal circumstances, one may expect a larger crop from the use of seed grown elsewhere than on the farm on which it is intended to be used. Without going into detail, one may safely follow the rule to change seed only when seed may be obtained which possesses a higher degree of development and vigour than the home-grown. This is assuming that the home-grown seed belongs to a suitable variety for the district and is free from noxious impurities. If these latter provisions are not complied with, the seed, of course, should not be used under any circumstances. Farmers who contemplate changing their seed and whose

seed is reasonably good, at present, would be well advised to procure some first class registered through the Canadian Seed Growers' Association at Ottawa and test this in comparison with their own. This is a relatively inexpensive practice which might well be adopted periodically by every farmer and with all classes of crop.

ENCOURAGE SMALL TOWNS TO DEVELOP HOCKEYISTS

It has been suggested by a close follower of the Northern Hockey League, which was comprised of clubs in towns and cities of Western Ontario, that the league confine its entries from towns and villages not larger than 5,000 population. Many of the clubs in the smaller centres have been complaining that they have been swept aside in competition annually by towns and cities which can afford to import several players, and outside of group matches, the little fellows get hockey for only the month of January.

It is also planned to allow teams finishing in second place in the runners-up in other groups in a secondary elimination series to stimulate hockey in those centres throughout the winter.

BETHOVEN'S TENDER HEART

Rugged as was Beethoven's outward appearance, he had a kind and tender heart. Once a child of his friend, Madame Ermann, died, and she was surprised that Beethoven did not pay her a visit of condolence. Finally she received a message from him, asking her to call at his residence at her earliest convenience. This she did, and found him too deeply moved to speak. He pointed to a chair, and the lady sat down, he meanwhile seating himself at the piano.

For an hour he played to her, bringing forth from the old instrument sounds of sympathy, and finally of comfort and resignation. It seemed to Madame Ermann as if an angel were speaking through the music. At length he stopped, and she, weeping happy tears, went away feeling greatly strengthened and consoled. She could never tell of this touching incident without emotion, although she lived to be an old, old woman.—Ave Maria.

They say long hair is coming back slowly. Naturally.

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TOTAL ECLIPSE OF SUN ON JANUARY 24

Niagara Peninsula in Path of Totality.—First Total Eclipse to Visit Ontario in Over Two Hundred Years.

A total eclipse of the sun takes place on January 24 next, and to residents of Central Ontario, the eclipse will be the most momentous astronomical event that has occurred in this section of the world, even in the memory of the "oldest inhabitant."

The path of the total eclipse lies from the district surrounding the Lake of the Woods, through Southern Ontario and New York State, out into the Atlantic, and well to the north of the British Isles.

According to the Almanacs of 1925, just issued, the eclipse begins at Toronto at 8 o'clock in the morning and becomes total at 9.07. The total-ity lasts a minute and eight seconds, and the eclipse ends at 10.23 a.m. The Niagara Peninsula is immersed in the shadow, with Toronto and Buffalo inside the north and south edges.

The only condition that may militate against the observance of the eclipse is the time of year when it occurs, which may be cloudy and stormy.

Besides the eclipse of the sun, the only other eclipse visible in this part of the world will be a partial eclipse of the moon on February 8,

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