

# RADIO DEVELOPMENT

BY LIEUT. JOHN R. IRWIN  
U.S. AIR SERVICE (RESERVE)

## ALTERNATING CURRENT.

In order that this article may be thoroughly understood, in its briefness, we must refer to the values of current given in the table of the preceding article. These values are plotted in the accompanying diagram as ordinates (vertically) and the corresponding lengths of time elapsed since the start as abscissas (horizontally), and a smooth curve drawn through the points enables one to determine what is the value of current for any moment lying between any two of those which are included in the table. It is to be noted that the changes of current repeat themselves. Thus in the table the current is the same at 1 second and 25 seconds after the start; at 7 seconds and 31 seconds, etc. The interval of 24 seconds in this example is the "period" of this alternating current. The current passes through a complete "cycle" of changes in this one period.

A current like that just treated is the same as that which would be produced in a current attached

to a coil revolving very slowly in a uniform magnetic field. The motion has been assumed slow in order that the changes can be followed with ordinary direct current instruments, as explained in the last article. In order to represent the current developed by an ordinary low frequency alternating current generator we must, however, imagine a coil to revolve more than a thousand times more rapidly. Thus the usual A.C. lighting circuits carry currents whose period is only about one-sixtieth of a second. The current passes through sixty complete cycles each second—that is, its frequency is sixty cycles per second.

The frequency of radio currents is, however, enormously greater than the usual lighting low frequency alternating currents, and usually a radio frequency cycle would be completed in one-millionth of a second to one hundred thousandths of a second.

(Continued in next issue.)

Sine Wave



# APPARATUS AND DEVICES

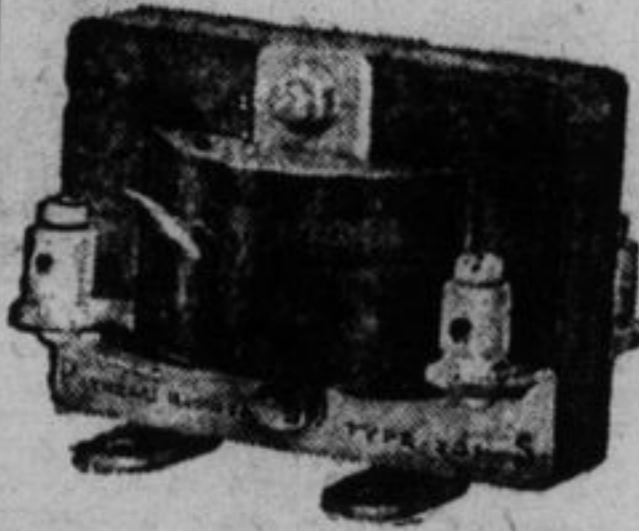
By RALPH BROWN, RADIO ENGINEER

## AMPLIFYING TRANSFORMERS.

The remarkable results obtained in long distance radio communication in recent years have been largely due to amplification made possible by the use of vacuum tubes. The experimenter has been at a decided disadvantage due to his inability to get suitable vacuum tubes. Fortunately this question has now been settled and satisfactory tubes are now available.

In order to get the maximum of results from these tubes, as amplifiers, they must be used with correctly designed amplifying transformers. The type illustrated was specially built to meet this situation. The primary receives the maximum amount of energy and delivers it undistorted in wave form and at the correct potential to the grid of the amplifying tube.

The core construction is such that there is little tendency for the setting up of external fields with the resultant howling in the audio frequency circuit. The distributed capacity of the secondary is low, so that the maximum potential is obtained on the grid of the tube.



distributed capacity of the secondary is low, so that the maximum potential is obtained on the grid of the tube.

Will readers interested in these radio articles kindly communicate with the editor by mail?

# Markets Reports

## GRAIN QUOTATIONS.

**Montreal, Oct. 20.**—Oats—Canadian Western No. 2 64 to 65c; No. 3 59 to 60c. Flour—Manitoba Spring wheat patents, 84c to 85c. Rolled oats—Baga, 90 lbs., \$2.90 to \$3. Bran, \$20. Shorts, \$22.

**Toronto, Oct. 20.**—Manitoba wheat—No. 1 Northern \$1.15 1/2. American crop—No. 3 yellow, 85c No. 2 yellow, 84c; all rail.

Barley—Malting, 59 to 62c, according to freight outside.

Buckwheat—No. 2, 60 to 65c.

Rye—No. 2, 62 to 67c.

Milled—Delivered, Montreal freight, bags included; bran, per ton, \$20; shorts, per ton \$22; middlings, \$23.25; good feed flour, \$1.90.

Ontario wheat—No. 2 white, 95 to 97c, according to freights outside; No. 2, 89 to 94c.

Ontario No. 2 white oats—33 to 40c.

Ontario flour—ninety per cent. patent, in jute bags, Montreal, prompt shipment, \$4.60 to \$4.70; Toronto basis, \$4.50 to \$4.60; bulk seaboard, \$4.50 to \$4.45.

Manitoba flour—1st patents, in cotton sacks, \$6.50 per barrel; 2nd patents, \$6.

Hay—Extra No. 2, per ton, track Toronto, \$16; mixed \$13.50 to \$14; clover, \$13.50 to \$14; straw \$9, car lots.

**Winnipeg, Oct. 20.**—Wheat—No. 1 Northern, \$1.02 1/2; No. 2 Northern \$1.01 1/2; No. 3 Northern 98c No. 4 96c; No. 5 94c; No. 6 91c; feed 70c; track, \$1.00.

Oats—No. 2 C.W., 46c; No. 3 C.W., 40c; No. 2 feed, 37c; rejected 35c; No. 2 feed, 37c; rejected, 35c; track 43c.

Barley—No. 3 C.W., 54c; No. 4 C.W., 50c; rejected and feed, 48c; track, 54c.

Flax—No. 1 N.W.C., \$2.07 1/2; No. 2 C.W., \$2.01 1/2; No. 3 C.W., and rejected, \$1.90 1/2; track \$2.05 1/2

Rye—No. 2 C.W., 72c.

**Minneapolis, Oct. 20.**—Flour family patents, \$6.75. Shipments, \$5.95 1/2. Bran \$21. Wheat—No. 1 Northern \$1.12 to \$1.19; December, \$1.09; May, 1.10c. Corn—No. 3 yellow 64c to 65c. Oats—No. 3 white, 37c to 40c. Flax—No. 1, \$2.35 to \$2.36.

**Chicago, Oct. 20.**—Wheat—

Chicago, Oct. 20.—Cattle, lower grades—beef steers, \$13.10; best

long yearlings, \$12.75; bulk steers, \$9 to \$11.50; sixteen loads Canadian grassers, \$7.50; Montanas to feeder buyers, \$6.50 to \$7.40; bulk desirable weaners around \$10.80; bulk desirable bologna bulls around \$4.25; bulk stockers and feeders, \$6.25 to \$7.50.

Hogs—bulk 170 to 200-pound average \$9.00 to \$9.25; estimated hold-over 9.00.

Sheep—top fat Western lambs, \$14.10; others, \$13.75 to \$14; bulk native lambs, \$13.75 to \$13.85; culls mostly \$9.50; feeders slow; few morning sales about steady; one double 105-pound Washington yearling wethers, \$10 to killer; sheep strong to 25c higher; heavy fat ewes \$3.75 to \$4.25; lighter weights upward to \$6.50.

## GENERAL TRADE.

**Toronto, Oct. 20.**—Butter—27c to 35c; do creamery 38c to 46c; eggs, fresh doz. 43c to 45c; cheese, lb. new 20c to 25c; do old 25c to 35c; Broilers, Spring lb. 40c to 45c; Fowl, lb. 25c to 28c; Ducklings, lb. 25c to 30c; Turkeys, lb. 35c to 40c; Apples, basket 25c to 50c; do bushel, 75c to \$1.50; do bbl., \$2.50 to \$5; Grapes, 6-qt. 30c to 40c; Peaches, yellow, 6-qt. 30c to 60c; do 11-qt. 40c to 90c; Pears, 11-qt. 30c to 60c; Plums, 11-qt. 25c to 50c; do prune, 11-qt. 75c to \$1.00; Quince, 6-qt. 30c to 50c; do 11-qt. 50c to 85c; Beets, bag 75c to 90c; Cabbage, doz. 35c to 60c; Cauliflower, doz. 75c to \$1.50; Carrots, bag 75c to 90c; Celery, doz. 40c to 75c; Cucumbers, basket 50c to 75c; Eggplant 30c to 50c; Lettuce, head, box 50c to \$1.00; Onions, sack \$1.50 to \$2; Parsnips, bag 75c to 90c; Peppers basket 25c to 35c; do red 40c to 60c; Potatoes, bag 70c to 80c; Pumpkin, doz. \$1 to \$1.50; Squash, doz. 75c to \$1.25; Tomatoes, 11-qt. 30c to 50c; Turnips bag 60c to 75c.

**Montreal, Oct. 20.**—Creamery, solids 36c lb.; prints, 37c per lb.; cooking butter, 27c per lb.; oleomargarine, 20c per lb.

Eggs—No. 1, 36c; No. 2, 30c; extras, 40c; specials, 52c to 53c.

Ham—Large size 33c; small size, 37c; cooked, 40c lb.

Bacon—Windsor boneless, 43c per lb.; breakfast, 32c per lb.

Dressed Poultry—Milkfed chickens, 38c to 42c lb.; broilers, 35 to 38c; selected chickens, 26c to 28c; turkeys, 40c to 60c; ducks, 25c to 36c; green ducks 35c to 38c per lb.

Dressed Hogs—Fresh killed abattoir stock, \$17.50 to \$18.50.

Flour—First patents, \$6.50 per bbl.; seconds patent, \$6 F.O.B. track; strong bakers, \$6.10 per bbl.; winter wheat flour, choice grade, \$5.50; broken lots in cotton bags, \$5.75 to \$5.80.

Milled—Bran and shorts in limited quantities in mixed car lots, \$21.25; shorts, \$23.25.

Rolled Oats—Standard grades, \$3.25 to \$3.30 per 90-lb. bag, delivered to the trade.

Hay—Baled, per ton, in car lots, new crop No. 2 Timothy, \$16 to \$17; No. 3 Timothy, \$14 to \$15, delivered to Montreal.

## KINGSTON RETAIL MARKET PRICES

Kingston, Oct. 21st.

There has been a considerable change in the local fruit market during the past week, the prices varying up and down, and plums and melons, for instance, disappearing from the market entirely. Bananas now retail at 50 cents, while oranges are to be had in different quantities from 50c to 90c per dozen. Apples have advanced slightly, but the supply is still plentiful at \$1 to \$1.50 per bushel. There was practically no change in garden produce, with the single exception of tomatoes, which have advanced 25c on the bushel.

Fresh eggs are to be had, but 45 to 50c per dozen is the average price to be paid for this breakfast variety. Flour has dropped to \$4 per hundred, while lard advanced 1 cent per pound. There was no change in the fish division.

At the present time, there are no Western oats coming into Kingston, while local oats remain about the same. Hay has dropped \$2 per ton.

**Fruit.**

Bananas, doz. 50c  
Grape fruit, each, 15c to 20c  
Grapes, basket 50c  
Honey, 5 lb. pail 90c  
Lard, lb. 23c  
Oranges, doz. 50c to 90c  
Apples, bus. \$1 to \$1.50  
Pears, Duchess, basket 80c  
Pears, winter, 11 qt. basket 75c

**Fish.**

Cod, lb. 12 to 15  
Eels, lb. 12 1/2  
Filets, lb. 20 to 25  
Finnan haddis, lb. 20  
Haddock, fresh, lb. 12 1/2  
Halibut, lb. 32 to 35  
Kippers, pair 25  
Oysters, quart 1.00  
Perch, lb. 12 1/2  
Salmon, lb. 15  
Steak, cod, lb. 18 1/2 to 19  
Trout, salmon, lb. 18 to 20  
White fish 20c

**Garden Produce.**

Beets, peck 25c  
Cabbage, each .05 to .10  
Carrots, bus. 75c  
Cauliflower, head 15c to 30c  
Celery, head .05 to 10c  
Lettuce, head 10c  
Onions, bush. 1.50  
Onions, Spanish 3 lbs for 25c  
Potatoes, peck 20c  
Peas, sweet, lb. 3 for 25c  
Peppers, red, green doz. 20c  
Pumpkins, each 10c to 40c  
Squash, Hubbard 20c to 35c  
Tomatoes, bus. 1.50

**Hay, Straw and Grains.**

Barley, bus. 60c  
Bran, ton 21 to 23  
Buckwheat, bus. 60  
Corn, feed, bus. 95c to \$1  
Corn, car lots 95c  
Hay, baled, ton \$13 to \$15  
Hay, loose, ton \$13 to \$15  
Oats, local, bus. 35c to 40c  
Shorts, ton \$23 to \$25  
Straw, baled, ton \$9 to \$10  
Straw, loose, ton \$8 to \$9  
Wheat, local bus. 95 to \$1

**Dairy Produce.**

Butter, creamery, lb. 40 to 42  
Butter, dairy, lb. 25  
Butter, whey, lb. 37c  
Cheese, new, lb. 25c  
Cheese, old, lb. 25c  
Eggs, fresh, doz. 48c  
Eggs, No. 1, doz. 40c to 45c  
Eggs, strictly fresh, doz. 60c

**Unclassified.**

Sugar, granulated, lb. 8 1/2c  
Sugar, yellow, lb. 8  
Sugar, icing lb. 11c



# Serving You and Canada

While Life Insurance stands watch over your home to cover the mortgage; to provide a fund to care for your wife and educate your children if you should die, or to support yourself in your own old age if you live—it is aiding Canada's industrial and commercial prosperity.

The trust funds formed by the payment of your premiums are invested in Government and municipal securities to build schools, roads, drains and bridges; to provide hospitals and welfare institutions; to establish justice, law and order—as well as being invested in mortgages, agriculture, transportation, industrial and other enterprises that go to develop Canada and make it a better place in which to live.

"Life Insurance serves as it waits."

Buy life insurance for the service it will render you individually, and the national service will follow. Seek the services of the life insurance representative, and he will advise how your life's program can be carried out even in the event of your premature death.

**NEVER HAS ANY POLICYHOLDER LOST A DOLLAR THROUGH THE FAILURE OF A CANADIAN LIFE INSURANCE COMPANY.**

LIFE INSURANCE SERVICE.



## The Flame That Gets Results

is the oxy-acetylene welded by us in a way that produces the finest and strongest welding. We can weld anything and everything in hard tempered steel or other metal. No use casting metals into the junk pile when welding will save it.

**Bishop Machine Shop**  
KING AND QUEEN STREETS

AN INVITATION TO ANYONE to come in any evening and hear a Radio Concert. No charge. Out-of-town residents, especially invited. If you cannot call, write.

# RADIO

IF YOU WANT ONLY THE BEST You will come here. Only quality goods, selected by radio experienced men, and sold at reasonable prices.

## CANADA RADIO STORES

RIGHT GOODS AT RIGHT PRICES

288 1/2 Princess Street Phone 12972. Radio BAAY. Kingston's First and Only Exclusive Radio Supply House

A friend to everybody is a friend to nobody.