

# POOR DOCUMENT

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THE EVENING TIMES AND STAR, ST. JOHN, N. B., THURSDAY, FEBRUARY 15, 1923

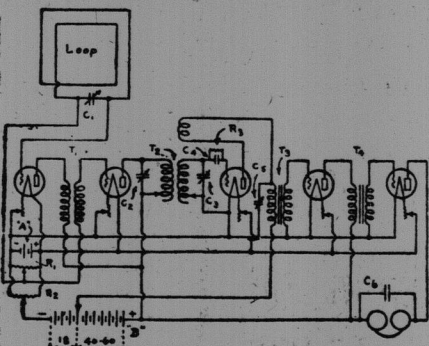
### FIFTEEN MINUTES OF RADIO EACH DAY

By Edward N. Davis  
Formerly Technical Electrical Expert For U. S. Government

Lesson No. 233.  
AN EFFICIENT MULTI-STAGE AMPLIFIER.

In the reception of radio signals, a vacuum tube detector used in conjunction with a regenerative circuit of the "tickler coil" or "tuned plate" type, produces results which are practically the equivalent of one stage of radio-frequency amplification combined with a vacuum tube detector non-regenerative circuit, the radio-frequency oscillations which pass through the detector and flow in the plate circuit are fed back to the grid circuit and reinforce the original oscillation. As a result, the amplified signal causes greater voltage variations, on the grid which in turn produces greater variations in the plate current.

If two or more stages of radio-frequency amplifications are combined with a regenerative circuit, several advantages are obtained. First, a loop antenna may be used to replace the outdoor type, thus permitting the exclusion of signals from unwanted stations due to the directional properties possessed by the loop. There is also a considerable reduction in static interference. Second, the feeble impulses which reach the antenna, from distant transmitting stations, are built up to a strength sufficient to actuate the detector thus increasing to a marked degree the effective range of the set. Third, only signals of radio-frequency are amplified, that is, signals which have a frequency above audibility, resulting in a considerable reduction in interference. Fourth, the insertion of radio-frequency amplification between the antenna and the regenerative circuit effectually prevents the antenna system from radiating the energy of oscillations which may occur in the detector tube circuit as a result of regeneration being carried to a point where the tube acts as a local oscillator.



In addition to a radio-frequency amplification, considerable amplification of signal is obtained by adding one or more stages of audio-frequency amplification thus permitting the use of a loud speaker.

In the accompanying diagram a very efficient multi-stage amplifier is secured by combining with the regenerative circuit, two stages of radio-frequency amplification and two stages of audio-frequency amplification. The loop may consist of ten turns of No. 14 B. & S. lamp cord, the turns being spaced three-quarters of an inch apart and wound on a frame three feet square with a tap made to each turn. Tuning of the loop to the frequency of the incoming signal is obtained by the variable condenser (C-1) which has a capacity of .0004 to .0006 microfarads. The radio-frequency transformer (T-1) must include within its range the wave lengths on which it is desired to receive, for example, transformers are available which cover a range of 200 to 5,000 meters by proper connection to sections of the windings.

The filament, or "A" battery, is of the 6-volt storage type and should have a capacity of about 80 amperes-hours. The plate, or "B" batteries, are of the standard 22.5 volt units, a tap being provided for impressing approximately 18 volts on the plate circuit of the detector tube. Additional units are connected in series to that a total potential of about 80 volts may be applied to the plate circuits of the respective amplifier tubes.

The potentiometers (R-1) and (R-2) each have a resistance of 200 to 400 ohms and are connected across the terminals of the "A" battery. (R-1) acts as a "volume" and by means of the adjustable contact sufficient potential is impressed upon the grids of the radio-frequency amplifier tubes to counteract the tendency of these tubes to oscillate due to back coupling. The adjustable contact on the potentiometer (R-2) permits close regulation of potential in the plate circuit of the detector tube.

### Out at Last! National Sea Food Recipes

Here's a unique book, compiled with the assistance of more than a thousand experienced cooks in the Maritime Provinces.

It contains 83 tested recipes, signed by contributors, including the recipes that won the \$100 prizes in our recent contest.

It covers the art of preparing fish in enticing ways more compactly and completely than ever before. It will help you improve your cuisine for Lent while at the same time cutting your cost of living.

Cost over \$1,000 to prepare—but we'll send it in return for merely enough to cover mailing charges—6c. Sign and send the coupon with two 3c. stamps for your copy.

Name.....  
Address.....



### Beautiful Diamond Rings

The many new styles of Ring Mountings in Platinum and White Gold effects have made the smaller Diamonds decidedly attractive.

We have an excellent display of these "newer modes."

The Diamonds are White and Snappy, showing to good advantage in the handsomely designed mountings.

Diamond Rings Our Specialty.

Ferguson & Page  
2-17.

### Clearance Sale of Nippon China

Teacups, Saucers and Plates \$5.00 dozen	Reduced from \$11.00 dozen
Cream Pitchers .....	25c each 60c each
Bowls .....	20c each 50c each
Cake Plates .....	40c each 90c each
Sugar Bowls .....	30c each 75c each

W. H. HAYWARD CO.,  
LIMITED  
85-93 Princess St.

### February Sale

Men's, Boys' and Youths' Footwear

Now on at King and Union Street Stores of  
WATERBURY & RISING

offer many bargains in Boots for Spring wear at cost prices—only made possible through our wholesale department being discontinued.

Specials For Week End

Men's Heavy Tan Grain Boots, splendid work boots, \$3.45
Men's Brown and Black Dressy Boots—also a few work boots, \$3.95
Men's Waterproof Boots in black—also best quality street boots, \$5.35
Boys' Boots—sizes 11 to 13, at \$1.88 to \$2.78
Sizes, 1 to 5, at \$2.28 to \$3.45
Men's Storm Rubbers at \$1.00
Women's Brown Rubbers at .75c
Women's Black Rubbers at .58c

Watch for Announcement of Opening Date for  
FIRE SALE  
At Our Main Street Store.

WATERBURY & RISING, Ltd.

61 King Street 677 Main Street

Variable condensers (C-2) and (C-3) each have a capacity of .0001 to .005 microfarads and are used to tune the primary and secondary windings respectively of the standard regenerative set. Grid condenser (C-4) has a capacity of .00025 microfarads and is shunted by a grid leak (R-5) having a resistance between 0.5 megohms and 2 megohms, the correct value being determined experimentally.

(C-5) is a variable by-pass condenser of .0001 to .005 microfarads capacity and provides an easy path for the radio-frequency oscillations, in the plate circuit of the detector tube, which otherwise would be choked back by the primary winding of the audio-frequency transformer (T-3). After detection the signal is further amplified by two stages of audio-frequency amplification which utilizes the coupling of the transformers (T-3) and (T-4). The telephone condenser (C-6) has a capacity of .00025 microfarads and is connected in shunt to the receiving telephones. If desired, a loud speaker may be substituted in place of the telephone receivers. Separate rheostats are provided in the filament circuits of the vacuum tubes so that individual control of filament temperature is obtained. This is an essential feature, for the reason that a slight difference in filament length would result in considerable temperature difference in the various tubes if only a single rheostat control was provided.

The combination of a loop antenna, radio-frequency, regeneration and audio-frequency amplification provides a greatly increased range of reception, high selectivity and with proper operation secures efficient magnification of signal without distortion and also comparatively free from static and other disturbing sources of interference.

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### THERMOGENE

HEAT RELIEVES PAIN

THERMOGENE is a dry, soft, medicated wool that takes the place of the old-fashioned poultice or plaster. Thermogene does not grow cold and clammy. Its keen penetrating heat stimulates the blood and produces a tingling warmth that drives away pain immediately.

Your Doctor will recommend Thermogene.

BRITISH OWNED AND BRITISH MADE

The Thermogene Company, Ltd., Hayward Heath, England.

Sole Agents for Canada: HAROLD F. RITCHIE & Co. Limited, 10 McCaul Street, TORONTO



### AMDUR'S Re-opening Exhibition!

FOR CARNIVAL WEEK!

Ladies' Sweaters	Men's Sweaters
White pullovers, V necks; shawl collar styles	Coat Sweaters .....
\$2.95, \$3.95, \$4.95	Jumbo-Knit, Pure Wool Sweaters .....
	\$3.50
Golf Hose .....	Men's Jersey Sweaters .....
49c	Extra Fine Quality .....
Pair	\$2.50
Fleeced-lined Bloomers .....	Men's Mufflers .....
59c	69c
Pair	Boys' Fine Jersey Pullovers .....
	98c

Amdur's, Ltd., No. 1 King Square

### Men's Colored Shirts

Two Bargain Price Groupings  
For Carnival Week

These are new spring patterns. The materials are of good quality and the patterns are neat and tasteful.

You Shouldn't Miss This Opportunity.

At \$1.19—

Shirts of good quality cord cloth in neat stripes and patterns. Well made with full sized bodies. You'll call them very exceptional bargains.

At \$2.75—

Mercerized cloth with colored stripes; or plain cloth with mercerized stripes in self color. Also a few pongee finish cloths in spring varieties. (Men's Furnishings, Main floor.)



### Sale of Dress Homespins For This Week Only

Newest mixtures in cocoa brown, fawn, sapphire, Mary Pickford blue, green and old rose. 34 to 37 in. wide. This is the material you'll be wanting for all sorts of summer sports garments. Better buy it now while this very special price is available.

Sale \$1.59 yd.

A Very Special All Wool Serge. Particularly Suitable for women's and misses' dresses, etc. Showing in Copen, navy and light or dark brown. 42 in. wide. Sale 88c. yd.



(Dress goods—ground floor)

Manchester Robertson Allison Limited  
KING STREET - GRANBY STREET - MARKET SQUARE

### RECENT WEDDINGS

Bullock-Cobbett.

A quiet wedding was solemnized yesterday afternoon in the Central Baptist church, when the pastor, Rev. James Dunlop, united in marriage Miss Dorothy Alice Cobbett, of Woodside House, Rotherham, St. John, to William John Bullock, of the Westmorland road. The bride's attendant was Miss May Lamb, and the groomsmen were William Cobbett, brother of the bride. Good wishes for their future happiness were extended to the bride and groom.

### RECENT DEATHS

Mrs. Jane Harper.

The death occurred yesterday morning of Mrs. Jane Harper, aged eighty-nine years, at the residence here, daughter, Mrs. J. F. Evans, 188 Paradise row. Three sons, Alexander, Noble and David Clark, and one other daughter, Mrs. Joseph Lamb, Lakeside, also survive.

Their Child Dead.

Many friends will sympathize with Mr. and Mrs. George L. Christiansen in the death of their infant son, George L., which occurred on Tuesday night at the home of his grandparents, Mr. and Mrs. G. B. Parks, Mill street, Fairville.

### PRINCE ERIK SPENDS DAY AS LUMBERJACK

Recent Visitor to Ottawa is Again on Way East.

Vancouver, B. C., Feb. 15.—Prince Waldmar of Denmark, brother of Dowager Queen Alexandra of England, and Prince Erik, lived as lumberjacks at the King Farris Mill here. The royal party, including Commodore E. Drechsel, Copenhagen port captain, saw the felling of 200-foot forest giants, logging and milling operations, and concluded a busy day joining the men at the cook-house door.

### Carnival Week BARGAINS

In Our Clearance Sale

Women's \$6.50 to \$8.00 Values in Walking Boots. Sale price .....	\$3.48
Men's \$8.00 to \$10.00 Values in Walking Boots. Sale price .....	\$6.75
Women's Patent and Kid Pumps with medium heels. Sale price .....	\$2.69
Men's One-Buckle Overshoes—sizes 7 and 9 only. Sale price .....	\$2.05
Women's Fine Quality Button and Lace Boots—sizes 2 1/2, 3 and 3 1/2. Sale price .....	\$1.45
Men's Good Quality Heavy Sole Rubbers—all sizes. Sale price .....	\$1.10
Women's Broad Toe and Heel Rubbers—sizes 5 1/2, 6, 6 1/2 and 8. Sale price .....	57c
Men's Five Eyed, Snag Proof Lumbermen's—sizes 10 and 11 only. Sale price .....	\$3.35

These and many other specials in our windows and on our bargain table await your inspection

McROBBIE

Foot St. John 50 King Street



### Friday Morning--- Tricotines, Serges

Up to \$17.25 \$11.50

A style introduction at a decided saving—Tomorrow Morning only. Serge and Tricotine Dresses worth all the way from \$12.75 to \$17.25 go on short and sudden sale for one price \$11.50

Some have Peter Pan collars, fancy stitching and plain and novel braiding. One Tricotine, for instance, shows the way Dresses have begun to wrap over to the left, a full length panel of military braid being held at waist by Tricotine girdle. Sets of Silver Buttons flank the braid here and there. New, but nevertheless Tomorrow Morning it's \$11.50

### Carnival Cardigans

Sport style so splendid the year round. Colors, Brown, Scarlet and Navies, with and without belts, but Saxon wool all through. Elevator to third floor finds them at \$6.48

### Holiday Economies

A reminder of two from first floor Annex—Full sized Voile Curtains, Hemstitched and Lace edged; four different patterns. Per pair, \$1.58. Marquiesette, 5 yards for \$1.45. Heavy Turkish Towels, 3 for \$1; Pillow Cases, embroidered, 4 for \$1.



### SportSkirts Step Forward

Combination stripes, sprightly Plaids and all the pleatings appear on Tricotines, Basket Weaves and Flannels—Black with White, Black with Grey, Navy and Fawn, Sands and Browns. Undeniable utility, and variety equal to their numbers. Prices from \$13.75 down to \$8.75

DANIEL - Corner of King

### THE NEVINS WILL APPEAL

The case of the will of Charles Nevins was taken up yesterday in Fredericton at the sitting of the Appeal Division of the Supreme Court, J. F.

H. Teed and Dr. F. R. Taylor, K. C., were heard in support of the decision of Judge H. O. McInerney, before whom the case was tried, refusing to accept the will on the ground of suspicious circumstances. Daniel Mullin, K. C., commenced his argument against the decision. The case will be continued today.