

**FIFTEEN MINUTES OF RADIO EACH DAY**

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

**Lesson No. 26**  
**THE ACTION OF RADIO FREQUENCY CURRENTS.**  
The constant building up, collapse and building up in the opposite direction of the magnetic field around a conductor, which carries an alternating current, requires a certain amount of time. If the medium surrounding the conductor is air, the time interval required is small and the field can readily be built up and reversed quite rapidly, hence coils of wire having air cores offer little opposition to the flow of radio frequency currents. If the medium is from the opposition to the changing magnetic field is much greater the greater the mass of the iron core. The higher the frequency or the more rapidly the magnetization and de-magnetization occurs, the greater is the opposition to the current flow. For example, if a transformer designed to operate a transmitter from a 60-cycle source were connected to a 500-cycle line of the same voltage, the current flow in the primary would be much below the normal value as can be readily shown by inserting an ammeter in the circuit. If the same windings were used for the 500-cycle transformer as for the 60-cycle transformer the core would have to be re-designed and much of the iron removed, thereby reducing the cross section area of the core. Similarly for audio-frequency amplification in receiving sets we use transformers having considerable iron in the core while for the much higher frequency of the carrier wave as amplified in the radio-frequency amplifier the core contains very little iron or none at all.

Many types of telephone receivers have marked on the case both the direct current resistance such as 1,000 or 1,500 ohms and also the alternating current resistance which may be four or five times this amount. In this case, however, the alternating current resistance does not mean the resistance of radio-frequencies, but at a common audio frequency such as 500 cycles or 800 cycles. A 1,500,000 cycles per second corresponding to a wave length of 200 meters the resistance of these same telephones would be so great that practically no current would flow.

In vacuum tube transmitters when it is desired to keep radio-frequency currents out of a part of the circuit a choke coil having large inductance, that is, many turns of wire on an iron core is used. For example, it is customary to employ such coils in the leads from the generator which supplies the plate current. While such a form of coil offers great opposition to the radio-frequency current, only the ohmic resistance of the copper wire itself effects the flow of the continuous current from the generator. On the other hand when it is desired to by-pass the radio-frequency current across the terminals of the high voltage generator a condenser is employed which does not permit the direct current to short circuit through it but offers very little opposition to the flow of radio-frequency currents.

Alternating current of very low frequency, such as 60 cycles, will flow through a condenser, but the physical dimensions of the condensers, that is, its capacity, must be much greater than is necessary for radio-frequency currents. For example, in the regenerative receiving system a small fixed condenser is usually connected across the terminals of the head telephones to by-pass the radio-frequency currents. This condenser should not be larger than absolutely necessary, however, or some of the energy in the pulsating direct current, which acts in a manner similar to audio-frequency alternating current, would leak through the condenser rather than flow through the telephones.

(All Rights Reserved by United Feature Syndicate. Reproduction Prohibited.)



**fine Underwear**

IN the manufacture of fine Cottons—Cambrics, Nainsooks, India Long Cloths and Madapolams—HORROCKS' Cottons have always excelled; and six generations of British gentlemen have made these HORROCKS' COTTONS the world's standard of quality and value.

For the latest styles of daily wear, women know they can depend on Horrocks' Cottons for truly satisfactory wear. Horrocks' does the following—Shirtings—Flannels, etc., are sold everywhere in Canada, from coast to coast.

**Horrocks'**

Made by HORROCKS, CREWSON & CO. Limited, Cotton Spinners and Manufacturers, Manchester, England.

For names of nearest stores please write to JOHN B. FITCHIE, Canadian Agent, 201 St. Catherine Street, West, Montreal. Branches: Toronto and Vancouver.

LOOK FOR THE NAME **Horrocks'** ON THE SELF-EDGE

**Week-End Specials at Waterbury & Rising's**

**FEBRUARY SALE**  
of Men's, Boys' and Youths' **BOOTS**

KING AND UNION STREET STORES offers a host of Exceptional Bargains in Boots—Bargains only made possible through discontinuing our wholesale business.

COME EARLY FOR YOUR SHARE

**FOR MEN—**  
HEAVY TAN GRAIN BOOTS—Splendid work Boots \$3.45  
BROWN CALE DRESS BOOTS—Made on English Lasts \$3.45  
HEAVY GRAIN BOOTS—In Black and Brown \$3.95  
BROWN AND BLACK BOOTS—All Shapes and Weights \$3.95  
BROWN AND BLACK BOOTS—Medium Narrow Toes \$4.65

**FOR BOYS—**  
Sizes 11 to 13 Selling at \$1.88 up  
Sizes 1 to 5 Selling at \$2.28 up

**Waterbury & Rising, Ltd.**  
61 King Street 212 Union Street

**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.

**1923—AMDUR'S BARGAIN BULLETIN No. 3—1923**

Special For Friday Only

A Remarkable, Timely Opportunity to Save

**Men's Overalls, \$1.00**

Get The Good Habit of Reading, Daily, The Amdur Bargain Bulletin.

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

**RECENT WEDDINGS**

Kaine-Lowe (Toronto Globe).

The marriage of Mary Greta, only daughter of Mrs. S. J. Lowe, to Raymond L. Kaine, son of S. L. Kaine of New Brunswick, was conducted by Rev. Hardy Andrews, on the afternoon of Thursday, February 15, at the house of the bride's mother, 182 Ferrer avenue. The bride entered the drawing-room on the arm of her cousin, James Henderson of Peterboro, and wore a becoming gown of mountain hare georgette, and carried Ophelia roses. The bridesmaid was Miss Lillian Duff of Detroit, who was similarly gowned in pink georgette and carried pink carnations. The groom was assisted by M. P. Davis. During the signing of the register, Miss Ethel Jay sang, "Miss Dora Cleave played the wedding music. After the ceremony a reception was held by the bride's mother, who wore black Canton crepe, and the bride, who wore black Canton crepe, and the bridegroom, who wore a suit of blue serge. Among the out-of-town guests being Mrs. Ray Nellist of Montreal, Miss Lillian Duff of Detroit, and James Henderson of Peterboro.

**RECENT DEATHS**

Joseph Leslie McLellan.

At Midland, Queens county, on Sunday morning, Jan. 21, the death occurred of Joseph Leslie McLellan in the fifty-eighth year of his age. Besides his wife, he leaves six sons, Leslie, Donald, Frank, Haycock, Russell, Emory; and four daughters, Mrs. Grant Lloyd, of Chipman, Mrs. Clarence Rolins, of Newcastle, Bridge; Elizabeth, of St. John, and Daisy, at home. He also leaves one sister, Mrs. Alexander Haines. The late Mr. McLellan had been in failing health for the last three years from heart trouble, but he bore

his sufferings with Christian fortitude. Rev. L. L. Crandall preached a very

**Special Bargains!**

In Our Clearance Sale of Good Quality Footwear

**MEN'S RUBBERS**, in light weight or with heavy corrugated soles. Sale price \$1.00

**GIRLS' TWO-BUCKLE OVERSHOES**—Sizes 11-12, 13-12, 1, 1-2, 2 Sale price \$1.48

**WOMEN'S BROAD TOE and LOW HEEL RUBBERS**—Sizes 5-2, 6, 6-2, 8 Sale price \$55c

**MEN'S LOW OVERSHOES** for pointed toe boots. Sizes 6-12, 7, 7-12, 8 Sale price \$1.25

**McROBBIE**  
Foot St. John 50 King Street Fitters

Stores Open 9 a.m. Close 6 p.m. During Winter Months.



**Smart New Frocks To Greet the Spring**

These frocks newly arrived, feature Georgettes, Flat Crepes, Epouge, Poiret Twills—and almost every other new and attractive fabric you have read about or seen. The straight line dress is still in favor, but is varied here and there by means of clever draperies, uneven hem lines, long waisted effects and becoming surplice styles. Your inspection of the newest models is invited.

**Very Dainty Models Made in France**

Among these is a particularly fascinating Georgette frock in pale orchid shade, trimmed with rows of hand-drawn work. A corsage bouquet of flat flowers in a combination of French shades ornaments the waist. A French frock of an entirely different type if fashioned from wool crepe in the new clover shade and is heavily beaded in black and white. Other models are equally attractive.

**The New Flat Crepe Is Delightful For Frocks**

You'll find a variety of dresses in this stunning new material here. One that is very original is developed in rose crepe with applied pattern of white kid. The sash is made from plaited kid and silk and the deep hem line is very neatly hemstitched.

**Heavier Frocks of Poiret Twill**

In these the coat dress is finding great favor and is showing in several delightful guises. Braids, bright embroideries, stunning buckles and panels of contrasting materials are new features in evidence this season, and many variations of the round neck and flaring sleeve are also among the new.

One Coat Frock deserving of special mention is developed in navy blue Poiret Twill and is fashioned in the becoming surplice style. This dress is brought together at the side front and held in place by means of a large red and gold oriental patterned buckle. A long roll collar makes the neck line particularly becoming and the flaring sleeves are cut in points at the wrist line. The price is only \$42.

This advertisement can give you but a meagre idea of the many wonderfully fashioned frocks now ready for your choosing at this store. (Costume Dept., 2nd floor)

**Manchester Robertson Allison Limited**  
KING STREET - GERRARD STREET - MARKET SQUARE

**Impressive sermon at the funeral service.**

Interment was made in the Baptist cemetery at Chipman.

**Child of Bruce Kennedy.**

The death of Norman Wesley, infant child of Mr. and Mrs. Duncan Kennedy, occurred on Feb. 20 at his parents' home, Young's Cove, Queens county. He is survived by his parents and four brothers, Beverly, Clifford, Lloyd and Collin, and one sister, Ethel. The funeral will take place this afternoon at 2:30 o'clock with interment in the Methodist cemetery at Young's Cove.

**TWO KILLED NEAR AMHERST.**

Amherst, N. S., Feb. 21—James MacKenzie, about eighteen years of age, was killed near Macosa station this evening when he fell from a freight train on which he was riding. Joseph Marks, a miner, was killed near Macosa Tuesday when he fell from a coal train while en route to his place of work.

**The Loyalist Temple, Pythian Sisters, held a successful Valentine tea in the Temple Building, Main street, yesterday afternoon.**

The large serving table was decorated with red geraniums in silver baskets and the smaller tables had red candles in silver candlesticks. Those in charge of the various departments were as follows: Conveners, Mrs. Fred Flewelling, Mrs. A. L. Roberts, Mrs. Barry Welford and Mrs. Harry Black; pourers, Mrs. J. W. Elliott and Mrs. Flewelling; waitresses, Mrs. Charles Cameron, Mrs. Otis Mullin, Mrs. Flewelling, Mrs. Moore, Mrs. William Murphy, Mrs. Fred Holman, Miss McAllister, Mrs. Gaynor, Mrs. George Armstrong, Mrs. Ralph White and Mrs. George Lemmon; replenishers, Mrs. Walter Miller, Mrs.

Walter Miller, Mrs. Fred Miller, Mrs. T. E. Robinson and Mrs. Harry Whitney; tickets, Mrs. John Mathison; cake cutters, Mrs. Walter Whittaker, Mrs. Millford Daisell, Mrs. Frederick Brooking and Mrs. H. Young.

The average man is firmly convinced that he does seventeen times as much for others as others do for him.

**Curtains From Switzerland Bedecked With Lace Applique**

Here in the convenient First Floor Annex, where the looms of the world set their proudest before you, something extra special enters at the very moment you plan that annual freshening up. And for the first subject, the window drapes that mean so much from within and without, the newly ascendant art and dignity of Swiss Lace bordered in scallops with rich appliques. Ninety inch length, \$6.75—with heavier borders, \$7.75.

In Marquisettes, new low prices, Lace insertions and edging. Wide and ninety inches long—\$2.95 to \$6.85. Scrims, same length, hemstitched and Lace and insertion edged, checks and stripes—\$1.98.

And a bountiful array of Scrims and Marquisettes for making up yourself in White, Beige, Ecu and Cream—20c to 50c yard. Hemstitch, Lace and Insertion Combinations, the Marquisettes from 33c being resplendent in Satin striped double borders as well as with lace and insertion.

Rival varieties of White Nottingham Nets—one for example having a lace edge like crochet—prices 39c to 75c yard.

Wide Voile Curtains, ninety inches long, hemstitched and lace edged; a special at \$1.98.

Tapestried Cretonnes also. Shadow effects in strong Cretonnes, bringing out the beauty of tapestry tones in light and dark designs, point the way to interesting decoration in an ever-fresh fabric—65c.

Other Cretonnes in tomorrow's floral-stripes—29c to 95c.

All the Kirsch rods to go with them.

**Pillows, Spreads, Shaker Blankets**

All-leather Pillows, 95c to \$3.95. White Spreads, including the Honeycomb Marcella, \$2.25 to \$10.50. Shaker Blankets with Pink and Blue Borders add further zest to a look around the convenient First Floor Annex.

**DANIEL**  
Corner of King

**FIRE SALE!**

Entire \$12,000 Stock  
Only Slightly Damaged By Smoke and Water

At Fire Sale Prices never before heard of hereabouts—Prices that only a Fire Sale can make possible.

**EVERY PAIR OF Boots and Shoes**

**MUST GO**

A partial list is given here—but everything is marked very low.

Women's 10-Button Gaiters	35c	Boys' Boots—Sizes 11 to 13 for	\$1.98
Women's Black Rubbers	48c	Sizes 1 to 5 for	\$2.28
Women's Kid Pumps	\$1.38	Children's Boots	48c up
Women's Kid Oxfords	\$1.38	Children's Slippers	38c up
Women's Patent Oxfords	\$1.48	Children's Boots, sizes 8 to 10½,	98c
Women's Boots	\$1.88 up	button or lace	
Women's Brown Strap Pumps	\$1.98	Girls' Boots, sizes 11 to 2, button	\$1.95
Men's Solid Leather Work Boots in brown and black—very low prices.		or lace	

**677 MAIN ST.**

STRICTLY CASH NO APPROBATION  
Store Open TUESDAY, THURSDAY and SATURDAY NIGHTS.  
Shop in the Morning and Get Best Choice.

**WATERBURY & RISING, LTD.**