



HALL'S
Catarrh Medicine
BOOK of
RADIO

Published by F. J. CHENEY & CO. Toledo, O.
Price 10¢



A Combined Local and Internal Treatment for Catarrh

THE Ointment, to be used locally, and the Internal Medicine, to assist in improving the general health.

While Catarrh is a local disease, it is greatly influenced by constitutional conditions.

The Only Genuine

HALL'S CATARRH MEDICINE

is manufactured by

F. J. CHENEY & CO., TOLEDO, OHIO

Beware of Imitations

FOREWORD

JUST before this booklet was prepared, an old man recovered his hearing after being deaf for many years. Almost his first request was to hear a radio program. He listened. Tears slipped down the wrinkled cheeks. "I can't believe it. No wires. Thru the air. A little box like that — and music. A miracle! And I might have missed it all!" Incidents like that bring one to a keener realization of radio's real worth—a greater appreciation for the manifold blessings of this 20th century "miracle."

What Radio will offer ten years—even five years—from today is difficult to conceive. Certainly it is safe to anticipate refinements in reception—greater fidelity in the reproduction of programs; and, quite probably radio fans will fall into a new classification—there may be "optiences" as well as audiences, for it is only a step into the future when we shall see as well as hear things via radio.

To the great fraternity of radio enthusiasts, we dedicate this little booklet—in the hope that it may add a measure to their understanding of radio and to the pleasure it provides.

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CATARRH

Its cause, effect and remedy

CATARRH is an inflammation of the mucous membrane which lines the nostrils, the throat, and other organs of the body. It is a local disease greatly influenced by constitutional conditions.

CAUSES OF CATARRH. Anything that irritates or weakens the mucous membrane may result in Catarrh. The inhaling of irritating vapors or dust, sudden exposure to changes in temperature (heat or cold) and low vitality of the system due to various excesses, such as irregular meals, improper food, alcoholic drinks, not enough rest or sleep, improper clothing, shallow breathing, infrequent bathing, and drinking too little water.

NASAL CATARRH. The kind of Catarrh that is most common, and of which we wish to speak particularly, is Nasal Catarrh. The Nasal Cavity being most exposed, is more liable to become affected than other parts of the body. It usually begins behind and above the veil of the palate and extends upwards into the nose. It is an exceedingly troublesome complaint and affects great numbers. It is commonly known as Catarrh of the Head. The inflammation is not confined to the Nasal Cavities, but extends frequently to the small cavities called Antrums and Sinuses, which have openings into the Nasal Cavity. Persons sometimes feel as though the whole face was involved in the disease, so great is the amount of matter discharged.

This form of Catarrh often is the cause of Catarrhal Bad Breath.

The disease often creates an almost constant desire to swallow, but leaves a sensation of something in the upper part of the throat. When inflammation has existed a long time, puriform matter is formed and may drop

down into the throat, sometimes causing general derangement of the health. Many times the person can breathe only with the mouth open. Upon arising in the morning a great effort is required to clear the head and throat. There is occasionally a feeling of pressure and tightness across the upper part of the nose and base of the brain, causing headache, vertigo and confusion.

CATARRHAL DEAFNESS. Deafness is sometimes caused by Catarrh. The mucous lining of the Eustachian Tube, or little air passage running from the throat to the drum of the ear, becomes inflamed and roughened and the tube becomes partially closed. This prevents the air from passing smoothly and causes a rumbling sound. Deafness of this character appears after the person has had Catarrh for some time. If Deafness is from any other source, we do not recommend Hall's Catarrh Medicine.

If you have Catarrh — Catarrhal Deafness — or are in a run-down condition, start taking Hall's Catarrh Medicine at once. It will tone up your system and we know you will be satisfied with results.

Hall's Catarrh Medicine is a Combined Treatment, consisting of an Ointment which soothes and relieves, and the Internal Medicine which acts thru the blood, aiding Nature to restore the inflamed mucous membrane to a normal condition.

Health Suggestions for Catarrh Sufferers

- (1) Use HALL'S CATARRH MEDICINE (Ointment) regularly as directed.
- (2) Take HALL'S CATARRH MEDICINE (Liquid) strictly according to directions.
- (3) Keep the bowels moving regularly every day.

(4) Keep the circulation active and muscles firm with moderate exercise in the open.

(5) Have pure air, day and night, and breathe through the nose if possible.

(6) Keep the skin normal by taking a dry rub with a coarse towel and by taking a bath at least twice a week.

(7) Drink freely of water, avoid alcoholic drinks, and take tea or coffee only in moderation.

(8) Eat regularly and freely of fruits and vegetables, sparingly of meats, sweets and pastries, abstain as much as possible from foods fried in grease. Boiled or broiled foods are better and more easily digested. Chew all foods thoroughly and don't drink fluids with meals. What you drink, drink after you are through eating.

THE PARTS IN YOUR SET

What they are and how they work

The Antenna. The antenna is the link between your receiver and the outside world, and acts as a collector of radio waves.

The Lead-In. The lead-in is the wire that conducts the radio signals from the antenna to the receiver.

The Ground. The ground is the connection from the receiver to the earth. It serves as a return path for the radio signals which are received over the aerial.

The Tubes. The vacuum tubes are the most interesting part of the radio. The radio frequency tubes take the signals from the antenna, over which they pass at a very rapid rate, and build up or amplify them until they are strong enough to operate the detector tube. The detector tube is so named because it takes the high frequency radio signal and slows it down, bringing it within the range of audibility. (Continued on page 7)

RADIO TROUBLES

How to find—How to correct

No Reception

(A) *A or B Batteries discharged, or defective.* Test with a meter and hydrometer, and have charged, repaired or replaced, as necessary. Eliminator not functioning. Be sure the current to it is turned on.

(B) *Worn out or defective vacuum tubes.* Try to rejuvenate tube by disconnecting "B" Batteries and burning the filaments at normal brilliancy for several hours. If not effective, have tubes tested by reliable dealer and replace defective ones.

(C) *Broken wire in headset or loud speaker.* To check, connect one wire to one dry cell post and tap other post with second wire. A distinct, sharp click should result. Absence of sound indicates broken cord or connection, requiring repair or replacement.

(D) *Lightning arrester leaky or improperly connected.* Aerial should go thru one connection to set. The other connection goes to ground.

(E) *Broken wire or disconnection in aerial or ground wires.* Check and repair if necessary.

(F) *Aerial grounded.* Aerial must not touch any surface which ends in contact with ground.

(G) *Batteries connected wrongly.* Check connections carefully.

(H) *Set improperly wired.* This applies to home-built, or reconstructed sets only. Check set with wiring diagram. If trouble persists, consult radio expert.

Weak Reception

(A) *Any of foregoing causes.* Check as directed.

(B) *No detector "B" Battery Connection, or too much or too little detector "B" Power.* Try increasing and decreasing voltage.

(C) *Poor ground connection.* Go over ground wire, remove rust under ground clamp, or change ground connection. Make ground wire as short as possible.

Noisy and Distorted Reception

(A) *Induction from nearby power lines, or nearby electrical machinery.* Turn on set to full volume then disconnect aerial wire. If noise ceases or diminishes it either is partly or wholly caused by nearby wires or electrical machinery. Try changing position and direction of aerial. If noise continues, endeavor to find source of trouble in neighborhood, and get owner to remedy if possible. If noise continues in full volume when aerial is disconnected, trouble is probably in set or battery wiring.

(B) *Static.* Cannot be eliminated.

(C) *Low "B" Batteries.* Check with a meter. Voltage should never run below 17 on 22½ volt battery; 35 on 45 volt battery.

(D) *Faulty Grid Leak.* Try new one.

(E) *Loose connections in plate, filament or grid circuit.* Check.

(F) *Poor contact in tube sockets.* Bend contact springs slightly to get greater pressure.

(G) *Noisy detector tube.* Try another tube.

(H) *Excessive generator hum or too great amplification at local broadcasting station.* Usually only temporary.

(I) *Radiation from regenerative sets nearby.* Investigate, and persuade owners to change, redesign or use extreme care in tuning.

(J) *More than one station on same wave length.* Cannot be corrected in receiving set.

(K) *Defective amplifier tube.* Check amplifier tubes by moving a new tube from one socket to another.

(L) *Too much "B" Battery to amplifier, loud speaker or headset.* Try reduced "B" power.

(M) *Damaged headset or loud speaker.* Test out on a neighbor's set or at any radio store.

(N) *Dead "C" Battery or wrong connection to same.* Check with voltmeter.

THE PARTS IN YOUR SET

(Continued from page 4)

The radio signal may be described as a rapidly moving train of electric waves upon which the sound waves ride. The function of the detector is to separate these two impulses. After detection the sound waves are passed on to the audio frequency amplifier which builds them up until they are strong enough to operate the loud speaker.

The tubes in the set actually do the work. The coils and condensers and the circuits in which they are hooked determine the kind of work that the tubes shall perform.

The Transformers. Both radio and audio transformers are coupling units that link one tube with the next. The radio transformers are tuning coils with an air core and are adjustable to different wave lengths by means of the variable condenser. The audio transformer has two large coils of fine wire with an iron core between them. The secondary coil has more wire than the primary. The relation of the number of turns of wire in one coil to the number in the other is called the turns-ratio. The turns-ratio acting with the tube gives each audio stage its step-up ability.

The Variable Condenser. This part consists of two groups of thin plates, one of which is movable. It supplies the elasticity of the circuit. A change in the position of the plates of the condenser will alter the wave length of the coil to which it is connected, and thus bring in different stations.

There are other small units of lesser importance such as rheostats to control the "A" Battery to the filaments, the grid condenser which assists the detector in its functions and the grid leak which prevents the grid condenser from overloading and choking the detector tube. The by-pass condensers are electrical shortcuts in the circuit hook-up and provide paths of low resistance around points of higher resistance. They are usually connected around batteries and transformers.

Briefly, the parts in the radio contain a wonderful combination of almost every known electrical function.

BROADCASTING STATIONS

Meters	Watts	Station	Location	Dials
545.1	750	WMAK	Tonawanda, N. Y. (Buffalo)	
	500	KFDY	Brookings, S. D.	
	500	KFUD	Clayton, Mo.	
	500	KSD	St. Louis, Mo.	
	500	WDAY	Fargo, N. D.	
	500	WFAA	Dallas, Texas	
	500	WPTF	Raleigh, N. C.	
535.4	5,000	WHO	Des Moines, Iowa	
	500	WCAC	Mansville, Conn.	
	500	WTIC	Hartford, Conn.	
526	5,000	KYW	Chicago, Ill.	
	2,500	KFKX	Hastings, Nebr.	
	500	KMTR	Los Angeles, Calif.	
	500	WNYC	New York City, N. Y.	
516.9	750	WFLA	Clearwater, Fla.	
	500	WCAE	Pittsburgh, Pa.	
	500	WMC	Memphis, Tenn.	
508.2	1,000	WOW	Omaha, Nebraska	
	500	KLX	Oakland, Calif.	
	500	WEEI	Boston, Mass.	
499.7	5,000	WBAP	Fort Worth, Texas	
	5,000	WOAI	San Antonio, Texas	
	500	WFAA	Dallas, Texas	
491.5	5,000	WEAF	New York City, N. Y.	
	1,000	KGW	Portland, Oregon	
	1,000	WAPI	Auburn, Ala.	
483.6	1,500	WCFL	Chicago, Ill.	
	1,000	WENC	Berrien Springs, Mich.	
	500	KFBU	Laramie, Wyo.	
	500	KFDM	Beaumont, Texas	
	500	WJAR	Providence, R. I.	
	500	WTAW	College Station, Texas	
475.9	500	WSUI	Iowa City, Iowa	
468.5	5,000	KFI	Los Angeles, Calif.	
	500	WRC	Washington, D. C.	
461.3	500	KRLD	Dallas, Texas	
	500	WBIS	Boston, Mass.	
	500	WCAE	Pittsburgh, Pa.	
	500	WNAC	Boston, Mass.	
	500	WRR	Dallas, Texas	
454.3	30,000	WJZ	Round Brook, N. J.	
	1,000	KFRC	San Francisco, Calif.	
447.5	1,000	KFOA	Seattle, Wash.	
	1,000	WMAQ	Chicago, Ill.	
	500	WEEI	Boston, Mass.	
	500	WJAD	Waco, Texas	
	500	WQJ	Chicago, Ill.	
440.9	5,000	WXR	Pontiac, Mich.	
	500	KFSD	San Diego, Calif.	
434.5	1,000	NAA	Arlington, Va.	
428.3	5,000	WLW	Harrison, Ohio	
	500	KFBU	Laramie, Wyo.	
	500	WMAF	Dartmouth, Mass.	
422.3	3,500	WOR	Newark, N. J.	
	1,000	KPO	San Francisco, Calif.	
	500	WOS	Jefferson City, Mo.	
416.4	15,000	WLIB	Elgin, Ill. (near)	
	500	WGN	Chicago, Ill.	
	500	WIBO	Chicago, Ill.	
405.2	7,500	WCCO	Anoka (St. Paul- Minneapolis), Minn.	
	500	KHJ	Los Angeles, Calif.	
	500	WFI	Philadelphia, Pa.	
	500	WLIT	Philadelphia, Pa.	

Catarrh of Head and Throat

500 WATTS AND HIGHER

Meters	Watts	Station	Location	Dials
399.8	5,000	WTAM	Cleveland, Ohio	
	1,000	WEAR	Cleveland, Ohio	
394.5	500	WSBT	South Bend, Ind.	
	7,500	KOB	State College, N. M.	
	1,000	KTW	Seattle, Wash.	
	1,000	KWKH	Kennonwood, La.	
	500	KWSC	Pullman, Wash.	
389.4	500	WHN	New York City, N. Y.	
	500	WPAP	Cliffside, N. J.	
	500	WQAO	Cliffside, N. J.	
	5,000	KGO	Oakland, Calif.	
	5,000	WBBM	Chicago, Ill.	
379.5	750	WMBF	Miami Beach, Fla.	
	500	WDWF	Cranston, R. I.	
	500	WLSI	Cranston, R. I.	
	50,000	WGY	Schenectady, N. Y.	
374.8	500	WCAJ	Lincoln, Nebr.	
	5,000	WOC	Charleston, W. Va.	
	500	KFDM	Beaumont, Texas	
	500	KNRC	Santa Monica, Calif.	
370.2	500	KUOM	Missoula, Mont.	
	500	WAAW	Omaha, Nebr.	
	5,000	WLWL	Kearny, N. J.	
	1,000	KHQ	Spokane, Wash.	
365.6	1,000	WDAF	Kansas City, Mo.	
	500	WEBB	New York City, N. Y.	
	500	WMCA	Hoboken, N. J.	
	1,000	WJJD	Mooseheart, Ill.	
361.2	500	WCSH	Portland, Me.	
	500	WEBH	Chicago, Ill.	
	500	WFHH	Clearwater, Fla.	
	5,000	WSAI	Mason (Cincinnati) O.	
348.6	500	KFWB	Hollywood, Calif.	
	1,000	WEW	St. Louis, Mo.	
	1,000	WWJ	Detroit, Mich.	
	2,500	KJR	Seattle, Wash.	
344.6	1,000	KVOO	Bristow, Okla.	
	500	KXA	Seattle, Wash.	
	500	WAAM	Newark, N. J.	
	500	WCAJ	Lincoln, Nebr.	
	500	WGBS	Astoria, N. Y.	
	500	WIP	Philadelphia, Pa.	
344.6	500	WOO	Philadelphia, Pa.	
	5,000	WCBD	Zion, Ill.	
340.7	5,000	WLS	Crete (Chicago), Ill.	
	1,000	WAPI	Auburn, Ala.	
336.9	500	WKAQ	San Juan, P. R.	
	500	WOQ	Kansas City, Mo.	
	5,000	WSM	Nashville, Tenn.	
333.8	1,000	WJAX	Jacksonville, Fla.	
	500	KNX	Los Angeles, Calif.	
	500	WHB	Kansas City, Mo.	
333.1	750	WHA	Madison, Wis.	
	2,000	WLBL	Stevens Point, Wis.	
331.1	1,000	KFQB	Fort Worth, Texas	
	500	KSAC	Manhattan, Kansas	
	15,000	WBZ	Springfield, Mass.	
325.9	500	WBZA	Boston, Mass.	
	500	WJAD	Waco, Texas	
	5,000	KOA	Denver, Colo.	
	2,500	WABC	Richmond Hill, N. Y.	
322.4	500	WBOQ	Richmond Hill, N. Y.	
	500	WPCH	Hoboken, N. J.	
	500	WRNY	Coytesville, N. J.	
	750	WQAM	Miami, Fla.	
	500	WHAS	Louisville, Ky.	

Hall's Catarrh Medicine for

BROADCASTING STATIONS

Meters	Watts	Station	Location	Dials
319	5,000	KFAB	Lincoln, Nebr.	
	5,000	KOIL	Council Bluffs, Ia.	
	1,000	KOIN	Sylvan, Ore.	
315.6	750	WHA	Madison, Wis.	
	500	WEAN	Providence, R. I.	
	50,000	KDKA	East Pittsburgh, Pa.	
309.1	1,000	KPSN	Pasadena, Calif.	
	5,000	KFAB	Lincoln, Nebr.	
	5,000	WABC	Richmond Hill, N. Y.	
305.9	500	KYA	San Francisco, Calif.	
	500	WBOQ	Richmond Hill, N. Y.	
	500	WPCW	New York City, N. Y.	
	500	WRNY	Coytesville, N. J.	
	15,000	WGN	Elgin, Ill. Nr. Chicago	
302.8	5,000	WHT	Deerfield, Ill. (Chicago)	
	5,000	WIBO	Desplaines, Ill	
	1,000	KOMO	Seattle, Wash.	
	500	WHZ	Troy, N. Y.	
299.8	1,000	KSL	Salt Lake City, Utah	
	1,000	WNAX	Yankton, S. D.	
	750	WGR	Buffalo, N. Y.	
296.9	5,000	KMOX	Kirkwood (St. Louis), Mo.	
	500	KOWW	Walla Walla, Wash.	
	500	WBAK	Harrisburg, Pa.	
	500	WPSC	State College, Pa.	
293.9	1,000	KLZ	Denver, Colo.	
	1,000	WWNC	Asheville, N. C.	
	750	WSMB	New Orleans, La.	
	500	KQW	San Jose, Calif.	
293.4	500	KUOA	Fayetteville, Ark.	
	1,000	WODA	Paterson, N. J.	
	1,000	WTMJ	Brookfield, Wis.	
	500	KPRC	Milwaukee, Wis.	
	500	WHAD	Houston, Texas	
288.3	500	WLBW	Milwaukee, Wis.	
	1,000	WGL	Oil City, Pa.	
285.5	1,000	W.D. O	Secaucus, N. J.	
	500	KTBI	Orlando, Fla.	
	500	WBET	Los Angeles, Calif.	
	500	WENR	Boston, Mass.	
	500	WTAG	Chicago, Ill.	
282.8	5,000	WBAL	Worcester, Mass.	
	4,000	KFAU	Glen Morris (Baltimore), Md.	
	500	KMMI	Boise, Idaho	
	5,000	WBAL	Clay Center, Nebr.	
	500	WCAL	Glen Morris (Baltimore), Md.	
	500	WDGY	Northfield, Minn.	
280.2	500	WJAG	Minneapolis, Minn.	
	5,000	WAIU	Norfolk, Nebr.	
	1,000	KPUN	Columbus, Ohio	
	750	WEAO	Colo. Springs, Colo.	
277.6	500	KPXF	Columbus, Ohio	
	500	WDRC	Denver, Colo.	
	5,000	WHAM	New Haven, Conn.	
	500	KTAV	Victor (Rochester), N. Y.	
	500	WGCP	Oakland, Calif.	
280.1	500	WNJ	Newark, N. J.	
	2,000	KWK	Newark, N. J.	
277.6	1,000	WKAR	St. Louis, Mo.	
	750	WGHP	East Lansing, Mich.	
	500	KTCL	Mt. Clemens, Mich.	
			Seattle, Wash.	

Certain Asthmatic Conditions

—500 WATTS AND HIGHER

Meters	Watts	Station	Location	Dial
277.6	500	KWWG	Brownsville, Tex.	
		500 WABQ	Philadelphia, Pa.	
275.9	1,000	WSB	Atlanta, Ga.	
275.1	1,000	WFBI	Indianapolis, Ind.	
	500	KFSG	Los Angeles, Calif.	
	500	WCAC	Mansfield, Conn.	
	500	WEAN	Providence, R. I.	
	500	WTAR	Norfolk, Va.	
	500	WTAS	Villa Olivia, Ill.	
272.6	5,000	WPG	Atlantic City, N. J.	
	1,000	WRM	Urbana, Ill.	
	750	KFJF	Oklahoma City, Okla.	
	750	WHAR	Atlantic City, N. J.	
	500	KFAD	Phoenix, Ariz.	
	500	WBAA	West Lafayette, Ind.	
270.1	1,500	KLDS	Independence, Mo.	
	1,500	KMBC	Independence, Mo.	
	600	KGU	Honolulu, Hawaii	
	500	KMA	Shenandoah, Iowa	
	500	KOAC	Corvallis, Oregon	
	500	KQV	Pittsburgh, Pa.	
	500	WGST	Atlanta, Ga.	
	500	WHAD	Millwaukee, Wis.	
	500	WJAS	Pittsburgh, Pa.	
	500	WMAZ	Macon, Ga.	
	500	WSOE	Millwaukee, Wis.	
267.7	1,000	KSBA	Shreveport, La.	
	500	KFWI	San Francisco, Calif.	
	500	WDAE	Tampa, Fla.	
265.3	5,000	WOI	Ames, Iowa	
	2,000	KTSA	San Antonio, Texas	
	1,000	WHK	Cleveland, Ohio	
	1,000	WNOX	Knoxville, Tenn.	
	500	WICC	Easton, Conn. (Sport Hill)	
263	5,000	WJAZ	Mt. Prospect, Ill.	
	2,500	WMBI	Chicago, Ill.	
	500	KGEF	Los Angeles, Calif.	
	500	WSEA	Virginia Beach, Va.	
260.7	2,000	KGA	Spokane, Wash.	
	1,000	KFQB	Fort Worth, Texas	
	1,000	WPIW	Hopkinsville, Ky.	
	1,000	WRHM	Minneapolis, Minn.	
260.7	500	WCAU	Philadelphia, Pa.	
	500	WCMA	Culver, Ind.	
	500	WDGY	Minneapolis, Minn.	
	500	WOOD	Furnwood, Mich.	
258.5	1,000	WBT	Charlotte, N. C.	
	750	WFBL	Syracuse, N. Y.	
	500	KFUL	Galveston, Texas	
	500	WEBW	Beloit, Wis.	
256.3	2,000	KTNT	Muscattine, Iowa	
	1,000	WBBR	Rossville, N. Y.	
	500	WCNO	Springfield, Ohio	
	500	WEBJ	New York City, N. Y.	
254.1	1,000	WRVA	Richmond, Va.	
	750	WREN	Lawrence, Kans.	
	500	KFKU	Lawrence, Kans.	
	500	WABO	Rochester, N. Y.	
	500	WDOD	Chattanooga, Tenn.	
	500	WHEC	Rochester, N. Y.	
	500	WTAQ	Eau Claire, Wis.	
252	5,000	WMIB	Chicago, Ill.	
	5,000	WOK	Homewood, Ill.	
	5,000	WORD	Batavia, Ill.	
	500	KFXB	Los Angeles, Calif.	

Hall's Catarrh Medicine for its Tonic Effect

BROADCASTING STATIONS 500 WATTS AND HIGHER

Meters	Watts	Station	Location	Dials	
249.9	500	KFRU	Columbia, Mo.		
	500	KFRY	Bismarck, N. D.		
	500	WCOA	Pensacola, Fla.		
247.8	1,000	WIOD	Miami Beach, Fla.		
245.8	500	KFH	Wichita, Kans.		
	500	WEVD	Woodhaven, N. Y.		
	500	WFIW	Hopkinsville, Ky.		
	500	WGMS	Minneapolis, Minn.		
	500	WHDI	Minneapolis, Minn.		
	500	WKRC	Cincinnati, Ohio		
	500	WLB	Minneapolis, Minn.		
	500	WWL	New Orleans, La.		
	243.8	1,500	KWUC	Le Mars, Iowa	
		1,500	WGHP	Mt. Clemens, Mich.	
1,000		WCAD	Canton, N. Y.		
500		KGRS	Amarillo, Texas		
500		KSCJ	Sioux City, Iowa		
500		WFBR	Baltimore, Md.		
500		WSOM	Woodhaven, N. Y.		
241.8	2,500	KFKB	Milford, Kans.		
	1,000	WEBX	Superior, Wis.		
	500	KFON	Long Beach, Calif.		
	500	WEDC	Chicago, Ill.		
	500	WGES	Chicago, Ill.		
239.9	500	WMAL	Washington, D. C.		
	2,500	KEX	Portland, Oregon		
	500	WBAW	Nashville, Tenn.		
	500	WCAD	Asbury Park, N. J.		
	500	WDBO	Winter Park, Fla.		
	500	WNAD	Norman, Okla.		
	500	WOAN	Lawrenceburg, Tenn.		
	500	WOAX	Trenton, N. J.		
238	1,500	KLDS	Independence, Mo.		
	1,000	WADC	Akron, Ohio		
236.1	1,000	WEMC	Berrien Springs, Mich.		
	1,000	KFWM	Oakland, Calif.		
	1,000	WHAP	Carlstadt, N. J.		
	500	KFMX	Northfield, Minn.		
	500	WBNY	New York City, N. Y.		
	500	WCAL	Northfield, Minn.		
	500	WDWM	Newark, N. J.		
	500	WMSG	New York City, N. Y.		
	500	WSUF	Suffolk, Va.		
	500	WTAD	Quincy, Ill.		
234.2	500	WTAR	Norfolk, Va.		
	1,000	KFVE	St. Louis, Mo.		
	500	KDYL	Salt Lake City, Utah		
232.4	500	KUT	Austin, Texas		
	500	WBRL	Tilton, N. H.		
	500	WSBC	Chicago, Ill.		
230.6	1,000	KFEQ	St. Joseph, Mo.		
	500	WREO	Lansing, Mich.		
228.9	5,000	WOWO	Fort Wayne, Ind.		
	1,000	KFLW	Burbank, Calif.		
227.1	500	KGBU	Ketchikan, Alaska		
	500	KMMJ	Clay Center, Nebr.		
	500	WCWK	Fort Wayne, Ind.		
	500	KSO	Clarinda, Iowa		
	500	WARS	Brooklyn, N. Y.		
	500	WBBC	Brooklyn, N. Y.		
	500	WFJC	Akron, O.		
	500	WJAY	Cleveland, O.		
	500	WSDA	Brooklyn, N. Y.		
	500	WSGH	Brooklyn, N. Y.		

Other uses for HALL'S CATARRH MEDICINE

COLD IN THE HEAD. Those who are subject to inflammation and congestion caused by frequent "Colds in the Head" will find that the use of Hall's Catarrh Medicine will aid greatly to place the mucous membrane in a healthy condition where you are much less liable to be affected by Cold Germs.

HAY FEVER PREVENTIVE. When used as a preventive to ward off Hay Fever attacks — Hall's Catarrh Medicine by acting as an alterative aids Nature in restoring the mucous membrane to a normal condition where it is much less liable to be affected by Hay Fever pollen. The best results are obtained when the medicine has been taken regularly at least six weeks prior to the time when the Hay Fever attack usually starts.

ASTHMATIC CONDITION PREVENTIVE. The potent ingredient in Hall's Catarrh Medicine, by acting as an alterative, tends to reduce the severity of the paroxysms in certain Asthmatic Conditions.

Broadcasting Stations 500 Watts and Higher—*Continued*

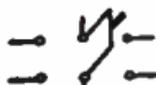
Meters	Watts	Station	Location	Dials
227.1	500	WWAE	Chicago, Ill.	
225.4	500	WAMD	Minneapolis, Minn.	
	500	WDAD	Nashville, Tenn.	
	500	WLAC	Nashville, Tenn.	
	500	WMAC	Cazenovia, N. Y.	
	500	WSYR	Syracuse, N. Y.	
223.7	500	WCAM	Camden, N. J.	
	500	WCRW	Chicago, Ill.	
	500	WFAM	Philadelphia, Pa.	
	500	WFKB	Chicago, Ill.	
	500	WNRC	Greensboro, N. C.	
	500	WPCC	Chicago, Ill.	
222.1	500	WAMD	Minneapolis, Minn.	
220.4	500	WKBH	LaCrosse, Wis.	
218.8	500	WBNY	New York City, N. Y.	
	500	WCGU	Coney Island, N. Y.	
	500	WGWB	Milwaukee, Wis.	
	500	WKBO	Jersey City, N. J.	
	500	WKBQ	New York City, N. Y.	
217.3	750	WKBW	Buffalo, N. Y.	
215.7	500	WQAA	Parkeburg, Pa.	
214.8	500	WDOD	Chattanooga, Tenn.	
212.6	1,000	WFLA	Boca Raton, Fla.	
211.1	500	WCGU	Coney Island, N. Y.	
209.7	500	KSOO	Sioux Falls, S. D.	
	500	WOKT	Rochester, N. Y.	
204	750	WKEN	Amherst, N. Y.	
202.6	10,000	WTFE	Mt. Vernon Hills, Va.	
	5,000	WRUF	Gainesville, Fla.	

RADIO SYMBOLS

and their meanings



PHONE PLUG



DPDT



VARIOCOUPLER



AUTO FILAMENT CONTROL JACK



ANTENNA

DOUBLE POLE
DOUBLE THROW
SWITCH



OUTPUT PHONE JACK



LOOP ANTENNA



SPST



TAP SWITCH



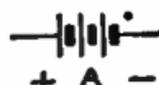
CLOSED CIRCUIT
PHONE JACK



VARIABLE CONDENSER



SPDT



'A' BATTERY



LEAD-IN INSULATOR



FIXED CONDENSER



LOUD SPEAKER



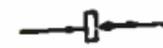
'B' BATTERY



HEAD SET



RHEOSTAT



CRYSTAL DETECTOR



INSULATOR



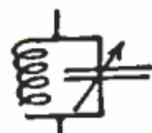
GRID LEAK



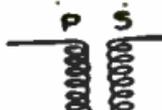
VACUUM TUBE



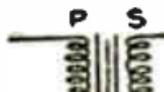
POTENTIOMETER



TUNED
RADIO FREQUENCY
TRANSFORMER



RADIO FREQUENCY
TRANSFORMER



AUDIO FREQUENCY
TRANSFORMER



BRIDGE OR
NON-CONNECTION



CONNECTION



GROUND



BINDING POSTS

Important Aids to Good Reception

1. Use a short, direct ground wire, fastened to a water pipe just ahead of the point where it enters the ground or to an iron or brass pipe driven deep into the earth. An eight foot pipe is none too long.

2. Use an aerial of the proper length and construction, clear of all obstructions, with a straight unobstructed lead-in to set. Today, most sets operate best on an aerial, which, including lead-in wire measure not over 75 feet.

3. Fully charged batteries are, of course, vital to good reception. The "A" Storage Battery should never be allowed to fall below 1200 specific gravity. "B" Batteries should be replaced when they get down to 17 volts on the 22½ volt battery; 35 volts on the 45 volt.

4. Keep the plates of the variable condensers clean by occasionally running a common pipe cleaner between them. Also be sure that your tube socket springs make good contact with the pins on the base of the tube.

5. Have your tubes tested when the set appears to be sluggish. If necessary have them rejuvenated, or replace them.

6. The loudspeaker is another item which plays a very important part in good reception. Even the costliest radio receiver cannot give you quality reproduction unless the loudspeaker used reproduces faithfully. In selecting your loudspeaker choose one which gives clear, true amplification of both high and low tones. And, by all means, before buying, be sure to test out the speaker on your own receiver as all speakers do not work the same on all sets.

7. Keep all battery and wire connections clean and tight. Check over your entire receiving system from stem to stern occasionally to make sure everything is in ship-shape order. Do not tamper with the arrangement of the parts or wiring in your set unless you are thoroughly versed in the intricacies of radio construction.

A friendly last word

In concluding this little book, let us remind the reader that just as half the joy of radio lies in good reception, half the joy of living lies in good health.

Catarrh is always annoying. Often it is offensive. You may have Catarrhal Bad Breath. Certainly it is a great handicap, and if your trouble is Catarrhal, you owe it to yourself to get rid of it.

Hall's Catarrh Medicine has been on the market for over forty years. It does not and never has contained Morphia, Opium, Cocaine, nor any other narcotic nor habit-forming drug.

The proved way is the better way. Thousands have found relief in Hall's Catarrh Medicine. Try it for 30 days and see what it can do for you. Follow the simple directions. Then note the improvement.

Any communications in regard to Hall's Catarrh Medicine will be answered promptly by

F. J. CHENEY & CO.

Toledo, Ohio

HALL'S FAMILY PILLS

PURELY VEGETABLE

*For Sick Headache, Dizziness, Indigestion,
Caused by Constipation*

HALL'S FAMILY PILLS are very small and easy to take. They are very effective in operation. Any one can take them. As one customer said: "There is not a gripe in a bottle of them." They are gentle in action, but do their work.

When suffering with Sick Headache, Dizziness, Indigestion, Sleepy or Sluggish Feeling after eating, caused by constipation, take HALL'S FAMILY PILLS.

We recommend these Pills to be taken in connection with HALL'S CATARRH MEDICINE.

HALL'S FAMILY PILLS should be taken by the whole family, from a child of four years to the oldest member. They are just what the name implies — A FAMILY PILL — and no family should be without them.

If your druggist does not keep them, he can get them for you, or we will send them direct upon receipt of price, 25 cents per bottle.



F. J. CHENEY & CO., Toledo, Ohio



HALL'S CATARRH MEDICINE

A Combined Local and Internal
Treatment for Catarrh

Manufactured by

F. J. CHENEY & CO., TOLEDO, OHIO

Beware of Imitations