

GROUND SYSTEM IMPORTANT IN RADIO PLANTS

Amateurs Likely to Overlook This Feature—Care Will Increase Outfit's Sending Radius Greatly.

By JOHN GILMORE O'ROURKE, Superintendent American Radio Relay League, District of Eastern Nebraska.

After erection of the antenna comes the ground system. The average beginner invariably looks upon the ground system as a rather minor detail and is generally satisfied with attaching the ground connection to a ground rod or water pipe. However, the ground system is every bit as important if not more so, than the antenna. At least 50 per cent of the amateur stations today would double their transmitting range and considerably increase their receiving range if more precautions were taken when installing the ground system.

Sizes of Ground Leads.

In the first place the ground lead should be as short as possible. Best results are obtained with ground leads not exceeding 10 feet in length. By ground lead I mean the lead running from the secondary of the oscillation transformer or the antenna inductance to the ground or point of ground connection. It is also imperative that the lead be as large as possible if long distance transmission is the aim of the builder. For the smaller type sets up to and including one-fourth kilowatt power input, two or three No. 12 copper wires twisted into the form of a cable will be sufficient. A cable composed of 10 or 12 copper wires of the above mentioned size will form an efficient ground lead for stations having a transformer power input of one-half kilowatt. At least 15 No. 12 copper wires should be used for stations employing one kilowatt of power as measured across the primary terminals of the high potential transformer. Copper tubing forms an excellent ground lead. One-half or five-eighths inch tubing should be used for the one-kilowatt transmitter.

Connections for Ground Leads.

The next and hardest problem of successfully installing a ground system is the connection of the ground lead to mother earth. Too much cannot be said on this subject. First, connect the end of the lead to a rod, preferably copper or brass. This rod should be placed so that the ground lead will be vertical if possible. It should be from eight to 10 feet in length. If possible, bury part of next winter's supply of coke in a hole and place the ground rod in the center. A few old copper-bottomed wash pans placed in the hole with the ground rod and topped off with a couple of sacks of salt will help out immensely. Now run wires or cables from this main ground rod to everything in sight. Chicken wire fencing laid directly under the antenna and soldered to the main rod will help the system admirably. Copper, brass or zinc plates buried and connected to the system also increase the efficiency. Copper wires or cables buried radially from the rod will further increase the efficiency. Last but not least add in the water and gas pipes. Connect to them from the street side of the meter.

Of course, if the antenna and ground system is to be used only for receiving, the large ground lead will not be required.

Next week: Principles of Tuning.

Queries Department.

Anyone may use this department as a source of information regarding radio communication.

Address all questions, care of Radio Department, Omaha Daily Bee.

T. H., Omaha, Neb.—I am 14 years of age. Is it possible for me to secure an amateur license?

A.—Yes.

2. Does it cost anything?

A.—No.

D. B. (near Douglas, Wyo.)—1. Are two stages of audio frequency amplification practical?

A.—Yes.

2. I have two bulbs, an audiotron and a Marconi V T. Which bulb is best for use as an amplifier?

A.—The Marconi tube.

French Aces Engage In Varied Pursuits; 12 Remain in Army

Paris, May 15.—Of 35 French heroes credited with 10 or more enemy planes during the war, 12 remain in the French army, seven are engaged in commercial pursuits, four have returned to college, one is a missionary and the others are scattered on farms or in factories.

Captain Fonck, leading ace of the allied armies, with 75 planes to his credit, is a member of the French chamber of deputies and also directs a business dealing specially with automobiles and aeroplane motors. Lieutenant Nungesser, who shot down 41 German planes or balloons, is in business. Sous-Lieutenant Bourjade, with 26 victories to his credit, is doing missionary work among the natives of the Sunda islands. Sous-Lieutenant Nogues was killed in a football game. Sous-Lieutenant Herbelin is engaged in newspaper work at Nancy.

\$75,000 Paid for Four Of Kitchener's Bottles

New York, May 15.—M. Parish Watson, art dealer of this city, confirmed a report from London that he had acquired the two famous pairs of "chrysanthemum bottles" given to the late Lord Kitchener by the emperor of China in 1909. Mr. Watson purchased the rare objects from Lord Broome, Kitchener's heir, for \$75,000. The bottles, Mr. Watson said, were purchased recently. He said that he intended to add them to his own collection and denied that he had acted as an agent in the transaction.

Four Mewing Mascots Of Aerial Squad Born 5,000 Feet Above Sea

Nogales, Ariz., May 15.—At least four "members" of the Twelfth Aero squadron will have a difficult time pointing out their "old home places" to their progeny in the years to come. The four are the latest additions to the Twelfth, which has just moved here for station from El Paso.

When the squadron moved out of El Paso it became a question of what to do with the mascots, a pair of cats. They were finally stowed away in one of the planes. Upon arriving here after the long flight, there were six cats. The four newcomers were born about 5,000 feet over the arid lands of Arizona while traveling anywhere from 100 to 125 miles an hour.

Laughs at Son's Joke, Dies of Heart Failure

Three Rivers, Mich., May 15.—Mrs. Caroline Osborn fell dead of heart disease after prolonged laughter over her son's joke. She had just said she never laughed to much in her life when she fell lifeless to the floor.

Pajamas for Paris Dogs.

Paris, May 15.—Pajamas for dogs is the latest freak fashion. Mlle. Jane Assimot, an actress, rigged out two of her Pekinese in silk pajamas of blue and rose and presented them to her friends at a reception. Within a fortnight dogs in pajamas began making their appearance in restaurants around the opera.

Be Rid of Painful Corns

"Geta-It" Makes Them Loosen Up So They Lift Off Painlessly.

There's no more pain after a few drops of "Geta-It" finds upon corn or callus and instantly dries.



In a day or two you lift the old misery-maker right off without even feeling it. That's the last of Mr. Corn and the last of your misery. Millions who have lost their corns the "Geta-It" way say it is the only common sense way to get rid of the pests.

"Geta-It" is the never failing, guaranteed money-back corn remover, costs but a trifle at any drug store. Mfg. by E. Lawrence & Co., Chicago.

Sold in Omaha and recommended as the world's best corn remedy by Sherman & McConnell's Drug Co.'s Stores.

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"I have been Using Your Sulphur Tablets More or Less for Many Years and Have Recommended Them to Many, Because I Think They Should Be in Every Home."

This writes Mr. Wm. Cameron, 1021 Ellis Place, Denver, Colo., and we publish this brief statement to prove the never-ending value of Sulphur Tablets, in the treatment of such ailments, as chronic constipation, impaired kidney action, and consequent impure blood manifested in many ways, such as headaches, pimples, boils, rash, hives, rheumatism, etc. Neglected constipation undoubtedly brings on a long train of more serious ills and the way to get relief is to use Sulphur Tablets as a laxative, tonic blood clearer.

They are made of extracts of herbs and roots and contain sulphur and cream of tartar, thus supplying the essentials for a regular and effective treatment. Sold by druggists everywhere at 60c per tube.—Advertisement.

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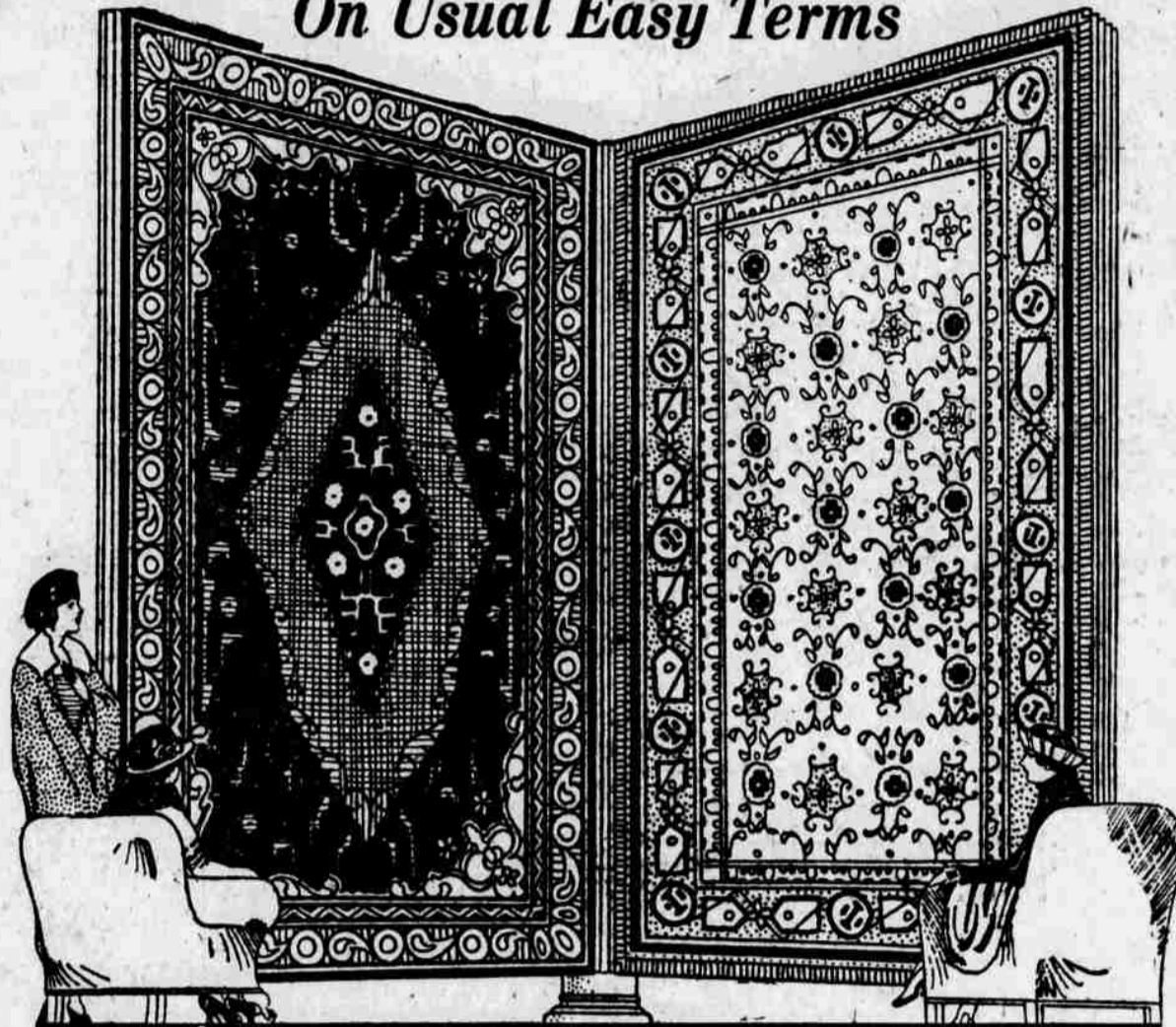
MY TIRED FEET ACHE FOR "TIZ"

Let your sore, swollen, aching feet spread out in a bath of "Tiz."

Just take your shoes off and then put those weary, shoe-crinkled, aching, burning, corn-pestered, bunion-tortured feet of yours in a "Tiz" bath. Your toes will wriggle with joy; they'll look up at you and almost talk and then they'll take another dive in that "Tiz" bath. When your feet feel like lumps of lead—all tired out—just try "Tiz." It's grand—it's glorious. Your feet will dance with joy; also you will find all pain gone from corns, calluses and bunions. There's nothing like "Tiz." It's the only remedy that draws out all the poisonous exudations which puff up your feet and cause foot torture. Get a box of "Tiz" at any drug or department store—don't wait. Ah! how glad your feet get; how comfortable your shoes feel; how can wear shoes a size smaller if you desire.

Rug Bargains Galore

On Usual Easy Terms



Compare These Unusual Rug Bargains and Be Convinced—Come Early Tomorrow

IF YOU are willing to be convinced we want you to investigate the exceptional values we are offering in high grade, serviceable rugs. We want you to try and duplicate the bargains listed below and you will be instantly convinced that here indeed are real values. They are the kind of rugs that folks who demand the most for their money are buying. Remember, your credit is good, even though the prices have been greatly reduced.

- | | | | |
|--------------------------------------|--------------------|---|---------------------|
| 9x12 foot Seamless Velvet Rugs..... | \$54 ⁷⁵ | 9x12 ft. Genuine Royal Wilton Rugs..... | \$116 ⁷⁵ |
| 9x12 foot Seamless Brussels Rugs.... | \$31 ⁷⁵ | 8.3x10.6 ft. Wool and Fibre Rugs..... | \$17 ⁷⁵ |
| 9x12 foot Fancy Border Grass Rugs... | \$24 ⁷⁵ | 6x 9 ft. Wool and Fibre Rugs..... | \$12 ⁷⁵ |
| 6x 9 foot Fancy Grass Rugs..... | \$5 ⁷⁵ | 27x54 inch Axminster Rugs..... | \$5 ⁷⁵ |
| 27x54 inch Velvet Rugs..... | \$3 ⁷⁵ | 36x60 inch Axminster Rugs..... | \$7 ⁷⁵ |

Buy a Columbia On Easy Terms — Only \$1 a Week —

No Interest Charge

Buy any model Columbia Grafonola you desire in your popular finish on the most generous easy terms. Come tomorrow and take advantage of our special offer.

You Choose From Complete Stock

Portable Model	Cabinet Model
Like the illustration, without cover. Golden or mahogany finish at \$32 ⁵⁰	The popular E2 model. It holds 75 rec'ds. Buy yours at \$120

Holds 75 Lbs.

The food compartments are heavily enamel lined. Handsomely finished in golden and can be had at only—

\$34⁵⁰

Very Handy

Note the elaborate raised decorations. Can be had in golden or fumed finish at—

\$16⁷⁵

Practical

A great aid to busy housewives. The large top is easily cleaned. Special at—

\$12⁵⁰

Specially Priced

The William and Mary design. Have full leather slip seats, and are truly a bargain at—

\$13⁷⁵

Greatly Reduced

You will have to come early. Genuine leather seats. The Queen Anne period design, at only—

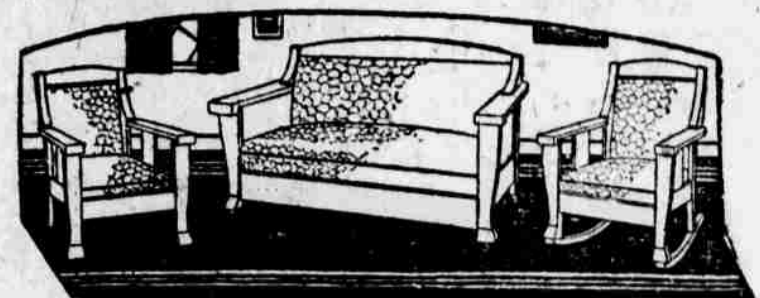
\$13⁸⁵

Practical

A great aid to busy housewives. The large top is easily cleaned. Special at—

\$12⁵⁰

Add Another Room to Your Home



3-Piece Kroehler Duofold Suite

Beat the "High Cost" by purchasing this high-grade suite tomorrow. Well proportioned pieces, have full steel spring construction and are upholstered in durable Spanish fabricoid. Choice of golden or fumed finish. Very special **\$138⁷⁵** for Monday, at only.....

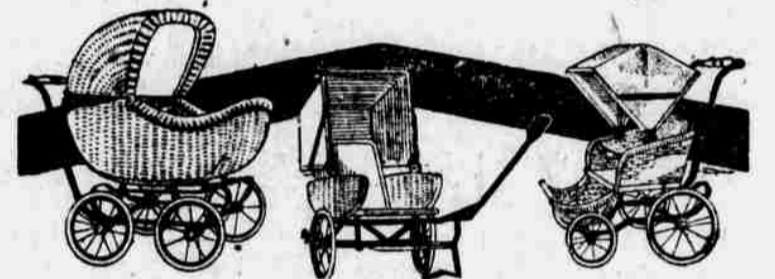
We Offer Many Values In Fine Living Room Suites



Loose Spring Filled Cushions

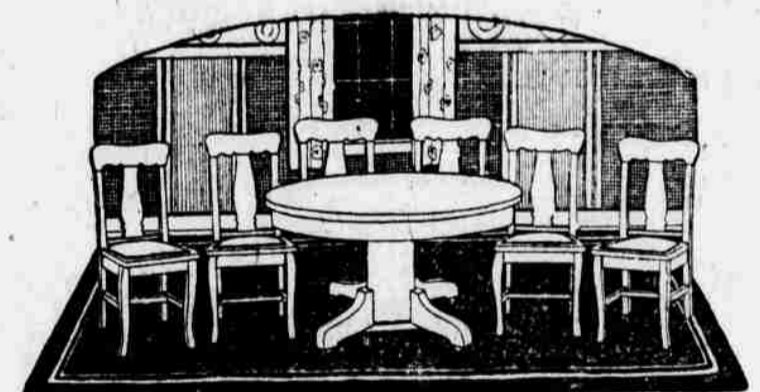
Extraordinary Parlor Suite Values

Our large stock of living room suites of cane and overstuffed pieces is the largest shown in Omaha. Choice styles, with spring-filled loose cushions, complete, Monday, at..... **\$387⁵⁰**



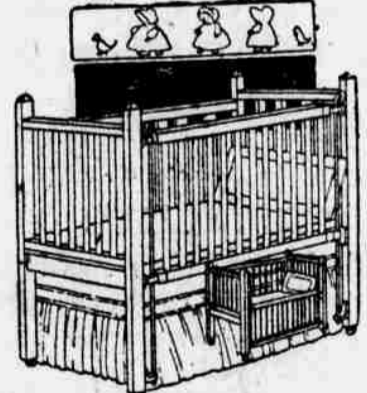
Carriage, Sulky and Stroller Bargains

- | | | |
|--------------------------|--------------------------|--------------------------|
| Comfortable | Collapsible | Serviceable |
| \$39⁸⁵ | \$13⁹⁵ | \$16²⁵ |
- A most comfortable carriage in the natural finish, neatly upholstered. Has fiber reed sides and adjustable back. Complete with a tan hood. Truly a serviceable and comfortable stroller, finished natural.



Great Surprise From Hartman's

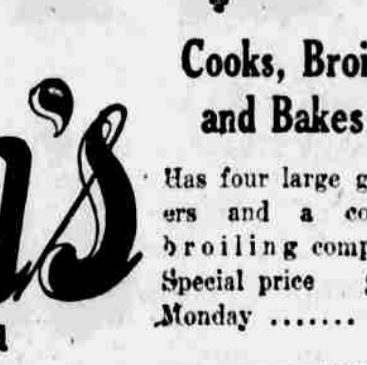
Examine the pieces shown above and then come and see them on our floor—you'll be more than surprised. Six sturdy oak chairs with fabricoid seats, and a table that extends to six feet, complete..... **\$67⁵⁰**



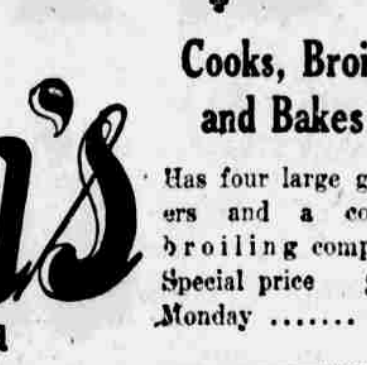
Fine Simmons Crib
It is the safety high side with full drop sides. In White Enamel or Ivory, only..... **\$13⁵⁰**



Full Spring Seat Value
The broad leather seat is fitted with many springs. Finished golden and a bargain at..... **\$22⁵⁰**



"Simmons" Bed Outfit
Choice white enamel or Vernis Martin bed, sanitary springs, comfortable mattress and a pair of pillows, all for..... **\$39⁸⁵**



Cooks, Broils and Bakes
Has four large gas burners and a convenient broiling compartment. Special price **\$58⁵⁰** Monday.....

Hartman's

Sixteenth—Between Harney and Howard