

S. Crosby
Zion Ill

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ZION.
OCT 7
12-14
1924



Ms J. Crosby
Bartle

Oriente

Cuba

Saturday P.M.
Nov 4

Dear Uncle Jesse

I've just finished reading your last letter so I am going to write and tell you about the radio set that I am going to send. It will be a three tube set with a night time range ^{of} 1500 miles under favorable conditions. It will enable you to use a loud speaker horn on stations ~~as~~ up to 800 miles distance. Am going to send some magazines on radio to you this week - and ask you to read the articles that I mark with a blue pencil as they will be helpful and will enable you to operate the receiver efficiently - I will ship the materials for the aerial in a week or so - so that you will have time to get it up before the set comes.

The definition for an aerial is - "an aerial is a device for intercepting part of the energy radiated by another aerial."

The best type of aerial for receiving is the two wire inverted L type and should be about 100 feet long and as high as possible - the higher the better altho it is not impossible to get anything with a low aerial - as I have received Los Angeles Calif. with an aerial but 3 feet above the ground at one end - My present aerial is about 50 feet

high and 105 ft long. I have also received stations up to 100 miles without any aerial or ground and also using a bed spring-metal covered trunk-stove etc. as an aerial

your aerial will consist of two copper ribbons spaced about 3 ft apart and 100 ft long and as high as possible - these are not connected together at the far end - but the end nearest the house is connected to a wire leading to the set in the house. It is best to bring the wire ~~strate~~ ^{straight} down to the window sill and thru a porcelain bushing to the set inside. This wire is called the "lead in wire" and the main part of the aerial is called the "flat top"

The ~~wire~~ lead in may be of covered wire - #14 copper house wire. The covering does not make any difference - in fact if the whole aerial were of covered wire, it would be just as efficient.

Just before the lead in enters the house it should pass thru a lightning arrester and lightning switch to protect the aerial in case of a thunder storm. A piece of pipe should be driven into the ground directly under the lightning arrester & switch.

The switch is connected so that the aerial may be connected directly to the ground when not in use. A wire is run from the switch & arrester to the pipe in the ground.

A pipe or rod about $\frac{1}{2}$ inch in dia. and ~~2~~

2 or 3 feet long will be all right.

When the aerial is grounded it acts as a lightning rod and absolutely protects your house from lightning. The lightning arrester protects the set in case it should lightning while you are using the set.

A ground wire is also needed for the set. This should be run from the ground binding post on the set and is best soldered to the well pipe or should run to a copper plate in the pond. An old wash boiler makes a good ground plate. The ground wire may be of either bare or covered wire.

My set is grounded to the well and it makes a very good ground.

The aerial should be insulated at each end and the lead in should be insulated at points where it touches the building - the ground wire does not have to be insulated.

All connections should be soldered.

Remember your set is no better than your aerial and ground.

I will send all the materials necessary for the aerial & ground soon.

Enclosed some sketches to illustrate more clearly & what I have written. know

I suppose that you most or at least some of this and am just writing this to make sure

The wire for the flat top will be a special copper ribbon about $\frac{3}{4}$ inch wide. It comes in 100 ft. lengths. It has come on the market lately and has been found more efficient for receiving purposes. This is because the alternating current set up in the aerial ~~to~~ has a tendency to flow on the surface of the conductor only and by using a flat ribbon more surface is obtained.

~~This~~ This ribbon has a tendency to vibrate in the wind and should be twisted to keep it from vibrating. About 1 twist per ft. will be plenty.

In putting up my aerial I put the poles up first with the pulleys on them and the ropes thru the pulleys then I ~~made~~ made up my flat top on the ground - laid it out - soldered all the connections and connected the lead in then I hooked on the ropes and pulled it up.

The spreader are of 2x2 oak $3\frac{1}{2}$ ft. long. My flat top is of #14 stranded bronze wire as that ~~was~~ used to be the best two years ago.

~~I use 3 inch~~ I use three 8 inch insulators on each end.

Well that is all ~~about~~ about the aerial + ground that I can think of now - if there is any thing that you don't understand or anything that I have left out please write + let me know.

I have had 2 sets - I sold one and still have the other. I have had three or four sets here to fix and I used to go out and repair sets. A year ago I worked for a electrical contractor and we used to wire houses, install and repair sets + build sets + sell them.

I used to get good results from my set but have not used it lately.

I have copied POZ Germany, a code station on 10,000 meters wave length with a 1 tube set. Also WSO Marion Mass. on 10,000 meters. It is necessary to use a special tuning coil for this long wave length stuff. All the broadcasting of music etc. is between 200 and 600 meters.

Will you please write and tell me if you have a storage battery or any way of charging one so I will know wether to design the set for six volt tubes or dry cell tubes?

Am sending a call book listing all the stations in the world. Those that are marked are code stations which I heard in two evenings. The most of them are amateur stations.

I know several radio operators, one who was at sea for 13 years. He is working in a radio store in Waukegan and he gives me all my supplies at 10 per cent discount.

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Say I forgot to say that you will get the best results by running the aerial north and south as this type of aerial has a slight directional effect

Tell Frank that I wish he would write. What is Arthur doing now.

Well it is getting pretty late now and I must sign off

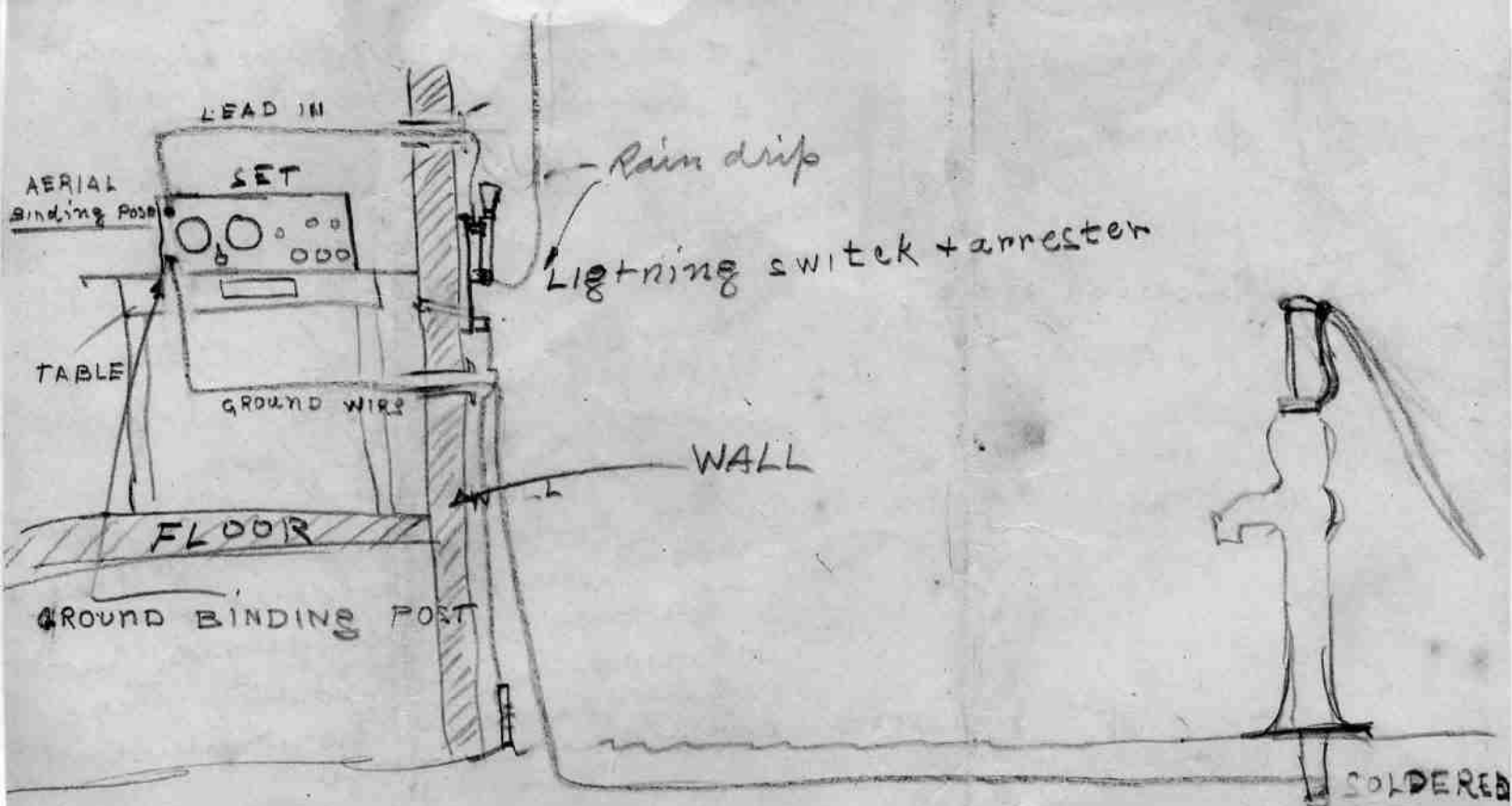
Love and best wishes

Your nephew

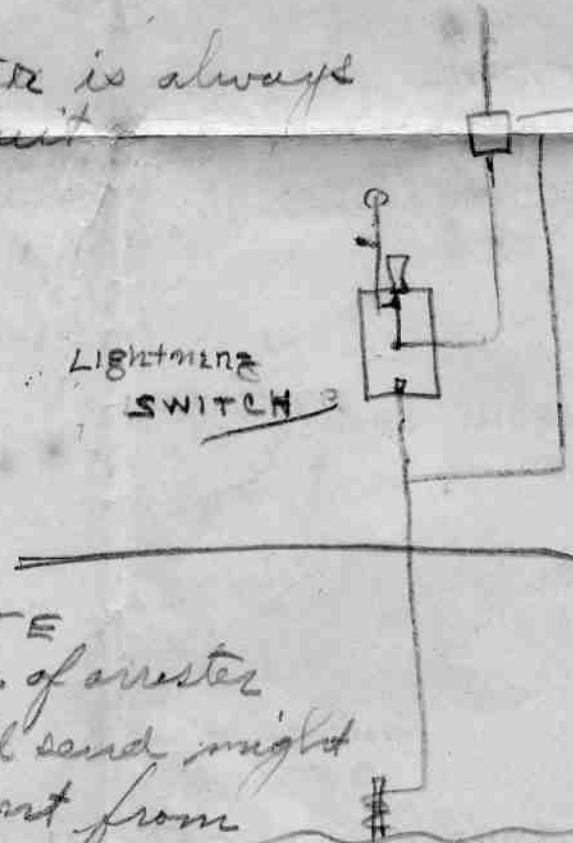
Stephen.

Am sending three magazines this week and will send some more later - have marked some articles that would be helpfull.

Please look the ads over as you could learn a lot from them.



arrester is always in circuit



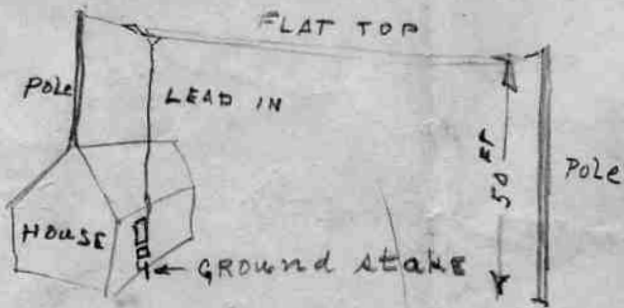
Lightning arrester

Lightning switch

Lightning switch of single pole double throw type

NOTE
The type of arrester that I will send might be different from this one so will send diagram with material

When switch is in top position set is connected and when in bottom position aerial is connected to ground



this aerial is called the inverted L because of its shape

one end may be lower than the other if it is not convenient to make ~~of~~ a pole as high as the one on the roof. a pipe pole is good but the aerial must be well insulated from it rain spout pipe - the thin sheet iron kind is good - several lengths may be soldered together this must be well gaged, but it makes a good mast altho it does seem as tho it wouldnt be strong enough

