## THE INVERTED "L" ANTENNA.

**Equipment.**

1 inverted "L" antenna, type AN–7, consisting of 75 feet, type W–24 wire, attached insulators (IN–10), and 25 feet lead-in type W–4 wire.
4 mast sections, type MS–14.
2 guys, rope, double, type GY–4.
1 counterpoise, wire, insulated, 75 feet long, type CP–5.
2 ground mats, copper screening, type MT–5.
2 insulators, type IN–7 (for mast tops).
4 stakes, ground, type GP–8.
1 hammer, type HM–1.

### GENERAL CONSTRUCTION OF THE ANTENNA.

**Information.**

This type antenna is used with the SCR–105 radio telegraph set. The erection of the inverted "L" antenna requires the above listed material. The mast sections are carried strapped together, while the rest of the equipment is carried in a canvas bag.

The mast sections are fastened together by using the metal clamps provided. The top of each mast section is so prepared that the mast top insulator may be screwed in place. When the mast is raised, the guy rope should make an angle of about 45° with the direction of the antenna. The antenna is made of stranded insulated wire because of its greater flexibility and less liability to become kinked as compared with single wire. Each of the type IN–10 insulators used between the antenna and masts consists of a 7 by $\frac{1}{2}$ by $\frac{1}{4}$ inch micarta strip with galvanized steel clevises and harness hooks at each end.

For a ground with this antenna either the insulated counterpoise wire or the ground mats may be used. Where the ground is dry, or the installation only temporary, the counterpoise is used. In case the ground is moist, and consequently a good conductor, or where the installation is semipermanent, the ground mats may be used. When the counterpoise wire is used, care must be taken to ascertain that it is well insulated and that it will not become grounded. The counterpoise or ground mats connect to the "ground" binding post of the set which is in use. Ground mats and counterpoise wires will not both be used at the same time. The antenna and counterpoise as well as the guys are placed on hand reels for transportation.

**Questions.**

(1) *What kind of wire is used with this antenna? Why?*

(2) *What insulators are used with this antenna? Where are they used?*

(3) *Where is the "lead in" and what is its purpose?*

(4) *How many mast sections are used at each end of the antenna, and how are the sections fastened together?*

(5) *Why are sectional masts used instead of one mast 20 feet long for each end of the antenna?*

(6) *Why is a copper wire screen used for the ground mat?*

(7) *What is the purpose of the insulation on the counterpoise wire?*

(8) *Explain how the counterpoise wire replaces a ground connection.*

**Information.**

Two men are required to erect efficiently the inverted "L" antenna. The antenna equipment is taken to the field and removed from the carrying bags. The mast sections are assembled and connected into two masts with the clamps and the mast insulators screwed into place. One guy and the lead-in end of the antenna is connected to the mast insulator of one mast. While one man (No. 1) holds this mast erect, the other man (No. 2) should stake down the guys, so that they will make an angle of about 45° with the direction of the antenna. Lean the pole so that its weight pulls against the guys. Then man No. 2 takes the reel on which the antenna is to extend, unreeling the antenna as he goes. No. 1 follows with the other mast, guys, two ground stakes, and the hammer. Connect the guys and antenna to the mast as was done at the first mast. The guys are tightened enough to take up the slack of the antenna after which the first mast is straightened up.

While the operator connects up the set and gets it adjusted, the other man should unroll the counterpoise wire, stretching it on the ground directly underneath the antenna. If the ground mats are used they should be spread out on the ground, or buried lightly, under the antenna.

A convenient method of placing the ground mats is to have them rolled up and then to start a trench about 8 inches deep and the width of the mats. The trench can be dug for about 2 feet and then a start made to unroll the mats in it. As the digging proceeds, the

loose earth is thrown back on that portion of the mats which is unrolled. The operation is kept up until the mats are completely unrolled and covered by the loose earth. This saves handling the earth more than once. The ground mats should be connected together with wire, leaving a space about the width of one mat between them. When the antenna has been erected, the work will be inspected by the instructor, after which it will be taken down and prepared for transportation.

## EXPERIMENT No. 1.

### TO ERECT AN INVERTED "L" ANTENNA.

**Directions.**

1. Erect the inverted "L" antenna assigned by the instructor in accordance with the procedure outlined above. One man of the team will act as No. 1 and the other as No. 2.

2. After the work has been inspected, remove the antenna and prepare it for transportation.

3. Unpack the equipment and again erect the antenna with man No. 1 now assuming the duties of No. 2, and former No. 2 assuming the duties of No. 1.

4. Remove the antenna and pack the equipment for transportation as before.