THE SCR–130 SET.

Equipment.

1 SCR–130 (set box BC–7 only).
4 legs for set box, type BC–7.
3 vacuum tubes, type VT–1.
4 vacuum tubes, type VT–2.
3 storage batteries, type BB–14 or BB–28.
1 set box, type BC–102 with BA–8 batteries.
1 dynamotor, type PE–6.
1 head set, type P–11.
1 cord, type CD–88.
1 cord, type CD–90.
1 cord, type CD–91.
1 cord, type CD–92.
1 antenna system, type A–1–A.
1 wave meter, type SCR–95 or SCR–125–A.

GENERAL CONSTRUCTION OF THE SCR–130 SET.

Information.

The SCR–130 set is designed to transmit continuous wave radio telegraph signals and to receive continuous wave radio telegraph and telephone signals. The wave-length range for both transmitting and receiving is from 550 to 1,100 meters. The SCR–130 is intended for use with such organizations as require a set of this power and have ample motor or animal-drawn transportation to carry it.

The transmitting and receiving circuits are connected to the antenna, as desired, by a triple-pole, double-throw switch, mounted on the front of the set box panel. (See Fig. 84.)

Directions.

1. Place the set box, type BC–7, on some convenient support. Unfasten the canvas cover and the three latches and lower the front door. (See Fig. 84.) Study the various controls on the panel and their markings. Notice the four large tuning knobs on the lower edge of the panel and determine the use of the smaller knobs located under the large knobs.

Questions.

(1) *What current does the ammeter on the panel indicate?*

(2) *What are the maximum and minimum amounts this meter will read?*

(3) *Locate the "antenna tuning" and the "transmit" wave length control knobs. What is the purpose of the small knob located beneath the "antenna-tuning" knob?*

(4) *Locate the antenna and ground binding posts?*

(5) *What are the binding posts on the right-hand side of the panel used for? Those on the left?*

Information.

Four VT–2 vacuum tubes are used in the transmitter of the SCR–130. One of the tubes is used as an oscillator or generator of elec-

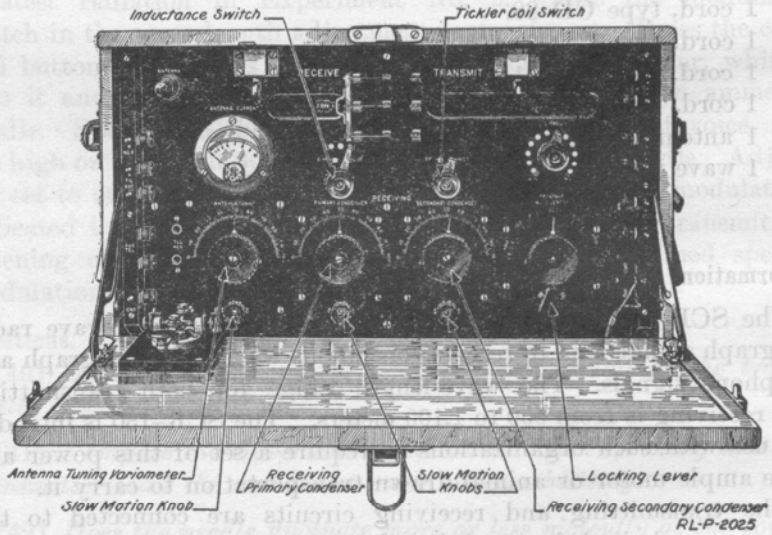

Fig. 84.—Set box BC–7 with front cover lowered to show panel.

trical impulses. The other three tubes, connected in parallel, are used to amplify the impulses generated by the oscillator tube. By using the tubes in this manner the antenna system does not affect in any way the wave length on which the set transmits. This is quite important for two reasons: 1. The set may be permanently calibrated for transmitting wave lengths. 2. The tone of the received signal will not vary when the transmitting antenna is swinging violently in the wind.

The amplifying vacuum tubes of the transmitter are inductively coupled to the antenna circuit. (See Fig. 85.)

The wave length of the transmitter is controlled by a variometer which is located in the right side of the set box. The antenna circuit is tuned by a variometer, located in the left side of the set box.

When the "Antenna tuning" variometer is adjusted so that the antenna circuit is tuned to the same wave length to which the "Transmit wave length" variometer is adjusted, the "Antenna current" meter will give the highest reading, and the set will be transmitting

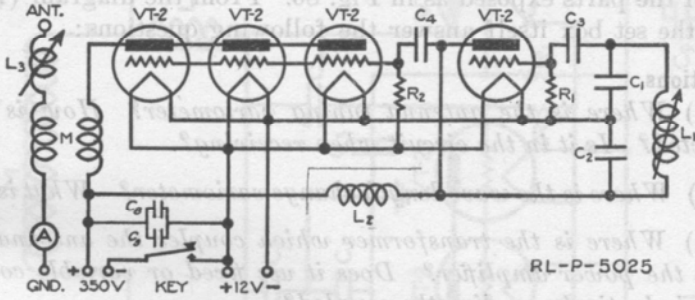

Fig. 85.—Schematic diagram of transmitter connections in SCR–130 set.

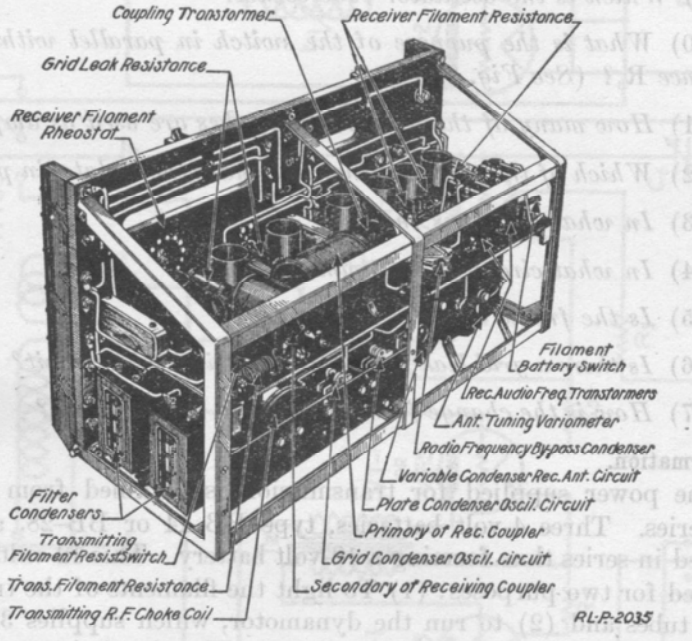

Fig. 86.—Rear view of panel and attached parts of set box BC–7.

efficiently on the wave length indicated on the "Transmit wave length" dial.

Directions.

2. Remove the four screws holding the two brackets to the operating table formed by the front of the set box and allow the front to

drop. Remove the leads from the binding posts marked "Key" at the lower right-hand side of the panel. Release the latches at the top and pull the panel out, then with an outward and upward motion remove the panel and the attached parts from the box. This leaves all of the parts exposed as in Fig. 86. From the diagram (Fig. 87) and the set box itself answer the following questions:

Questions.

(6) *Where is the antenna tuning variometer? How is it constructed? Is it in the circuit when receiving?*

(7) *Where is the wave-length change variometer? What is its use?*

(8) *Where is the transformer which couples the antenna circuit with the power amplifier? Does it use fixed or variable coupling? Is it inductively or directly coupled?*

(9) *Which is the oscillator tube socket?*

(10) *What is the purpose of the switch in parallel with the resistance* R_3*?* (*See Fig. 87.*)

(11) *How many of the transmitting tubes are used as amplifiers?*

(12) *Which of the transmitting tubes have their plates in parallel?*

(13) *In what circuit is the key?*

(14) *In what circuit is the ammeter?*

(15) *Is the frame of the set grounded?*

(16) *Is there a grid leak in the transmitting tube circuit?*

(17) *How is the change from transmit to receive made?*

Information.

The power supplied for transmission is obtained from storage batteries. Three 4-volt batteries, type BB–14 or BB–28, are connected in series thus forming a 12-volt battery. This 12-volt battery is used for two purposes: (1) To light the filaments of the transmitting tubes and (2) to run the dynamotor, which supplies 350 volts to the plates of the transmitting tubes. The circuit is so arranged that when the "Transmit-Receive" switch is placed in the transmit position the dynamotor will start running and the filaments of the VT–2 tube will light. Since the VT–2 tube requires approximately 8 volts across its filament and the storage battery supplies 12 volts, it is necessary to place in series with the filament a resistance of such value that when the normal filament current is flowing the

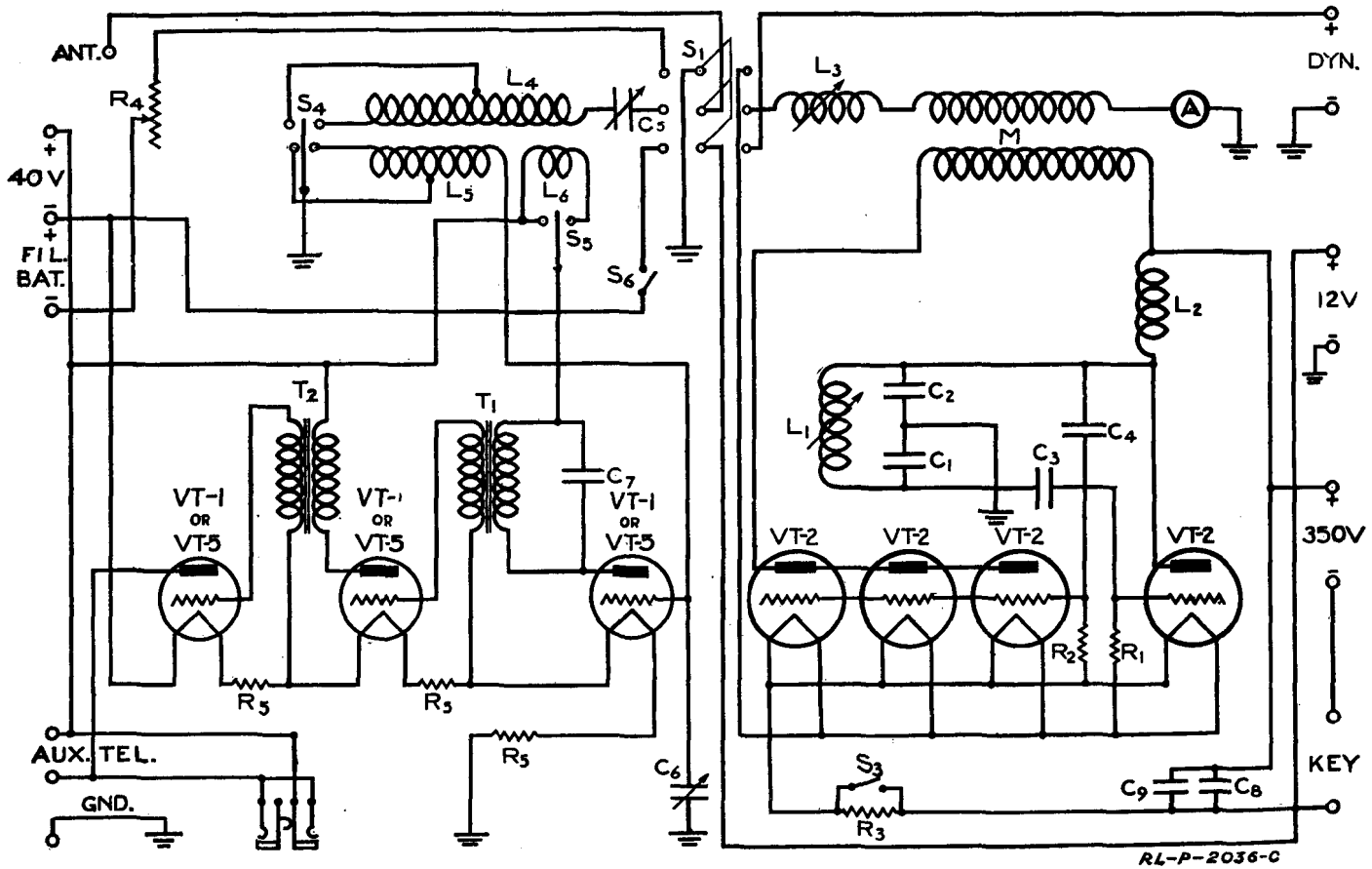

Fig. 87.—Schematic diagram of transmitting and receiver connections in set box BC–7.

voltage will be reduced to about 8 volts. The resistance, R_3. (Fig. 87) serves this purpose. The switch S_3, which is so arranged as to throw out the resistance, must be open. The switch is closed only when 8 volts is supplied to the filament circuit, as is done when the set box is used in the SCR–127 set.

Questions.

(18) *To which binding posts are the motor terminals of the dynamotor connected?*

(19) *To which binding posts are the generator terminals of the dynamotor connected?*

(20) *To what is the 12-volt storage battery connected?*

(21) *If the storage battery had a capacity of 100 ampere-hours and the dynamotor drew 8 amperes, how long would the battery allow the operator to transmit with the set?*

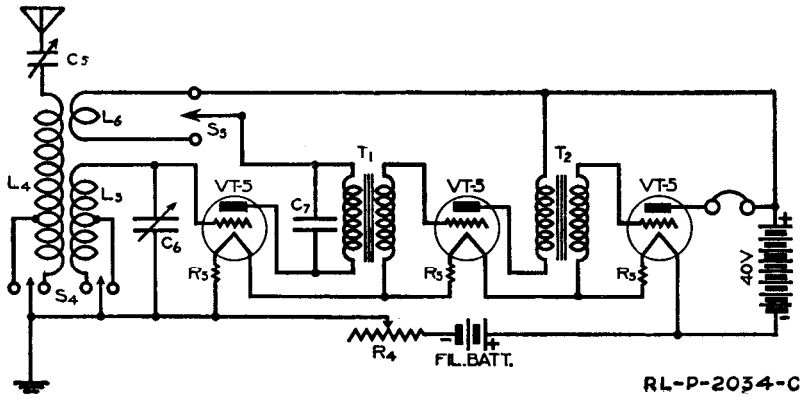

Fig. 88.—Wiring diagram of receiver connections in the SCR–130 set.

THE RECEIVER OF THE SCR–130.

Information.

The receiver of the SCR–130 is of the inductively coupled type. In addition to the primary and secondary receiving coils a third coil is provided in the plate circuit of the detector for the reception of continuous wave signals. This third coil is the *tickler coil.* When it is desired to receive spark signals the tickler coil is cut out of the circuit by means of a switch marked "Spk.-Het." located on the panel of the set box. The abbreviation "Het." stands for "Hetrodyne," meaning that the circuit is adjusted for continuous wave reception. (See Fig. 88.)

The primary circuit is tuned by adjusting the variable condenser, which is in series with the primary coil, and by adjusting the amount of inductance in the primary coil. The primary coil has one tap, which is connected to a switch on the panel of the set box. (See S_4, Fig. 88.) When the switch is thrown to "SW" (short wave) only part of the coil is in use, and when thrown to "LW" (long wave) the entire coil is in use. The secondary circuit is tuned by adjusting the variable condenser, connected across the secondary coil. In a later model of this set box the secondary coil also has one tap, which is connected to the same switch provided for the primary coil. (See S_4, Fig. 88.) This is so arranged that when the switch is in the position "S. W" only parts of each of the primary and secondary coils are in use. When it is in the "LW" position the entire circuits of the primary and secondary coils are in use.

Questions.

(22) *Locate the primary and secondary condenser controls. How are the scales marked?*

(23) *What is the purpose of the small knob located beneath the large condenser control knob?*

(24) *To which side must the large three-pole switch be thrown when using the set as a receiver?*

(25) *Locate the "SW–LW" switch. What is the purpose of this switch?*

(26) *Locate the "SP–HET" switch. What is the purpose of this switch?*

(27) *For what are the binding posts located at the left of the panel used?*

Information.

Two stages of audio frequency amplification are provided in the receiver, the coupling between stages being provided by audio frequency transformers. The filaments of the three receiving tubes are connected in series. In the SCR–130 set, VT–1 tubes are used for receiving. Since the filament voltage required by the VT–1 tube is 4 volts, the three tubes in series will require 12 volts which is just the amount furnished by the storage batteries which supply power for transmitting. It is therefore possible to use the 12 volts from the storage battery directly on the receiving tube filaments. The plate voltage is supplied by two batteries, type BD–8, connected in series, thus giving 45 volts for the plate. In field operations the

BA–8 batteries are carried in a battery box, type BC–102. (See Fig. 89.) Connections are made from the battery box terminals to the terminals on the BC–7 set box by means of a cord and receptacle.

The filament circuit of the receiving tubes is completed through the "Transmit-Receive" switch so that the tubes are only lit when the switch is on the receive position. Since the BC–7 set box is used both in the 127 and 130 sets, and when used in the 127 set receiving filament current is supplied from a separate source, it becomes necessary to have a switch which will connect or disconnect the receive tube filament from the source which supplies the transmitting tube filament. This is accomplished by the switch S_6. (See Fig. 87.) This switch must be closed when the set box is used in the SCR–130 set.

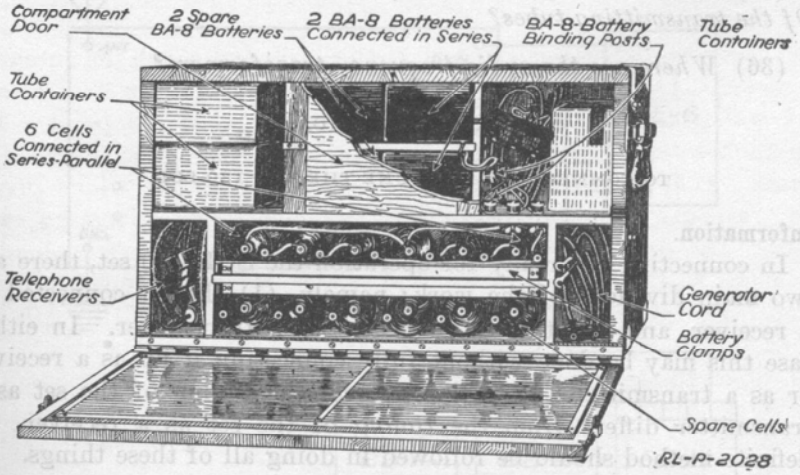

Fig. 89.—Battery and spare parts box, type BC–102 of the SCR–130 set.

Directions.

3. Observe the various receiver parts mounted back of the set box panel. As far as possible trace the wiring of the receiver, using the wiring diagram shown in Fig. 88.

Questions.

(28) *Locate the receiving tube sockets. Which is the detector tube socket? Which are the amplifier tube sockets?*

(29) *Where are the fixed resistances that are in series with the receiving tube filaments?*

(30) *Where is the primary receiving inductance? How many taps are taken from it? To what do they go on the panels?*

(31) *Where is the secondary receiving inductance? Is it coupled inductively or conductively with the primary? Is the coupling variable or fixed?*

(32) *Where is the tickler coil? Where are its terminals? Is it fixed in position with respect to the secondary?*

(33) *How many headsets can be connected to this set?*

(34) *What is the plate potential of the receiving tubes? Of the transmitting tubes?*

(35) *How are the filaments of the receiving tubes connected? Of the transmitting tubes?*

(36) *Where are the audio frequency transformers?*

EXPERIMENT No. 1.

TO CONNECT UP AND TUNE THE SCR–130 SET.

Information.

In connecting up, ready for operation the SCR–130 set, there are two main divisions of the work; namely, (1) the set connected as a receiver, and (2) the set connected as a transmitter. In either case this may be done without fully connecting it up as a receiver or as a transmitter. In a like manner the tuning of the set as a transmitter differs from the tuning of the set as a receiver. A definite method should be followed in doing all of these things.

Directions.

4. *To connect up the set as a transmitter.*—Erect the set box on its legs. The set box should be so placed that the antenna and ground leads will easily reach the proper binding posts on the panel. (See Fig. 90.) Place the dynamotor and storage batteries under the set.

a. Open up the front cover of the set box, pull down on the catches which hold the panel closed, and open the panel.

b. Insert four VT–2 tubes in the four transmitting tube sockets in the set. Open switch "S_3" (Fig. 87).

c. Close the panel, being sure that the catches are properly locked, and open the "Trans.-Rec." switch so that it does not make contact on either side.

d. Connect the high voltage dynamotor leads (with the proper polarity) to the binding posts marked "+350" and "−350."

e. Connect the low voltage dynamotor leads to the two binding posts marked "+Dyn" and "—Dyn" with the correct polarity.

f. Connect the antenna lead-in wire to the post marked "Ant."

g. Connect the wire from the counterpoise or other ground system used to the post marked "Gnd."

h. Connect the receptacle of the cord, type CD–90, to the two plugs on the side of the set box marked "+12 V." "—12 V." (It will only go on with the correct polarity.)

i. Connect the three 4-volt storage batteries in series.

j. Check all connections to see that they are correct.

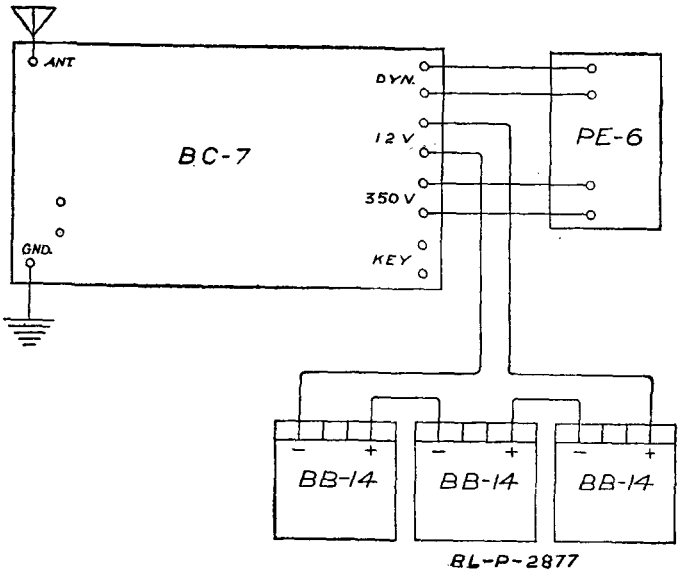

Fig. 90.—Cording diagram of transmitter connections in the SCR–130 set.

k. Connect the red terminal of the cord, type CD–90, to the positive terminal of the 12-volt battery formed by the three 4-volt batteries in series and the black terminal of the cord to the negative terminal of the 12-volt battery.

l. See that the double-pole, single-throw switch on the dynamotor panel is closed.

Questions.

(37) *Why is it necessary to follow certain steps in their proper order when connecting up the SCR–130 set?*

(38) *Why is it important to have the connecting leads connected with proper polarity?*

Directions.

5. *To tune the transmitter.*—The next step after having made all of the connections as previously given is to tune the transmitting side to the desired or specified wave length. In order to do this properly the following steps are gone through:

a. Turn the "Transmit Wave Length" pointer to *exactly* the desired wave length and lock it in that position by means of the small lever under the knob.

b. Throw the "Trans.-Rec." switch to the "Trans." side. The dynamotor should now start running and the filaments of the VT–2 tubes should glow a dull red.

c. Close the key.

d. Turn the "Antenna tuning" knob slowly and watch the antenna ammeter. As the knob is turned the ammeter will start indicating and will gradually increase in reading up to a certain point. As the knob is turned still further the reading of the ammeter will decrease. That position of the "Antenna tuning" knob which gives the greatest reading on the antenna ammeter is the correct adjustment. The final adjustment to obtain the greatest reading should be made with the small knob just under the "Antenna tuning" knob. This small knob is a vernier or fine adjustment of the larger knob.

e. Open the key.

f. Open the "Trans.-Rec." switch. The set is now adjusted for transmitting on the wave length to which the pointer of the "Transmit wave length" adjustment is set.

Questions.

(39) *Why is the "Transmit Wave Length" pointer locked after it is set to the desired wave length?*

(40) *If, when the "Trans.-Rec." switch is thrown to "Trans." the vacuum tubes light but the dynamotor fails to start, what is the probable trouble?*

(41) *Why is it necessary to adjust the "Antenna tuning" knob so that a maximum reading occurs on the ammeter?*

Directions.

6. *To connect up the receiver side of the set.*—After having made all of the connections given under connecting up the transmitter side of the set, the following additional connections will be needed in order that the receiving side of the set be ready for operation. (See Fig. 91.)

a. Open the panel to the set and insert 3 VT–1 tubes in the receiving tube sockets. (Be sure that the "Trans.-Rec." switch is open.)

b. Close the switch S_6 (Fig. 87) and close the panel, being sure that it locks into place.

c. Connect two batteries, type BA–8, in series and connect the positive terminal of the 45-volt battery thus formed to the binding post on the edge of the panel marked "+40." Connect the negative terminal to the post marked "—40."

NOTE.—If the battery box, type BC–102, is used, then the BA–8 batteries will be placed in that box and connections made from batteries by means of the cord, type CD–88, to the two plugs on the side of the panel marked "+40 volts" and "—40 volts."

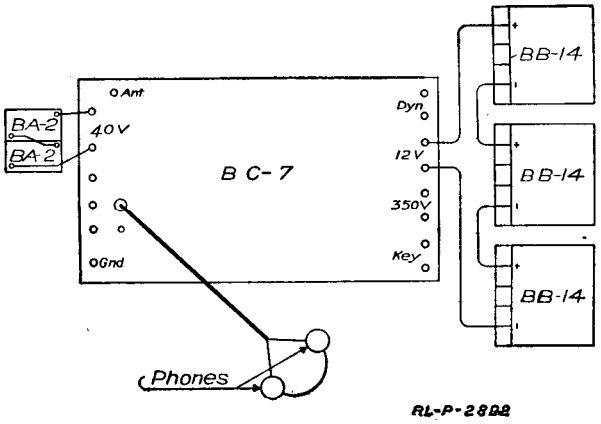

Fig. 91.—Cording diagram of receiver connections in the SCR–130 set.

d. Plug one or two head sets, type P–11, into the jacks provided on the left side of the panel. (If available head sets are not provided with cord plugs, the cord tips may be connected to the two binding posts marked "Aux. Tel.").

e. Put on one of the head sets and adjust it to fit the head comfortably.

f. If the receiving side only of the set is to be used, omit the items given under *b.*, *c.*, *d.*, and *e.* in direction 1.

7. *To connect up both as a transmitter and as a receiver.*—After the set has been properly erected:

a. Open up the front cover of the set box, pull down on the catches holding the panel closed, and open the panel.

b. Insert four VT–2 tubes in the transmitting sockets and three VT–1 tubes in the receiving sockets. Open switch S_5 and close switch S_6. (Fig. 87.)

c. Close panel, being sure that the catches are properly locked, and open the "Trans.-Rec." switch so that it does not make contact on either side.

d. Connect the high voltage dynamotor leads (with the proper polarity) to the binding posts marked "+ 350" and "— 350." (See Fig. 92.)

e. Connect the low voltage dynamotor leads to the two binding posts marked "+ Dyn" and "— Dyn" with the correct polarity.

f. Connect the antenna lead-in wire to the post marked "Ant."

g. Connect the wire from the counterpoise or other ground system used to the post marked "Gnd."

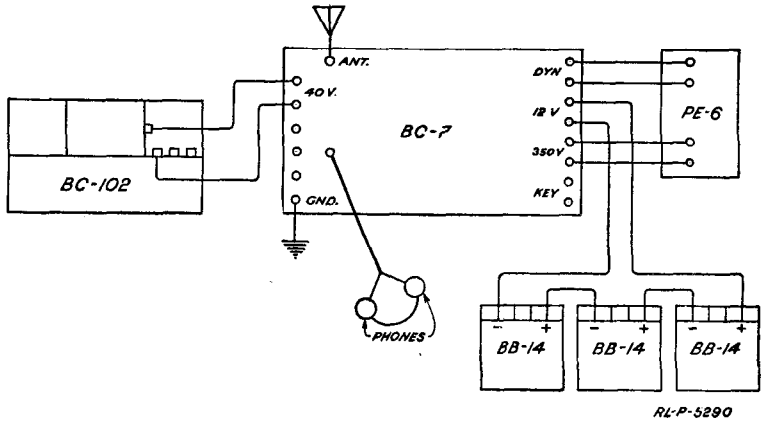

Fig. 92.—Cording diagram of complete transmitter and receiver connections in the SCR–130 set.

h. Connect the receptacle of the cord, type CD-90, to the two plugs on the side of the set box marked "+ 12" and "— 12" volts. (It will only go on with the correct polarity.)

i. Connect two batteries, type BA–2 or type BA–8, in series and connect the positive terminal of the 45-volt battery thus formed to the binding post on the edge of the panel marked "+ 40." Connect the negative terminal to the post marked "— 40."

NOTE.—If the battery box, type BC–102, is used, then the BA–8 batteries will be placed in that box and connection made from them to the two plugs on the side of the panel marked "+ 40" and "— 40" volts by means of the cord, type CD–88.

j. Plug one or two head sets, type P–11, into the jacks provided on the left side of the panel. (If head sets are to be used that do not have plugs on the ends of their cords, they may be connected to the two binding posts marked "Aux. Tel.")

k. Connect the three 4-volt storage batteries in series.

l. Check all connections to see that they are correct.

m. Connect the red terminal of the cord, type CD–90, to the positive terminal of the 12-volt battery formed by the three 4-volt batteries in series and the black terminal of the cord to the negative terminal of the 12-volt battery.

n. See that the double-pole, single-throw switch on the dynamotor panel is closed.

o. Put on one of the head sets and adjust it to fit the head comfortably.

Question.

(42) *Why is it necessary to have the "Trans.-Rec." switch open as in Direction 3, a?*

Information.

To tune the receiver.—In tuning the receiver several different cases will occur. They are as follows:

a. Tuning in a C. W. signal of known wave length.

b. Tuning in a damped wave signal of known wave length.

c. Tuning in a C. W. signal of unknown wave length.

d. Tuning in a damped wave signal of unknown wave length.

8. To tune the receiver of the set to a C. W. signal of known wave length proceed as follows. After the receiving side has been connected up as directed above:

a. Throw the "Trans.-Rec." switch to the "Rec." side.

b. Place the "Spk.-Het." switch on "Het."

c. Set the "LW–SW" switch and the secondary condenser to the desired wave length as given by the calibration of the set.

d. Vary the primary condenser until a distinct double click is heard, and set the primary condenser about 5° to either side of the point where this double click is heard.

e. The receiving side of the set should now be in tune on the desired wave length, but due to inaccuracies which may occur the setting may not be exact enough to pick up the signal sought. It is therefore advisable to swing slowly the secondary condenser over an arc of about 10° (the middle point of which is the setting given by the set's calibration, until the sought-for signal is heard.

f. Upon hearing the desired signal, stop turning the secondary condenser by its knob and make the final accurate adjustment by means of the small vernier knob located just under the secondary condenser knob.

g. A small further adjustment of the primary condenser may now be made in order to increase the loudness of the signal.

9. To tune the receiver to a damped wave signal of known wave length proceed as follows:

a. Same as *a* above.

b. Same as *b* above.

c. Same as *c* above.

d. Same as *d* above.

e. Place the "Spk.-Het." switch on "Spk."

f. Same as *e* above.

g. Same as *f* above.

h. Same as *g* above.

10. To tune the receiver to a C. W. signal of unknown wave length proceed as follows:

a. Same as *a* under Direction 4.

b. Same as *b* under Direction 4.

c. Set the "LW–SW" switch on "SW." Set the secondary condenser at about 5° and vary the primary condenser until the double click is heard, indicating the primary circuit is in tune with the secondary circuit.

NOTE.—For every position of the secondary condenser there should be a corresponding position of the primary condenser at which the primary or antenna circuit is in tune with the secondary circuit. In searching for a signal of unknown wave length the method should be to vary both condensers at the same time, attempting at all times to keep the primary condenser close to that point where its circuit is in tune with the secondary.

d. Starting with the secondary condenser at about 5° and the primary condenser at the point where it is in tune, slowly turn both condensers as outlined above, over their entire scale. Repeat this several times until you are sure that the signal is not obtainable. (The primary condenser should increase as the secondary is increased.)

e. Set the "LW–SW" switch on "LW" and repeat *d*.

f. When the desired signal is found under either *d* or *e*, engage the vernier knobs of the primary and secondary condensers and make the final adjustments for a loud, clear signal for a readable pitch with these knobs.

11. To tune the receiver to a damped wave signal of unknown wave length for Direction 4, proceed as follows:

a. Follow exactly the procedure outlined under Direction 3 until the desired signal is found. When found, the natural tone of the damped wave will be badly distorted.

b. Throw the "Spk.-Het." switch to "Spk." and if necessary retune slightly both the primary and secondary condensers. The damped wave signal should now be heard with its natural tone but much weaker than when heard under *d*.

NOTE.—Damped waves may be received with the "Spk.-Het." switch on "Het." if the change in tone is not objectionable. The receiver will be far more sensitive than with the switch on "Spk."

EXPERIMENT No. 2.

CALIBRATION OF THE RECEIVER SECONDARY.

Directions.

12. Erect two complete antenna systems, separated by about 300 yards, for the SCR–130 set. On the first antenna (set A) connect up, ready for transmission, one SCR–130 set, and on the other antenna another SCR–130 set (set B) which is to have its receiver secondary calibrated.

13. Start transmitting with set A on 500 meters. Tune set B to receive the signal. Set B is now tuned to receive 500 meters. Read, in degrees, the setting of the secondary receiving condenser and put it down in a table similar to the one shown below.

Wave length.	Secondary condenser setting.	Settings of SW–LW switch.
500		
525		
550		
575		
600		
625		
650		
675		
700		
725		
750		
775		
800		
825		
850		
875		
900		
925		
950		
975		
1,000		
1,025		
1,050		
1,075		
1,100		

Transmit with set "A" on 525 meters and again tune in with set "B" and record the reading in the table. Continue this process in steps of 25 meters until the entire wave length range has been covered.

Information.

The SCR–130 set must primarily receive from another SCR–130 set; therefore it is desirable that its receiving side be calibrated with an SCR–130 transmitter. It would be easier to calibrate it by the use

of a wave meter, but in that case the wave meter calibrations and those of other SCR–130 transmitters might not be identical. As a variation of about 1° on the secondary condenser is sufficient to tune out the desired signal it may be seen that accuracy is very important.

EXPERIMENT No. 3.

CHECKING THE CALIBRATIONS OF THE TRANSMITTER OF SEVERAL SETS.

Information.

When three or more sets are to operate in a net it is very important that the transmitting wave length calibrations of all of the sets be identical; that is, any one set should receive all other sets operating on the same wave length, on the same setting of the secondary receiving condenser. In order to accomplish this it is sometimes necessary to check or recalibrate all of the sets involved. Although the oscillator of the SCR–130 set is originally quite accurately calibrated, sometimes due to rough handling, or to other causes, the calibrations may be thrown off.

Directions.

14. Set up two antenna systems. Pick out one set to be known as the "master set" and connect it up ready for transmitting to one antenna. To the other antenna connect another set ready for receiving. With the master set transmit successively on wave lengths from 500 to 1,100 meters in steps of 25 meters.

15. Receive each of these transmissions on the other sets and fill out accurately a table similar to the one shown below, showing all receiving adjustments on which each of the transmissions is received.

Wave length.	Primary condenser.	Secondary condenser.	Setting of SW–LW switch.
500			
525			
550			
575			
600			
625			
650			
675			
700			
725			
750			
775			
800			
825			
850			
875			
900			
925			
950			
975			
1,000			
1,025			
1,050			
1,075			
1,100			

Disconnect the master set and place it aside. Connect to the antenna of the master set one of the sets whose calibrations have been checked and start it transmitting on 500 meters according to its new calibration. Tune in the transmitted signal with the remaining receiving set. If it is received on the same adjustments used for the master set when it was transmitting on 500 meters, then the 500-meter calibration of the set under test is correct. If it is received on a different adjustment the calibration is inaccurate and must be corrected.

16. To do this, adjust the receiving sets to the settings on which the master set was received on 500 meters. Gradually vary the transmitted wave length of the set under test until it is heard by the adjusted receiving sets. It will then be transmitting on 500 meters by the calibrations of the master set. A piece of paper should be pasted over the scale of the master oscillator and a mark made on the paper exactly opposite the end of the pointer, this mark being labeled "500". The above process is repeated in steps of 25 meters until the entire wave length range of the set has been covered. The next set to be checked is then put through the same process.

EXPERIMENT No. 4.

TUNING A SET HAVING A BURNT OUT ANTENNA AMMETER.

Directions.

17. Connect up the set properly for transmitting, and if the burnt out antenna ammeter has not been short-circuited, do so with a piece of fairly heavy copper wire. Throw the "Trans.-Rec." switch to the "Trans." and hold down the key.

METHOD "A."

Slowly turn the antenna variometer (with the wave length variometer set at the desired wave length) until on listening to the dynamotor a very perceptible slowing up is noticed. As the antenna variometer is still further turned the dynamotor will again increase its speed. At the position of the antenna variometer half way between the points where the slowing up is first noticed and where the dynamotor again speeds up, the antenna circuit is approximately in tune with the master oscillator circuit. The set is then transmitting fairly well on the desired wave length.

METHOD "B."

Light and adjust the lamp on an SCR–95 wave meter and couple the wave meter to the master oscillator circuit of the set by holding

the side of the wave meter marked "Plane of coil" against the knob of the wave length variometer. Start the set transmitting and close the key. Set the wave meter to the desired wave length and vary the wave length variometer until the wave meter lamp burns brightest. Then, without disturbing the adjustments of either the wave meter or the wave length variometer, move the wave meter over and couple it to the antenna circuit by wrapping one or two turns of the lead-in wire around it. Slowly turn the "Antenna tuning" variometer until the wave meter lamp again indicates that the circuits are in tune. The set is then transmitting on the desired wave length with all circuits in tune.

Information.

With the SCR 127 and 130 sets, tuning the set to transmit on a given wave length is entirely dependent on readings of the antenna ammeter. Accordingly some method becomes necessary to tune the set when this meter is out of service. Of the two methods given, the first may be employed with no additional apparatus and will give fairly good results. The second method is dependent on the availability of an SCR–125–A wave meter, but when properly used will give excellent results. Sometimes, in using the second method, trouble is experienced in getting an indication that the circuits are in tune with the wave meter coupled to the wave length variometer. This is due to weak oscillations in the oscillator tube of the set and may be overcome by tuning the set by the first method and then coupling the wave meter to the antenna circuit for the final adjustment. It is to be remembered that the calibrations on the SCR–125–A wave meter and the master oscillator variometer may not be the same, due to inaccuracies in manufacture, and therefore a set transmitting on, say, 800 meters by the wave meter may not be on exactly the same wave length as one which was set by the calibrations on the set. It will be noticed that in both of the above methods the calibrations on the set are used in determining the wave length. In general, the calibrations on the set are more accurate than those on the SCR–125–A wave meter.