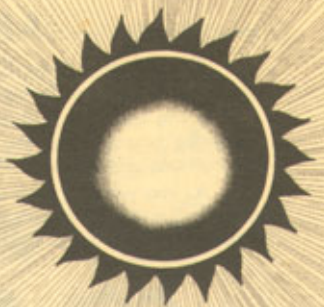


ACOPIAN SOLAR RADIO WORKCHEST



**INSTRUCTIONS
FOR
ASSEMBLY AND OPERATION
OF THE
ACOPIAN SOLAR RADIO**

When you have completed the assembly of this radio you will belong to that distinguished group of pioneers . . . the pioneers who are making the first practical applications of Solar Energy.

ACOPIAN TECHNICAL COMPANY
ONE SHIMER BOULEVARD — PHILLIPSBURG, NEW JERSEY

Model No. 457 C-H

ASSEMBLY

The Acopian Solar Radio has been designed for assembly with either soldered or solderless connections.

If you have a light-duty soldering gun or iron and are familiar with soldering practice, use the soldered assembly. Otherwise, follow the instructions given in solderless assembly.

As you progress with the assembly of the solar radio, cross out each line and sentence as you complete the instructions therein. This will prevent omissions and confusion should your work be interrupted.

SOLDERED ASSEMBLY INSTRUCTIONS

Arrange a clean working surface and the following articles. Then proceed with Step No. 1.

1—Light duty soldering gun or iron, flux and solder.

DO NOT use acid-core solder.

1—Pair of wire cutters.

1—Screw driver with 1/8" blade.

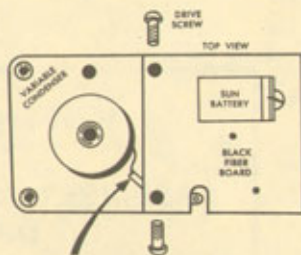
1—Bottle of airplane or quick drying cement.

1—Pair of needle nose pliers.

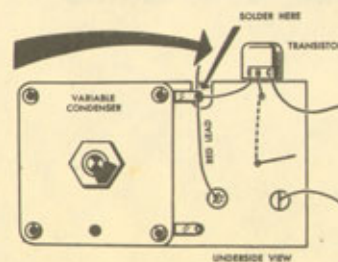
1 each of 5/16" and 3/8" open end wrenches could be used, but are not necessary with the use of pliers.

STEP No. 1

Using the two drive-screws, attach sun battery to the variable condenser as shown in illustration. Use a hammer to drive the drive-screws or squeeze them in with a pair of pliers. If hammer is used, take care not to damage the sun battery or the condenser.



Note the position of the soldered lug on the condenser in respect to holes and slot on the black fiber board which supports the battery.



STEP No. 2

Holding the assembly so that the shaft on the variable condenser is facing you, insert the "B" lead of the transistor through the upper hole of the fiber board. (See last page for identification of leads.) Then knit through the lower hole and pull tight with pliers to take the slack out and anchor the transistor. The "C" (collector) lead is

to your right and the "E" (emitter) lead is to your left.

Pass the "E" lead through the upper lug of the condenser. DO NOT clip off the extra length of lead. Be sure that none of the leads on the transistor are making a sharp bend at the transistor.

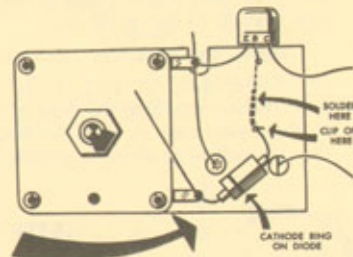
Wrap the stripped end of the red lead from the battery around the same upper lug, apply flux and solder. Care should be taken not to overheat the joint because excessive heat conducted through the transistor lead may damage the transistor permanently. It is best to use a "heat-

sink" by holding the lead with a pair of needle nose pliers between the transistor and the spot to be soldered.

STEP No. 3

Attach the diode by passing the lead near the cathode ring (usually painted in black around the diode) through the lower lug of the variable condenser. Pass the other end of the diode through the lower hole on the fiber board. Cutting off the extra length of the diode lead about 3/8" away from the board, bend it alongside the transistor base lead, apply flux and solder. Take same precautions as in Step No. 2 so as not to overheat the transistor or diode.

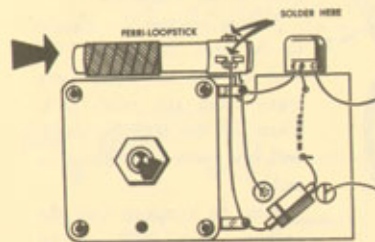
Clip off extra length of transistor "B" lead at the hole.



STEP No. 4

Take the ferri-loopstick and clip off the extra leads near the lugs. Pass the extended "E" lead of the transistor through one of the lugs on the loopstick. Holding the loopstick firmly in position, twist the lead around the lug and solder. (See the picture in Step No. 6 for position of the lug on the loopstick in respect to the slot on the fiber board and the variable condenser).

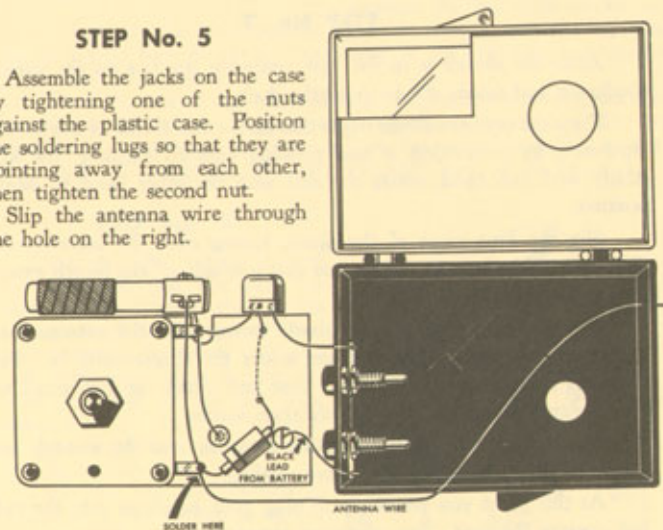
Pass the free cathode-end of the diode through the second lug on the loopstick, pull it tight, twist around the lug and solder.



STEP No. 5

Assemble the jacks on the case by tightening one of the nuts against the plastic case. Position the soldering lugs so that they are pointing away from each other, then tighten the second nut.

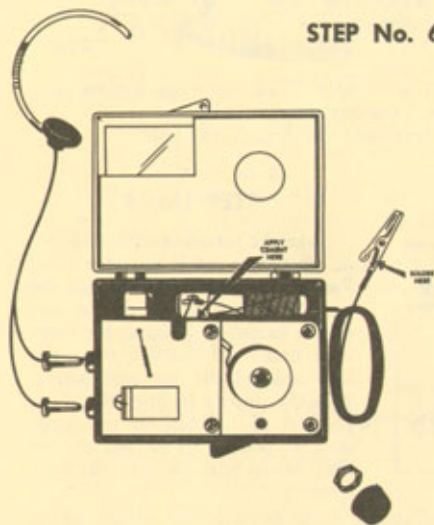
Slip the antenna wire through the hole on the right.



Remove the hexagonal nut from the variable condenser. Strip the insulation off the end of the antenna wire, pass it through the lower lug on the variable condenser and solder. While soldering, grip the diode lead with needle nose pliers between the diode and the lug to prevent any damage to the diode.

Solder the black lead from battery to the lug on lower jack.

Solder the "C" lead of the transistor to the lug on the upper jack. When attaching this lead, bring the fiber board as close as possible to the plastic case so that the lead length between the transistor and the jack will be as short as possible. Clip off the extra length left over.



STEP No. 6

Before putting the chassis into the case, double-check all connections. Be sure that the transistor leads are not shorting out with the metal case on the transistor.

When placing the chassis in the case, guide the "C" lead of the transistor wire away from the other jack. Then as the lead bends, it will not short out the other jack.

Also be cautious that the antenna wire will not be pinched near the variable condenser shaft.

STEP No. 7

After the chassis is in the case, assemble the nut on the variable condenser and mount the knob on the shaft.

Place the orange-colored paper dial on the round disc of the variable condenser by moistening it and pressing lightly. Holding the knob steady with one hand, rotate the dial with the other hand to desired position.

Slip the long piece of the plastic tubing over the antenna wire. Slide it into the hole in the case so that one-half of the length extends outward.

Slip the short piece of the plastic tubing over the antenna wire, strip the insulation off the end and solder the alligator-clip on. Slide the short tubing near the soldered joint and crimp the two small tabs over the tubing and the wire to hold them secure.

Apply some cement between the loopstick and the variable condenser to prevent the loopstick from rattling.

At this point you are ready to plug your earphone into the radio and operate the unit. See operating instructions.

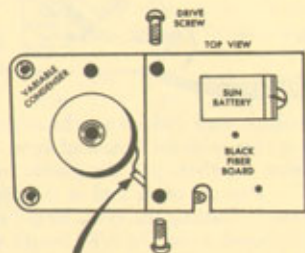
SOLDERLESS ASSEMBLY INSTRUCTIONS

Arrange a clean working surface and the following articles:

- | | |
|--------------------------------|--|
| 1—Needle nose pliers. | 1—Bottle of airplane or quick drying cement. |
| 1—Regular pair of pliers. | 1—Pair of wire cutters. |
| 1—Screwdriver with 1/8" blade. | |
- 1 each of 5/16" and 3/8" open end wrenches could be used, but are not necessary with the use of pliers.

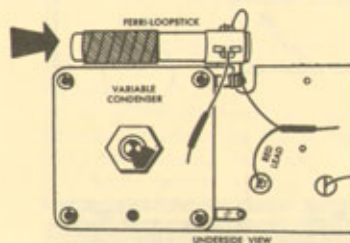
STEP No. 1

Using the two drive-screws, attach sun battery to the variable condenser as shown in illustration. Use a hammer to drive the drive-screws or squeeze them in with a pair of pliers. If hammer is used, take care not to damage the sun battery or the condenser.



Note the position of the soldered lug on the condenser in respect to holes and slot on the black fiber board which supports the battery.

STEP No. 2



Remove the cotton insulation from one of the extended leads on the loopstick. Holding the assembly so that the shaft on the variable condenser is facing you, attach one of the leads on the loopstick to the upper lug on the condenser. To do this, pass it through the hole on the lug and wrap it around the lug. Then squeeze the lug with needle-nose

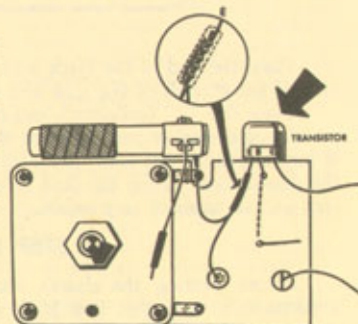
pliers so that the wrapped wire is tightly in contact with the lug. (See the picture in Step No. 6 for positioning of the loopstick in respect to the variable condenser.)

Twist the end of the red lead from the battery with the extended end of the wire, which you have just wrapped around the lug. Slip one short piece of plastic tubing over and past the twisted ends. Slip another short piece of tubing over the other extended lead on the loopstick.

STEP No. 3

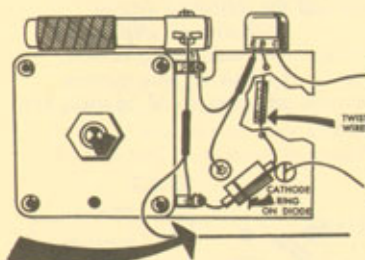
Insert the "B" (base) lead of the transistor (see last page for identification of leads) through the upper hole of the fiber board. Then knit through the lower hole and pull tight with pliers to take the slack out and anchor the transistor. The "C" (collector) lead is to your right and "E" (emitter) lead is to your left.

Twist the red lead (which in Step No. 2 was twisted to one of the loopstick leads) around the



middle of the "E" lead of the transistor. Bend the end of the "E" lead to a tight "U" at the twist and slide the plastic tubing over the entire connection to hold it intact. (See enlarged view of the connection.)

STEP No. 4



Attach the diode by passing the lead near the cathode ring (usually painted in black around the diode) through the lower lug of the variable condenser. Wrap it around the lug and crimp the lug so it results in a tight electrical connection. Take the antenna wire and strip the insulation at one end. Twist it around the end of the

cathode lead (which you have just secured to the lug on the condenser) together with the free lead from the loopstick. After twisting the three wires together, pull the plastic tubing over the entire connection.

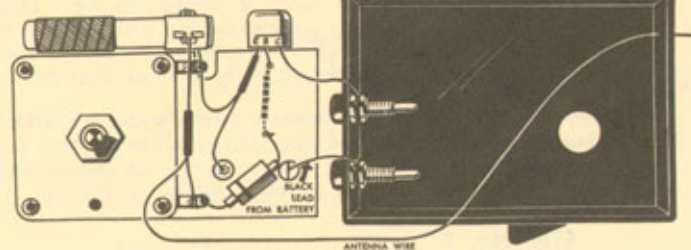
Pass the other end of the diode through the lower hole on the fiber board. Cutting the extra length of the diode lead about 3/8" away from the board, twist the 3/8" length around the transistor base lead between the two small holes. Clip off the extra length of transistor base lead facing you.

STEP No. 5

Assemble the jacks on the case by tightening one of the nuts against the plastic case. Do not use the soldering lugs.

Slip the antenna wire through the hole on the right.

Remove the hexagonal nut from the variable condenser.

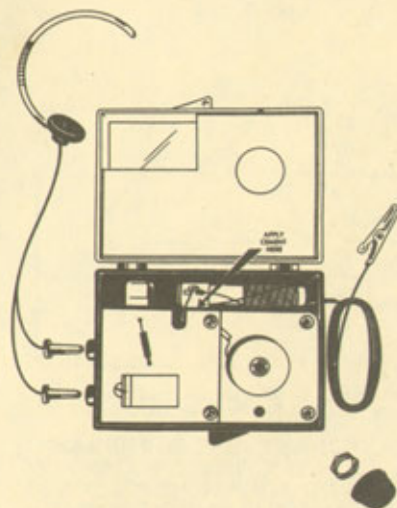


Place the end of the black lead from the battery between the nuts, around the threads of the jack and tighten the second against the first.

Place the "C" (collector) lead of the transistor around the threaded portion of the other jack between the nuts and tighten the second nut. When attaching this lead, bring the fiber board as close as possible to the plastic case. Then the lead lengths between the transistor and the jack will be as short as possible.

STEP No. 6

Before putting the chassis into the case, double-check all connections to be sure that base leads are not shorting-out. Be especially sure that the lead extending from the top lug is not coming in



STEP No. 7

After the chassis is in the case, assemble the nut on the variable condenser and mount the knob on the shaft.

Attach the orange-colored paper dial on the round disc of the variable condenser by moistening it and applying with slight pressure. Holding the knob steady with one hand, rotate the dial to desired position.

Slip the long piece of the plastic tubing over the antenna wire and slide it into the hole in the case so that one half of the length extends outward.

Strip the insulation at the end of the antenna lead. Passing it through the hole at the end of the clip, wrap it around a few times and crimp the two small tabs over the wire to hold them securely.

Apply cement between the loopstick and the variable condenser to prevent the loopstick from rattling.

At this point you are ready to plug your earphone into the radio and operate the unit. See operating instructions.

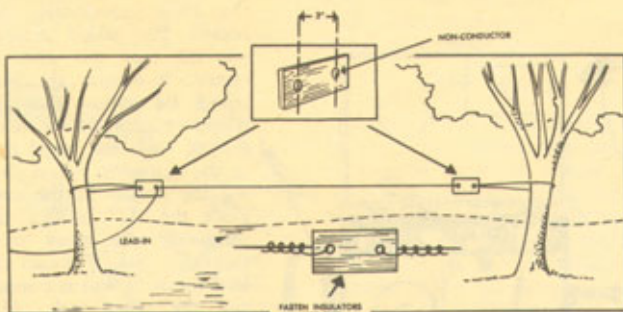
OPERATING INSTRUCTIONS

For best results follow the suggestions outlined below. Use an antenna as you would with any high-priced radio or television set. Your antenna connection is the alligator-clip at the end of the insulating-wire leading from the right side of the radio. Attach the clip to one of any number of articles readily available which will serve as an antenna. Among the objects which you can use for an antenna are the finger-stop of your telephone dial, the metallic base of your telephone, a metal lamp base, a standard radio or television antenna, a radiator, an electric switch plate on walls or any similar object. The clip should be attached to bare metal, not to a painted surface. **DO NOT ATTACH TO A LIVE WIRE.** If outdoors, a rain spout, storm window, wire fence or a similar item may be used for an antenna. If none are available, an additional length of any type of bare or insulated wire should be used.

After locating an antenna, hold your radio so that the sun battery is directed toward sunlight. If the unit is operated indoors, away from the sunlight, hold the unit near a window and direct the solar battery toward daylight. In the event the radio is used at night or at a location where daylight is not available, it can be operated by a regular lamp or flashlight held near the sun battery. Turn the dial **VERY SLOWLY** to tune in the stations.

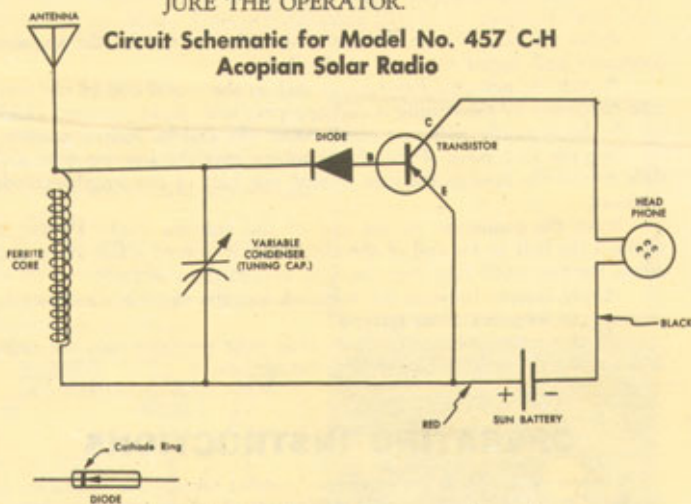
When using a lamp to energize the battery, do not allow the hot bulb to stay close to the sun battery for long periods of time, since heating the cell over 185 degrees F will injure it.

In some locations you may improve the reception with the use of an outside antenna. A simple antenna system is illustrated on next page.

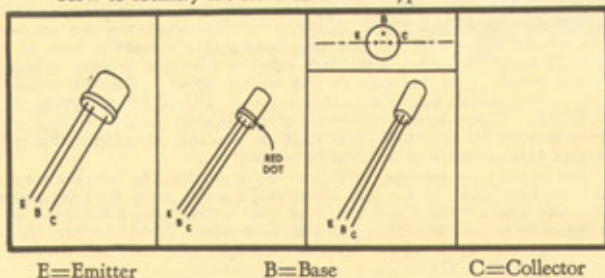


Note: High and long antennas should be disconnected from the radio set during a lightning storm to eliminate possible injury to your radio.

WARNING: NEVER CONNECT ANY PART OF THE RADIO SET TO AN ELECTRIC LIGHT SOCKET OR TO OTHER POWER EQUIPMENT. IN DOING SO YOU WILL DESTROY THE SET AND INJURE THE OPERATOR.



How to identify the leads on various types of transistors.



Although the transistor is a very rugged device, nevertheless it should be handled with care. Bending leads back and fourth could break the leads and render the unit useless.