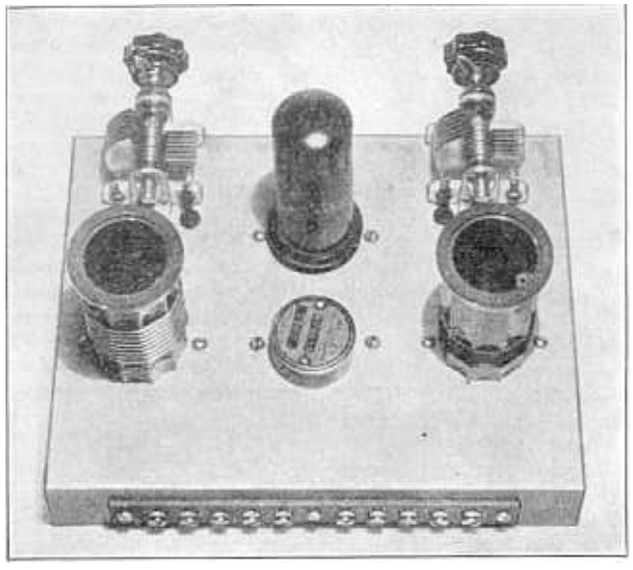


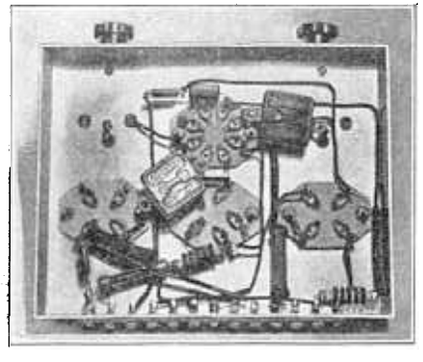
The one-tube 2-band transmitter for beginners.

6L6 Transmitter
For Beginner

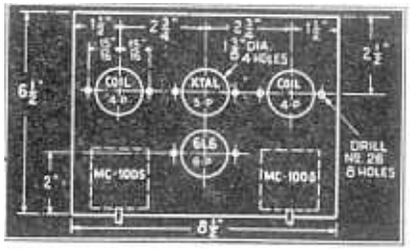
THIS transmitter was originally described in the 1938 edition of the Radio Amateur's Handbook published by the A.R.R.L. It was intended primarily for the beginner. The copy shown in the photograph was built in the Hammarlund laboratory and carefully tested.

The beginner starting out with a transmitter of this type will find it very convenient to add to it in order to complete a higher powered transmitter. Used by itself, it will provide a very efficient code transmitter, capable of operation on all bands from 175 to 20 meters. It consists of a 6L6 beam tube, "tri-tet" oscillator, and is crystal controlled. The transmitter will operate on two amateur bands with a single crystal. For instance, starting out with a 160 meter crystal, operation is possible on the 80 meter band as well as the 160 meter band. A tuned circuit is connected in the cathode lead, and the crystal connected between the grid and cathode. This tuned circuit consisting of L-1 and the 100 mmf. condenser, which tunes it, is adjusted to a frequency approximately midway between the crystal frequency and the second harmonic. This makes it possible to tune the plate circuit, consisting of L-2 and its 100 mmf. tuning condenser, to twice the crystal frequency with very little decrease in power output.

Looking at the top view of the transmitter, we find that the cathode tuning control is on the left, just behind it is the cathode coil, L-1. The tube and the crystal are mounted in the center of the chassis and the plate circuit, consisting of the tuning condenser and L-2,



Fixed condensers and resistors are mounted underneath.



Completely drilled chassis for one-tube transmitter.

are on the right. Plug-in coils are wound on Hammarlund SWF 4-prong coil forms. Coil L-1 has 28 turns of No. 18 cotton covered wire, close wound, for a 1.75 mc. crystal. If a 3.5 mc. crystal is employed, 10 turns should be used and the 7 mc. coil has five turns. For 1.75 mc. L-2 has 60 turns of No. 24 cotton covered wire; for 3.5 mc. 30 turns of No. 28 cotton covered wire; 7 mc., 14 turns of the same wire; 14 mc., 8 turns of No. 18 cotton covered wire. These coils are all wound to a length of 1½", spaced, where required, to meet this length. The link coil, L-3, is wound on the same form with L-2 and consists of two or more turns depending upon the amount of coupling necessary.

The power output of this transmitter is approximately 15 watts with 400 volts applied to the plate of the 6L6 at a plate current of approximately 60 ma.

Two methods of coupling an antenna or another amplifier to this oscillator are provided. One consists of the link L-3 which should be used with twisted-pair feeders. A half-wave doublet employing twisted pair or similar type of feeder will work very nicely with this transmitter. If the single-wire fed antenna is employed, it may be coupled directly to terminal "A".

The cathode tuning condenser should be adjusted so that the crystal oscillates stably. Without the antenna connected, the plate tuning condenser should be adjusted for a minimum plate current, that is, when operated on the second harmonic. When the antenna is coupled to the plate coil, it will be necessary to re-adjust the plate condenser slightly for maximum output. Don't try to drain the last bit of power out of the oscillator, because it will not key smoothly.

Parts List

HAMMARLUND

2—MC-100-S variable condensers
2—CH-X 2.1 mh. R.F. chokes
2—S-4 Isolantite sockets
1—S-5 Isolantite socket
1—S-8 Isolantite socket
7—SWF-4 prong, XP-53 coil forms

I. R. C.
(Resistors)

1—400 ohm 10 watt wire wound
1—25,000 ohm 10 watt wire wound
1—100,000 ohm 1 watt metalized

CORNELL DUBILIER
(Condensers)

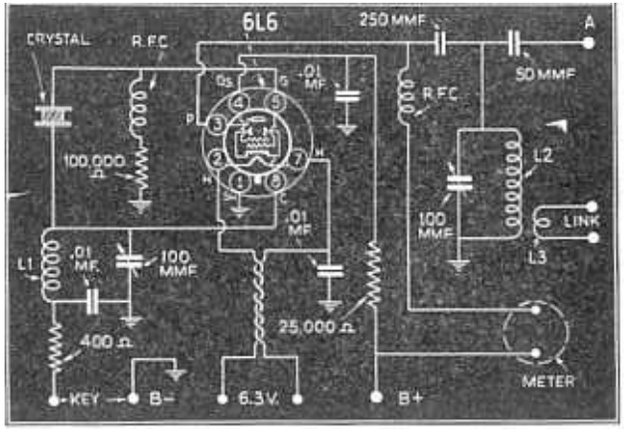
1—.002 mf. mica receiving type
2—.01 mf. tubular, 400 V.
1—250 mmf. mica, 500 V.
1—50 mmf. mica, 500 V.

R. C. A.

1—6L6 Beam tube

MISC.

1—Chassis, 6½" x 8½" x 1¼"
2—Knobs
1—Crystal



Complete wiring diagram and parts values for transmitter.