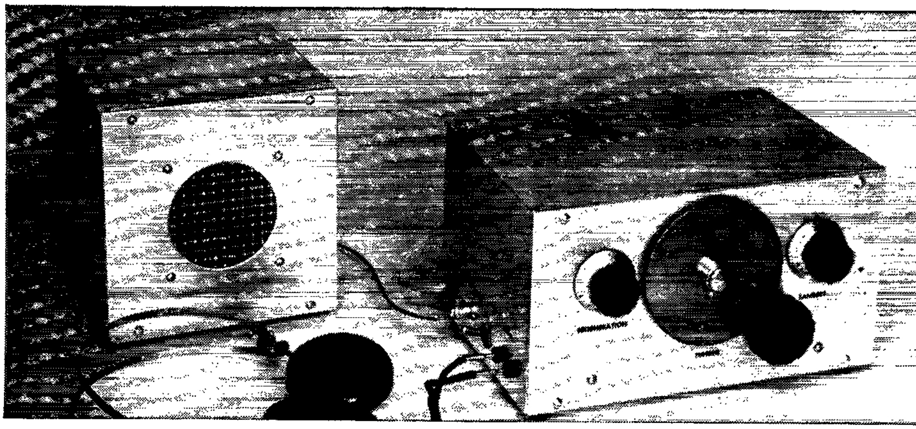


The two-tube Novice Special receiver is built into a standard 5 × 6 × 9-inch aluminum box. Panel controls from left to right are for regeneration, bandspread tuning and band-set adjustment. The large dial is National type K. The two smaller dials are Johnson, type 116-222-2 to the left, and type 116-222-1 to the right. The original vernier knob has been replaced with the larger Johnson type 116-260. Along the side of the box from front to rear are insulated phone-tip jacks (Johnson 105-603), speaker toggle switch, speaker connector (a phono jack) and a grommet-lined hole for power leads. The antenna connector is another phono jack set in the lower rear corner of the opposite end of the box. The 3-inch speaker is enclosed in a 6 × 6 × 6-inch aluminum box fitted with a grille of "hardware cloth."

# The Novice Special

## *Simple Two-Tube Receiver with Good Sock*

**BY DONALD MIX, W1TS**

In spite of the fact that it is possible to go down to the corner radio store and buy a receiver to fit almost any pocketbook, our correspondence indicates that there is still a surprising number of beginners who are interested in building their own first receivers. Perhaps the reason for this is that today's beginners are basically the same sort as those who were attracted to the ham game back in the days when the only way to get a receiver was to build one. They are the people who get a bigger kick out of hearing their first signals on something they have built with their own hands than the old timer might get out of hearing Mars on his five-hundred-dollar Super XX-A5. There is still no better nor more interesting way for the beginner to take an active part in the game before he has the qualifications to pass his license exam than to try his hand at building a simple receiver. In the process, he learns the basics of the arts of reading diagrams, working metal, and handling the soldering iron. It also helps to give him a far better understanding of how radio circuits work.

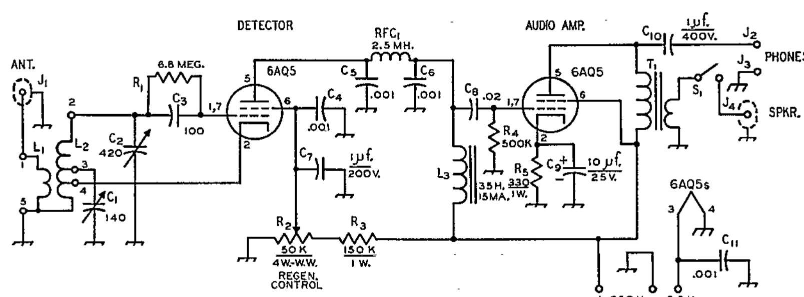



*Fig. 1* — Circuit of the Novice Special regenerative receiver. All capacitances less than 0.001 µf. are in µµf. All fixed resistors are ½ watt unless otherwise specified.

$C_1$ — Johnson 140R12 or similar.
$C_2$ — Philmore 1945T.
$C_3$ — Mica.
$C_4$, $C_5$, $C_6$, $C_{11}$ — Disk ceramic.
$C_7$, $C_8$, $C_{10}$ — Aerovox P92ZN.
$C_9$ — Electrolytic.
$J_1$, $J_4$ — Phono jack.
$J_2$, $J_3$ — Johnson 105-603.
$L_1$, $L_2$ — See text.
$L_3$ — Thordarson 20C51.
$R_2$ — Mallory M50MPK.
$RFC_1$ — National R-50.
$S_1$ — Toggle switch, ¼-inch stem.
$T_1$ — Thordarson 24S51.

Although all of the present-day manufactured communications receivers are superheterodynes, the old regenerative receiver is still to be recommended as the beginner's teething ring, because good sensitivity is obtained with simple circuit and construction. While no one in his right mind would say that such a receiver can compete with the better examples of the superhet, the regenerative can be made to do a very creditable job on 80 and 40 meters. Properly executed, it can compare quite favorably on these bands with the cheaper superhets on the market.

The trouble with many of the regenerative receivers that have been offered the beginner in recent years is that there has been a tendency to overdo the matter of simplification to the point where the finished product is hardly worth the effort. Only a dollar or two more for components and a few more hours of work can spell the difference between a receiver that you can hear almost nothing on unless you hold your breath, and one that will work a small speaker on the stronger signals.

The receiver shown in the photographs will do a good job on 80 and 40 meters. You won't have to strain your ears to hear plenty of signals. Although designed primarily for use on these lower frequencies, coils have been made to permit listening on the 20-, 15- and 10-meter bands as well. While the frequency stability on these higher-frequency bands is nothing to brag about, the performance, otherwise, is still there. A few hours of listening during the recent ARRL DX contest brought in over 200 stations in 74 countries. At one point, all continents were heard on 20 meters within a space of about 20 minutes, and amateurs in Europe, Africa and South America were heard on 80 meters.

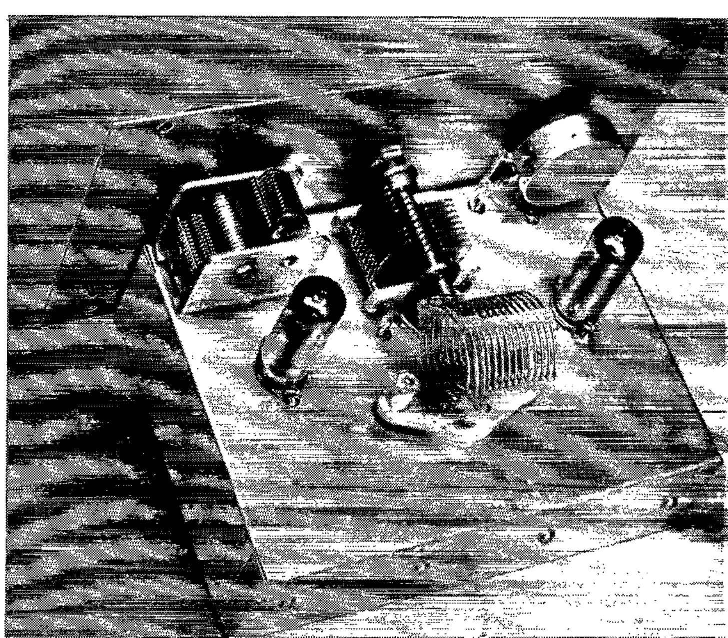
The circuit is shown in Fig. 1. Regeneration is controlled by varying the screen voltage of the detector by means of $R_2$.

The simple regenerative receiver's greatest weakness is its poor frequency stability compared to that of a superhet. The reason for this is

**• Most regenerative receivers offered to the beginner are lacking in signal output. With this one you won't have to strain your ears. In fact, the stronger signals will work a small loudspeaker at good volume. Designed for good stability and bandspread on the 80- and 40-meter bands, coils are also described covering the 20-, 15- and 10-meter bands and all frequencies in between as well. A special coil connection is included that spreads the Novice portion of the 80-meter band out over the entire dial.**

the lack of isolation between the antenna and the single tuned circuit. Movement of the antenna as it swings in the wind has a tendency to shift the frequency of the tuned circuit. It is also difficult to maintain the chassis at ground potential. As a result, movement of the operator's hands or the headphones around the receiver will have the same effect as movement of the antenna. These effects have been minimized in this receiver by the use of as much capacitance as practicable in the tuned circuit. Changes in antenna capacitance thus become a smaller percentage of the total capacitance in the circuit. Antenna effects are negligible on 80 meters, and within satisfactory limits on 40.

The large amount of variable capacitance also provides a very flexible tuning arrangement. Basically, the circuit is designed for simple parallel-capacitor bandspread on 80 meters, using almost the full capacitance of the band-set capacitor $C_2$. For bandspreading the higher-frequency bands, the tuning capacitor, $C_1$, is connected across only a portion of the coil. By proper setting of the band-set capacitor, all frequencies in between the amateur bands may be covered. All kinds of government and commercial c.w. stations as well as the shortwave broadcast signals can be heard, many of them with good loudspeaker volume.



♦

**Rear view of the beginner's receiver with the 80-meter coil in place. The detector socket to the left and the amplifier socket to the right are Eby 9064. They are centered 1¼ inches from the sides of the chassis, and 2¼ inches from the front. The Millen 33005 coil socket is centered 3¼ inches from the front. Leads for the stator connections to $C_1$ and $C_2$, and to $R_2$ are brought up through holes in the chassis.**

♦

As other examples of the flexibility of the tuning system, a Novice who may be interested for the time being in only the Novice portion of the 80-meter band can tap the 80-meter coil for $C_1$ to spread that portion of the band out over most of the dial. Then, by simply changing the setting of $C_2$, the 40-meter band, also well spread out on the dial, can be heard on the same coil. Later on, the entire 80-meter band can be covered, merely by shifting the connection of $C_1$ to the top end of the coil — a minute's work with the soldering iron.

With the 15-meter coil plugged in, and $C_2$ set for this band, the band is spread out over most of the dial. However, by resetting $C_2$, the 20-meter band can be heard, with either the c.w. portion or the phone section spread out, depending on the setting of $C_2$. Another setting of $C_2$ with the same coil will bring in the 10-meter band likewise spread out over most of the dial.

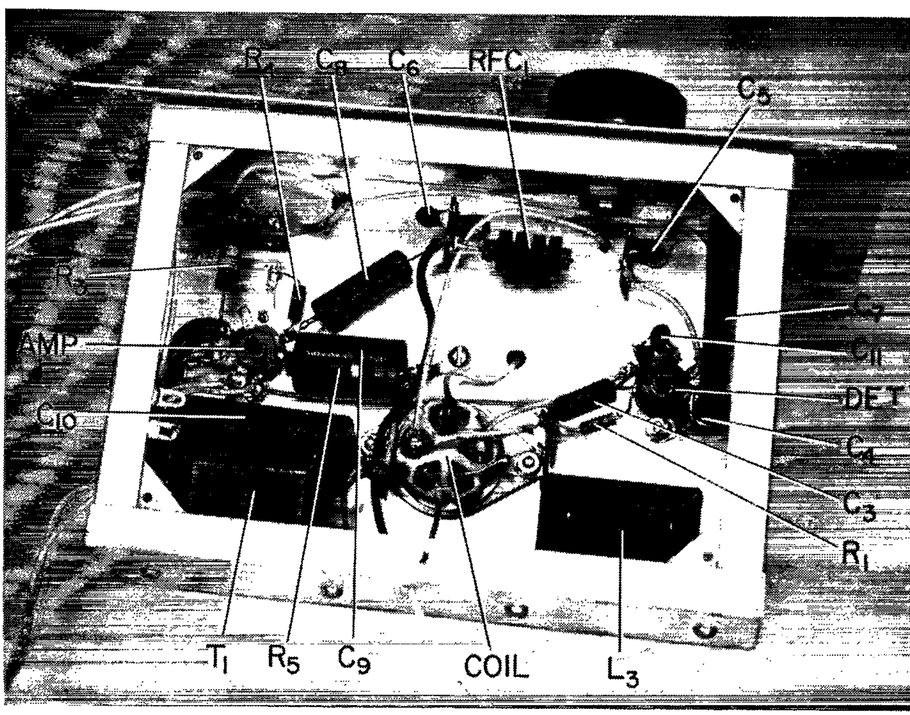
A more-experienced amateur may question the use of a power tetrode as the detector. Several of the "hot" r.f. pentodes, such as the 6AK5, 6CB6 and 6BJ6, were tried. It was found that tubes of this type were highly critical as to feedback. It was practically impossible to control regeneration satisfactorily (at least by the screen-voltage method) over any appreciable frequency range, and the detector was prone to jump into v.h.f. parasitic oscillation. An even more disappointing development was that the signal output was pitifully small, and even less than a moderate signal would tend to block the detector. The 6AQ5 solved all of these difficulties.

Another 6AQ5 is used in the audio stage. With a plate supply voltage of 250, it was felt best to keep the d.c. off the headphones. The primary of an inexpensive output transformer provides parallel plate-voltage feed, and the transformer may be used to feed a small loudspeaker. The speaker may be cut in or out by the toggle switch, $S_1$.

### *Construction*

The receiver is assembled on a 5 × 7 × 2-inch aluminum chassis. The enclosure is a standard 5 × 6 × 9-inch aluminum box. One of the removable covers is used as the panel. Most of the constructional details are shown in the photographs and their captions. The bandspread capacitor, $C_1$, has its shaft central on the chassis, and is placed forward just far enough so that the outside shaft-mounting nut can be threaded on at the front of the panel. $C_2$ should be mounted with the side and front of its frame flush with the right and front edges of the chassis. $R_2$ is mounted on the left side of the panel so that its shaft and the shaft of $C_2$ will be symmetrical in respect to the shaft of $C_1$.

The socket of $V_1$ should be mounted with




**Bottom view of the two-tube regenerative receiver. Insulated tie points fastened under socket and variable-capacitor mounting screws are used where convenient to support the smaller components. The one at the left provides an anchorage for the ungrounded side of the voice-coil winding of $T_1$. Leads to the left toward the front go to switch and jack connections inside the box. Those toward the rear are power leads. The lead to the antenna jack emerges from the rear.**

its No. 1 pin toward the rear; Pin No. 1 on $V_2$ should be toward the front. The coil socket should be turned so that its Pins 1 and 5 are toward the rear.

Before mounting the components permanently on the chassis, the panel should be drilled. The panel is fastened to the chassis by two screws 1 inch from the bottom of the panel, and 1½ inches from each end. A ½-inch clearance hole should be drilled for the shaft of $C_2$ so that the shaft will not make contact with the panel.

In using the template that comes with the National type K dial, it should be noted that the radius marked 2 inches is actually about 1⁄16 inch short — enough to make the vernier work more stiffly than desirable. This radius should be measured accurately. If the center for the vernier-shaft bearing is moved about ½ inch more to the left, along the 2-inch arc, more room will be provided between the vernier control and the dial of $C_2$.

The panel must be spaced 1⁄16 inch from the chassis to allow room for the bottom lip of the box to slide up in between the two. This can be done with washers at the two mounting screws and a large one around the vernier-shaft bearing, or a strip of aluminum 1⅜ inches wide, running the length of the chassis, top edge flush with the top of the chassis, and having holes corresponding to those in the panel, may be used as the spacer. The panel should be clamped to the front edge of the chassis, *with its bottom edge 1⁄16 inch below the bottom edge of the chassis*, while duplicate holes are marked on the front edge of the chassis, and on the spacing strip if one is used.

After $C_2$ and the panel are in place, a hole should be drilled in the panel with a No. 33 drill, and then carefully through into the upper left-hand corner of the frame of $C_2$. Make sure that the rotor plates of the capacitor are turned so that they will not be damaged. Enlarge the hole in the panel with a No. 24 drill. Fill the space between the capacitor frame and the panel with small washers as needed, and fasten the frame to the panel with a ⅜-inch No. 6 sheet-metal screw. This additional bracing is quite desirable for best frequency stability.

In wiring the receiver, the coil socket should be wired according to the pin numbering in Fig. 1. The leads connecting to the components mounted on the left end of the box should be extended 6 or 8 inches from the chassis so that they may be connected before the receiver is placed in the box.

The receiver (minus tubes and coil, and with the plates of $C_2$ fully meshed) is placed in the box by keeping it high enough to clear the bottom lip of the box until the receiver is all the way in. Then the panel should be pushed downward as the lip goes up into the space between the chassis and panel. The panel is fastened in place with No. 6 sheet-metal screws.

Rubber feet are fastened on the bottom of the box by drilling No. 33 holes in the corners and using sheet-metal screws. While the rear of the chassis is pressed firmly against the bottom of the box, a No. 33 hole should be drilled through the bottom of the box into the rear lip of the chassis. Then a No. 6 sheet-metal screw should be used to hold down the rear of the chassis securely.

### *Making the Coils*

B&W (Barker & Williamson) types 20-MEL and 10-MEL are used respectively for 80 and 40 meters. The bases of these coils have 5 pins, one of which (No. 3) is not in use. This is used for the bandspread-tap connection. A pin connection for the feedback tap is provided by cutting the end of the main coil going to Pin 4 off close to the ceramic base and soldering the end of the coil to the link wire going to Pin 2.

The 20-MEL coil used for 80 meters has 14 turns No. 18, 1⅜ inches diameter, 1⅜ inches long, and a 2-turn link 1⅝ inches diameter. Carefully bring a wire from Pin 4 under the coil, bending it so that it does not make contact with either the link coil or the leads going to Pin 5, and solder it to the main coil a little less than one turn from the outer end of the coil. This will be the outer turn, about ¼ inch to the right of the bottom plastic supporting strip as viewed from the link end.

The connection to Pin 3 will depend on how much of the 80-meter band you want to cover. If you want to cover the entire band, simply solder the wire from Pin 3 to the end of the main coil connected to Pin 2. However, if you are interested for the time being in only the Novice band, this band can be spread out over most of the dial, thereby making tuning much easier for a beginner. This can be done by connecting the wire from Pin 3 to the main coil at a point a little over four turns from the Pin 5 end of the coil. The tap should be placed on the fourth turn, about halfway between the bottom and side plastic strips. Be sure to do the job carefully so that the solder does not short from one turn to another. The 40-meter band will also be spread out over most of the dial with this tap.

### *Coils for Other Bands*

The 10-MEL coil, used for 40 meters, has 8 turns No. 16 wire, 1⅜ inches diameter, 1⅜ inches long, and a 2-turn link 1⅝ inches diameter. It is altered exactly as described for the 80-meter coil. The lead from Pin 4 is connected to the outer turn in the same manner, except that it is placed at about ¾ turn from the end — just below the right-hand plastic support strip. In other words, it is about ¼ inch farther up on the end turn than the 80-meter tap. The tap from Pin 3 should be placed a little over four turns from the Pin 5 end of the main coil, again about halfway between the bottom and side plastic support strips.

Attemps to use the MEL coils for 20 and 15 meters were not very successful. The placement of the taps was too critical. The best way to make coils for these bands is to buy a couple of extra 10 MEL or 20 MEL coils and use the mounting base to support smaller coils of B&W

Miniductor. If the original coil is stripped from the mounting carefully, the job can be done quite easily.

Hold the coil upright with Pin 3 facing you. You will see that the wire coming out of Pin 4 doubles back to start the first turn of the main coil. Follow this turn up on the coil and cut it just before it reaches the *top* supporting strip.

Now turn the coil so that Pins 1 and 5 face you. You will see the wire from Pin 2 starts the first turn at the opposite end of the main coil. Clip this turn just under the side supporting strip. At the other end, you will see that the wire from Pin 5 starts the outer turn of the link coil. Turn the coil over so that Pin 3 faces you and cut this turn about halfway between the bottom and side supporting strips. Cut the wire from Pin 1 off close to the point where it enters the bottom supporting bar.

Bend the stubs of the cut wires out where you will be less likely to cut them off accidentally, then cut off all other turns as close to the bottom supporting strip as possible, removing both the main coil and the link coil. Be sure that you do not cut off the wire from Pin 4 at the base. Free this half turn after the others have been cut.

For the 20-meter coil, make a coil of exactly 7 turns of No. 3006 Miniductor (5/8-inch diameter, 8 turns per inch). Place it on the plug-in base with the supporting strip at which the coil turns end against the supporting strip on the base. Cement it centrally on the base strip with Duco cement. After the cement has dried, bend the lead from Pin 2 toward the nearest end of the coil, and solder it to the end turn, close to the bottom supporting strip. Bend the wire from Pin 5 and solder it to the other end turn of the coil. Keep the wire from Pin 5 in as close to the bottom supporting strip as possible. The lead from Pin 4 should be bent into such a position that it can be soldered to a point two turns from the nearest end of the coil without shorting on the wire from Pin 5. The soldering point should be about halfway between the bottom and side supporting strips. A wire soldered to Pin 3 should be brought out and soldered to the same point on the coil.

Two turns of insulated hook-up wire should be wound over the coil, as close as possible to the Pin-5 end, for $L_1$. These turns will pass between the bottom supporting strip and the ceramic base. Solder the outer end of this coil to the end of the main coil going to Pin 5. Solder the other end of the link coil to the wire going to Pin 1.

The 15-meter coil is made in the same way. It consists of 7 turns of No. 3002 Miniductor (1/2-inch diameter, 8 turns per inch). The tap from Pin 4 is soldered on the coil at 2 turns from the nearest end. A wire from Pin 3 should be soldered to the coil at one turn from the same end. Make sure that each lead is clear of all others. The link coil, $L_1$, is the same as for the 20-meter coil.

### *Antenna and Power Supply*

The receiver was tested on a 75-foot length of wire, almost half of which was indoors. Shorter lengths may be used. In fact, the shorter the antenna the more stable the receiver will be, and good signals should be obtained with a 10-foot indoor wire. In any event, the antenna should be suspended as rigidly as possible to minimize swaying. A phono plug to fit the antenna jack should be soldered to the inside end of the antenna. The antenna lead should be kept as much as possible to the rear of the receiver, away from the operator.

The receiver requires a well-filtered power supply delivering 250 volts at about 50 ma. A suitable circuit is shown in Fig. 2.

### *The Band-Set Capacitor*

The centering of the amateur bands on the dial of $C_1$ will depend upon a rather critical setting of $C_2$. However, once the correct setting has been found and recorded, it can be returned to with reasonable accuracy. Since it is anticipated that the receiver's principal use will be on 80 or 40 meters, there will be little occasion for frequent hopping from band to band. Approximate settings for $C_2$ will be given. The dials of both $C_1$ and $C_2$ should be set to read 0 when the capacitors are at maximum capacitance (plates fully meshed). Individual copies of the receiver may require slight readjustment, in one direction or the other, in order to center the band on the dial. These readjustments should be made in very small steps — perhaps not much more than the width of a pencil line on the dial at the higher frequencies. The amateur bands can be most easily recognized by the phone signals, and the bands can be centered in reference to them.

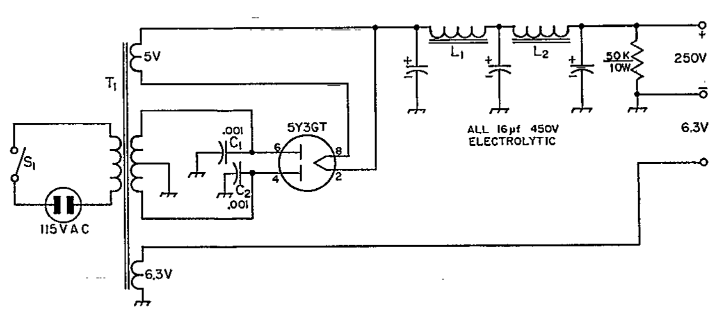
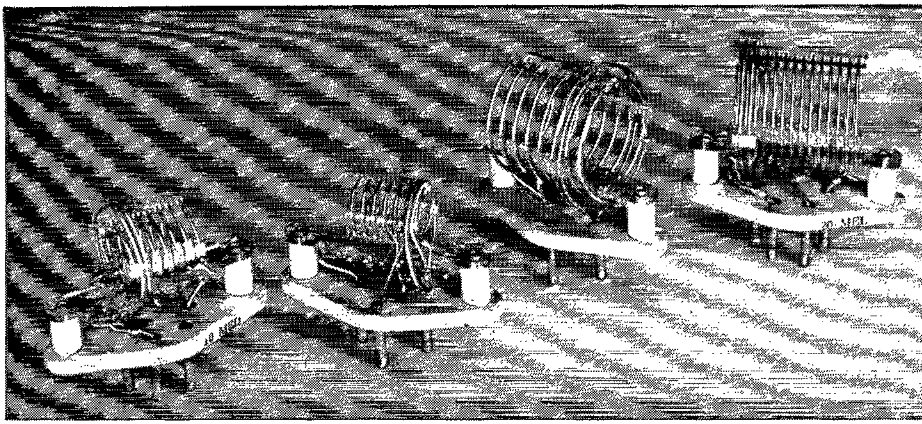



*Fig. 2* — Circuit of a suitable power supply for the regenerative receiver. $C_1$ and $C_2$ are disk ceramics and should be connected directly from rectifier socket terminals to chassis. All capacitances are in µf.

$L_1$, $L_2$ — 16-h. 50-ma. filter choke, 580 ohms (Stancor C-1003).
$S_1$ — Toggle.
$T_1$ — 480 volts c.t., 55 ma., 5 volts, 2 amps., 6.3 volts, 2 amps. (Stancor PC-8402).



**A complete set of plug-in coil for the regenerative receiver. From left to right they are for the 20-, 15/10-, 40- and 80-meter bands.**

### *Coil Coverages*

The 80-meter coil can be used with the bandspread tap at either of two points. In either case, the total frequency range (from maximum on both $C_1$ and $C_2$ to minimum on both) will be approximately 3.2 to 11.5 Mc. When the tap is connected to the extreme end of the coil, the entire 80-meter band will be covered by $C_1$ when $C_2$ is set at approximately 14.5. (Remember that each calibration mark on the small Johnson dial is 2 points, so that 14.5 means 14 plus one quarter of the way to the next dial mark.) When $C_2$ is set at approximately 57.5, the 40-meter band will occupy about 10 per cent of the dial.

If the bandspread tap is set as described earlier for the Novice band only, $C_2$ should be set at about 4.5. When $C_2$ is set at about 57.5 with the Novice bandspread tap, the 40-meter band will occupy about 50 per cent of the dial of $C_1$.

### *40-Meter Coil*

Better stability and greater bandspread will be obtained on 40 meters by using the coil designed for 40 meters, rather than the 80-meter coil as described above. The total frequency range with this coil is approximately 6 to 23 Mc. With $C_2$ set at about 22, the 40-meter band should occupy about 80 per cent of the dial of $C_1$. If $C_2$ is set to approximately 74, 20-meter signals may be heard, but the entire band will occupy only about 10 per cent of the dial.

### *20-Meter Coil*

The total range with this coil is about 10 to 39 Mc. When $C_2$ is set at about 47.5, the 20-meter band should occupy approximately 70 per cent of the dial of $C_1$. By setting $C_2$ to about 72.5, signals in the 15-meter band can be heard, but the band will be spread out over only about 20 per cent of the dial of $C_2$.

### *15-Meter Coil*

The total frequency range covered with the 15-meter coil plugged in is about 11 Mc. to 40 Mc., but the regeneration control will be rather critical and not too reliable at the high-frequency end of the range. With $C_2$ set at 56.5, the 15-meter band will occupy about 80 per cent of the dial of $C_1$. With $C_2$ set at approximately 74.5, the 10-meter band will occupy about 70 per cent of the dial of $C_1$. With $C_2$ set at 30, the c.w. portion of the 20-meter band will occupy practically the whole dial of $C_1$. By resetting $C_2$ to a slightly higher reading, the phone portion of the band will be likewise spread out over most of the bandspread dial.

### *The Regeneration Control*

With the power supply, antenna and headphones connected, plug in the 80-meter coil. Turn the regeneration control, $R_2$, all the way counterclockwise, and set $C_2$ as indicated previously, depending on whether or not the Novice bandspread tap is used. A minute or two after the power supply has been turned on, advance the regeneration control slowly until the detector goes into a soft hiss as it starts to oscillate. Reverse rotation of the regeneration control, and the hissing should stop. Go back and forth over this point several times so that you may familiarize yourself with the sound. See how close you can come, in advancing the control clockwise, to the point where the hissing starts without actually making the hiss start. If you listen carefully, you will hear the background noise come up (in the absence of a signal). This is the most sensitive adjustment for modulated (phone) signals. Now turn the control clockwise past the point where the hissing starts. Reverse the direction and slowly approach the point where the hissing stops. See how close you can get to this point without making the hissing stop. This is the point for greatest sensitivity on c.w. signals. Strong c.w. signals may block the detector when it is adjusted for this most sensitive condition. In this case, turn the control clockwise as far as necessary to prevent blocking. On some of the higher frequencies, advancing the control too far may result in a high-pitched squeal. If this should occur, the control should be retarded.

*(Continued from page 140)*

this particular construction, but other conventional mobile type carbon mikes may be easier to obtain.

The unit runs rather warm in normal operation, so ventilating slots were cut in the Minibox cover, and fitted with perforated metal to provide easy flow of air through the equipment. The rig has been given a long period of operational test, and has been very dependable and convenient to use. It has been operated in aircraft, marine, and mobile service, as well as base station installation, and has performed most satisfactorily in all instances.

## Conelrad

*(Continued from page 19)*

a relay that grounds the positive side of the meter while the transmitter is operating.

A resonant coil or a tuned circuit can be used in conjunction with the monitor's pick-up antenna for the purpose of improving selectivity and sensitivity.

— *Robert R. Rathbun, W8TGH*

[EDITOR'S NOTES:

1) The effect of fading should be checked by anyone who must depend on a *distant* station for the Conelrad alarm signal. A signal that comes in loud and clear at one time of day may fade below a useful level at other times.

2) In many installations, it will be practical to take the power for the circuits shown in Figs. 2 through 5 from the control receiver, especially if the receiver employs a transformer-type power supply. Plate power for the circuits may also be obtained from many of the popular a.c.-d.c. receivers, but stealing heater voltage from any such set may be a more difficult problem, requiring a change in the heater wiring of the receiver and the substitution of a new resistance-type line cord — one having a lower resistance. Remember also that most a.c.-d.c. receivers have the chassis *above* ground, and the hazard of shock will be avoided only if the companion Conelrad unit is constructed so as to prevent direct contact with its controls, circuit and chassis.]

— *C. V. C.*

## Novice Special

*(Continued from page 39)*

On the higher frequencies, changing the setting of the regeneration control will have some effect on the frequency, so it may be necessary to readjust $C_1$ slightly to keep the signal in tune.

An antenna that happens to be resonant at the listening frequency may load the detector so that it will not oscillate. These "dead" spots can usually be eliminated by inserting a 50-$\mu\mu$f. variable capacitor in series with the antenna and setting the capacitor at a point that permits oscillation. Dead spots should not occur in any of the amateur bands with the 75-foot antenna, although some will probably be found in between the bands.

*(Continued on page 142)*

You should find plenty of signals at the right time of day or night that are strong enough to work a small loudspeaker connected to the speaker jack. One of the speaker leads should be connected to the pin of the phone plug, and the other to the outside shell of the plug.

The detector should go into oscillation at screen voltages from 15 to 50. At 250 volts, the total current drain should be about 45 ma.

The frequency stability of this receiver on the amateur bands above 7 Mc. will probably not be considered good enough for regular station use on c.w. It will, however, be found entirely adequate on phone signals where high stability is of less importance.

Preliminary tests have shown that the problem of stability on the higher frequencies can be readily solved by the addition of a converter. The frequency stability on the higher frequencies then becomes essentially the same as on 80 meters. We expect to have more on this in a later issue of *QST*.

## Simple Ground Plane

(*Continued from page 26*)

stood all Hurricane Connie and an "Extra Tropical Cyclone" could muster up!

As stated, the antenna was mounted on the chimney. However, it could be easily adapted to other types of mounting. Still, this would be the ideal mounting for a cliff-dweller QTH!

The radials should be equally spaced and at least four used. They could be run at almost any convenient angle.

In the short time I have had the vertical in operation, it has snagged all continents with very good signal reports, using a Viking II.

Build one! Give some competition to the kw. + beam men!

## Correspondence

(*Continued from page 78*)

well and good to prate about the other fellow, and what he should (and should not) do; but what has the League been offering up that is so vastly superior? Precious little, I might say. . . .

Commercialization is upon us for many reasons. Among them are such factors as (a) lack of time among busy professional men; (b) lack of construction facilities in crowded apartments; (c) apprehension that it may not work as expected; (d) difficulty in obtaining certain parts; (e) knowledge that home-brew gear has negligible trade-in value; and, (f) lack of interest in any phase of construction . . . there are, no doubt, many other factors. I have touched upon those that appear most frequently. . . .

— *Neil A. Johnson, W2OLU*

### RAPP–TURISTS

4802 Palo Verde Ave.
Lakewood, Calif.

Editor, *QST:*

This letter is written after the members of this club unanimously decided to request a satisfactory explanation for the articles which you allow to appear in your magazine each April. The particular article in question is, naturally, "A Radical Approach to VFO Design," the author of which was not given — unless you want your readers to think that your fictitious character, "Larson E. Rapp," is for real.

(*Continued on page 162*)