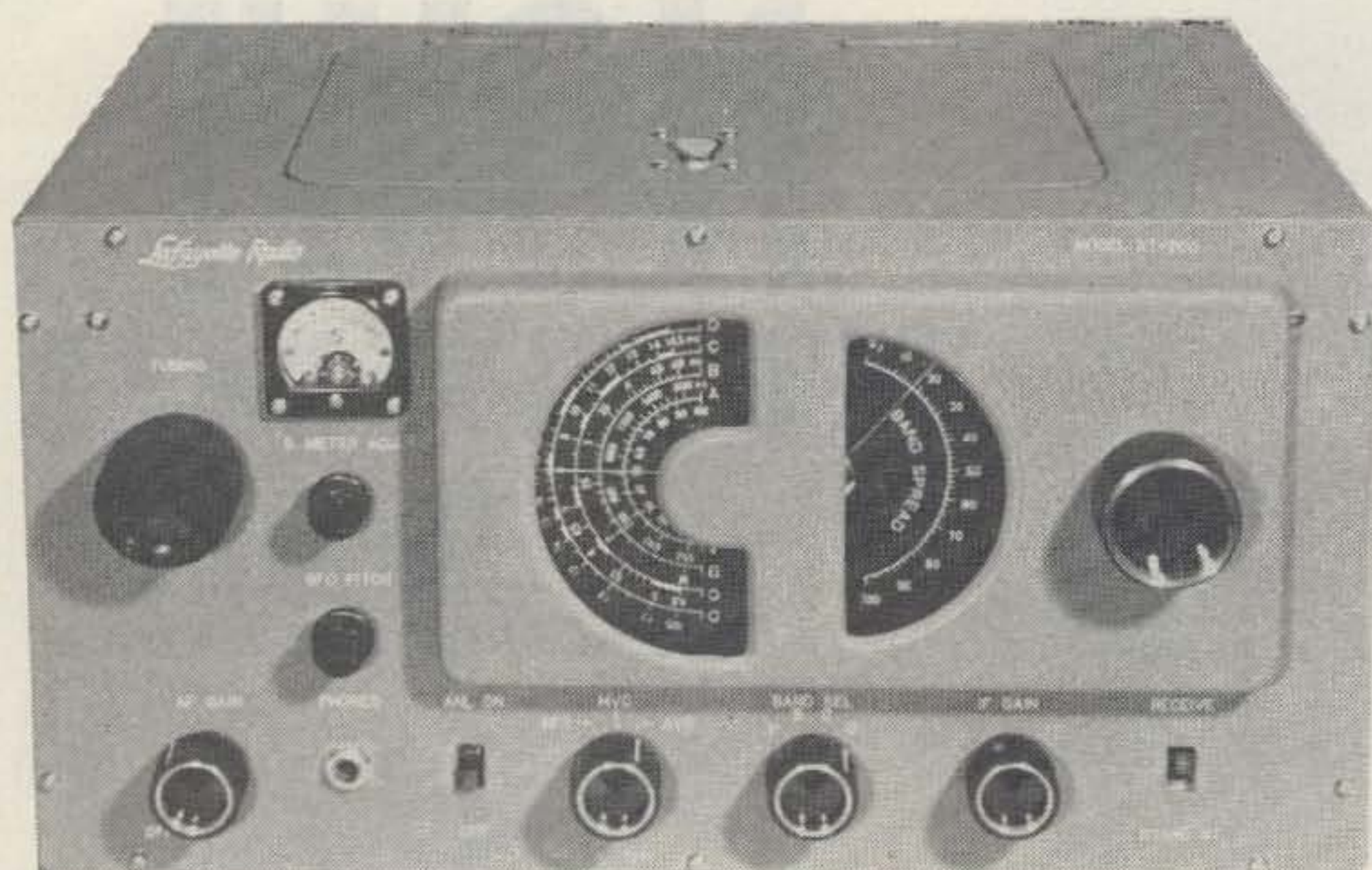




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The Lafayette KT-200 Receiver

a review

As a kit, the KT-200 represents a departure from the usual kit practices. As soon as you unpack it, you'll note that by the usual kit standards you are about half finished already. All of the mechanical mounting is already completed for you. Tube sockets, transformers, main tuning capacitor, filter capacitor, controls, and even knobs and pilot lamps are all in place. The tuning mechanism is already installed and operative. The dial cords are strung and the flywheels are in place. And, best of all, the complex assembly of coils and alignment capacitors for the oscillator, mixer, and rf amplifier stages are mounted and pre-aligned, but more about this later.

Circuitwise, the KT-200 is conventional, straightforward, good design. It consists of a 6BD6 rf amplifier, a 6BE6 mixer, a separate 6BE6 oscillator, two 6BD6's as 455-kc if amplifiers, a 6AV6 detector, avc rectifier, and first audio amplifier, another 6AV6 beat frequency oscillator and shunt-type noise clipper. A 6AR5 serves as the audio power amplifier and a 5Y3 as the rectifier completes the nine-tube complement.

It is to be noted that many receivers commonly use a single 6BE6 pentagrid tube as both oscillator and mixer. However, in the interest of stability, the designers of this circuit have chosen to devote separate 6BE6's to the mixer and oscillator functions. This contributes to stability since it greatly reduces

the tendency of the oscillator to "pull" on strong signals and probably it also lessens thermal drift problems.

AVC voltage is applied to both the rf and if amplifier stages. A front panel control provides for disabling the avc in its mvc (Manual Volume Control) position. This same switch in its third position (BFO) serves the dual purpose of turning on the beat oscillator and disabling the avc for copying CW or SSB signals.

Instead of the traditional rf gain control, the KT-200 is provided with a manual if gain control. Thus, the rf amplifier runs fully open all of the time except as modified by the avc bias. A minor point here is that the if gain control is simply a 10K potentiometer in series between ground and the two cathodes of the if amplifier tubes. Therefore it does not afford a complete range of control from cut-off to full gain as is the case with rf gain controls. It does, however, provide sufficient control to keep strong signals from over-driving and distorting.

A stand-by switch opens the plate supply lead to the rf amplifier, mixer, and oscillator stages while leaving the remainder of the stages powered. This is perfectly adequate and probably contributes to quick recovery time and stability when break-in operation is used. The stand-by switch terminals are brought out to a five-pronged socket on the rear apron of

the chassis for connection to a break-in relay in the station control system if desired.

All of the components are of Japanese manufacture and appear to be of excellent quality. The use of a few wax impregnated by-pass capacitors is probably the lone exception. While these are of good quality, modern receiver construction practice is to use plastic or ceramic encapsulated capacitors which can be expected to give longer service.

The cabinet, panel, and chassis are a pleasant surprise. They are of heavy gauge steel including two heavy diagonal braces between the chassis and top of the front panel. This contributes to the receiver having the ruggedness of a piece of military gear when completed. It should assure good mechanical stability of the finished assembly. The cabinet and panel are finished in gray wrinkle finish, and the cabinet is provided with numerous louvers to allow good circulation and heat dissipation from the interior. Both bottom and top are provided with hinged access doors of ample size and good fit.

A unique feature of the chassis is that ground points are formed by punching out "U-shaped" tabs in the chassis. These are bent out from the underneath side of the chassis by the constructor and ground leads are wrapped around them and soldered. This feature should give positive grounds avoiding difficulties with loosening of screwed-on ground lugs, and interface corrosion between ground lugs and the chassis. However, the kit builder using a low wattage soldering iron might encounter difficulty in heating these ground tabs hot enough to assure a good solder job.

The S-meter is one of the small 1½ inch square type and it is connected with a multiplying resistor and calibration control from the cathode of the rf amplifier to ground. Essentially, it measures the voltage developed on the cathode which is a direct function of the strength of the received signal. Calibration of the S-meter is accomplished by temporarily shorting the antenna terminals on the back of the set and adjusting the "S Meter Adjust" control on the front panel until the meter reads zero. Unfortunately, this zero position varies from band to band and requires frequent re-adjustment if you are band-hopping. When the meter is adjusted to give proper readings on the short wave bands, switching to the broadcast band will pin the meter unless you back off on the control. Then you are out of calibration when you return to the higher frequency bands. Perhaps the best operational scheme here is to tune the receiver to a clear spot on the band in question and adjust the control to make the meter read just slightly above zero. Your S-meter readings then will be in terms of signal strength above background noise which is a meaningful relative reading.

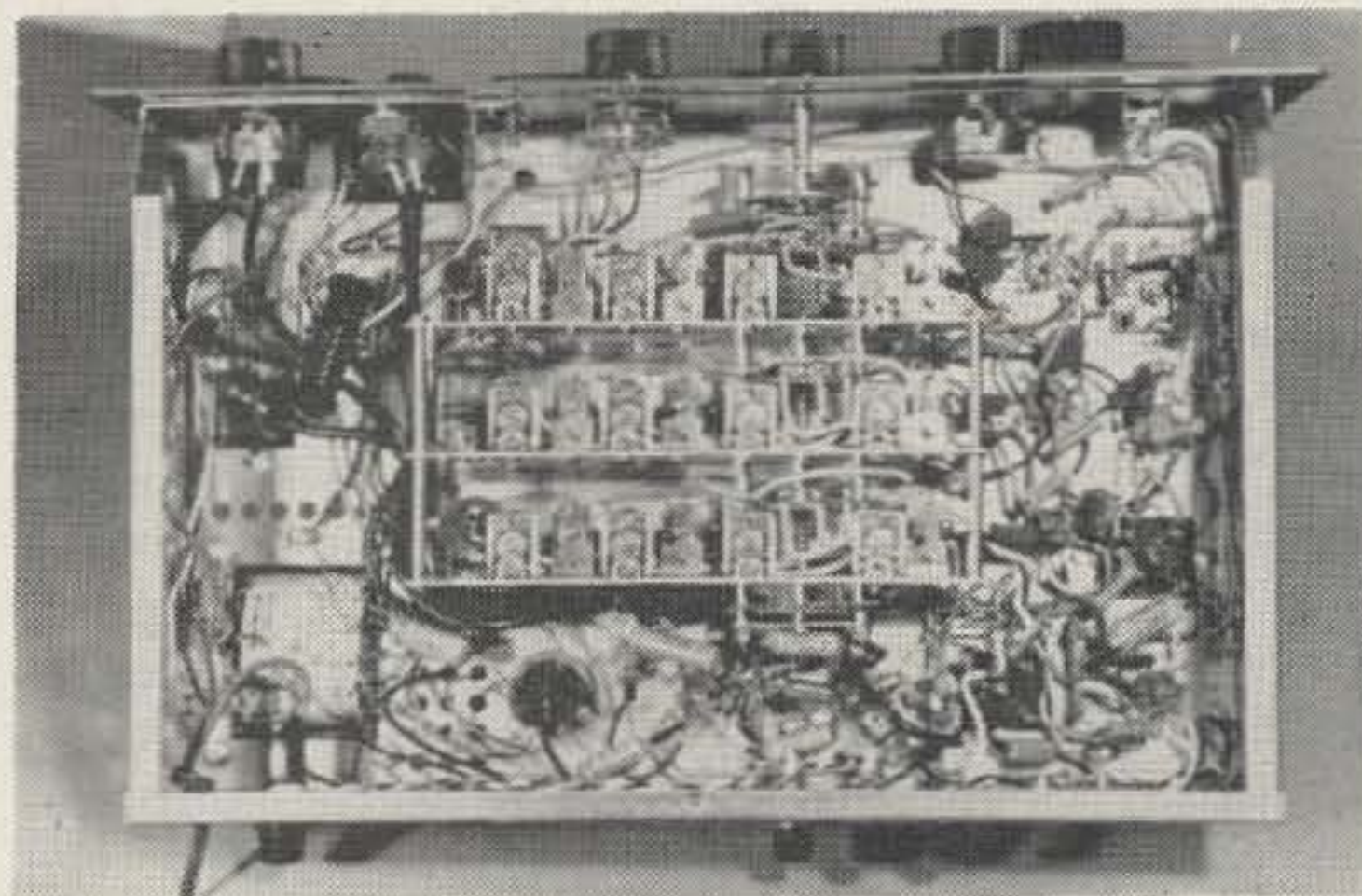
Assembly of the kit consists chiefly of wir-

ing in all of the components which are mounted on their pigtail leads, and connecting the terminals of those items which are pre-mounted on the chassis and panel. The only part which might be considered difficult is the wiring of the bandswitch since this requires careful attention to directions and some work in rather cramped space at times. Total wiring time for a careful, experienced worker shouldn't exceed ten to twelve hours, and even the rankest novice kit constructor should be able to complete the job in fifteen to twenty hours.

Pre-Alignment

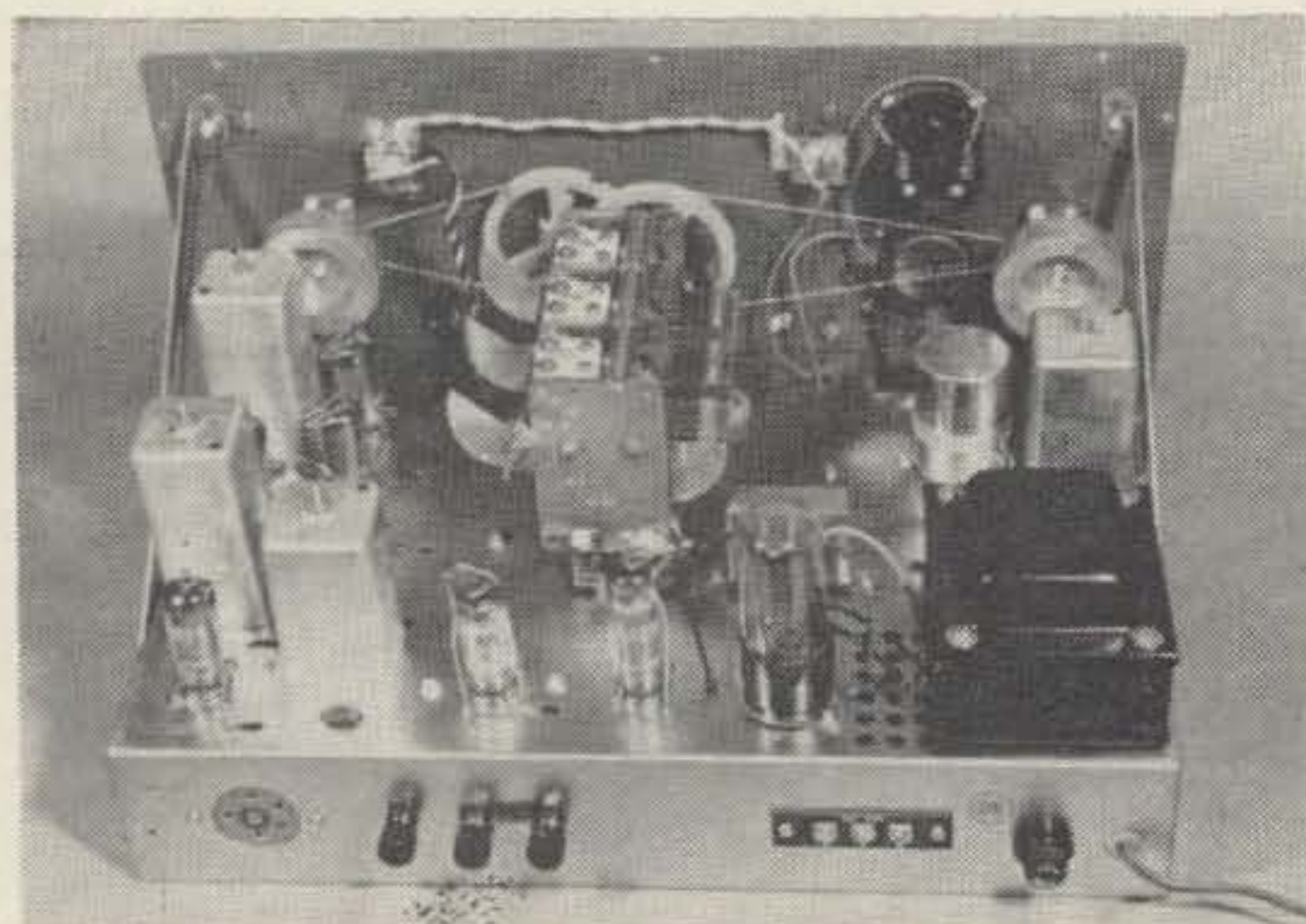
Your writer has, through experience, developed a tongue-in-cheek attitude toward kits which are sold claiming pre-alignment of the tuned circuits. Most such kits result in a completed unit which is aligned well enough to work after a fashion, but most of them require alignment for optimum operation. The KT-200 proved to be almost an exception however. By virtue of the fact that the tuning coils and capacitors are pre-mounted and aligned, the overall alignment was quite good and only required a minimum of touching up to achieve the sensitivity and selectivity claimed in the specifications. In particular, the frequency calibration of the main tuning dial scales was outstanding. Anyone who has ever spent hours tuning between the top and bottom of four bands while juggling padders and coil adjustments will certainly appreciate this feature of the KT-200.

Similarly, the *if* transformers were close enough to proper alignment to allow them to be peaked by ear by the kit constructor who is not equipped with a signal generator and voltmeter. The only exception to this good



alignment was the bfo coil which was considerably out of tune. However, this is aligned by simply adjusting the core until a zero beat is heard in the speaker or phones, and hence it was not difficult to bring into line.

It was previously mentioned that frequency calibration of the main tuning dial was excellent. However, two-dial tuning of this type in general suffers from poor re-set accuracy and since, in this case, the main tuning dial



does not have index marks for setting to the amateur bands, location of the ham bands becomes a small problem. The bandspread dial is not calibrated except for an arbitrary 0—100 logging scale. The selectivity of the receiver is good enough to justify the use of a great deal of bandspreading, i.e., the bandspread control provides for a slow tuning rate enabling accurate tuning. But, this good feature is at the expense of coverage on the bandspread dial and one complete sweep of the bandspread scale does not cover fully any ham band in its entirety. It is necessary to reset the main tuning in order to tune a whole band.

If a 1000 kc crystal calibrator is available, it can be used to good advantage in spotting the proper ham band settings of the main tuning. Set the bandspread dial to 100 (maximum capacity) and tune in the 1000 kc marker at the lower end of the band in question. Then the bandspread will tune up the band from the lower edge. At the limit of the bandspread tuning if you wish to tune further up the band, it will be necessary to "fudge" the main tuning up a fraction. In practice, this isn't as much of a handicap as it sounds since the bandspread is sufficient to cover the entire phone or CW sub-band on most of the bands, and it is seldom that an operator operates both modes at one operating session.

The lack of bandspread calibration is no real handicap in modern operation which calls for zero-beating the station that you are working with your transmitter vfo. You must, however, assure yourself that your transmitter is operating within the proper frequency limits by some other method than your receiver's calibration, unless you provide the receiver with a crystal calibrator and learn to use it properly.

Mechanically, the bandspread tuning is interesting. In the main tuning capacitor, one plate is omitted in the center of each of the three rotor sections. Then, on a separate shaft from the opposite side of the capacitor, a single plate is turned into this gap in each stator section from the bandspread tuning shaft—a very neat arrangement.

The instruction manual is quite complete,

but there are a sprinkling of errors and omissions which must be watched. For example, a correction sheet enclosed with this particular kit changed the instructions for wiring the main filter capacitor. However, this kit appeared to have one of the original type capacitors in it. When wired according to the correction sheet, the second section of the filter capacitor was connected with reverse polarity and the first section was ungrounded. As a result, all of the voltages were low by a large amount and there was excessive hum. Indeed, this could lead to the demise of the filter capacitor if not found and corrected quickly. Reference to the terminal notation on the capacitor can clear up this problem.

A couple of omissions which will be caught quickly by the experienced kit builder but which might trip the novice are worthy of mention. One relates to the pilot lamp wiring. There are two pilot lamps—one for each tuning dial. The instructions direct the wiring only of the one on the bandspread dial while the second one is not mentioned or shown in any of the illustrations. Perhaps this a change in the design which has not yet been worked into the manual. It is necessary only to run a couple of leads from the wired lamp socket to the other one in order to make both operate.

Another oversight appears in the rather detailed instructions for aligning the bfo. In the course of this procedure the manual fails to direct that the bfo be turned on with the front panel switch.

In the tabulation of voltages, the instructions fail to give directions for the settings of all of the front panel controls. This can lead to some readings which are perfectly normal but quite at variance with those given in the table. For example, it is obvious that the bfo must be turned off to obtain the readings given in the tabulation on the bfo tube. Likewise, some of the grid voltages will be different from those in the table depending on whether the AVC is activated or not, and whether a signal is present or not.

Modifications

Two modifications suggest themselves as being worth consideration by those who may assemble one of these units in the future. One is to take advantage of the three unused prongs of the five-prong rear apron socket to bring out a power take-off for a Q-Multiplier, TR Switch, crystal calibrator, or other low-drain auxiliary station accessory. Connect one pin to ground, one to the 6.3-volt filament line, and one to the plate voltage from the output of the filter. It is a good idea to mark these on the chassis beside the socket so that when you want to use it, you can recall how you wired the socket without having to open the cabinet and trace the wiring.

The second modification relates to the 10-watt resistor used as part of the power supply

filter (R21). This generates considerable heat and it is in rather close proximity to the oscillator coils and padders. Since the set was found to have a very substantial amount of drift for about the first ten to fifteen minutes of its operation from a cold start, it seemed prudent to move this resistor over to the side of the chassis away from the coils and nearer some of the ventilating holes. This move diminished the warm-up drift appreciably and made for more rapid stabilization.

The bfo in the particular unit tested failed to provide sufficient injection to allow for good SSB reception. It was necessary to increase the size of the small tubular capacitor which coupled the bfo output into the second detector. The 2.2-mmfd capacitor supplied was too small. A 10-mmfd disc ceramic gave more suitable injection level and an even larger one might be desirable. (Two pieces of hook-up wire twisted into a gimmick capacitor might serve as well.)

While the receiver is capable of good SSB reception, it must be observed that tuning in a sideband signal with the small bfo knob on the panel can be a bit tedious. A larger knob, or planetary reduction drive would be of some assistance.

Operation of the KT-200 for a limited time since its construction has left the impression that it is definitely a hot performer even on ten meters where many single-conversion general coverage units with 455-kc *if*'s fall down. No problem was encountered with images, no doubt due to the isolation and attenuation provided by the rf amplifier stage. Sensitivity is very good and selectivity is adequate although the addition of a Q-Multiplier would be useful for operation in the crowded ham bands. After the warm-up drift previously discussed, the stability is excellent—good enough even to allow satisfactory reception of single sideband signals. Incidentally, as sort of a bonus, this receiver is an outstanding performer on the broadcast band.

In summary, the KT-200 appears to be an excellent value for a middle-priced general coverage receiver. It is worthy of serious consideration by anyone ready to graduate from the inexpensive five or six tube general coverage receivers, but not yet in a position to purchase one of the top-flight communications receivers. Or it might be useful as a second receiver to supplement your ham-band-only hearing aid.

... K2DHA

Hey	Fri.	Fri.	Thu.	Wed.	Sat.	Sun.
8	7	6	5	4	3	2
16	15	14	13	12	11	9
23	22	21	20	19	18	17
31	30	29	28	27	26	24
38	37	36	35	34	33	32

DOWN through the ages civilization has developed into its present, though ever changing form. In the wake of its evolution it has left the remains of innumerable outmoded ideas and once useful articles. Some of these have been revised to meet the times, while others were simply discarded.

One thing that has survived unscarred and unchanged throughout centuries of use and misuse is the calendar.

After many long years of diligent research on the subject I have developed the following plan for calendar revision. I propose that this plan be adopted for the good of all amateur radio operators and any and all individuals associated with them.

Hams, as everyone knows are inclined to "put off till tomorrow what should be done today." With this calendar you can put off washing the car on the seventh and still get it done by the third.

Ever notice how your Friday night net meetings always clash with the XYL's bridge parties or other great social occasions which demand your presence? No longer. Not with two Fridays in each week!

Now you can go ahead and buy that expen-

The Ideal Ham Calendar

R. M. Case K4YNO

sive KW rig you've had your eye on without worry about the first of the month payments on it as there isn't any first. The tenth and twenty-fifth have also been eliminated in case you are asked to pay on those days.

The number of week-days has been cut to four leaving a glorious three-day week end for hamming.

Those bothersome Mondays have been eliminated altogether and an extra day: Heyday has been added to round out the week. It is hoped that with a little persuasion Frank's Country Cousins would allow unrestricted operation on this day.

After you have carefully scrutinized the intricate details of this wonderful new calendar and feel that you would like to join our campaign for its adoption please stop by our headquarters at the S.A.H.F.H.B.A.O.C.H.**

If you don't have enough time to devote to this worthy cause at least stop by to see us some time. We are allowed to have visitors from one till four o'clock on Wednesday and Friday afternoons.

**Sunny Acres Home for Half Baked and Otherwise Crazy Hams.