

THE COMMUNICATION RECEIVER

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THE 1935 LAFAYETTE 56-MHz SUPERHET KIT

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In looking back at the world of the communication receiver as of 1935, we usually think of the HRO, the Super-Skyrider, Super-Pro, the various RME and RCA models, and other high-frequency workhorses. We tend to overlook the serious UHF work that began in the late 1920s in the 5-meter band (it had become an amateur band in 1924) and which was beginning to show real results by the mid-Thirties.

While a few pieces of commercially manufactured VHF gear were on the market in the early Thirties, for the most part equipment was in the realm of the experimenter, and consisted primarily of the modulated-oscillator transmitter and the superregenerative receiver. The latter was remarkably sensitive to weak signals, and also amplified CW signals much more than the background noise. Its big disadvantage was the strong signal radiated by the oscillator/detector, and in crowded areas the QRM was getting serious. The circuits in use were inselective, and many operators objected to the characteristic 'rush' noise in the absence of signal.

Attempts to use 56-MHz superhet receivers had, however, been unproductive, and serious communications work continued with the superregenerative circuit. In mid-1935 the Lafayette 56-MHz kit receiver was introduced in an effort to change the picture.

The circuit was a modification of a design by Frank C. Jones, W6AJF, a well known experimenter and writer of the period. Manufactured by the Wholesale Radio Service Co. of New York, it was marketed under the Lafayette Radio name as a simple, easy-to-assemble kit.

The six-tube receiver consisted of a 6D6 tuned RF stage, a 6C4 autodyne first detector/oscillator,

and two 6D6 RC-coupled IF stages, followed by a 41 second detector/AVC and a 42 audio output, capable of driving a dynamic speaker to full volume. The constructor could also plug in the equivalent 2.5-volt tubes. An ordinary external power supply, not supplied with the kit, was required. Batteries could also be used for portable work. Price was \$16.75, less tubes; \$8.25 more for the power-unit kit. The set was also available wired for \$3.25 more.

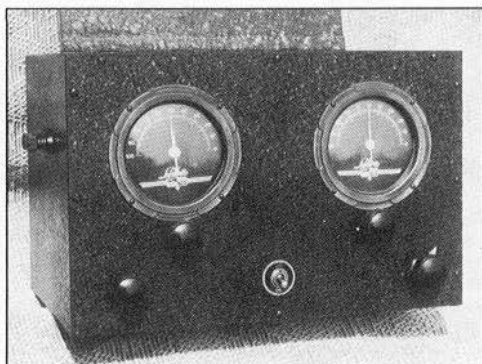
The oscillator circuit is unique. The grid circuit of the oscillating first detector was detuned slightly from the signal frequency, giving a low-frequency beat note at the IF frequency. Plate-to-

grid feedback was obtained by using a cathode RF choke, and the circuit constants were chosen to give smooth feedback, but not superregeneration.

The IF-stage constants were selected to pass the IF but reject the audio frequencies, allowing modulated-oscillator signals to be received with a relatively sharp IF system. In particular, the use of very small coupling capacitors (100 pF) and the stray capacitances of the

circuit together gave an IF passband from about 15 to 100 kHz. The manufacturer noted the advantages of using the RC-coupled IF system; not mentioned was the fact that it was considerably cheaper to build. The wide IF passband (and essentially zero suppression of the image frequency) gave selectivity superior to that of a superregenerative set, but wide enough to accept the wobbly signal of a modulated-oscillator transmitter.

In the true radio-amateur spirit of the times, several variations of the circuit were available. For example, the 400-ohm RF gain control shown



The Lafayette 5-meter kit receiver. The audio gain control is on the left, and an added regeneration control on the right. The knobs are standard National design.

