

THE COMMUNICATION RECEIVER

EDITED BY

WILLIAM FIZETTE, K3ZJW
RD #1 Box 55, Henryville, PA 18332

All correspondence requires SASE for reply



THE "ALL-STAR SENIOR" - A DEPRESSION RECEIVER

H. Paul Bohlander, W3VVS

2731 Hawthorne Road, North Hills, PA 19038

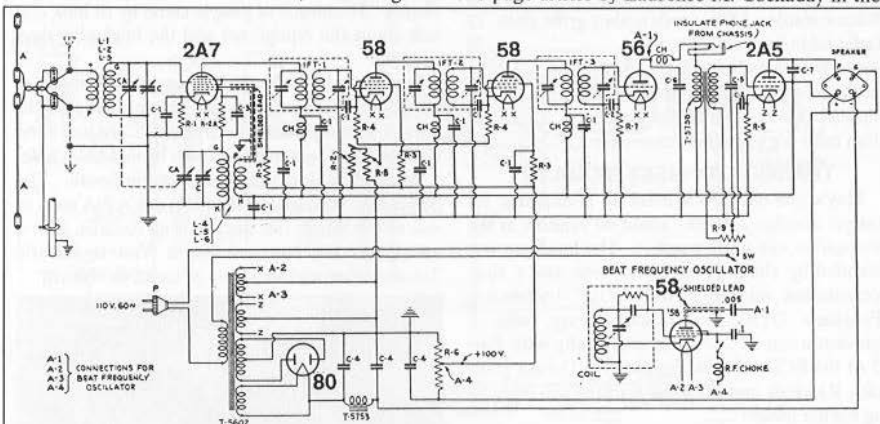
The year is 1935. The Depression is in full swing and funds are scarce for the high-school lad interested in short-wave radio. Unable to afford a factory-built receiver, he discovers a low-priced "foundation unit" manufactured by Thordarson. He builds the set and uses it for short-wave listening until licensed as W8VVS in 1941, and then continues to use it on 160 and 75 meters. In due course it is replaced, and sits on the shelf for almost 50 years. Recently restored by the author, now W3VVS, it works again. Here is its story. -K3ZJW

In the early 1930s the Thordarson Electric Mfg. Co. of Chicago published a series of "Transmitter Guide" booklets for the radio amateur. The circuits were state-of-the-art at the time, and had been reportedly constructed and tested by the Thordarson technical staff, many of whom were licensed amateurs. Not only did this effort produce several fine publications on the construction of transmitters, but through Thordarson, "foundation units" were made available, consisting of

metal chassis and panels, pre-drilled and punched for sockets, terminal strips, meters, and other parts. An instruction sheet illustrating the location of parts and step-by-step assembly, and a schematic diagram came with each package.

Parts used in the construction of the transmitters were standard, readily available from most supply houses. Naturally, Thordarson filament, plate and audio transformers, as well as filter chokes, were specified in the list of parts. Furthermore, each foundation chassis was drilled and punched for the specified transformer or choke, encouraging the constructor to purchase the company's products.

In due course, consideration was given to a short-wave receiver kit to be marketed in the same manner as the transmitter foundation units. The "All-Star" was introduced in late 1934 as a superheterodyne receiver intended for construction by short-wave listeners and amateurs. A two-page article by Laurence M. Cockaday in the



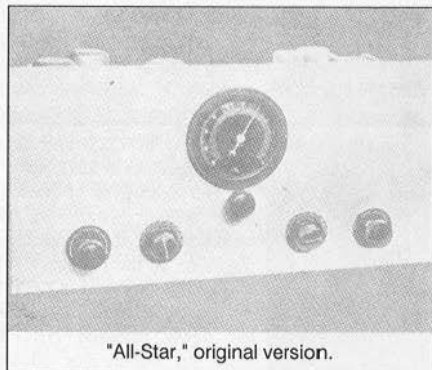
L-1 Meissner 20 Meter Detector Coil
L-2 Meissner 40 Meter Detector Coil
L-3 Meissner 80 Meter Detector Coil
L-4 Meissner 20 Meter Oscillator Coil
L-5 Meissner 40 Meter Oscillator Coil
L-6 Meissner 80 Meter Oscillator Coil
C 140 MMFD. Hammarlund Star Cond.

CA 35 MMFD. Hammarlund Dual Cond.
C-1 0.1 MFD. Cornell-Dubilier Cond.
C-2 1.0 MFD. Cornell-Dubilier Cond.
C-3 .001 MFD. Cornell-Dubilier Cond.
C-4 8 MFD. Cornell-Dubilier Cond.
C-5 .003 MFD. Cornell-Dubilier Cond.
C-6 .0005 MFD. Cornell-Dubilier Cond.

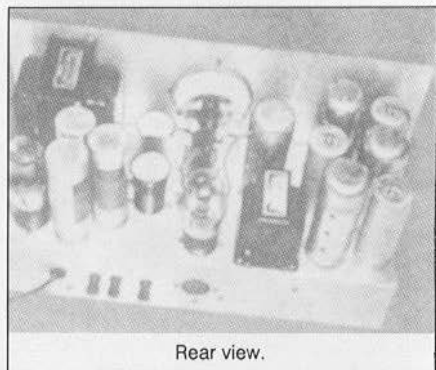
CH Meissner 16 MH. R.F. Choke
IFT Meissner 370 KC. I.F. Transformer
C-7 .01 MFD. Cornell-Dubilier Cond.
R-1 500 ohm Ohmite Resistor
R-2 10,000 ohm Ohmite Resistor
R-2A 25,000 ohm Ohmite Resistor
R-3 5000 ohm Ohmite Resistor

R-4 1000 ohm Ohmite Resistor
R-5 500 ohm Ohmite Red Devil Resistor
R-6 25,000 ohm Ohmite 55-watt Voltage Divider with Two Clips
R-7 50,000 ohm Ohmite Resistor
R-8 10,000 ohm Volume Control—Potentiometer Type
R-9 100,000 ohm Tone Control—Potentiometer Type

All-Star Senior. Note the "hot" phone jack - don't use a plug with a metal shell!



"All-Star," original version.



Rear view.

September issue of "Radio News," and a full-page ad in the same issue, extolled its virtues. The magazine participated in the promotion by offering a four-page construction folder. The foundation consisted of a punched chassis, a front panel, and a small coil shield. Complete instructions included the wiring diagram, schematic, pictorial layout, parts list, and step-by-step procedures for wiring, adjusting, and operating the finished receiver.

The parts list to construct the "All-Star" receiver reflected the specific manufacturers' components for which the foundation was punched. Co-sponsors of the receiver design with Thordarson (the self-proclaimed "Stars") were well known: Belden, Cornell-Dubilier, Crowe, Electrad, Hammarlund, Meissner, and Ohmite.

The circuit used 2.5-volt tubes; a 2A7 pentagrid converter, two 58 pentodes as 370-kHz IF amplifiers, a 56 triode power detector, a 2A5 pentode audio output amplifier, and an 80 full-wave rectifier.

Looking toward sales to radio amateurs, a optional beat-frequency oscillator was made available to enable CW reception, and the chassis was changed to mount the BFO coil and 58 oscillator.

Later in 1935, another "All-Star" receiver was introduced, utilizing the newer 6-volt tubes. It became known as the "All-Star Junior," a 5-tube set (including rectifier) using multipurpose tubes which included the BFO circuit. The "All-Star Super-6" name, used for a while, was dropped from the advertising, and the receiver renamed the "All-Star Senior."

The foundation unit for the "Senior" cost \$2.50, from such mail-order houses as Allied Radio, Wholesale Radio Service Co., Newark Electric, Lafayette, etc., and from local radio stores and distributors handling Thordarson components. The builder was free to substitute parts, although the literature encouraged purchase of the "official" components. The total cost of parts to build the set was approximately \$34 (1935 prices).

Thordarson claimed that over 6000 foundation units had been completed.

To reduce costs, parts such as wafer tube sockets, tube shields, resistors, tubes, and volume controls could be salvaged from broadcast sets. During the latter days of the "Great Depression" the foundation units enabled many a builder to buy only the parts needed to complete the set.

The Crowe airplane-type dial in the center of the front panel operated the Hammarlund dual 35-pF band-spread condensers. Two 140-pF units were used to band-set the local oscillator and antenna circuits. The gain of the 58 IF stages was controlled by a potentiometer in the cathode circuit. The 370-kHz IF provided high gain and reasonably sharp selectivity.

The Meissner plug-in coils were identified as 80-, 40-, and 20-meter sets; later, coils for the 10-meter band were made available. Others covered the 160-meter and AM broadcast bands.

The recommended speaker was an electro-dynamic unit with a 2500-ohm field coil. Following prevailing practice, the audio output transformer to match the 2A5 was mounted on the speaker frame and a four-wire cable and plug connected the speaker to the receiver chassis. A Jensen 8-inch unit was a logical choice for the builder.

In my own experience of building the "All-Star Senior" as a teen-ager with limited knowledge, two things occurred which caused problems not solved until I restored the receiver some 50 years later! First, the Meissner RF chokes supplied for the set were 1.5 mH and not the 16 mH called for. Today the IF amplifier operates much better with the correct chokes. Then, the Meissner BFO coil was a 465-kHz unit, not the 370-kHz one required. This was not obvious until the oscillator frequency was measured with a counter. I always suspected the frequency was in error, because in order to receive CW it was necessary to tune the BFO so that a harmonic fell on the received signal. Adding a capacitor in parallel with the trimmer enabled correct operation on 370 kHz.