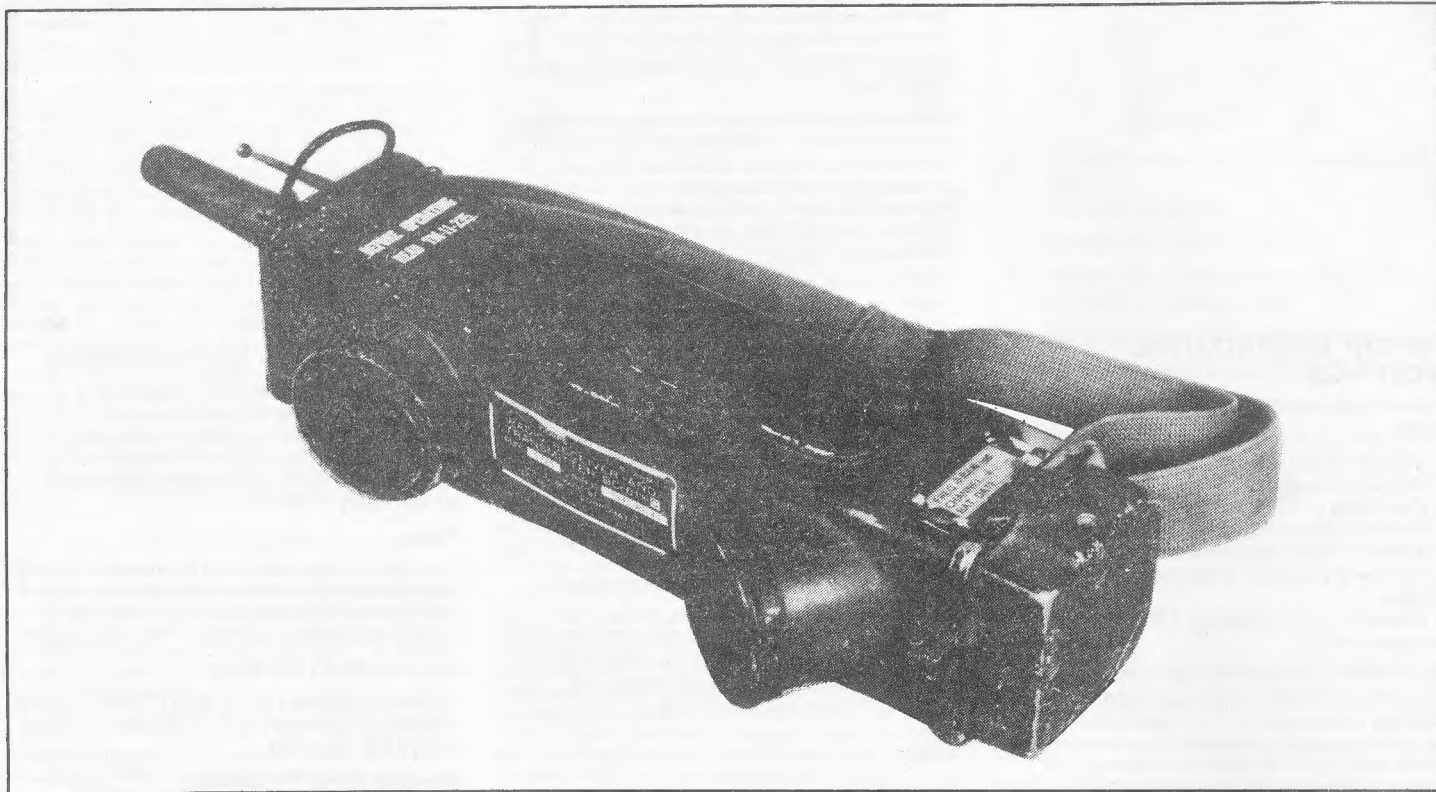


RECEIVER — TRANSMITTER BC-611

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A hand-held transceiver weighing five and a half pounds (2.5 kg)!

I have followed, with much interest, the series of articles by various authors on World War II radio equipment. As a 13-year-old when WWII ended, I was fascinated by the seemingly endless array of communication equipment which was released on to the surplus markets; first as a trickle then into the 1950s, a veritable flood.

Like most amateurs of that post-war era, I cut my teeth on a series of converted military surplus transmitters and receivers all of which are now only memories, or occasionally preserved in a museum.

One of the more intriguing little devices which became available through disposal outlets in the late 1950s and early 60s was the US Army Signal Corps Receiver-Transmitter, type SCR536 or BC-611, known as the "walkie-talkie". In 1941, battle experience showed a need for a reliable short range hand-held, two-way voice (R/T) communications system for use in the thick of a battle at section and platoon level. The Galvin Manufacturing Corporation of Chicago, Illinois, developed a transmitter-receiver which was hand-held in the

manner similar to a telephone handset, weighed only 5.5 pounds (2.5 kg) and employed the newly developed miniature seven pin, 1.5 volt battery operated valves of the 1T4, 1R5, 1S5 and 3S4 series. It was designed to operate over ranges from 100 feet to a mile or so, in open terrain.

The set was housed in a rectangular case which was divided into three-compartments. One accepted the transmitter-receiver chassis and telescopic antenna. The second the radical new layer construction BA-38 103.5 volt 'B' battery and the third, the BA-37 1.5 volt 'A' battery for the valve filaments. A dynamic ear-piece and microphone were positioned similar to a telephone handset and a "knuckle" type send-receive switch was positioned for left-handed operation, leaving the right hand free for taking notes, etc.

The set was switched on by extending the lowest section of the telescopic antenna which operated a double-pole tumbler switch. The antenna extended to a maximum of 39 inches (one metre), at which length the radio was working in its most efficient manner. No receiver volume control was fitted, it being only necessary to telescope some of the upper sections of the antenna to reduce transmitter output and receiver efficiency for close communication.

The radio must have been one of the first true transceivers in that the same valves and circuit

components were used for both reception and transmission. Change over between receive and transmit was affected by the "knuckle" type mechanical press-to-talk switch which operated 14 sections of a spring loaded wafer slider switch.

Table 1 shows the valve line-up functions.

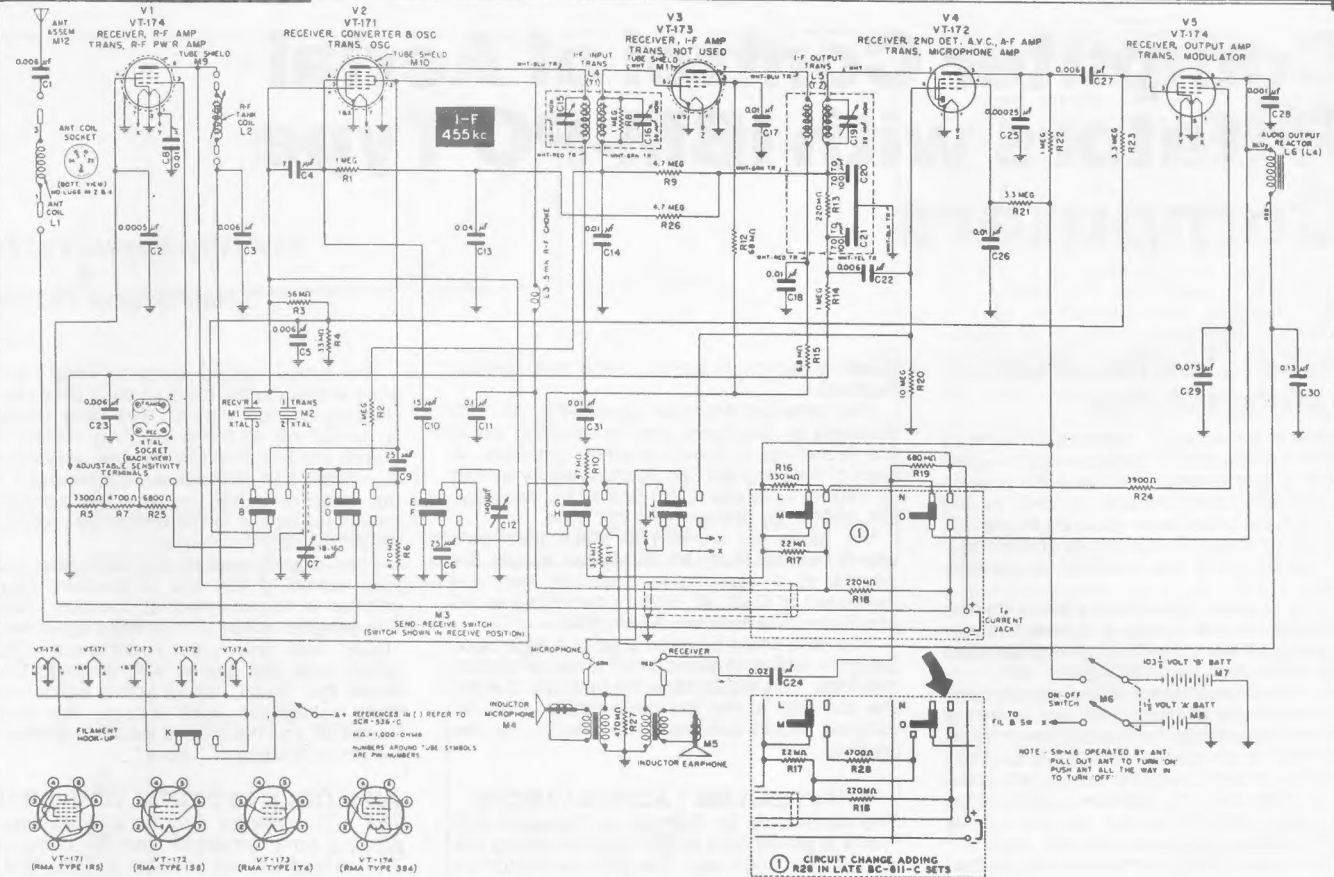
In order to preserve the life of the 'A' battery, only one half of the 3S4 filaments were used during reception, and the 1T4 IF amplifier filament was open circuited on transmit. Single ended choke coupled "Heising" modulation was employed and the power input to the 3S4 RF power amplifier was approximately 1.5 watts. Frequency range was 3.5 to 6.0 MHz in 50 crystal controlled channels. For amateur use, the trick was to purchase sets from the disposals dealer which had coils and crystals for the 80 metre band. This was realised by the dealer fraternity and, of course, the price went up for those sets. The other way was to be lucky enough to purchase the boxes of complete coil and crystal sets. These, however, were not all that plentiful and commanded an appropriate price. Batteries were still available on special order through a well-known dry battery company, up until the early 1960s. It would be a real challenge to construct a 103.5 volt 'B' battery these days!

When viewed in the context of 1941 technology, the BC-611 can only be regarded as an ingenious device and a very successful exercise in miniaturisation. When one contemplates the abundance of hand-held amateur, CB and commercial transceivers available today, I can only wonder if the Galvin Corporation realised what they were starting!

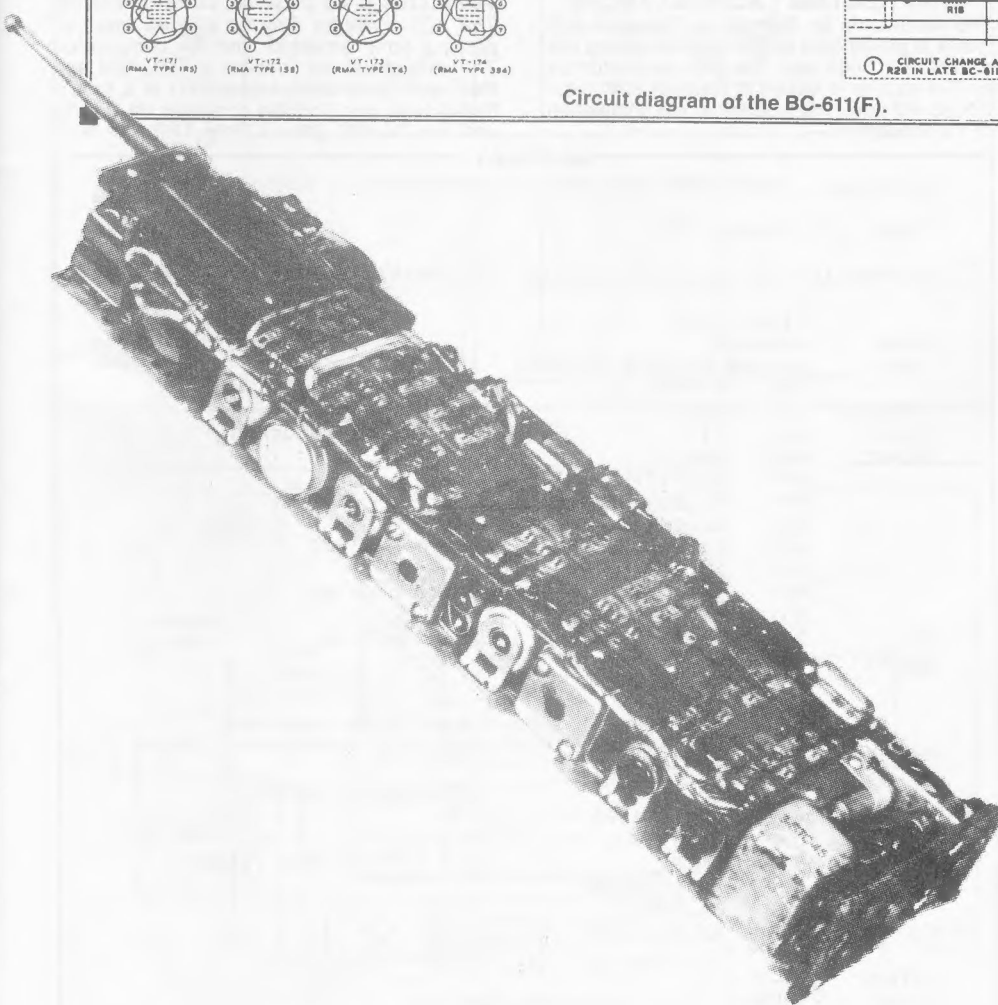
It is interesting to note that after the war the Galvin Company became the well-known Motorola organisation.

Table 1.

SIGNAL CORPS DESIGNATION	COMMERCIAL TYPE	RX FUNCTION	TC FUNCTION
VT-174	3S4	RF Amplifier	RF Power Amplifier
VT-171	1R5	Converter	TX Crystal Oscillator
VT-173	1T4	IF Amplifier	Not used
VT-172	1S5	Det AVC 1st Audio	Microphone Amplifier
VT-174	3S4	Audio Power Amplifier	TX Modulator



Circuit diagram of the BC-611(F).



Receiver/Transmitter BC-611(F) Chassis.

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