AN EARLY TRANSMITTING LOOP

Gerald Stancey, G3MCK was not taken by the idea of Richard Silberstein, W0YBF of putting a secret antenna under the floorboards (*RadCom*, September 1989) and my own concern at the idea was that no mention was made of the possible radiation hazard to anyone in the room immediately above (or below) the antenna. On the other hand the compact transmitting loop of high-conductivity copper tubing, out-of-doors if QRO, is establishing itself as an effective antenna for those with restricted sites.

G3MCK continues to find much of interest in the back copies of amateur journals, often unearthing items which attracted little attention when originally published. In this process he has come across an article 'Ham-band transmitting loops' by Richard Hay, W4LW (*QST*, September 1952, pp14, 118) that pre-dates by 15 years the US Army Loop of 1967 to which most recent loop ideas can be traced back. G3MCK writes: "This loop antenna appears to have the dimensions of a modern 'magnetic loop' but is not fed like one nor used in the vertical plane. However it seems certain to radiate better than something under the floorboards! At the worst it supports the theory that anything fed with RF will radiate!"

W4LW's horizontal square loop suitable for balcony mounting had 3ft sides and was connected directly in series with a conventional tank circuit (**Fig 3**). He reported that it gave him 7MHz CW contacts up to 2500 miles when fed with 40Watts of RF, with 'reliable' contacts up to 1000 miles. He wrote: "The possibilities of this system have not been explored fully. However, two facts have been established: it works, and it is a wonderful subject for conversation during QSOs!"

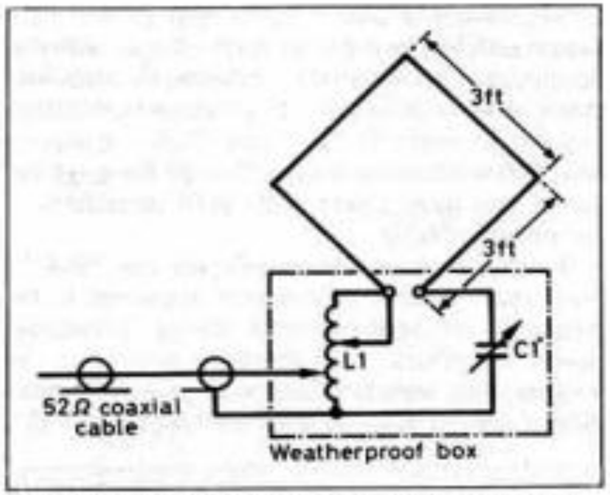

Fig 3. The 1952 horizontal-plane 'transmitting loop' of W4LW was simply connected in series with a conventionally tuned circuit. For a loop with 3ft sides at 7MHz, L1 had an inductance of 2.5μH and C1 a maximum capacitance of about 150pF (high-voltage spacing).

W4LW's loop used No 12 wire for both the loop and for L1 but he pointed out "an improvement could probably be effected by the use of heavier wire or even copper tubing." In 1952, SWR meters were still uncommon and he described an adjustment technique that did not depend on their use. He wrote: Adjustment is as follows: (a) Substitute a 52-ohm dummy load for the antenna system and adjust transmitter for proper loading. (b) Remove dummy load and replace the loop antenna assembly. (c) Set the tap for the coax connection at about 3 turns and tune C1 to resonance at the transmitter frequency. (If necessary, reduce inductance of L1 by shorting turns with the second tap.). (d) Vary the position of the coax tap (retuning C1 each time) until proper loading is indicated. The position of the coax tap is a fairly critical adjustment and must be set to the nearest ¼-turn for best results. An SWR indicator would be very helpful, although it *can* be done by 'cut and try'... It would be desirable to make the loop as large as possible, with corresponding reduction in L1. The ultimate would be to reduce L1 to just enough inductance to match the coax line impedance; the larger the loop, the greater the (desirable) radiation resistance and the wider the band of frequencies that can be covered without re-adjusting." The square loop with 2-ft sides had a bandwidth on 7MHz of about 20kHz. W4LW reported "An unexpected by-product of this system is freedom from TVI and, on reception, marked reduction in local QRN with interference from the line output oscillator of a neighbour's TV set disappearing entirely."

The inclusion of the loop within the lumped inductance tuned circuit must inevitably increase the resistive losses compared with the present use of a small inductively coupled matching loop. However, there are circumstances in which W4LW's horizontal loop might be a useful, if makeshift, arrangement.