advantage of improved front-end technology and pioneered the use of menu-driven operation is the compact AOR-UK Model AR7030 (**Photo 1**). Designed and first marketed in the mid-1990s it must be one of the few models that have remained on the market for over ten years. In a detailed tabulation of some 59 receivers and transceivers measured by Robert Sheerwood, WB0JGP and George Heidelman, K8RRH of Sheerwood Engineering (see 'TT', May 1997, pp153-4) the AR7030 came second only to the specially modified Drake R4C/CF-600/6 receiver (the stock R4C came near the bottom of the table).

I can personally vouch for the excellent performance of this small, lightweight receiver but I have to agree with G8MOB and others that ergonomically it leaves something to be desired; it requires careful study of the operating manual and even then is visually challenging in operation. The small black push buttons are almost lost against the compact black enclosure while the small white labels are difficult to read by those of us who no longer have 20/20 vision. The tuning knob is of convenient size and smooth in action, but the rotary volume control and memory selector (which is also used to switch bands by setting the memories) are small for those of us with large clumsy fingers. It certainly takes time and practice to use the AR-7030 effectively without reference to the user's manual, yet undoubtedly it was/is a truly pioneering iconic design. Its linearity throughout all stages and low-phase-noise oscillator also makes it ideal for use with external analogue or DSP audio filtering for CW/digital-modes operation without the optional narrow-band CW filter. MF/HF AM broadcast station reception is improved by the ability to use synchronous demodulation of both sidebands. If the size of the front panel had been larger the receiver might have been less portable but more of the human-engineering guidelines would have been possible. Size matters!

Peter Waters, G3OJV insists in the Waters & Stanton advertisements that "Software Defined Radio is the future. I am sold on it and so will you be. No, it is not like controlling your XYZ radio by computer. SDR transfers most of your radio circuitry into the PC – even SSB generation – offering ultra linear processing and unprecedented circuit stability.... This transceiver [marketed version of the SDR-1000] outperforms hardware designs that cost three times the price."

Certainly the SDR rigs that I have worked on SSB on the 3.5MHz band have notably pleasant audio and seem to perform well. But the overall performance in terms of dynamic range etc of an SDR rig, particularly on the higher HF bands, must inevitably at present still depend on good RF analogue engineering of the front-end and the suppression of internal switching noise. I believe that the stand-alone transceiver, even if increasingly dependent on digital techniques and built-in software, still has an assured future. Price is not everything, particularly since costs can be reduced by home-assembly, for those willing to construct or assemble some recent designs and kits such as the Elecraft K2 that can provide a performance as good as or better than the latest factory built models, at a significantly lower cost.

Michael O'Beirne, G8MOB writes in respect of SDR generally: "I may be an old fogey, but I am not totally convinced that a PC and a radio make the best of bedmates. Quite apart from QRN (noise) issues, who wants a radio tuned by a computer? The answer is the professionals because it is vastly cheaper than paying a trained radio operator plus all the add-on costs – NIC, pension, sickroom benefit etc, etc. [SDR also appeals to the military because of its flexibility for coping with ever-more complex new digital modes and signal-concealment techniques that are of only marginal interest to the radio amateur – G3VA].

"No, I want a 'proper' radio, preferably in a 19-inch cabinet or rack with a proper 2-inch tuning knob and proper manipulable knobs/controls, not a black-box with an on/off switch and a red LED indicator.

"However SDR does have a good part to play ... the SDR module can replace or be additional to the IF strip. I know someone who has an SDR module with which he plans to smarten up his Racal RA3701 as in **Figure 3.** The common LO is applied before and after the SDR unit so that there is no error in the return to the main IF of the receiver. An alternative is to feed the IF output to an external SDR module and extract the audio from the module.

"This seems to me a sensible approach

FIGURE 3

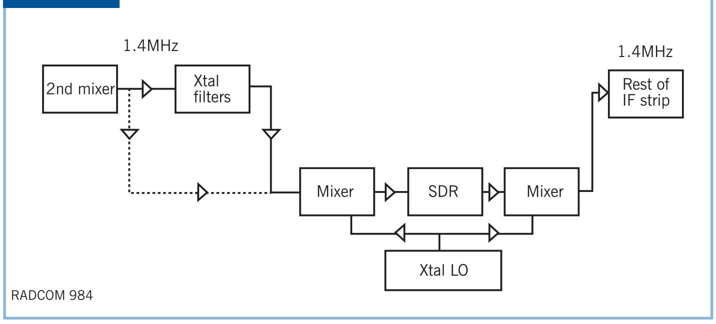

Figure 3: Suggested use of a SDR board to 'smarten up' the 1.4MHz IF strip of a RA3701 receiver.

FIGURE 4

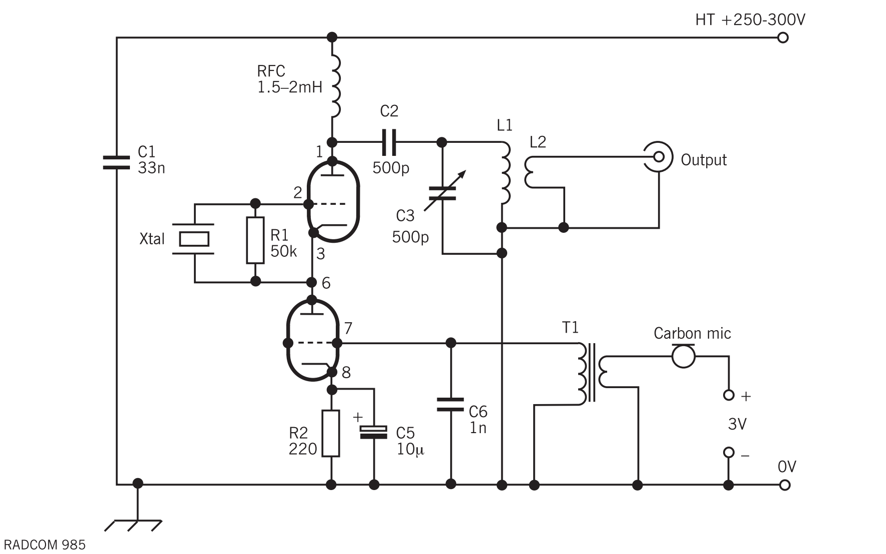

Figure 4: Circuit diagram of G3BDQ's "single-valve" (12AT7 double-triode) series-modulated A.M. transmitter. Note in the diagram the heaters are wired for 6V AC operation. When using a 12V-heater supply as in Figure 6, the heater centre tap (pin 9) is not used. Full constructional details etc in the January 2007 *Practical Wireless*. For 1.8MHz, L1 (34[micro]H) is close wound with 24 SWG enamelled copper wire and has 42 turns on a 35mm plastic film container, with a two-turn link winding at the 'earthy' end of L1.

to SDR rather than by boxing the SDR into the guts of a PC."

G3BDQ's "ONE-VALVE" QRP A.M. TRANSMITTER. In the May 2006 'TT' item "'Ancient' Series Modulation (pp102-3) I drew attention to an article "Receiving FM programmes in the Medium Wave Band" by Peter Lankshear (writing from New Zealand) that appeared with full constructional details in *Radio Bygones,* No 18, August/September, 1992 (*not, as given, 1982).* I included the circuit diagram of his unit as an example of a low power series modulated 'transmitter' which used a double-triode valve (12AU7, ECC82, B329, 6SN7, B65 or ECC32) plus a triode audio amplifier. The unit was intended to produce a few milliwatts of RF with one section of the double-triode acting as a self-excited MF tuneable oscillator intended to provide coverage of his house and was intended to distribute programme material from an FM receiver to AM sets within the house. I added: "For this application, such a device breaches UK regulations. A few quick tests showed that the system worked well on MW and could, almost certainly with a few modifications and a good antenna, be shifted into the 1.8MHz band. It would then become, with microphone input, a simple 1.8MHz QRP transmitter, or used to provide drive for a high-gain grid-driven linear amplifier, although I never got round to trying this out in practice."

I have no idea whether it was this item (or possibly the 1992 *RB* article) that may have inspired John Heys, G3BDQ to develop "The Rother – 1.8MHz amplitude modulated transmitter" described with full constructional details in *Practical Wireless,* January 2007, pp52-53. As shown in **Figure 4,** his low-power transmitter features crystal-control rather than a self excited oscillator and dispenses with the audio amplifier by using a high-output carbon-insert microphone (old telephone-type insert). He limits the HT supply to 250-300V in order not to exceed the cathode-heater insulation rating. The PSU (**Figure 5**) uses two of the readily available 230/12V transformers back-to-back to provide 12V heater and 250V HT supplies isolated from the mains supply.

He finds that (presumably with a good antenna) and an RF output of some 250-500 mW, ranges of up to about 20 miles can be achieved with this simple "one-valve AM transmitter." He also suggests that it could work on 3.5MHz with a suitable crystal. By adding a simple AF amplifier as in Peter Lankshear's original distribution unit, it would be possible to use a higher quality, lower output microphone. The May 2006 'TT' item also showed a basically similar solid-state series-modulated arrangement.

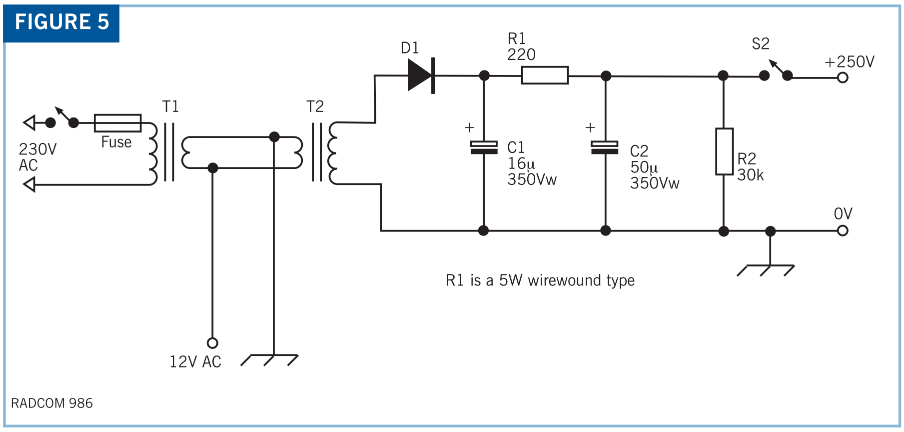

Figure 5: PSU for G3BDQ's single-valve QRP series modulated AM transmitter as described in Practical Wireless

KK7B's MICRO-T2 SIGLE-BAND SSB TRANSMITTER. The February 'TT' outlined KK7B's design of the Micro-R2 – an easy-to-build, single-band solid-state high-performance SSB/CW direct-conversion receiver with I/Q processing that he fully described in the October, 2006 *QST.* In the December, 2006 issue (pp28-33), Rick Campbell, KK7B describes, with full constructional details, "The Micro-T2 – A Compact Single-Band SSB QRP transmitter" to go with the Micro-R2. It uses a crystal-controlled VXO to cover about 100kHz of the 7MHz band with an output of about 1mW but he also provides details of a 0.5W amplifier. He points out that the design can be adapted to provide USB or LSB output on any single band from 1.8MHz to 50MHz. The design uses I/Q signal processing based on all-pass op–amps and two Mini-Circuits TUF-3 diode ring mixers. **Figure 6** shows the block diagram of the circuitry on the PC board.

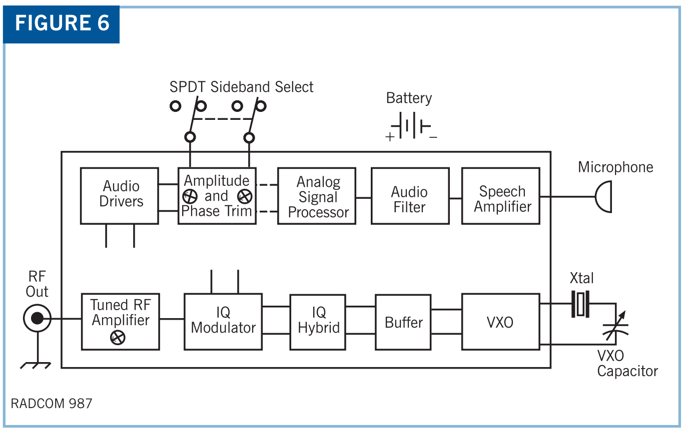

Figure 6: Block diagram of the PCB circuitry of KK7B's MicroT2 "A compact single-band SSB transmitter"

HERE & THERE. Dr Brian Austin, G0GSF (ex ZS6BKW), reports the death last December at the age of 91 years of Horace Dainty, ZS5HT, later ZS5C, a noted designer of military radios. Together with David Larsen, ZS5DN later ZS6DN, he was responsible in the early 1960s for the development in South Africa of the first relatively low-cost HF/SSB pack set (RT14) which was soon to form the basis of the Racal fully transistorised "Squadcal" (5W pep output) pack set. The Squadcal was marketed by Racal in 1965 as the first to put a complete SSB station on a man's back for a cost of about £300. Although Racal sold some 25,000 Squadcals to more than 50 countries, it was never adopted by the British Army due to niggles by SRDE. The full story of the work of Horace Dainty and David Larsen is told in G0GSF's two-part article "The SSB Manpack and its Pioneers in Southern Africa" (*Radio Bygones,* Issue No 93, February/March 2005 and Issue No 94, April/May 2005). Earlier, It was Dainty's company, then known as SMD, that built the first six HF receivers utilising Trevor Whadley's triple-loop system; one of which was demonstrated to Racal led that firm to produce the classic RA17 receiver.

CORRECTION: 'TT', January, 2007, p64, 2nd column. In the item on protecting the 12V auxiliary output from G4ANA's AR7030, it was wrongly stated that the 22Ω series resistor when fried changed in value to 1.5Ω. This should have read 1.5 KΩ.