G3XF6D & G1TEX REVIEW THE AKD MODEL HF3E ON TARGET THE SECOND TIME

FEATURES
- QRP CONTEST RESULTS
- AMATEUR RADIO IN GERMANY

REVIEWS
- THE PALSTAR KH-6 50MHz TRANSCEIVER
- THE AKD HF3E TARGET RECEIVER
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The 505DSP transceiver is remotely controllable (up to 23m away - so no noise problem!) from your computer. Includes 100W transceiver module, operator control head and software. This has taken the USA by storm

100W all modes * Runs under Windows 3.1 or 95
* Gen. conv. receiver * Variable bandpass filters
* 1Hz tuning steps * Antenna impedance chart
* RF speech processor * SWR alarm * Full DSP * CW break-in
* Electronic keyer * 100 memories * Auto notch filter * control head mounts in PC or on desk

Transceiver £1999.00 (Available November)
Auto ATU £249.95

**NEW**

**ICOM IC-706 MK II**

£995 Deal Match

Plus £50 Accessory Voucher

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<thead>
<tr>
<th>160-6m 100W 2m 50W</th>
<th>Auto ATU</th>
<th>Spectrum Display</th>
<th>DSP Noise Unit</th>
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100W all modes * Runs under Windows 3.1 or 95
* Gen. conv. receiver * Variable bandpass filters
* 1Hz tuning steps * Antenna impedance chart
* RF speech processor * SWR alarm * Full DSP * CW break-in
* Electronic keyer * 100 memories * Auto notch filter * control head mounts in PC or on desk

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<td>MFJ-812B 2m VSWR</td>
<td>144 - 148MHz 30 / 300W Wire, coax or balanced feed Easy to use - convenient size Low cost - efficient accessory 1.8MHz to 170MHz Digital Readout Resonance VSWR Impedance A4 batteries or 12v external Connect to aerial or coax and adjust it in seconds. Turns hours into minutes and ideas into antennas!</td>
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<td>300 Watts PEP 150W CW 1.8 - 30MHz - with ease! Wire, coax or balanced line Balun included for best match 30 / 300W power meter - PEP / RMS Antenna selector, by-pass etc.</td>
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<td>160 to 10m 300W PEP 150W CW Wire, coax or balanced feed Built-in Dummy Load Built-in antenna selector 30 / 300W power meter - PEP / RMS Antenna selector, by-pass etc. 160 to 10m 300W power meter - PEP / RMS Antenna selector, by-pass etc.</td>
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<td>MFJ-250X 1kW load</td>
<td>1kW Dummmy Load Oil cooled design SO-239 socket Ideal for linear 1MHz to 400MHz</td>
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<td>MFJ-941E Atu</td>
<td>160m to 10m ATU - 300W Wires, Coax and Balanced Feed Cross Needle VSWR &amp; Power 3-Way antenna selector By-pass position - Dummy load socket Internal Balun - 30 or 300W position 260 x 180 x 70mm</td>
<td>£109</td>
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<td>MFJ-780 DSP Data Unit</td>
<td>Multi-mode Packet ATR Factor Colour SSTV 10 Modes total DSP filtering Tuning scope Simple to use Software</td>
<td>£399</td>
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<td>MFJ-1278DSPX Data Unit</td>
<td>10 Modes total DSP filtering Tuning scope Simple to use Software</td>
<td>£399</td>
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<tr>
<td>MFJ-260C 300W</td>
<td>Dummy Load 50 Ohm 300W OK to 450MHz Air cooled SO-239 Totally enclosed Essential item</td>
<td>£34.95</td>
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<td>MFJ-704 LPF Filter</td>
<td>Low pass filter 1.8 - 30MHz Cleans up output Reduces 1kHz 1kW rating SO-239 sockets Fully shielded</td>
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<td>MFJ-9410B HF Atu</td>
<td>1.8 - 30MHz 300W PEP 150W CW Wire, coax or balanced feed Built-in Dummy Load 50-239 socket Built-in antenna selector 30 / 300W power meter - PEP / RMS Balun included for best match 30 / 300W power meter - PEP / RMS Antenna selector, by-pass etc. 160 to 10m 300W power meter - PEP / RMS Antenna selector, by-pass etc.</td>
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<td>1kW linear 9dB Gain Like a 5 element Monobander! Uses low cost 811A tubes Built-in rugged AC Supply Instant by-pass switch PA V/A meter + Grid meter Over rated variable capacitors Fan cooled for long life Very efficient - 600W output Easy to tune and connect Size 16&quot; x 13.5&quot; x 6&quot;</td>
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<td>Connect between auto tuner and transceiver - no more problems with G5RV and all those difficult antennas - 160 to 10 metres</td>
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<td>MFJ-914E Atu</td>
<td>* 160m to 10m ATU - 300W * Wires, Coax and Balanced Feed * Cross Needle VSWR &amp; Power * By-pass position - Dummy load socket * Internal Balun - 30 or 300W position * 260 x 180 x 70mm</td>
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<td>MFJ-713 Intermod Filter</td>
<td>A three section high-Q bandpass filter for 145MHz handsets. Includes RF speech processing. 144 - 145MHz 120kHz - 9kHz 1W power output from 120V 1Watt, 10kHz to 1.25MHz 1W power output from 120V</td>
<td>£64.95</td>
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<td>MFJ-7948 HF ATU</td>
<td>300 Watts PEP 150W CW 1.8 - 30MHz - with ease! Wire, coax or balanced line Balun included for best match 30 / 300W power meter - PEP / RMS Antenna selector, by-pass etc.</td>
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<td>£149</td>
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<td>Displays words, letters and numbers. 3 to 35WPM with natural CW note Various modes including Farnsworth enormous vocabulary of words Actually sends complete O50s, just like the real test. And no O50 is ever the camel 1kHz rating MP3 format of words. Sends text just like an actual test. A tutor that displays what it sends. A tutor that displays what it sends. * Actually sends complete 050</td>
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- Time out timer
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- Built in test facilities, digital voltmeter + audio signal generator

£199.00 + 6 pp
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By the time you read this Rodney, Bill and Mandy from our Axminster branch should be just moving in to brand new premises just down the road from their current shop. They will have purpose built displays for Icom, Kenwood and Yaesu radio equipment, customer sections similar to those in HQ, a coffee area and a whole new range of Kenwood and Sony home entertainment systems. They will also be uprating the range of antennas and radio accessories that they currently stock so they will truly be a "one stop radio shop! Watch this space for the opening date when they are planning an opening party with dealer support, raffles and refreshments.

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Practical Wireless, December 1997
Castle Electronics was formed in 1990 by Geoff Wainhouse and John Taylor, when they realised that there was a need for an independent service facility for the Amateur Radio enthusiast. Both are qualified Engineers in Radio Communications and Microprocessor Technology. They are proud to have had Castle Electronics appointed as the authorised service agents and dealers of Kenwood, ICOM and Yaesu equipment. Castle Electronics is the primary sub-contractor for Kenwood service requirements.

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I n the past few years I've seen many of my old friends pass on, and I'm grateful to have fond memories of them. However, on occasions we lose someone who is rather "special" and the late Bert Newman G2FIX was most certainly in this category. And I have no doubt that if you read my obituary to Bert (published in the October issue) you will also understand why he was rather special!

Personally speaking I think that there's a reason for everything - and without realising it we're mostly following a preset path (a program if you like!) and it seems ironic that G2FIX became a 'Silent Key' just as it became necessary to introduce a new category into the PW and Kenwood Club Spotlight Magazine competition.

The 'Club Spotlight' club magazine competition has been a resounding success. Starting with 11 excellent entries last year we received 26 for the 1997 competition - and these included clubs who serve their members nationally.

Of course, the 'national' type clubs (WAB, BAXTG, BATC, etc.) have very high standards indeed for their magazines. So, the panel of judges all agreed that it was best to introduce the new category. And it so happened that the British Amateur Radio Teletdata Group ("Bartag" to their many friends) scored the highest number of points in the 'national' category.

Bert's Bell

Having the need to introduce a new award for a rather special group of clubs got me thinking. Then I hit on the idea of commemorating G2FIX in a most appropriate way - by a mounted inscribed bell! Bert was a keen bell-ringer, Radio Amateur 'extraordinary' and a great communicator (he was a delight to listen to when acting as the Controller of the Royal Air Force Amateur Radio Society Net on the 3.5 MHz band). So I started the search for a suitable bell. And although the kind members of the RAFARS Net assisted, I was still looking when I was contacted by Bert's family.

They wanted to buy the bell and get it mounted and inscribed!

Having suggested the trophy myself I had been fully prepared to "put my money where my mouth was." It didn't seem right to suggest the idea and get someone else to pay for it! However, I was delighted that Bert's family wanted to handle that side of things. A most satisfactory conclusion.

I'm hoping that the first award of 'Bert's Bell' will take place at a ceremony in Salisbury very soon in the presence of G2FIX's family and friends. In future years the Salisbury Club have agreed to supply one extra silver plate for the 'national' category only and wouldn't it be marvellous if Bert's own specialist society - RAFARS were to take part. It would certainly be appropriate!

So, here's to the future of the competition and everyone who has supported it. And I'm hoping that the 'bell will be ringing' to communicate to others and at the same time commemorate G2FIX's dedication to Amateur Radio, bell-ringing and making friends wherever he went, for many years to come. Good luck everyone!

A FAX From The ARRL

As I was preparing to write this issue of 'Keylines' I received a FAX from the American Radio Relay League Headquarters in the USA. And it appears that we have got it VERY WRONG regarding the ARRL's plans for the future of the Handbook. (PW November) 'Keylines'

In his FAX demanding that I publish a retraction and 'to take what other steps are necessary' to inform readers that the ARRL have no plans to stop producing The ARRL Handbook For Radio Amateurs in book form. Mark Wilson K1RO, the ARRL Publications Manager/CST Editor, has made his position very clear indeed. In fact the ARRL tell me that they consider (as I do) that the Handbook is of prime importance as a book and in effect it's their 'flagship' publication.

So, although I am very sorry for the confusion caused - I am very pleased indeed that the news is that the all-important ARRL Handbook is continuing as a book.

And I'm afraid to say that although there are many reasons why the confusion was caused (many of them my own making) I feel sure that if the letters and FAXes I sent to the ARRL, President Rodney Stafford K162ZV - registering my mistaken dismay - in July had been answered - the whole catalogue of errors could have been avoided. They could have corrected me there and then! It's frustrating to be so embarrassingly wrong on this occasion but at least there's good news to impart to you all!

Electronics In Action

As from the February 1998 issue of PW we are introducing a new bi-monthly series looking at electronics, applications, projects, techniques and ideas. The new series 'Electronics In Action' is to be compiled by Tes Swann GITEX and will compliment the very successful 'Antennas In Action' which he also compiles, which will continue to appear in the 'opposite' alternative months to the new 'Electronics In Action'.

The new series will enable us to introduce more electronic ideas and projects with 'associated interest' for your interest. It will also make it far easier for the Editorial team to use some of the ideas which come in from you the reader. So, if you've got any ideas you'd like to discuss...why not write, E-mail or speak to Tes GITEX about it very soon. He's waiting to hear from you!

Open Forum At Convention

During late September I attended the Young Amateur Of The Year (YAOTY) presentation and luncheon as the guest of the RSGB at the HF Convention at Old Windsor in Berkshire. It's a splendid occasion and I came away feeling very proud of the young people (see report in the news pages) and their achievements, and pleased at the hard work by the RSGB, everyone involved and the sterling support of the Radiocommunications Agency the YAOTY award.

Despite the support given by the RA to the YAOTY I had been rather surprised and concerned at some comments expressed by a spokesman from the RA at an 'Open Forum' held during the mid-morning.

During the 'Open Forum' one of the RA's spokesmen clearly stated that the Agency really wish us to negotiate with a united hobby. In other words - with one voice. And although that was only one topic it was surely message 'Number 1'.

One of the next 'topics' however (and perhaps message No. 2?) came as rather a surprise to me and many of the audience! The RA spokesman (talking about the trends of modern private mobile radio communications) told the whereas the trend is for modern communications systems to be using really low powers, "Radio Amateurs like to use Kilowatts!!" Standing at the back of the audience I could see and almost feel the reaction. And of course - my own reaction was immediate! Along with others I pointed out that the vast majority of transmitting Amateurs cannot use (and often don't wish to) high power communications because of EMC problems. Indeed - the sizeable QRP contingent in the audience also expressed their surprise at the remark.

After the 'Open Forum' finished I was left wondering. Are attitudes and staff changing in the RA? For many years we have dealt with Civil Servants who have been Radio Amateurs themselves and even those who have no direct interest in our hobby have shown a clear understanding of our aims and objectives. It would be a very great shame indeed if new attitudes and lack of understanding from anyone person in this most important Governmental body worked against us.

Indeed, as one "within the very senior in the ranks" RSGB friend told me: "We're going to have to fight our corner Rob!" I agree fully with what he said...and let's hope Radio Amateurs in general will agree to fight together!
It's 73s From Martin Lynch!

Martin Lynch & Son have recently joined the ever growing number of companies wishing to make their telephone numbers easier to remember. So, with effect from October 1st telephone callers to the Lynch Emporium have been able to dial 0181 73 73 73 for sales enquiries.

Martin says he chose 73 73 73 as his new number because he felt it was an obvious choice for his business and that even newcomers to Amateur Radio would be familiar with the meaning of 73, therefore making it easy to remember for everyone. The old 0181-566 1120 telephone number is still in use and for the time being Martin's Customer Services number will remain as 0181-566 0566.

So, now you've got no excuse for not remembering to call Martin Lynch!

Need A Postcard QSL? - Catch A Salmon!

Have you ever wished to have something really different on your QSL card? Ever fancied a magnificent steam locomotive, traction engine or aeroplane? If you have ever longed for any of these - or wanted a high quality colour postcard view of your town, area of the countryside depicted on your QSL card - there's someone who could help you.

Rob Mannion G3XFD has been searching a long time for a reasonably priced way of having one of his favourite steam locomotives on a colour postcard as a QSL to reflect his interest in railways and radio.

That's how he discovered the large range of postcards produced by J. Salmon Ltd. Based in Sevenoaks in Kent, J. Salmon produce an extremely wide range of colour postcards and Rob saw a selection -

Classic Television

Classic Television is a new publication which has just been launched by Eagle Eye Publications. The magazine contains feature articles on all aspects of radio and television from media technology through to trivial snippets of information.

The pilot issue (dated September) contains features on Dad's Army, Robin of Sherwood, Carry On films and much more. Future issues will give an 'airing to many forgotten programmes as well as looking at shows that are destined to become future 'classics'.

Classic Television costs £1.95 and is gradually being introduced into many independent newsagents so you should be able to find a copy on their shelves. If not, you can order it direct from Eagle Eye Publications, PO Box 13325, London W5 4GE. Tel/FAX: 0181-568 9881. E-mail Epiculfill@aol.com enclosing a cheque or postal order for £2.20.
Emma Constantine 2E1BVJ from West Yorkshire has been awarded the title of Young Amateur of The Year (YAOTY) for 1997. Proud and very confident 15-year old Emma, accompanied by her parents, was formally ‘crowned’ with her title at a presentation luncheon organised by the RSGB at the HF Convention at Old Windsor on Sunday September 28.

Emma, the first lady winner of the YAOTY, is a founder member of the Rishworth School Radio Club G5OQA and has been Secretary since the age of 12. She helps to run Novice courses and has recently started lunchtime Morse code sessions. Her Head of Science Tony Vinters GW0WFG describes Emma as “an excellent ambassador” for Amateur Radio. She further proved this statement by creating a precedent by delivering a short and very confident speech to the assembled officials and guests.

Runner-up this year was 14-year old Mark Haynes 2EOA/PH from Essex who was also present at the ceremony with his parents. Mark also set up a school radio club and has also taught Morse to two school friends. He’s broadcast on BBC Radio Essex about his hobby, is a member of the Air Training Corps and is also active on the h.f. bands on QRP - particularly 28MHz. Mark, who received special prizes from the RA, the RSGB, and Icom UK’s traditional ‘goody bag’ of gifts and Love Electronics who presented a Hi-Mound Morse key. Mark also broke with tradition when he addressed the assembly to express his thanks.

Speaking on behalf of the judging panel who comprise of members from the RSGB and the Radiocommunications Agency, Hilary Claytomsmithe G4JKS specifically remarked on the very high quality of the entries for the 1997 award and the significant increase of nominations in 1997.

After congratulations were offered on behalf of the RA, Roger Louth Head of Mobile Service at the Agency and the RSGB 1997 President, Ian Kyle G1BAYZ/MA0AYZ presented Emma - who hopes to begin training as a Veterinary Surgeon at University soon - with a cheque for £300, and a certificate signed by the President of the Board of Trade and Secretary of State & Industry Margaret Beckett MP. Emma also received prizes of a guided tour of the RA’s Baldock Monitoring Station in Hertfordshire, a Palstar KH-6 50MHz hand-held transceiver and a year’s free membership of the RSGB, plus a Tandy DX-394 receiver on behalf of the Tandy Organisation. Other prizes included a one week course at the BT Portable Radio station where she’ll learn about international maritime and aeronautical communications and Siskin Electronics donated a Packet Radio modem.

Everyone on the Practical Wireless team sends congratulations to everyone involved in the Young Amateur of The Year Award and we will follow their continuing careers with interest as our hobby approaches the new century.

Pure Energy!

A new range of rechargeable alkaline batteries and compatible charger are now available from Waters & Stanton Electronics.

Common NicCad cells need to be periodically discharged to avoid a low memory charge developing and often don’t hold their charge due to their 1.2V rating. However, the new Pure Energy batteries offer a distinct advantage in that they can be charged up to 250 times. require no initial charge, can be ‘topped up’ at any time, offer a full 1.5V and are said to have a longer shelf life.

The Pure Energy batteries cost £4.99 for a pack of four and the EnviroCharger, which must be used to charge the batteries, costs £17.99 complete with four AA cells. To place your order or to find out more, contact Waters & Stanton on (01702) 206835/204965.

Student Radio Awards

By the time you read this the 1997 Radio 1 Student Radio Awards will have taken place at the Brooks University in Oxford. The event, now in its second year, aims to celebrate the success of Student Radio and to highlight the talents of potential professional broadcasters which has dominated the airwaves in university towns across the UK during the last 12 months.

Student radio, which is part of the NUS and the Student Radio Association, has been developing of the past few years, so much so, that Radio 1 has recognised the need to support this area of broadcasting.

The winners from all the award categories will receive training and work experience packages from Radio 1, including an hour of dedicated airtime for the winners of the Best Student Radio Station Award. So, if you’re studying at university why not get involved with your student radio station or get one started and who knows next year your station could be one of the entries in the Radio 1 Student Radio Awards.

For more information contact Radio One Awards, c/o NUS Press Office, 461 Holloway Road, London N7 6LJ.
The Star Letter will receive a voucher worth £10 to spend on items from our Book or other services offered by Practical Wireless. All other letters will receive a £5 voucher.

This Month’s Star Letter

Loewe Multiple Valves

Dear Sir

I would like to add extra detail to Charles Miller’s excellent review of the famous Loewe multiple valve sets in ‘Valve & Vintage’ (PW October, page 50). I have a set in my collection which came from a retired Customs and Excise Inspector in Tottonham some 20 years ago. He told me that it was made there and that he had acquired it during his visits to the factory.

The set dates from about 1928 and has a Bakelite base and is fitted with metalised valve type 3NFNB. He told me Loewe made valves as well as sets there, importing the sealed resistors and capacitors from Germany, hence the Customs interest.

About the same time, Marconi tried to get Loewe to pay the Valve Royalty of 12s 6d on each valve assembly in the unit. The case finished up in the Patent Court, with a technical victory for Loewe, who argued that their valves were sufficiently unique to be covered by German patents, so no Royalty was due.

The Court agreed that this was true, but that there was infringement of Marconi circuit patents, so a reduced Royalty of 7s 6d per complete 3-valve device and 5s for the 2-valve was payable and that Marconi should pay all the costs! Total production of Loewe valves at that time was in the hundreds of thousands per annum - hence the Marconi interest.

Anthony Hopwood
Worcestershire

Editor’s comment: What a fascinating story Anthony! Additionally, an Irish reader from Galway, sending me an s.w.l.’s report, also wrote to say that several years ago he attended a sale in Galway city itself. Looking through the catalogue he saw that there were several ‘Old Fashioned’ valves included. He bought them all for £1 and it wasn’t until he saw Charles Miller’s article did he find out that the strangest looking valve he bought at the sale was a Loewe multiple valve. But…perhaps that’s “The luck of the Irish” as the saying goes!

Mobile Home ‘Ham’

Dear Sir

As one who has lived in a ‘Mobile Home for the last 17 years, I was very interested to read the article ‘Mobile Home Ham’ by Dennis Hartwell G0V0V, page 42 in the October PW. However, it would like to make a couple of points on the subject.

Nowadays, they are more properly called ‘Park Homes’ as none of them are mobile in the sense that was meant originally. The Pathfinder Village site here (near Exeter), was (to the best of anyone’s knowledge) the very first Mobile Home site in the United Kingdom. It is also the only site that is actually recognised as a ‘Village’ in its own right by Ordnance Survey map makers. It’s history is interesting, but too long for this note.

A lot of Park Home sites have a ‘no aerials’ rule, TV and stereo radio are received from a common site aerial system for which one pays a ‘connection fee’. There is one in Exeter that I know. When buying a Home on a site, you have to sign an agreement to abide by the site rules, so it’s wise to read carefully any agreement first to check out the restrictions. I have checked and these agreements are enforceable in law.

Many sites have overhead power lines for domestic electricity, random wire and vertical aerials are definitely out as I know from experience! I operate on all h.f. bands with a full size G5RV (ends dropped slightly) I also operate on 144 and 430MHz, all quite successfully. Poles and towers are a ‘no go’ on almost every site. I hope that these points will be of interest to prospective buyers.

Ron Wilson G3DSV
Devon

One Valve Challenge

Dear Sir

Reference the piece entitled ‘One Valve Challenge’ in the Practical Wireless for October 1997. I thought that I would send the enclosed circuit* (see note below) and photographs in case of interest. You have said that you have no objection to twin-triodes, etc., in the ‘one valve’ challenge and this has enabled me to offer mine, which is based on a twin triode.

In the circuit used there are two stages of r.f. amplification followed by a diode detector, then two stages of a.f. amplification. This is a ‘double reflex’ circuit.

The circuit is based on a design by Sir Douglas Hall, published in the January 1968 issue of Radio Constructor. The original circuit uses transistors, MAT 101s, but later revised designs used npn transistors which were silicon.

Ron Wilson G3DSV
Devon

Letters Received Via The Internet

Many letters arrive for Practical Wireless, giving new ideas or answering questions. However, we are unable to reproduce the circuit mentioned by C. M. Lindars because of possible copyright problems.

However, the photographs provide some indication of this interesting project. Readers will also be interested to know that C. M. Lindars was the Chief Engineer for the very well known HAC ‘one valve receiver’ (Heard All Continents) Company who advertised in many years in the Amateur Radio press.

First Use of Practical Wireless

Dear Sir

I see in the October PW, page 11, the reference to the first issue of the magazine on 24th September 1932. It may be of interest to note that this was not the first Newsheet weekly to include the words ‘Practical Wireless’ on the cover, albeit as a subtitle; as you will see from the enclosed photocopy of the cover of the Hobbies and Practical Wireless for August 20th 1932.

(EDITOR’S NOTE: unfortunately we could not use the photocopy in this month’s issue).

Although F. J. Camm is not credited with the

Practical Wireless, December 1997
Editorship of this magazine, the 16 page Wireless Supplement has two articles under his name and the whole magazine bears the typical hallmarks of the great man!
The next copy which I have, dated December 17th 1932 and subsequent issues are entitled Hobbies and Wireless Supplement, but still contain Wireless articles by Cann, Barton Chapple, etc., an indication of the prolific output of these writers and the wide interest in wireless in this period.

Dear Sir

The Oldest Reader?

Dear Sir

When my friends read the Editor’s ‘Keylines’ editorial in the September issue, they commented that I must surely be the oldest reader — however, I think I’m certainly not! There must be somebody else ‘way out yonder’ who has reached their ‘personal century’ mark!

My friends (there’s still a few left) also pull my leg about my never ever throwing anything away so I may well be the only reader who has not only taken PW magazine since issue number one, but who still has them on his library shelves!

As a schoolboy before the Second World War, I was a keen home constructor and s.w.l. saving my sixpence (old money) per week pocket money to buy tools from Woodworths (the hand drill came in three parts—6d each), but the pliers were only a tanner, and, of course, I still have both on my workbench! Also, the electric soldering iron, a green ‘Solon’ type with a big bit, with which I seem to remember cost all of 7/6d.

The first test meter was home constructed around a moving iron meter, price 6/6d from Lisle Street, where else? Later the sixpences were saved up to buy an AVO meter...the height of luxury. Yes, I still have both meters as well as the iron, but sadly its element is burnt out.

Unfortunately, I am short of three copies of PW, having lent them to a college and they were never returned. They are those for November and December 1950 and July 1980. Can any kind reader help please?

Douglas Byrne G3KPO Isle of Wight

Republith Transmitter Design

Dear Sir

I’m writing in response to the mention you made (‘Editor’s comment’ following the letter entitled ‘A Hobby For Life’ in ‘Receiving You’ October PW), about the 4-valve transmitter originally designed and built by Steve Appleyard G3PND. I for one would like to see it reprinted!

In the early 1960s I built something similar from PW. Since then I have since bought some PWs from that period in the hope of finding the circuit and information again.

The one I made was a 3 valve transmitter. It was crystal controlled, working on 3.5MHz and with valve number 2 being a buffer, it went on 14MHz very well, (about 20W out to a G5RV).

The transmitter worked well on a.m. via cathode modulation, using a carbon microphone that needed a good shake every now and then and as the transistors used to pack together! My receiver was the HRO Senior. I hope you have enough requests for a reprint. Best wishes and YECHID DA from West Gwent.

Sam Rees GW0NLB Dyfed

Enjoying The Hobby

Dear Sir

I am very new to the field of Amateur Radio, having decided that I would like to have another bash at it listening to Radio Amateurs, and eventually, perhaps, even have a go at transmitting myself.

As a youngster I built a simple radio, on tag-board as I recall. It was not very effective, but it gave me a tremendous feeling of achievement and real enjoyment.

Now, I worry, I see reviews in your magazine for expensive radio equipment, which has been professionally designed, uses high quality components, thoroughly tested and extremely well marketed. You then proceed on review of the equipment to tell us all that it actually does the job it was designed for. Well, so it should.

There is no excuse for expensive modern day equipment not to fulfils its design specification. With the modern CAD packages, for electronic systems and manufacturing methods with good quality control, there is every reasonable to expect the equipment to perform well.

Grapple more over! I have no objections to spending what ever amount of money they want on their hobby. The ‘name of the game’ after all is enjoyment. But please, let us all get away from pseudo-mystic. Expensive ‘Kit’ is not necessary for the continued enjoyment of one’s hobby.

The articles by the Rev. George Dohles G3JRV are superb in this respect. I realise that many people may not have the time of the inclination to build ‘Kit’ for themselves. But for the people who do, these articles are entertaining, informative and at times, a challenge.

My skills as an amateur electronics constructor may well have a lot to be desired. There are vast gaps in my knowledge of radio theory and amateur radio. But still press on, recycling as many parts as possible, buying second-hand helps to keep the cost down for me, as does buying components in bulk and when you can afford them. Hunting for ‘bits’ is part of the fun.

The argument that specialist parts are needed to enjoy Amateur Radio albeit on a simple level is a myth. I accept that there will be limits on performance of ‘home-brewed’ equipment, which professionally designed and built equipment will not have, but what? I can live with that and I suspect so can many other people.

Well, perhaps having somewhat out of the mainstream view, my message really is simple. There is only one thing important in this hobby - apart from necessary good conduct and operational rules - and that is enjoyment. Thanks for really a good magazine.

Steve Cappairi

Editor’s comment: Good luck in the hobby Steve and I’ve no doubt we’ll meet at one of the specialist QRP rallies and eventually on the air - perhaps using ‘one valued’ receivers with home-brewed transmitters?

Send your letters to the PW Offices, marking it clearly for ‘Receiving You’
Special Event Station

Recently the Droitwich Spa Amateur Radio Club operated a Special Event Station with the callsign GB2SER at the Hanbury Steam Rally in North Worcestershire. Hanbury is just south of Bromsgrove, in sight of the BBC Droitwich transmitting masts, and is supposed to be the village where the BBC called "Ambridge" in the Archers radio series. The rally was in aid of Hanbury Parish Church, which needs some restoration.

The Rally attracted hundreds of visitors from all over the country with its display of coal and oil fired Traction engines, as well as stationary engines. There were also displays of ex-army scout cars, trucks and jeeps as well as a display of classic cars including an immaculate Model T Ford.

In other arenas were displays of country crafts and the usual stalls and beer tents! It was a really hot, fine day and a marvellous occasion.

The Droitwich Spa ARC operated over the Saturday and Sunday, on h.f. with an Icom rig running 100W into a 6m suspended GI4OKM and a 100W linear into a 6 element quad loop antenna, as well as on 70cm (430MHz).

A number of club members helped out with operating the rigs and setting up the station, the stalwart however, being the club Chairman Eddie Cotton G4PQZ, who operated for hours on end! Other operators in the Sunday were Chris Margetts G7VJM and Derek Thorpe G4RCB.

Also, the club would like to make a special mention of club member Richard Bourne, who although not licensed yet, provided a lot of the man power in setting up the station and a good deal of equipment. Richard hopes to pass the Radio Amateurs Exam in the near future and is already studying for the Morse exam.

A general view of some of the engines.

New Meeting Dates

The Ymys Mon Radio Users Group will, as from October, hold their meetings every 2nd and 4th Tuesdays of the month at the Scout Hall, Llangefni, opposite the Kwik Sav shop, at 7.30pm. More events are scheduled to run throughout the year with the club's callsign MWOAER. Further information from Tony Anziani GW4ZWN. Secretary, on (01407) 832197.

Junk Sale

The Lincoln & District Amateur Radio Society (LADARS) will be holding a Junk Sale on Thursday 27 November at 8pm in the Concert Room at the Lincoln Post Office Club (the LADARS usual meeting place), this is located on Dunkirk Road, off Burton Road, in the uphills part of Lincoln. The price of tables for selling 'junk' costs £1 each and admission is 50p for people not wanting a table.

Last year, it was the Society's first attempt at running such an event, and overall they were pleased with the evening's attendance and it went very well. The Society hope that this year the success will continue.

As well as the usual radio and electronics 'junk', CYMA Computer Systems will also be present. This is a new local company which can supply PC spare parts for upgrades, etc. They also sell new and second hand user systems at reasonable prices. There will also be a raffle and tickets will be on sale throughout the evening. Anyone interested in radio or computing will be most welcome to attend the night, also any new members who wish to join LADARS. Further information from Paul Ward G4RVM. Secretary, on (01522) 537751.

Rewarding Year For Bangor

The Bangor & District Amateur Radio Society (G13XQR) have had their most rewarding year ever - on at least four accounts. Firstly, they have just celebrated their 30th anniversary with a major rally that attracted traders from England and Scotland and right across GB.

Secondly, the Society has just moved into a new home, the 'State Room' at the Clandeboye Lodge Hotel, on the outskirts of the town. Thirdly, it's been one of their most financially successful year in their history, and last but not least, with 64 fully paid-up members, it's the largest radio club in Northern Ireland (and perhaps EI as well!).

At the Society's AGM, the Chairman Stewart Mackay GI4OCK, Secretary Harry Squance G14JTF and Treasurer Terry Barnes GI3USW were all re-elected. Keith Burnside GI4YO, a well-known Ulster Television Presenter, was elected as Vice-Chairman and Editor of the Society's magazine Contact.

Other officers were Roy Finlay G10WVN, PRO, and Tony Harvey GT7V1W as Equipment Officer. The committee is as follows: Norman Neveel GI3JMY, Merrill McIniche GI6JGB, Bertie Drain GI4POC, Myles Boyle G10VTS, Keith Stevenson GI0SSA and Jeff Smith M1OAX.

The Society meet on the first Wednesday of each month and a full programme of talks is being organised for the coming months. Anyone wanting further information should contact Stewart GI4OCK, QTHR or telephone on (01247) 454049.
Duxford Radio Society

Rob Mannon G3XFD recently had an interesting QSO with Max Westley G4VEZ, of The Duxford Radio Society, who has kindly sent in some information about the Society and its history.

The Society originated when members of the Special Forces Signals Section and friends operated a Special Event Station at Duxford Airfield. This was to celebrate the 40th Anniversary of D-Day and VE Day back in 1948/48 respectively, and at the same time putting on exhibitions of wartime radio sets. Formed as the Duxford Airfield Radio Society in 1986, the name was reduced to Duxford Radio Society in July 1989. From 1986, when GB2IWM was issued as the permanent call sign, co-operation with the Imperial War Museum (IWM) Department of Exhibits and Firearms produced displays appropriate to the special events for which Duxford is well known.
The Society aims to serve the Museum and the interests of its members by active work in documentation, collation, restoration, putting on exhibitions of IWM and members’ artefacts, publishing a Newsletter of activities, articles on specific equipment or techniques, as well as increasing the usage of GB2IWM (by a larger roster of operators).

GB2IWM

Radio Station on imperial War Museum
Duxford
Cambridge
Cambridgeshire
Huntingdonshire
The largest aviation museum in the world

So far, GB2IWM has operated from the Operations Block, behind Hangar 5, used for fighter aircraft control in the Second World War and then during 1990-91 the school room, with more space for exhibits and for the public to move around. The Society now has their own two buildings (permanent) by the Gibraltar Gun, one which has the inner Radio Station room and an outer room which houses the radio equipment display, hopefully, this will eventually be open to the public.
The other building is the restoration workshop and also houses an active display of working restored radios. These rooms are currently only open when members are in attendance.
During the big display days, when flying aircraft and Military vehicles draw large numbers of spectators, GB2IWM uses mainly s.s.b. with modern rigs, but on other days old c.w. only 'rock-bound' sets have been used.

While the first priorities are the IWM's collection of mainly army and RAF gear, including American items used by British and Allied Forces, items from former countries desirable for comparison. There is Naval equipment but it does tend to be rather large and mainly kept on HMS Belfast.
The Society is now on a recruiting drive, seeking kindred spirits, not only Amateur radio operators but men and women who can contribute to the project, either from their own past experience or by cataloguing, research and literature or technical manuals, by translation from the several languages used by the allied forces, even from Japanese, since the IWM has some captured radios.
To fit in with the museum's policy, with respect to having only one outside organisation to deal with and insurance requirements, the regularly attending members of the DRS have joined the Duxford Aviation Society (DAS) forming its Radio Section. In fact, it can be said that the DRS has itself become part of the DAS and abides by the rules of the parent body. However, it is only necessary for DRS members to join DAS if they are going to attend regularly as access is then easier and free, but 12 working visits are required per year.
The Radio Section of the Duxford Aviation Society have three main aims: 1) To support an interest in the History of Radio in Military employment, including radio in all Armed Forces, Para-Military and Clandestine (Resistance) Groups and extending to radio equipment of other countries for comparison.
2) To support an interest in and assist in the provision of an exhibition of radio equipment in accommodation provided by the Imperial War Museum, Duxford. To restore radio equipment in preparation for use or display and 3) The operation of an amateur radio station with the call sign GB2IWM (or other call signs that may be provided during special events), using both modern and historic equipment in accordance with the provisions of the amateur licence.

Further information about the Society can be obtained by writing to: Duxford Radio Society, c/o Imperial War Museum, Duxford Airfield, Cambridge CB24 4QR.

Spotlight Trophy North Of The Border!
The 1997 winner of the Practical Wireless & Kenwood 'Club Spotlight' Club Magazine Trophy is The Cockenzie & Port Seton Club, based in the Lothians near Edinburgh in Scotland. However, due to the much increased entries - compared to the 11 in 1996 - the rig, a Yaesu 1500 with the late Bert Newman G2FIX would have it, we were given the opportunity to honour the memory of the late Bert Newman G2FIX who died in July.
The new award will be presented to the winners in the new category, The British Amateur Radio Teledata Group (BARTG).

Lighthouse Activity
The Sutherland & District Amateur Radio Club took part in the lighthouse weekend back, on the 23/24 August 1997 from Tarbat Ness Lighthouse, IO87CU, which is located on a Northern peninsula of land where the Dornoch and Moray firths meet.
Tarbat Ness is the second highest lighthouse in Scotland at 146ft 7.4in. It was built in 1837 at a cost of £7300 and was designed by Christopher Stephenson, the cousin of Robert Louis Stephenson, who was the well-known builder and inventor of 'The Stephenson's Rocket', the world's first locomotive.

Everybody enjoyed the weekend and over 550 contacts were made from as far as Indonesia, USA, Canada, South Africa, Honduras, Israel and most of Europe.
The antenna was a G5RV, sloped from the top of the lighthouse to just over three metres above ground. It worked extremely well, the rig, a Yaesu FT-767QX, running just 10w.
The tent was provided by The Tain Scout Group, who paid the club a visit on the Saturday evening, so thanks go to them and Tom Lane, the Lighthouse Keeper, for the help they gave the club to make it such a wonderful week.
Here's to the next lighthouse event!

Practical Wireless, December 1997
A part from being used purely for rectification, semiconductor diodes have a number of other properties which can be put to good use in a variety of applications. One such property is that they exhibit a change in capacitance when a reverse bias is applied. As a result of this phenomenon diodes designed and used for this application are called varactor (variable reactance) or varicap (variable capacitance) diodes.

The capacitance change can be used in a variety of ways. One of the most obvious is for applying frequency modulation to a signal from a varying audio voltage in an oscillator or in a phase reactance modulator.

Frequency synthesizers make widespread use of varactors. They need to use the control voltage in the phase locked loop (p.l.l.) to control the frequency of the oscillator.

Varactor diodes are also used in voltage controlled filters. Often these filters are controlled by microprocessors where the tuning data is sent to a digital to analogue converter, where the data is converted into an analogue voltage to control the varactor diodes used in the filter.

How They Work

Previously we have already seen that the key area for semiconductor diodes occurs in the junction between the N type and P type semiconductors. The same is true for varactor diodes. Here the area called the depletion layer does not allow current to flow and acts as if it's a plate capacitor as the depletion layer does not allow current to pass.

In the junction between the N type and P type semiconductors the area called the key area for semiconductor diodes occurs. The same is true for varactor diodes. Here the area called the depletion layer does not allow current to flow and acts as if it's a plate capacitor as the depletion layer does not allow current to pass. The depletion layer widens effectively and the capacitance becomes less as shown in Fig. 2. In this way, a varactor becomes a voltage controlled capacitor.

Varactor diodes are always run with a reverse bias. A forward bias is avoided because the diode starts to conduct and this has the effect of reducing the Q of the tuned circuit.

The actual capacitance range which is obtained depends upon a number of factors. One is the area of the junction. Another factor is the width of the depletion region for a given voltage. This is governed by the doping concentration and it is normally adjusted to give a relatively abrupt junction which results in a greater capacitance change.

Diodes typically operate with reverse bias ranging from around a couple of volts up to 20V and higher. Some may even operate up to as much as 60V, although at the top end of the range comparatively little change in capacitance is seen.

Tuning Range

Obviously the most important characteristic of a diode is its tuning range. Normally two voltage points are specified, one at the top of the range and the other near the bottom at the minimum usable voltage.

It's obviously important to select a diode which combines the correct capacitance range for the available tuning voltage range. The higher voltage specified is normally the maximum reverse bias and this should not be exceeded otherwise breakdown may occur.

An important characteristic of any varactor diode is its Q. This is particularly important in a number of applications. For oscillators used in frequency synthesizers it affects the noise performance. High Q diodes enable a higher Q tuned circuit to be achieved, and in turn this reduces the phase noise produced by the circuit.

For filters the Q is again very important. A high Q diode will enable the filter to give a sharper response, whereas a low Q diode will increase the losses. The Q of a diode is simply the ratio of the capacitive reactance and the bulk resistance, i.e. \( Q = \frac{X_C}{R_b} \) at a specified frequency.

Reference may also be made to abrupt and hyper-abrupt diodes. These diodes have a very sharp junction and small changes in voltage give relatively large percentage changes in capacitance. These diodes are particularly useful when oscillators or filters need to be 'swept' over large frequency ranges.

Back-To-Back

Varactor diodes can be used in a variety of ways. However, one of the most common is in a back-to-back arrangement like that shown in Fig. 3.

The use of the diodes in the configuration shown in Fig. 3 prevents the alternating r.f. voltage in the circuit from driving the diodes into forward conduction. However, it does mean that the total capacitance of the diode combination is only half that of each diode, assuming they have the same capacitance.

The control voltage is applied through a resistor in the control voltage line and a capacitor to ground to act as a filter. High value resistors, around 10kΩ are generally used as the feed impedance to the diodes is high.

Fig. 1: A Varactor diode.

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Next Time

I'll be taking a look at the Pin diode
November 15: The London Amateur Radio & Court Burton, Westfield, Portland, Dorset DT5 2HJ or telephone on (01105) 821373.

December 7: The SDX Cluster Support Group & Scottish DX Convention are holding their third SDX Glasgow Rally at the Maryhill Community Halls, Maryhill Road, Glasgow. There will be a variety of special interest groups with stands and displays and Morse test sessions will be available throughout the day. Once again, the famous Jackie & Sandi Café will be open for business throughout the day, serving hot and cold snacks, tea, coffee and soft drinks. Doors open at 10.30 for Bring & Buy registration and the café is also open from this time. Adults: £3. Senior Citizens: £2 and children under 14 - free. With an adult: John Dundas G4G0PS on 0141-638 7670 or Packet 1357 to G4G0DX or E-mail: J.m.dundas@internet.net.com.

December 7: The 40th Northern Mobile Rally is to be held at the Flower Hall, Great Yorkshire Showground, Harrogate, North Yorkshire. Gerald Brady G4RPJ, Rally Manager on (01765) 640229.

December 14: The Leeds & District Xmas Radio & Computer Rally is to be held at the Pudsey Civic Centre (Dawsons Centre). All the usual traders will be there, including a licensed bar and disabled facilities, etc. Further information from John Mortimer on (0113) 2567546 or from Stuart Milsom on (0161-298) 2615.

December 14: The Northern Mobile Rally is to be held at the Queen Elizabeth Hall, Civic Centre, West Street, Oldham, Lancashire. Doors open at 1100 (1100 for disabled visitors). The event features all the usual traders plus a Bring & Buy stall. Morse tests are available on demand and there is a talk on S22 via GB4ORC, commencing at 0730. Mobile Contact price up to 400. There will be refreshments and free parking available. (01706) 846124 or 0161-652-4164.

February 1: The 33rd South East Amateur Radio Society Radio Rally will take place at the Padlocks, Long Road, Carer Radio Essex. This is one of the biggest and best rallies in Essex. The Padlocks is situated at the end of the A130. Doors open at 1030. Features include amateur radio, computer and electronic component exhibitors, a Bring & Buy, RSGB Morse testing on demand (two passport photos required), home-made refreshments, free car parking with space outside main doors for any disabled visitors. Admission is £1. David Gl4DV on (01280) 697979.

If you wish to have your Rally featured in Radio Diary, all you have to do is to put together as much information about the Rally as possible, ie. date, location, time, who to contact, etc., and send it to Zoe Crabb at the PW Editorial Office.
**JRC JST245**

All-mode 150W HF plus Six metre transceiver including built-in mains PSU and Auto Tuner

HF Band Plus 50MHz Band. The JST-245 covers the 1.9MHz band plus the 50MHz band, and operates in all the modes including SSB, CW, AM (A31), AFSK and FM

Some of the outstanding features

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- Built-in power supply
- Multiple Antenna Selection
- Stable Frequency Control
- Band Memory
- 200 Channel Memory

Other Standard functions are provided including VFO with equaliser, full break-in, electronics keyer, all-mode squeeoh, VOX and RF speech compressor.

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Lowe Price £429.00

A Global Positioning System receiver with electronic map. It not only shows you the lay of the land, but where you stand, too.

 Millions of miles of motorways, roads, railways, rivers and shorelines are programmed into the GPSIII. Yet this versatile personal navigator weighs only 255g and fits comfortably into your hand, on your bicycle or on the dashboard of your car.

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The GPSIII's 12 parallel channel receiver will find your position fast and keep your position even in dense foliage. Position averaging reduces the effects of Selective Availability (SA) for the best accuracy possible.

**Where you've been**

The GPSIII tracks your route and stores favourite spots with names, icons and a brief description. With one keystroke, trip odometer and speed calculations are in clear view. It will even display sunrise and sunset times so you're not left in the dark.

**Where you're going**

Most remarkable about the GPSIII is its basemap. It shows primary landmarks for Europe, Africa, Asia, Australia and Oceania. After telling you how far you are from a given point, it will work out the time of arrival.

**Lowe Price £429.00**


Don’t miss out - just send four first class stamps to receive your own catalogue!
Panel kindly donated by Bob Keyes GW41ED of Key Solar Products. Ten Oldham Radio Club have been taking part in the PW contest almost every year since its inception. And whereas other groups have come and gone, they have been consistent in their good performance. An analysis of the relative scores of all groups in all 15 annual contests since 1983 shows G1ORC/P in second position overall (the outright leaders are the ‘Bug Bashers’ group who dominated the results table in the early years of the contest).

Leading Scottish Station
The leading Scottish station this year was once again the Cockenzie and Port Seton Amateur Radio Club GMM0CLN/P.

Although this time by a narrower margin over their nearest rivals. They have again been awarded the Tennamast Trophy in Memoriam to Frank Price GWOVMW, Albert Seton Amateur Radio Club GMOCLNIP, kindly donated by Mike Baguley and the Oldham Radio Club GMM0CLN/P, a group comprising of Dave GWONWR/P, a group of enthusiasts who not only beat the friendly competition from Eire, but was also placed 8th overall, and fourth placed single operator.

The Procateur’s efforts.

Leading multi-operator stations

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Leading single-operator stations

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Adjudicator Absent
Adjudication of the contest has been somewhat hampered this year by your adjudicator being...
absent from the country for most of the year. My work has taken me to California for a prolonged stay, so that was why, as some of you noticed, 4G4HLX was not on the air on 15th of June.

As it happened, I found that ARRRL were running a 'VHF QSO party' on that same day. It was an event with a rather similar flavour to our own ORP contest, even down to an identical scoring system on 144MHz.

However, I confess that W6G4HLX was not active in that American event either. This was because I hadn’t got round to assembling a station yet (too many other delights of Southern California to enjoy!)

So, shortly after the closing date for entries, my son Ben G8EXQ (yes, he’s got my old callsign) packaged up all the logs in his suitcase (callsign) packaged up all the logs in his suitcase and brought them with him to San Diego. This was when with the rest of the family, he came to stay with me for the summer.

Those few entries which were submitted late were a nuisance, so their score has been penalised by 5%. The two which arrived very late were lucky to be included at all, as special arrangements had to be made for me to obtain the logs!

My 'temporary export' to the USA led to the results being published a month later than usual. This was as anticipated and announced with the rules in June PW.

The full detailed results list will, as usual, be sent to all those who provide an s.a.e. with their entries, or if you send one now to the PW offices at Broadstairs. And of course, it will be available, soon after publication of this issue, on our Internet Web pages at http://www.rmplc.co.uk/eduweb/sites/Page/pwqpp.html. This Web site also has an archive of results of previous year’s contests, back to 1991, and other contest information. This year however, I will not be distributing the tables via the Packet radio network.

Comments & Reports

The comments and reports I’ve received this year make interesting reading, and for example the Oldham group, G10RC/P were amongst those for whom the weather at their elevated site, on Kinder Scout: “made working conditions somewhat uncomfortable. We were in cloud all day with visibility about 50 yards, it almost bamboozled the Peak District Wardens who eventually came across us and reported that they had only located us through sound, and homed in on the radio” Mike Baguley G7VL/DQ/P on the other hand notes that: “last year’s superb weather was replaced by grey skies, intermittent rain and wind”.

At the winner’s site, the North Wales Wafflers GW4NWP/P, who set up their station on the Saturday report that: “despite putting waterproof gear on we all ended up soaking that night”!

For Jon Page G1PPS/P, the runner-up single operator, it was: “the first time that I have had to do the contest in the rain”. Arriving at his site on the Saturday, he realised that he had “forgotten the box with all the nuts and bolts in”. But with no transport, having been given a lift to the site by his wife, he had to improvise: “I used bits of fencing wire to hold the mast together and managed to make ten elements of the 14-element. All of this in the pouring rain”.

However, while operators in Wales and the Midlands of England were struggling to keep dry, others were more fortunate. The Mid-Argyll Amateur Radio Society GM3RJ/P report that: “the weather once again was superb with all of us getting sunburned”.

Weather & Propagation

Accompanying the poor weather in many parts was rather poor radio propagation conditions in all parts. Most stations did not enjoy any exceptional DX, although as usual those stations in good sites and with good antennas managed to work some very good distances.

But also (as usual), many stations were delighted with what they did manage to work. Peter Lowrie G7/JVK/P, for example, says: “I was delighted to work GI/E7NET/P in IO65 on Rathlin Island for a new square for me.
and for my first contact on 144MHz s.s.b. with the island.

Dave Hewitt
G8ZRE/P was also pleased to contact G1/E7NET: saying that it was "nice to work G8ZRE/P for the first time". Dave also noted a welcome high level of activity in some areas: "Lots of activity from GM/GI/EI. I turned the aerial north and was amazed that I worked so many stations."

The Scottish winners, The Cockenzie and Port Seton Club, GM0CLN/P, also remarked on "a noticeable increase in 'quality' Scottish entries. Another improvement was the level of EI/GI activity". Sadly though, the activity reported was barely reflected in the number of EI and G1 logs received and we somehow need to encourage those who participate on the day to send in their logs. The new PW EI/GI Trophy Clock should be an inducement, we hope!

From Cornwall, David Blackford G3NBP, reported a lot of local activity: "This year, of my 47 contacts, 38 were Cornish stations".

However he doubts that stations in other areas spend much time with their antennas directed to the south-west and asks that "perhaps you could remind stations that there is activity in IO70 and it's another multiplier". (I can sympathise here, for some operators it can be frustrating failing to get a contact into a square where they really ought to be some activity).

Andy Williams
G7MSX, heard one contest station calling CQ with these words: "Gentlemen, we are pledging on bended knee for someone in JO2D".

Newcomers to the delights of v.h.f. contests discovered some of the unexpected difficulties. For example, Phil Davies M0AYB/P, had a task to contend with that will sound familiar to many portable operators: "I was kept busy turning the antenna and 'shooing off' the cows. I don't really mind them licking the car, but I object to them nibbling the windscreen wipers!"

The Clyde Coast
Contest Group
GM4HEL/P, after the steep climb to their 710m a.s.l. site to set up station on the Saturday, found it hard to get any sleep, as in mid-June at that location that "it was still very light at 23:30". The "impromptu karaoke from GM7GDE and his YL's tent did nothing for the other operators trying to get some sleep". Their final weary comments was "The sun returned at 0500 just to make sure tired operators were at their best for an early start!"

More seriously, on the climb to the site of the Oldham club, G1ORC/P reports that "one of the club members, Ian Firby, who came along to assist in carrying the equipment up the hill slipped and fractured his ankle on the way down". (Bad luck Ian. I hope everything's okay now!).

My Job
A few words now about my job as adjudicator! And I'm pleased to say this is made very much easier by the care which many entrants take in presenting their logs and covering information clearly and as required by the rules. However, there are a substantial number of entrants who still provide incomplete information. The problems include missing list of squares worked, putting wrongly (e.g. log columns in the wrong order) or logs which are generally hard to read.

The vast majority of entrants provide the covering information I sometimes wonder if they in fact, ever read the rules! Serious transgressors will find that their score has been penalised, but I wonder if I'm not too lenient on some others! So, let this be a warning: 1998 might be the 'get tough' year, and more entrants will lose points if they haven't provided the information required.

More than one quarter of entries received were written on the Cover Sheet and Log Sheet stationery, downloaded from the Web site. This really does help as I know instantly where to look for the Information I need, and can do the log cross checks much quicker when there is a standard format.

Third Sunday
The PW 144MHz QRP contest has always been held on the third Sunday in June (actually there was one exception, around 1985). Although this has led to some inevitable clashes with other events, for example a few local radio rallies, it has been generally very popular and we shall certainly not change it.

In recent years, the date has also allowed co-ordination with a leg of the RSGB Backpackers' event. Very often, though, the date of the contest has also been 'Father's Day'. Responses to this fall into two categories: The Silverthorn Radio Club G2HR/P tell me that 'we certainly lost some of our team members this year because it clashed with Father's Day - that was their excuse, anyway'!

On the other hand the more common remark is like this one from John Rudd G7QIC/P: "my other operator G7OKV is able to 'escape' as the contest falls on 'Father's Day', so he is able to have his treat!"

Next year, the third Sunday is later in the month, since June starts on a Monday, putting the contest right on the summer solstice, 21st of June 1998, with the same duration as this year, 0900 - 1600UTC. So, mark this in your new diaries, and start planning now!

Thank-you to all who took part in this year's QRP contest, and for the enthusiasm which maintains it as the lively, friendly, fun event that we have. Perhaps David G3NBP, echoes the thoughts of many when he writes this comment year after year: "as always, it's the highlight of my Amateur Radio year!" So, here's looking forward to 1998!

Neill Taylor G4HLX

Intrepid (and experienced) single-operator entrant Dave Hewitt G8ZRE operating as G8ZRE/P in the 1997 contest.

Practical Wireless, December 1997

A most appropriate callsign - G0VHF/P (Go-VHF-Portable?), a beautiful day and a magnificent looking antenna system for the 'Windbreakers Contest Group' at Walton-On-The-Naze.

Rob Mannion G3XFD, Editor Practical Wireless

Once again on behalf of the Editorial team and all those who take part in the PW 144MHz QRP Contest I have to thank the Neill for the tremendous hard work organising and adjudicating the event requires on his part. Additionally this year, Dr Taylor has had the extra problem of having to do the job whilst being on the West Coast of the USA for most of the time! It meant that the entire Taylor family were involved - and the contest entries being flown to the USA. So, again Neill I thank you on behalf of everybody - we all appreciate your commitment and dedication and hope this wonderfully friendly and important event will continue for many years to come.
Topping’s Timed Out

By Colin Topping GM6GW

Colin Topping GM6GW has come up with a simple transmitter ‘time-out’ unit.

This unit was designed to fit two criteria. One that it should limit the transmissions to a known maximum (but be capable of being terminated at any time within the period) and that it should be both cheap and simple to build. I think I’ve managed to achieve all those needs!

The circuit of the unit is shown in Fig. 1, and as you can see it is very simple, a single 555 timer chip and a few other components. In its simplicity the workings are easy to understand. The integrated circuit IC1 is connected as a ‘single shot’ mode. As shown, the output (pin 3) of IC1 is low and will remain there until triggered by taking pin 2 low using S2, the ‘Start’ switch.

Immediately after S2 shorts to 0V the timing capacitor C1 starts to charge through R1 and the voltage across it rises with a time controlled by R1 and the capacity of C1 itself. At the same time the voltage on pin 3 shoots up to a maximum value, which switches on relay RL1 connecting the common to the normally open contact.

When the voltage across C1 reaches a predetermined value (a known percentage of the supply voltage) the timer takes the voltage on pin three low. This allows the relay RL1 to switch off, returning RL1 to its normal state.

At any time during the time period pressing S1 will (almost) instantly take the voltage on C1 above the threshold point and effectively terminate the timing period. The purpose of diodes D1 and D2 is to protect the integrated timer from the voltage ‘kick’ (back e.m.f.) caused by rapid changes of current (at switch over) in the coil of relay RL1.

You could have two separate resistors serving the part of R1, each selected by a single pole two-way switch. This is the system I’ve implemented on my version of the timer - with settings of one and four minutes.

I’ve not included a shopping list as the unit is so simple - you could use whatever size components that are to hand. Relay RL1 should have a 12V coil, and may have more contacts than those shown. For easiest time setting I’ve found that, for R1, the small screwdriver slotted multi-turn ‘Cermet’ units are best suited.

Simple Construction

I’ve shown a simple construction diagram, Fig. 2, of one small layout made on the ubiquitous Veroboard. Using a piece seven tracks wide by 16 holes long, there are only four track breaks needed at C7, D7, E7 and F7. But you don’t have to follow this particular layout, but it is small.

So don’t sit there get your soldering irons out. No time out for laggards!

PW

Fig. 1: This is the simple circuit of Colin’s timer (the unmarked pin on IC1 is pin 2). See the text for a description of how it works.

Fig. 2: Following this Veroboard layout allows a small unit size to be achieved.

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Practical Wireless, December 1997
Richard Newton
GORSN says a sensible 50MHz handheld has been a long time coming but now it's here he's convinced it was worth the wait!

As a Novice Instructor I have long awaited the arrival of a sensible 50MHz handheld FM transceiver that would be accessible to all, including Novice licensees. I am just amazed it took this long!

Therefore I was delighted when I saw the advert for the new Palstar KH-6 50MHz handheld. My delight then turned to utter excitement when the team from PW contacted me to ask whether I would put it through its paces.

The Palstar KH-6 is a 50MHz handheld transceiver. It covers 50-54MHz. It is supplied with a small helical antenna, carry strap and a belt clip. The battery pack is designed to take dry cell or NiCad type batteries. A sealed NiCad battery pack and charger are available as an optional extra.

Simple By Design

The KH-6 is simple by design and easy to operate. Both of these observations are very much to the radio's credit. The top panel has the On/Off and volume rotary knob and the squelch rotary knob.

The radio features a BNC antenna connection. It also has the standard 'Speaker Mic' jack plug connections. I connected a Speaker Mic that I use with my Icom handheld, and this worked very well indeed.

The side panel of the KH-6 is home to the Press-to-Talk button and the Up/Down buttons. It tunes using 10kHz steps, however 5kHz can be added to any frequency by use of a front panel button. For quick tuning, 1MHz steps can be achieved by the use of the ‘F’ key and Up or Down together.

The front panel buttons are used to access this little transceiver's many features. They are also used to access the KH-6's five standard memories and the ‘Call’ memory.

The KH-6 has all the features I would want in a radio of this type. It has full CTCSS encode and decode, five memories that can be very easily programmed and scanned.

There is a 'Call' channel that can be programmed for easy, one button access to a frequency. This could be used for your local repeater, the call frequency or perhaps a local Net frequency for example.

One of the features that immediately struck me was the display of the KH-6. The frequency read out is large and easily seen, even when the 5kHz step is activated. Other display items such as Low Power select and the ‘S’ Meter reading are also well defined and the back light is excellent.

The KH-6 is a splendid looking little radio. It's the size a hand-held should be. When you hold it, you know you are holding a radio!

However, the transceiver is small enough to be highly portable and by no means cumbersome. It's well finished in grey metal and plastic and I think the whole design is very tasteful.

Two Power Settings

The KH-6 has two power settings. With its 12V supply it offers a choice of 5W on high power and 1W on low power.

The rig also features a 'power save' function, which is important for a waffler like me, as the battery pack does not last long. An attachment to allow connection to external power is available as an optional extra.

In my opinion there will be no problem using the all new 50MHz repeaters with the Palstar KH-6. As I have already mentioned it's fitted with CTCSS, it also has 'Repeater shift' function.

The repeater shift function itself is very easy to activate. It's a single button press operation. However, I could not find a way to easily reverse the repeater setting, so that the repeater input frequency could be monitored.

The flexi-whip antenna that is supplied with the KH-6 is rather small. It's neat looking and works well for short range communications such as around a rally site, but for anything else I am afraid it's of little use.

There is, however, a somewhat longer flexi-whip antenna available as an optional extra. This is about the most needed 'optional' extra I have ever come across!

I was loaned this longer antenna with the review radio and the difference was staggering. The efficiency of the KH-6 was tripled at the very least.

Making Contacts

It never ceases to amaze me that a band as diverse and exciting as 50MHz has been so neglected for so long. There is some 50MHz activity in my area so, I was looking forward to getting some contacts under my belt.

My first QSO using the KH-6 was a little bit of a cheat, as I set-up a sked with Steve GI1NY. I used the...
Exciting And Diverse

The Palstar KH-6 is simple but effective. I think it represents excellent value for money.

Amateur Radio is exciting because of its diversity and sense of adventure in things new and old, a fact some of us seem to forget sometimes. So, no matter if your interest is Packet radio, F.M. DXing, local 'chit chat' or having a bit of a tun band, I look forward to meeting you all on 51.51 MHz!

My thanks go to Nevada of 189 London Road, North End, Portsmouth, Hampshire PO2 9AE. Tel: (01705) 662145, FAX: (01705) 690026 for the loan of the Palstar KH-6 for review. The KH-6 complete with small whip antenna, carry strap and a belt clip costs £149. the HF-501 Flexi Antenna costs £12.95, the NP-126 NiCad Pack (12V), £29.95 and the Nic060 NiCad Mains Charger, £9.95. Other accessories are also available, details of which can be obtained direct from Nevada.

PW
Richard Maris G2BZQ describes a one valved transmitter for the 3.5 or 7MHz band. And although it’s an old ‘classic’ it works well provided you take the necessary TVI precautions.

If you look back to the earlier days of amateur radio, in old magazines and textbooks, you’ll see that many amateurs used a single valved transmitter. Initially it would consist of a Hartley, or other, oscillator operated with a Morse key and attached to a simple long wire antenna.

Although the frequency drift could be considerable, remarkable long distant communications were achieved with those simple sets. But in the 1930s, the crystal oscillator, often using a triode valve, became popular. This set-up provided frequency stability during transmission and a guaranteed known operating frequency.

The arrival of the 6V6 (and the larger 6L6) beam power tetrode valves, before the Second World War, meant that a single valve low power c.w. transmitter became an efficient and reliable item.

With a keyed single valve crystal oscillator, hooked onto a long wire or simple dipole antenna, the amateur could ‘work the world’ on 7MHz. The power could be anything up to 10W input, depending on the circuit used, and the h.t. applied to the anode of the 6V6.

The 6V6 was extensively used for both a.f. and h.f. applications, in communications equipment throughout the second world war. and proved its reliability. It is interesting to note that in the 1940s literature the 6V6 appeared as an a.f. output valve, in many h.f. transmitter circuits and it also appeared as a 112MHz transmitter oscillator valve!

The 6V6 valve has lasted over 55 years and is still going strong. Recently I’ve found the 6V6 being used as the transmitter valve in the USA’s 1750m long wave amateur band. I wonder if any of our present day semi-conductor devices will still be around in 50 years time?

At the end of Second World War the 6V6 became available, for a few (old ones) pennies, on the surplus market. While waiting for the restoration of the amateur radio licence after the war, a 6V6 crystal controlled c.w. transmitter was made up, almost ready ‘to go’.

When the Postmaster General (PMG), who was then the responsible authority, ‘gave the off’ for the resumption of amateur radio, the transmitter was quickly finished off and ‘on air’ within hours. It was connected to a very long wire antenna wire running from a bedroom window to a large tree down the garden.

Almost immediately the DX was being worked. And every other QSO seemed to be with someone else using a 6V6, 6L6 or an 807, with its differing base connector. in a single valved transmitter. Happy days! A simple TX would do the job and TVI had not been invented.

More recently it was decided to replicate this transmitter using ‘junk box’ or readily available components.

**Description & Circuit**

The circuit is shown in Fig. 1. The only real departure, from the original transmitter, is the use of modern 0.047uf 400V polyester layer decoupling capacitors in lieu of the original 0.005uf 350V waxed paper ones. These paper capacitors though still obtainable, have a nasty habit of failing due to sheer old age. All component and wattage ratings have been given a generous safety margin in the interest of reliability.

The circuit uses a crystal controlled 6V6 metal ‘bottle’ valve, with an FT243 crystal in a conventional circuit (see later for a 3.5MHz option). A metal 6V6 was used in preference to the much larger glass bulb type, as it is smaller, more robust and has superior heat dissipation due to its matt black finish.

Cathode keying is employed in a switched power oscillator configuration. The circuit uses an internal Pi-network (L1 + C6 + C7a/b) a.t.u. to couple to the antenna. Although I’ve not found harmonics or TVI it might be preferable to fit an additional low-pass filter at the output.

Although it was designed for the 7MHz band using FT243 crystals, it can also be used on 3.5MHz with appropriate crystals and a larger coil for L1. Other bands could, no doubt, be covered with crystal and coil changes.

A suitable p.s.u. is shown in Fig. 2. The maximum h.t. voltage should be about 300V, but can be between 200 and 300V. At 300V h.t., the stage can be loaded to about 10W input, giving QRP(ish) power levels. However, with say 200/250V the set will give true QRP powers (5W or less).

The power supply used was kept separate and the TX power leads are...
plugged into it. The advantage of a separate p.s.u. is that it can be used for other projects.

As shown, the h.t. was 280V at up to the maximum of 100mA, 6.3V a.c. at 1A and 6.3V a.c. at 1.5A. The unit is more than adequate and easily enables the transmitter to operate at about 10W output, with good 'key down' regulation.

Panel and Chassis

The project can be assembled on a simple panel and chassis plate arrangement (Fig. 3) which I made to slide into an existing small metal box. The cabinet was well ventilated with side louvres and top holes and sprayed matt black for maximum heat dissipation.

The size isn't critical, but ensure that the cabinet is well ventilated and painted matt black. The layout of the major components is shown in Fig. 4 and can be adjusted to suit the space.

The 6V6 (metal jacketed) valve is mounted horizontally in an international octal moulded valve socket, supported by a vertical bracket. A ceramic valve socket would be an advantage if available.

Connections between C6, C7 and L1 are polythene insulated leads (RG58 coaxial cable inner). L1 is wound on a 25mm diameter Paxolin or plastic tube as follows: For the 7MHz band, L1 is 21 turns of 0.56mm (24s.w.g.) enamel covered copper wire. For the 3.5MHz band, L1 = 35 turns of the same type of wire.

If the transmitter is required to operate on both bands, the 35 turn coil could be tapped at 21 turns. Alternatively, a couple of plug-in coils could be made. When wiring the assembly, it should be remembered that there is a high h.t. voltage and appropriate insulated wire should be used.

A useful p.s.u. could be made by using a 500V d.c. max. transformer and a 365p capacitor.

TVI and Low-Pass Filters

You should always operate your station with the cleanest output signal possible and with a transmitter, that by its very nature creates significant levels of harmonics, you should take pains to reduce these spurious signals. This approach is essential for this project.

The usual method of reducing the harmonic output of any transmitter is to add a low-pass filter to the line feeding the antenna (or antenna changeover switch). There are many commercial low-pass filters available, but many are arranged to restrict frequencies above 30MHz.

If you are working on the 3.5MHz band you could find the harmonics in your signal (in the 7, 14, 21 and 28MHz bands) are making you very unpopular with other amateurs - even though you are not causing any TVI. So fit a suitable low-pass filter.

When operating at QRP levels, low-pass filters are very easy to construct for almost any band. In the March 1997 issue of *PW* (pages 46/47) The Rev. George Dobbs G3RIV in his series 'Carrying On The Practical Way' showed you how to 'roll-your-own' low-pass filters. The filters described were designed for use with a 50Q coaxial transmission line and so should work well with the one valved transmitter at up to a maximum output power of about 10W.

On page 47 (*PW* March 1997) there is a formula shown in Fig. 2 to calculate the turns needed and it should read $N = 10^4 (f/L - 1) L$ rather than how it is presented there. But you probably won't need the formula because in Table 4, all the necessary values are worked out for you for any h.f. band.

*GITEX*
Removing the power supply components from an old valve communications receiver, such as Heathkit RA1/RA1G1, which would give an h.t. voltage of at least 250V at around 80mA with 6.3V a.c. for valve heaters.

**Carefully Recheck**

After completing the construction, but before applying power, carefully recheck the accuracy. A power meter with a 50Ω dummy load should be inserted onto the coaxial socket, a crystal into its socket and the unit connected to the p.s.u. Set capacitor C6 about mid-range and C7 at maximum capacitance. After a couple of minutes warming up period, the Lt. can be switched on and the Morse key depressed. Then C6 should be quickly rotated to resonance (a dip in the meter). Loading capacitor C7 can then be adjusted for maximum into the load and C6 readjusted to dip as necessary.

**Conclusion**

The single valve transmitter is a simple, and quite inexpensive almost QRP level transmitter which will make an interesting and ‘different’ project for the home constructor. For the old timers, it should bring back happy days. For the newcomer, weaned on low voltage transistor circuits, it will give an introduction to the wonderful magic of valves. The project is simple to make, simple to operate and will produce excellent results.

**Warning**

I must give a warning to the many home constructors only familiar with the low voltages associated with transistor equipment. With valued transmitters, high voltages are present and great care should be taken.

**Tickled Crystals**

Some of the older type of crystals may not oscillate, or they may just oscillate spasmodically giving a ‘chirping’ note. This problem can often be cured with a ‘Tickler’. The ‘Tickler’ is a small value capacitor (made from a short length of twin figure-of-eight well insulated wire). Fitted in the circuit between anode and grid of the valve, a Tickler is only necessary if the crystal valve combination will not oscillate, or will not oscillate smoothly.

A tiny capacity value produces a small amount of feedback from anode to grid of the valve giving the reluctant crystal an incentive to oscillate - hence the name Tickler. The Tickler, if it is required, is made of a short length of well insulated figure-of-eight twin wire, shown in Fig. 6.

At one end, the wires are slightly separated and soldered to the anode and grid pins (3 and 5) on the valve socket. The shortest possible Tickler should be used and a little trial and error will be needed starting with a 25mm length. Always switch off the power supply before adjusting the tickler.

**Shopping List**

**Capacitors**

Polyester layer 400V (min) working 4.7nF
4.7kF

5kV (min) high voltage disc ceramic

Variable (airspaced preferable)

365pF 1 C6

365+365pF 1 C7 (a and b)

Electrolytic 450V working (minimum) 16µF 2 C8, 9

**Resistors**

Carbon resistor (0.5W)

22kΩ 1 R1

220Ω 1 R3

15kΩ 1 R2

**Valves**

6V6GT 1 V1 (metal jacketed preferred) or 6L6GT EZ81 1 V2

**Inductors**

2.5mH 2 RFC1, 2

10H 1 L2

**Miscellaneous**

You will also need two valve bases (get them from the valve supplier at the same time), a 50 (or 100)mA meter, a suitable box/chassis a suitable crystal and socket, adequately insulated hook-up wire (separated from mains cable perhaps), suitable switches for S1 and S2.

**Fig. 5:** The octal valve base pin numbering with the pinout details for the 6V6GT and the 6L6GT valves.
Errors & Updates

Back To The Drawing-Pin Board, page 52 PW October 1997

The gremlins managed to get at the overlay drawing of Steve Ortmaryer’s 7MHz pre-amplifier. However, the circuit diagram escaped their attention, and this is correct. A revised overlay diagram is shown here and replaces Fig. 2 on page 52 of the October issue of PW. In this correct version the end of R2 is connected to L2 as in circuit design.

My apologies for this mistake. Editor

Carrying On The Practical Way, pages 72/73 PW November 1997

In the article on creating your own p.s.u. on a standard ‘island’ style board, the gremlins were at it again. In Fig. 3 on page 73 an extraneous thin line appeared touching D3 in the overlay drawing. The overlay drawing of Fig. 5 is also unfortunately the wrong one, please insert the drawing shown here

My apologies for these mistakes. Editor
The late 1960s through to the early 1970s saw the introduction of the Trio JR-599 communications receiver and its matching transmitter, the T-599S. Available on the second-hand market. In his opinion they form a ‘classic’ combination now available for a very reasonable price on the second-hand market.

The JR-599 Receiver

The JR-599 receiver is fully transistorised, and it is the same with the transmitter with the exception of the valve driver and a pair of p.a. valves. (I’ve outlined the specifications for both the sets in Table 1).

The receiver uses 25 transistors, 5 f.e.t.s, one integrated circuit and 35 diodes. A 2SK22 device is used in the r.f., 1st mixer, 2nd mixer and v.f.o. circuits, the remaining transistors being of the 2SC460, 2SC278, 2SC733 variety.

The audio output stage is a 2SD90 and 2SB473 devices in a transformerless configuration. A TA7245M i.e. is used as the 1st i.f. amplifier. (The block diagram of the receiver is shown in Fig. 1).

In its basic form the receiver tunes the familiar ‘old’ amateur bands of 1.8, 3.5, 7, 14, 21 and 28MHz, plus reception of the WWV frequency standard on 10MHz. No coverage of the WARC bands, but the receiver is available.

The M version includes a 144MHz converter, which is tuned using the 28MHz range on the receiver. The same technique is used for the X version which includes converters for 144 and 50MHz converter.

Double Conversion

The receiver, the front panel layout of which is shown in Fig. 1a, employs standard double conversion superhet principles. It incorporates a first ‘broadband’ i.f. of 8.295 to 8.935MHz feeding the second mixer to produce a fixed second i.f. of 3.395MHz. The second i.f. is where the various filters are fitted and where the selectivity factor is set.

If all the filters, c.w., s.s.b., a.m. and f.m. are fitted then selectivities of 500Hz for c.w., 2.5kHz for s.s.b., 5kHz for a.m. and 25kHz for f.m. are available.

An unusual feature of the receiver is that the i.f. filter can be selected either manually. This is regardless of the mode being received, or it can be left in an ‘auto’ mode that selects the more normal filter dependent upon the setting of the mode switch itself (for example: the 50Hz filter for c.w. reception).

A 10 position crystal oscillator is used in the first mixer stage with the main v.f.o. operating between 5.5 to 4.5MHz, employed in the second. In addition to the main v.f.o., there’s provision for a crystal oscillator with up to five crystal controlled frequencies each crystal used will in fact give a crystal controlled channel on every band. For example, using a crystal of 5.4MHz will result in monitoring of 1.9, 3.6, 7.1, 14.1, 21.1, 28.1, 28.6, 29.2MHz and the appropriate 50 or 144MHz frequencies.

The JR-599 Transmitter

The JR-599 transmitter is fully transistorised, and it is the same with the receiver with the exception of the valve driver and a pair of p.a. valves. (I’ve outlined the specifications for both the sets in Table 2).

The transmitter uses 15 transistors, 3 f.e.t.s, one integrated circuit and 18 diodes. A 2SK22 device is used in the r.f. and v.f.o. circuits, the remaining transistors being of the 2SC460, 2SC378, 2SC733 variety.

The audio output stage is a 2SB507 and 2SA812 devices in a transformerless configuration. A TAA7460N i.e. is used as the 1st audio amplifier. (The block diagram of the receiver is shown in Fig. 1).

In its basic form the transmitter tunes the familiar ‘old’ amateur bands of 1.8, 3.5, 7, 14, 21 and 28MHz, plus reception of the WWV frequency standard on 10MHz. No coverage of the WARC bands, but the transmitter is available.

The X version includes a 144MHz converter, which is tuned using the 28MHz range on the transmitter. The same technique is used for the M version which includes converters for 144 and 50MHz converter.

Separate detector stages. balanced ring, diode and ratio. are used to resolve s.s.b., a.m. and f.m. signals respectively. In addition to the v.f.o., there’s provision for a crystal oscillator with up to five crystal controlled frequencies selectable by switch.

As the crystals replace the v.f.o., and can be between 4.2 and 5.5MHz, each crystal used will in fact give a crystal controlled channel on every band. For example, using a crystal of 5.4MHz will result in monitoring of 1.9, 3.6, 7.1, 14.1, 21.1, 28.1, 28.6, 29.2MHz and the appropriate 50 or 144MHz frequencies.
A front panel switch operates a stepped resistive attenuator fitted in the antenna feed line. This facility provides fixed levels of r.f. reductions of 20, 40 and 60 dB (a fully variable r.f. gain is not fitted to the set).

A 100 kHz crystal oscillator is provided as a calibrator. This also drives a 25 kHz multivibrator to supply 100 and 25 kHz frequency marker pips.

Amplified a.g.c. voltage is used to drive both the s-meter circuit and provide gain regulation for the r.f. and i.f. amplifier stages, with the a.g.c. response time being selectable between fast and slow.

The receiver includes a built-in mains power supply unit and consumption is only 15 W. However, it can also be run from a separate 12 V source, a rear panel switch selecting the supply and 1A supply is required for this option.

The rear panel also contains the antenna sockets (both h.f. and v.h.f. if fitted). It's also where the speaker terminals and a remote socket (for use with the matching transmitter) are located.

The T-5995 Transmitter

The matching T-5995 transmitter employs 30 transistors, four f.e.t.s, one integrated circuit, 38 diodes and three valves. The s.s.b. generated at 3.395 MHz is mixed with the v.f.o. to give a first mix of 8.895 to 8.295 MHz. This is further mixed with a switched crystal oscillator to give the required operating frequency.

The mixing frequencies and intermediate frequencies are the same as the receiver. Because of this the pair can be used in transceiver operation with either v.f.o. controlling the operating frequency. All the stages employ semiconductors with the exception of the driver stage, a 12BY7A, and the power amplifier stage which utilises a pair of S2001 or 6L46Bs, with a standard Pi type output circuit. The block diagram for the transmitter is shown in Fig. 2 and the front panel layout in Fig. 2a.

A built-in semiconductor power supply provides 850 V for the p.a. stage valves and the various other supplies required by the set. Other facilities include automatic voice-controlled transmit-receive (VOX) operation, block bias keying for c.w. work and provision of sidetone monitoring.

The front panel mounted meter can be switched to monitor various parameters. These include the a.c.e. level, the p.a. stage cathode current, the r.f. output or the p.a. stage h.f. voltage.

The rear panel of the transmitter houses the main antenna socket and the receiver antenna output. There are also sockets for a.c.e. voltage feed from a linear, c.w. key socket, a low power transistor output and 'p.a. disable switch', a switch selecting transceiver or 'separates operation'.

Mains is applied through the rear-mounted power cable and there's a matching remote socket for use with the receiver. A rear mounted fan is provided to supply forced air cooling for the p.a. valves.

Whilst the pair are obviously styled to match each other a strange thing is that although the receiver is badged as a Trio the transmitter is badged as a Kenwood. Because of this, I think it was possible that versions badged in either logo were available.

I also believe there may have been slight differences in case colour available. The pair reviewed for this article were in silver for the receiver and dark grey for the transmitter, but the matching sets were the same colour. (Incidentally, a matching speaker, the SP-55, was available to finish off the styling of these units).

Table: 1

<table>
<thead>
<tr>
<th>Band</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8 MHz</td>
<td>1.6 to 2.30 MHz</td>
</tr>
<tr>
<td>3.5 MHz</td>
<td>3.5 to 4.0 MHz</td>
</tr>
<tr>
<td>7 MHz</td>
<td>7.0 to 7.5 MHz</td>
</tr>
<tr>
<td>14 MHz</td>
<td>14.0 to 14.5 MHz</td>
</tr>
<tr>
<td>21 MHz</td>
<td>21.0 to 21.5 MHz</td>
</tr>
<tr>
<td>28 MHz</td>
<td>28.0 to 28.5 MHz</td>
</tr>
<tr>
<td>28.5 MHz</td>
<td>28.5 to 29.1 MHz</td>
</tr>
<tr>
<td>29.1 MHz</td>
<td>29.1 to 29.7 MHz</td>
</tr>
<tr>
<td>50 MHz</td>
<td>50.0 to 53.4 MHz (Model X Only)</td>
</tr>
<tr>
<td>144 MHz</td>
<td>144.0 to 146 MHz (Model M, X only)</td>
</tr>
<tr>
<td>WWV</td>
<td>10 MHz</td>
</tr>
</tbody>
</table>

So much for the technical details...but what are the units like in use! And to start, the receiver does lack the now familiar r.f. shift, and facilities like an audio notch filter, it has only one v.f.o. and no memories to fill.

But as a straightforward, Amateur bands communication set, it does perform very well.

Feeding the receiver with a decent antenna there are plenty of signals to hear, and the s.s.b. filter proved to be quite adequate to the job on the crowded 7 and 14 MHz bands. However, replacement of the r.f. and mixer f.e.t.s with lower noise and better quality devices could possibly improve the set a little.

In operation, the transmitter unit's mode switch has a 'tune' position. This apparently puts the transmitter into transmit mode without the microphone amplifier or p.a. stage being connected, thus allowing the tuning of the drive...
control first.

With the mode switch to c.w., and the key pressed (if connected) the p.a. is engaged and the normal procedure of 'dip' and load for a Pi-output is undertaken with the p.a. 'plate' and load controls. (You should remember of course, not to hold key down in the un-dipped state for too long if you wish to keep the p.a. bottles for a long time!).

**No 'Top' Band**

Whilst the transmitter can drive an external transverter, to match the 50 or 144MHz coverage option on the receiver, the transmitter does not cover the 1.8MHz band. So, with no additional crystal positions or spare banks on the band change switch, it cannot be added easily. The front panel layout is shown in Fig. 2a.

In conclusion, it's my opinion that if a Trio JR-599 and T-599 combination can be obtained, in good condition and at a reasonable cost you're on to a good thing. I'm sure any newcomer to the bands would be able to enjoy many hours of fun, without the worry of a bank overdraft!

**Manufacturer's Specifications**

**Trio JR-599**

- **Frequency coverage**
  - Band: 1.8MHz
  - Coverage: 1.8 to 21MHz
  - Band: 3.5MHz
  - Coverage: 3.5 to 4MHz
  - Band: 7MHz
  - Coverage: 7 to 7.3MHz
  - Band: 14MHz
  - Coverage: 14 to 14.35MHz
  - Band: 21MHz
  - Coverage: 21 to 21.45MHz
  - Band: 28MHz
  - Coverage: 28 to 28.5MHz
  - Band: 28MHz
  - Coverage: 28.5 to 29.1MHz
  - Band: 28MHz
  - Coverage: 29.1 to 29.7MHz

- **Modes:**
  - s.s.b., c.w., a.m.

- **Power amp. stage input:**
  - (s.s.b/c.w.) 3.5 to 21MHz 160W (28MHz 140W)

- **Amplitude mod. p.a. stage input:**
  - 3.5 to 21MHz 80W (28MHz 60W)

- **Carrier suppression:**
  - -40dB or more

- **Unwanted sideband:**
  - -40dB or more

- **Output impedance:**
  - 50 to 70Ω

**Trio T-599 Transmitter**

- **Frequency coverage**
  - Band: 1.8MHz
  - Coverage: 1.8 to 21MHz
  - Band: 28MHz
  - Coverage: 28.5 to 29.1MHz

- **Sensitivity (c.w./s.s.b.)**
  - 1.8 to 21MHz: 0.5μV for S/N 10dB or more (Image ratio >50dB)
  - 28MHz band: 1.5μV for S/N 10dB or more
  - 50MHz band: 1μμV for S/N 10dB or more
  - 144MHz band: 2μV for S/N 10dB or more

- **Sensitivity (a.m.)**
  - 1.8 to 21MHz: 2μV S/N 10dB or more
  - 28MHz band: 4μV S/N 10dB or more
  - 50MHz band: 2μV S/N 10dB or more
  - 144MHz band: 3μV S/N 10dB or more

- **Selectivity**
  - On s.s.b.: -6dB at ±1kHz, -60dB at ±2.5kHz
  - On c.w.: -6dB at ±250Hz, -60dB at ±750Hz
  - On a.m.: -6dB at ±2.5kHz, -60dB at ±5kHz
  - On f.m.: -6dB at ±30kHz

- **Dimensions:**
  - 270 x 140 x 310mm

- **Weight:**
  - 5.7kg
Thank you to everyone who congratulated us on having the best stand once again. We sold a record amount of new equipment and therefore have an unrivalled selection of traded-in equipment.

**HF EQUIPMENT**

- ICOM IC735 HF Base £495
- ICOM IC22L LINEAR + PSU £1089
- KENWOOD TS580SAT with ATU £695
- KENWOOD TS850SAT with ATU £1095
- KENWOOD TS990S £1395
- LOWE HF150 HF RX £279
- LOWE HF150 HF RX £299
- LOWE AP/SP150 £139
- LOWE PI-150 £159
- MIZUNO MX 3.5/80m ORP + £229
- ROBERTS R827 HF/VHF RX £129
- TEN TEC PARAGON 585 + PSU £739
- TKO TS920SE £299
- YAESU FT77 Mobile 80-10m £249
- YAESU FT77 Mobile 80-10m £299
- YAESU FT77 Mobile 40-10m £349

**VHF/UHF EQUIPMENT**

- BNO5 LP50 10-50 6m linear £109
- BNO5 LP432 10-50 70cm linear £169
- ICOM IC449 70cm mobile £279
- AMERITRON AT61 1.5kW ATU £299
- YAESU FT203 2m/hf £89
- YAESU FT790 MkI £199
- YAESU FT790 MkI £219
- YAESU FT290 MkI £179
- YAESU FT290 MkI £199
- YAESU FT770 2m/70cm £169
- YAESU FRT770 RX tuner + FFS £39

**ACCESSORIES**

- DIAMOND DL1000 Dummy Load £129
- DAIWA digital SWR 1.8-150MHz £89
- GARTHIN GPS38 + case £125
- KINGFISHER KAM + plus £245
- KW E-ZEE match 80-10m £59

**HF PROGRAMMABLE ANALYSERS**

- RFI HF £119.95 P&P £1.55
- RFI VHF/UHF £209.95 P&P £10.00

**PYRAMID RF ANTENNA ANALYSERS**

- RF1 £109.95 P&P £15

**VIBROPLEX**

- IAMBIC STANDARD £169 DELUXE £199
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**Explore the infinity of possibilities with COLOMOR!**
It was with great sadness that I heard the news of the death of Doug DeMaw W1FB. After fighting leukaemia for several months, Doug died on September 28th 1997, aged 71.

I first got to know Doug through his writing in the early 1970s. At that time I was attempting to update my Amateur Radio technology from valves to solid state.

My local library was generous enough to keep copies of QST and in their pages I found Doug as a "fellow traveller". He was then W1CER, and had just become the Technical Editor of the ARRL (American Radio Relay League).

At the time Doug was shifting the emphasis of the ARRL QST magazine from valve to solid state design. My early introduction to transistor circuit design and the first solid state projects I built came directly from his writing. It was lucid, it was interesting and I understood it!

Licensed as W8HNS

Milton F. "Doug" DeMaw was first licensed in 1950 as W8HHS. He was the son of a farmer in North Michigan. And Doug always spoke of his early days with a great fondness.

The family grew their vegetables and frequently hunted their own meat. Doug began his working life as an engineer at the University of Michigan, then working with an aeronautical research company in San Diego.

He also worked in radio and television engineering at WWTV and WATT radio in Cadillac, Michigan. Additionally, Doug was also chief engineer and part-time DJ for Radio WATT.

Founded Avtronics

In 1950 Doug founded Avtronics in Traverse City, a company manufacturing low frequency radio beacons for civilian airports. He sold Avtronics in 1963, and began Comare Electronics, manufacturing VHF and UHF amateur radio equipment. During his time running Avtronics, Doug established the VHFer magazine. This was taken over by Loren Parks K7AAD, when Doug joined the ARRL staff in 1965.

Doug began his work on the ARRL Headquarters staff as an assistant Technical Editor. In 1968 he was promoted to The ARRL Handbook Editor and Laboratory Supervisor.

In 1970 he succeeded the late George Grammer WIDE, as Senior Technical Editor and Technical Department Manager. This marked the beginning of what I can only call the "Golden years" of QST magazine. Every issue seemed to be full of good technical articles and worthwhile projects to build.

Produced Books

Doug DeMaw produced and wrote several books during his time with the ARRL. His book Solid State Design For The Radio Amateur, which he co-authored with Wes Hayward W7ZOI, was the classic.

Personally, I believe Solid State Design to be probably the best technical book ever written on Amateur Radio. It was written exactly 20 years ago and I still use it constantly in my radio construction activities. I understand that the co-authorship was not an easy road...but it has entertained and informed me for all its 20 years.

Doug served on the ARRL staff for over 18 years and is said to have written more than 200 technical articles in QST magazine. He earned several patents for his research work and practically invented the concept of QRP construction.

Doug had a great love for low power h.f. band Amateur Radio and his many articles were largely responsible for popularising QRP operation with home made equipment. Doug's wife, Jean WICKS, also worked on the staff of the ARRL and their son David is licensed as N8HLE.

Retired Early

Doug retired early, in 1983, on the death of his father, and returned to live in the family farm in Michigan. It was then I believe he did some of his best writing.

The small series of what I call books that I read constantly!

It's not difficult to work out that W1FB was my hero. I have been inspired by his work for many years and he has kept the hobby alive for so many people.

It's a lucky man indeed who can come to know a hero as a friend and I am glad to say that happened with Doug. When I began my writing for amateur radio magazines, Doug DeMaw was my model.

The ARRL staff used to say of Doug: "he wrote it once and it was done!" In the 1960s it was more than pleasant when he subscribed to SPRAT, the journal I edit for the G-QRP Club and absolutely delighted when he began to write to me about SPRAT and even about the articles I wrote for UK radio magazines.

Visited in 1992

We exchanged mail for several years and I first visited Doug at the end of a trip to the Dayton Hamvention in 1992. Dick Pascoe GOBPS, and I did the day's drive from central Ohio to northern Michigan to visit the Oak Hills Farm.

It was a visit to a deity! The farm house lies just outside the tiny village of Luther among the lakes and forests of north Michigan.

The house is beautifully restored and much of the surrounding land has been left to return to the wild. Here Doug followed his other great loves: black powder shooting, hunting and cooking with natural ingredients.

We were served wild deer and onions gathered from the local forest. Jean DeMaw was a lovely hostess as well as being a keen shot with a muzzled loaded rifle!

On my next visit to the Oak Hills Farm, I was presented with a wooden plaque which had my callsign burned on a deer jawbone. It had the inscription: "Primitive Man Endorsement. In recognition of the accomplishments of Rev. George DeMaw W1FB & the Rev. George Dobbs G3RJV.

Doug DeMaw W1FB was G3RJV's hero and George was delighted to play the part of 'Mountain man & Buckskinner' in tribute to his friend.

Dobbs G3RJV, who has demonstrated at Luther, Michigan, his skill and deadly marksmanship with primitive muzzle-loading weapons, for having eaten wild deer meat and for gnawing native grog at the Luther tavern. Rev. Dobbs has earned the title of Mountain Man and Buckskinner; by the hand of Doug DeMaw W1FB, 1994.

I also cherish a small cup fashioned from deer horn by Doug and presented to me on condition that it would only ever contain spirits!

Hall Of Fame

In 1992, the American QRP ARCI, revived the QRP Hall of Fame Award and Doug was the first named recipient. I was also chosen to receive the award at the same time as Doug.

My own Amateur Radio writing is modelled on Doug's style and I have always tried to make it as interesting and worthwhile as his work. Doug was presented with his plaque first and I received mine after I joined him, I looked up to him and said, "I don't know why they gave me one of these!"

Doug looked down from his great height and in the deep voice, that always reminded me of James Stewart said: "I reckon for about the thing anyone has ever said to me!"

The last contact I had with Doug DeMaw was about 10 days before his death. He sent me an E-mail. It was a joke about a man (Nothing else). An era in Amateur Radio has ended!
Looking back at the review I did on the original 'Target' receiver from AKD which was published in the November 1996 issue of *PW*, I can remember being rather impressed with the budget-priced unit sat on the desk in front of me.

Time has flown by, it's over a year since the original receiver arrived on the market and now it's been joined by a more 'up market' version - with some rather special facilities.

**Horses For Courses**

It's a case of 'Horses For Courses' in this joint 'opinion' prepared by Tex Swann GITEX and myself. I'm looking at the general receiving side and Tex is looking at the computing department - and his comments follow mine. So, what's arrived this time...is there any difference?

I was immediately impressed when I opened the packaging following Tex's turn with the new AKD receiver. What immediately strikes you is the neat finish and tidy look about the cabinet. It looks 'finished' and the controls are comfortable to use.

And as I usually do - I took a long and critical look - and then used the receiver on the bands. And what a surprise - a good little receiver has been made even better!

Sensitivity, selectivity and general receiver operator seem to have been improved greatly. The 'switchyness' of the synthesiser steps seem to be much less noticeable and the i.e.d. 'dial' on this model (illuminated) was clear and easy-to-read.

On the broadcast bands the receiver was quite excellent for its class. The 'acid' test down on the south coast is trying to receive the BBC World Service on 648kHz. Quite a challenge - and it did very well.

Up on the h.f. broadcasting bands I did a lot of listening and quite frankly I was again very impressed. The internal speaker was good and the (rather misnamed) 'headphone' output socket proved to give very adequate good quality drive to an 821 hi-fi loudspeaker. So, as I worked on another job for *PW* I listened - and enjoyed!

**On The Air**

During one evening I actually used the receiver during c.w. QSOs on 3.5MHz - very successfully. Okay, the selectivity is not up to the standard of my narrow filtered Alinco DX-70, but it proved very good indeed for a general purpose and still relatively budget priced receiver.

Both s.s.b. and c.w. reception modes were easy to use and the receiver provided very acceptable performance. The only difficulty occurred whenever the station being received was awash with the selectivity of the synthesiser. But I quickly learned to tune up or down slightly before tuning in with the 'clarifier'.

The supplied antenna was adequate, but the receiver now works very well indeed on the 'main station' antenna, with switchable attenuation available on the rear of the receiver.

Using the supplied mains 'plug-in' power unit the receiver worked extremely well down to approximately 600kHz. Then the receiver became very sensitive to harmonics obviously being received from the power supply itself. I proved this because the same effect happened when I used a similar p.s.u. on the receiver.

The extremely annoying 'buzz' (obviously harmonics from the power supply, disappeared totally when I ran the receiver from a 12V d.c. battery source (an old car battery I keep in the shack). Using this, the receiver proved to be very quiet and superb in its class and I was able to receive some fascinating signals down to well below the 73kHz amateur band. Even the I.F. aircraft beacons were romping in.

Most impressive!

When I used the receiver on my main station (electronically smoothed and filtered) p.s.u. the I.F. performance was almost as good as on a battery supply. But I must point out that my comments are not a criticism of the receiver (it's obviously more towards the power supply) - but perhaps they only draw attention to its sensitivity!

**What's The Score?**

So, what's the score from G3XFD for the Target? Well, I'm pleased to say that I feel that the receiver is a little
gem. I thoroughly enjoyed using it and found the neat, tidy and 'no fussy' case and presentation to be to my liking.

I also think that with the simple presentation styling adopted by AKD, that the receiver could be incorporated into a portable station. I'd certainly consider this option as I could then concentrate on making a transmitter to suit my requirements. With this in mind I’ve recommended to AKD that they consider making the same receiver available without the software, because at around £200 or so... it would be a very competitive little receiver indeed.

Now it’s Tex’s turn to try receiver: so... over to you GITEX:

All received Rob! I won’t dwell on the basic reception capabilities of the new Target HF3E receiver from AKD. I’m sure that Rob will have said enough about it!

Instead I’m going to concentrate on the computer side of its use. The items that set this version of the receiver apart from its earlier model are two new leads and two 1.4Mbyte disks with IBM PC software on them. The software breaks down into two distinct parts.

The first of the two pieces of software I shall deal with is the AKD Receiver Control Software. The initial issue of the software is a DOS based product that users of Windows (either 3.11 or 95) are warned to exit to the DOS prompt before trying to run the program.

**Procedure In Detail**

The installation procedure is given in good detail in the slim, but complete manual. The commands needed to run the control program is automatically put into the ‘CA AKD’ batch file to run it. The more adventurous could create their own batch file to run the programs from the DOS prompt (and if needed could call up windows again after it has terminated).

Once the software is installed on the hard drive comes the time to fit the control cable. The cable is fitted to the parallel (printer) port of the host computer and connects to a special nine pin socket on the rear of the rig. I experienced no problems at all in use, although I felt a switch box to select either the printer or the control cable would be a distinct advantage to many users.

One option would be to fit a second printer interface card and use this for the printer. However, after some period of use with both pieces of software I came to the conclusion that the switcher box was the better of the two. But I’ll explain more about this later.

**Calibration Mode**

On first running, the software goes through a calibration mode. (Before carrying this out you must disconnect the antenna from the unit). This has two effects: one is that it checks to see how fast the display of the host computer is, and how fast the display can be updated.

The second part of the calibration checks the maximum and minimum signal strength readings from the particular receiver. A zero signal strength check is then made, followed by a full signal level, where the receiver is tuned to an internally generated carrier.

All the required steps for self-calibration are quickly done and the various parameters are stored in a file. When running the control program (shown in Fig. 1), you can drive the frequency and mode from computer stored memories (500 as opposed to the 10 of the rig alone) or directly by selecting frequency and mode.

You can recalibrate the signal strength set-up whenever you wish to do so...it is on the start-up menu. I then tried out the spectral display mode, in Figs 2 & 3, I’ve shown two typical displays.

When in spectrum mode, you chose the start frequency, then the scan width from six options (Fig. 4). The six options are bandwidths from 200kHz to a full 30MHz. In Fig. 2 I’ve shown a scan of the complete 30kHz to 30MHz spectrum scanned in 120kHz steps.

I was so distracted by the enormous signals in the short wave band that I almost missed the small signals in the 28MHz band. I would never have found these without the spectral display!

The photograph Fig. 5 is of the lower part of the 50MHz spectrum where there are the large signals of the long wave band and the lower part of the medium wave band shown. One of the things I felt needed ‘looking’ at with the original AKD receiver was the noise floor on the L.F. band. With using the supplied p.s.u. I found I could listen to the long wave stations with ease and the various utility stations came in quite strongly. I felt this really was a distinct improvement over the original Target receiver.
The Other Software

But now to the other software supplied with the AKD Target HF3 and that is a copy of FAX and RTTY reception software. I am not particularly familiar with this type of software and to make the most of it I needed to take a couple of books home with me for some homework.

The ‘Tarfax’ data mode software installs itself as easily as the receiver control software, but this time chooses a sub-directory called ‘WEATHER’. From within this sub-directory typing the command ‘Tarfax’ starts the program up.

When using this software another lead must be plugged into the 3.5mm socket on a flying lead on the parallel port plug, and the parallel port plug must be disconnected from the host computer.

To complete the connections the other end of this new cable, fitted with a single nine-pin plug (like a PC mouse so you need a converter if your machine has only got a 25-way serial port) is connected into the serial socket of the host PC.

It's at this point I'll go back to the switcher box or a second printer port dilemma I mentioned earlier. If the printer port is left connected it is impossible to use the radio's own controls, other than the volume and Clarify ones.

So, even if you have a second printer port, you would still have to unplug the radio from it, and this must be done at the computer end. I think that the best option is to use the radio's own controls, other than the volume and Clarify ones.

Now back to the screen, on choosing RTTY working from the initial menu a simple DOS style communications window is displayed. In the top part of the screen the incoming decoded text is shown. Underneath are indicators of the upper and lower frequency limit of the incoming audio tones, and if the decoded text seems to be in order.

Other than choosing which serial port is to be used, there is no other setting up to do, and I found that it worked quite well. Incoming text was displayed with only the occasional error that was due to a poor r.f. signal.

One nice touch with this decoding software was by pressing 'H' a histogram of the audio passband of the audio signal was displayed. With little experience of this part of the hobby, and not knowing the sound I should be listening for, this alone was a great help.

The FAX software is a copy of NASA marine software, licenced especially for use with the AKD Target radio. However, as FAX via radio was even more of a 'black-hole' than RTTY, I needed more books to get me going and in the end a change of keyboard.

If there was an histogram screen, such as that available in decoding RTTY then it would have been much easier. In fact, I spent a period using the RTTY histogram screen 'training' my ears to the sound of a FAX signal so that I could get the audio signal right by using the Clarifier control.

After a change of keyboard all went much better. (I had a cheap one that I'd had to re-assign keys to produce the slashes etc.) This training paid off, as I found it easy then to tune around and look at the various incoming FAX signals. However, I was unable to correct the tremendous slant on the 'picture', it was this slant that, being unable to correct, I assumed I had to 'tweak', the Clarifier control.

If you do use this software as I did, I recommend changing to this software when using the Target in this mode. The set is very stable in frequency, it's small and light, using little power at 12V and is an interesting package with all the control and decode interface cables thrown in. All-in-all I feel it is still good value for money. So, it’s now time for me to hand back to Rob to ‘sign-off’!

Thanks Tex! And our joint 'thanks' go to Val Wagstaffe and colleagues at AKD, Unit 5, Parsons Green Estate, Boulton Road, Stevenage, Hertfordshire SG1 4QG. FAX: (01438) 357591 for the loan of the receiver which costs £299 and is available from all leading stockists of AKD products or direct from AKD via their Mail Order Sales Dept. Contact Val on (01438) 351210 for a catalogue and further info on the HF3E.

Receiver Improved

As to the radio side of the package I feel that the receiver itself has been improved and it gives a very clean sounding tone on a strong a.m. signal. But for my personal preference I would pass the audio to a selectable filter for long periods of listening to s.s.b. work.

I find listening to an audio signal with a large high frequency content very tiring. When using the radio of the Target receiver on s.s.b. to be just a little 'bright'. This is a personal preference and is not in any way a criticism of the AKD itself.

The set is stable in frequency, it's small and light, using little power at 12V, and there is an interesting package with all the control and decode interface cables thrown in. All-in-all I find it to be still good value for money. So, it's now time for me to hand back to Rob to 'sign-off'!

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But with the FAX and RTTY decoding software, I feel they are both a little on the simple side to keep everyone happy. If I could I would keep the AKD receiver (and I would like to keep it) it's a very nice and simple rig to operate at all times I would change to a rather more comprehensive decoding software package.

Editorial Note: AKD are looking to include HamComm and JVFax discs in the HF3E package. They have obtained permission from HamComm but are having difficulty contacting JVFax for their permission. Can anyone help? In the interim there is a registration form with each HF3E receiver to enable customers to receive their free discs, as and when (if?) permission to supply is obtained.

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Antenna Workshop

By Gerald Stacey G3MCK

Gerald Stacey G3MCK shows his Preferences, when he says there’s only one antenna for the typical amateur.

When it comes to antennas, I’ve been told I’m prejudiced, and I have to admit, it’s true. I am prejudiced when it comes to antennas. I think the dipole is the premier antenna for the typical amateur. It is cheap, easy to install, effective and is good where electromagnetic compatibility (e.m.c.) or just plain radio interference (r.f.i.) is a problem. The many standard handbooks give charts which show in great detail the properties of dipoles. But let’s see what they mean for the typical amateur who puts up a horizontal dipole at about 10m above the ground.

With a dipole up at about 10m, the s.w.r. on 3.5MHz should be close to unity. The s.w.r. figure may rise to about 2:1 on 10MHz, and then fall back down to about 1.5:1 on all the other h.f. bands.

Hence, with such an acceptable s.w.r. figure, an a.t.u. will not normally be needed. This removes a potential source of losses and of course it’s one less box in the shack.

On 3.5 and 7MHz the dipole’s horizontal radiation pattern will be virtually omni-directional. This means that you don’t have to consider in which direction you erect it.

On the higher bands the maximum radiation is broadside to the wire. However, it is a broad beam, the lobe is about 90° wide, so it is not too important to align the antenna correctly. (If you can select from two dipoles erected at right angles all-round coverage will be available).

The Classic Dipole

The illustration of Fig. 1 shows the layout of the classic dipole. This is of course an ideal arrangement for a dipole. Note that the feeder comes away at right angles for as far as possible then runs close to the ground.

The approach illustrated minimises r.f. pick up on the outer or braid of the coaxial cable. On the dipole length B-X is the same as C-X, point A is a support point on the house.

There are purists who may wish to insert a balun at point ‘X’ in Fig. 1. But this is not usually necessary on the lower h.f. bands where the ratio of the length of the dipole to the diameter of the coaxial cable is very large.

In most cases ‘pick up’ on the braid is more likely to be caused by the feeder running too close to the dipole. And, if this is the case, then fitting a balun will do very little to prevent this.

However, there are known cases where the inclusion of a balun has cured an e.m.c. problem so keep an open mind on this. On the other hand excluding the balun does remove one other potential source of losses and also enables you to easily test that all is well.

Now I’m coming to the perennial problem of the length of the dipole. Here you should remember that the correct length of a dipole, at any one frequency, is a little less than half a wave-length.

But, the ‘little less’ figure depends on the dipole’s height above the ground, the diameter of the wire and the nature of the ground beneath it. (Equations are available which to some degree take account of these variables which can make the maths side easier to work out).

Happily you can ignore these equations for the length of dipoles, as all you need to do is to adjust the dipole for minimum s.w.r. using a reflectometer type of s.w.r. meter.

A bridge, such as the one described by the Rev. George Dobbs G3RJV, in PW January 1997 is ideal. (A laboratory instrument, such as a Wheatstone bridge type of resistance measuring bridge is not satisfactory for this purpose).

In the real world of amateur radio, due to lack of space, it may not be possible to erect a dipole in the manner shown in Fig. 1. Fortunately however, all is not lost.

A dipole will accept quite a lot of abuse before its effectiveness is severely degraded. (There are two widely used methods of ‘abusing’ a dipole and these are to shorten it, or, the other method is to bend it). In practice, either shortening or bending a dipole, will increase the losses or reduce the bandwidth. They will also lower the feed impedance which will probably show as an increase in the s.w.r.

But, on the plus side, if the length is not reduced by more than about 50% or the bending is done with care, losses should be acceptable and the s.w.r. should be no greater than two or three to one.

So, let’s go into various implementations of these shortening an. or. bending dipole elements. As with the full size dipole all the following configurations are adjusted to give minimum s.w.r. using a reflectometer type of instrument.

The Loaded Dipole

Physically shortening a dipole is shown in Fig. 2. It shows how a short dipole can be brought to resonance by means of a loading stub. And although this antenna may look like a GSRV but beware, it isn’t! The top (AB) should be made as long as possible and the length of the stub (CD) should be adjusted for minimum s.w.r. A good starting point is to make the total length of the wire in the antenna somewhat more than half a wave-length.

The diagram of Fig. 3, shows the use of loading coils (shown at

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**Fig. 1:** This form of dipole is quite effective at h.f. and should work on all bands.
Coaxial cable
To rig

Fig. 2: Using a tuning stub (C-D) makes the dipole look like a G5RV antenna, but is still nonetheless a dipole.

points L in the drawing) to achieve the same effect. The optimum point for the coils is about 50-70% away from the centre point.

A dipole such as the one shown here should be adjusted for minimum s.w.r. by trimming the end sections at A and B. For guidance, if the top is λ/4 long and the coils are in the middle of each leg then the reactance of each coil should be about 900Mohm at the desired frequency.

The efficiency the antenna shows, depends on the quality of the loading coils. A good design should incorporate air spaced coils made from thick wire. (When it rains or snows you may find that the antenna will not load: on such days you may be reduced to tidying the shack out.)

A short dipole can be capacitively end-loaded to make it resonate as shown in Fig. 4. However, in practice a symmetrical layout is not usually necessary and just bending the ends (C-A or B-E) achieves the same effect.

The lighter lines A-D and B-F, shown in the illustration, are alternative directions. But if they are additional then they add greater end loading capacitance, allowing a shorter distance between points A and B for resonance on any frequency.

Bend the wires where it's convenient. The ends do not have to be bent in the same direction or plane. But try to keep the straight centre section (A to B in the diagram) as long as possible.

Bent Dipoles

Now it's time to move from loading dipoles with coils or capacitors, to bending the whole dipole. Of the 'bent' dipoles, probably the most well known variant is the inverted-V dipole. (This antenna variation can be erected with only one support at the mid-point).

Using one of the variants of the 'bent' dipole, can have a big advantage as a (socially accepted) dummy TV antenna on the roof of your house can fulfill the role of support. As the centre support carries the weight of the feeder and centre insulator, the dipole itself can be made virtually invisible by using very thin wire and mono-filament nylon at the ends without end-insulators.

Finally in the bent dipoles department, Fig. 5 shows the Reinartz loop which is a highly bent dipole. In fact, this is so bent it resembles a loop antenna - but note that the ends of the dipole do not touch at the top.

Any insulator used at this point must be of good quality as very high r.f. voltages can be generated, even at QRP power levels.

Now I'll turn to hybrid and asymmetric dipoles. And it is perfectly feasible to combine any of the above methods if circumstances so dictate, as Fig. 6 shows an inductively loaded bent inverted-V dipole.

In this case it's probably desirable to place the loading coils at the point where the antenna is bent. The bent ends can, as before, go in any direction, even perpendicular to the plane of the paper.

Another feasible configuration is when a dipole can be erected with one leg straight and the other leg bent to fit into the available space. In fact, the possible variations are only limited by your imagination.

All Work

All the above antennas work! Which variant of the dipole is best for you, will be driven by your circumstances as all antennas interact with their environment in unpredictable ways.

It will probably be necessary to experiment to get any of them to work. If the first configuration you try doesn't work very well, then try another. This is what amateur radio is about, experimenting and trying to get good results from impossible sites.

Good luck with your trials!
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By Bob Griffiths G7NHB

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This book is the reference and learning source which has been so highly recommended by Rob Mannion G3XFD in his series 'Discovering The Basics' in PW. In fact, Rob regularly refers readers to this book which he consider to be "excellent".

Older readers may well remember the famous 'Common Core' Series of Books entitled Basic Electricity, Basic Electronics, etc., and these are the books which Rob considers to have been replaced by Understanding Basic Electronic. Rob says that: "the ARRL have produced an excellent textbook and I think that their statement that they have aimed the book at being a basic introductory source for all students (not just Amateur Radio) is spot on and they have scored a direct hit"!

The book covers the subject of introductory electronics in concise 'blocks' with excellent text, diagrams and occasional humorous cartoons and comment. Very readable and very highly recommended.

GMDSS For Small Craft

By Allan Clemmetsen

£11.95

Allan Clemmetsen, a Radio Amateur himself, takes a look at how the Global Maritime Distress & Safety System (GMDSS) works. In this interesting and helpful book (of very great interest to the small boat owner of course) will prove to be helpful to any radio enthusiast wishing to learn about specialist satellite-based systems.

Its interesting, non-fussy approach with plenty of simple diagrams, illustrations and simulated displays and comments will prove very helpful to the radio enthusiast and student navigator alike. Interesting and helpful introductory source.
Amateur Radio in Germany

By Angelika Voss G0CCL/DF2XV

Angelika Voss G0CCL/DF2XV explains how Amateur Radio operates in her home country of Germany, as well as offering advice on what you need to do to operate from Germany, if you're visiting from abroad.

As radio amateurs we are used to communicating with people from all over the world and having long chats with people we may never see in countries we may never have the privilege to visit. But do you ever stop to wonder what it's like to be a radio amateur in another country? How easy or otherwise it is to get a licence, how the national society operates and what the local clubs are like?

When travelling abroad do you make a point of taking radio equipment, or of establishing contact with local amateurs either before going, or whilst you are there? And would you know how to find out about rallies and other events?

Being one of the UK's near neighbours, the Federal Republic of Germany is one of the more accessible places, and one which most people are likely to have visited or passed through at some time in their lives. Germany has one of the largest radio amateur populations in Europe - and with just under 60,000 members, its National Society is one of the largest amateur radio societies in the world.

National Society

The national society in Germany is called the Deutscher Amateur Radio Club (DARC). Like most of the larger National Societies it runs as a business employing full-time staff.

The DARC Headquarters is located in Baunatal on the outskirts of Kassel. A total of 30 people look after the day-to-day running of the Society, with a further five working on the monthly magazine CQ-DL. Book publishing and distribution are looked after by a subsidiary company called DARC Verlag, which employs a staff of six.

The organisational structure of the DARC is somewhat different from that of the Radio Society of Great Britain (RSGB) in that it's based on a four-tier system. This consists of Local Group, District Council, National Council and Executive Committee.

Unlike in the UK, local radio clubs are part of the national society and are funded out of national society subscriptions (which means that it's impossible to be a member of a local club without being a member of the National Society, and vice versa). The membership of DARC is divided into geographical districts (similar to RSGB zones, but covering smaller areas).

There are 24 DARC districts made up of a total of over 1,000 local clubs. Each district has a district assembly which consists of the chairmen of the local clubs. The district assemblies each elect a representative to represent them on the National Council.

The National Council of the DARC (known as Amateurrat) is made up of the elected representatives of the 24 districts. Unlike in the UK, individual members have no direct say in who serves on their National Council, but have to trust their club chairmen to make the right choice.

The Amateurrat elects an Executive Committee consisting of the president and two vice-presidents, these are elected either from within their own ranks, or from the ranks of committee chairmen or other officers of the Society. The Executive Committee is elected for a term of two years, but its members may stand for re-election as often as they like.

The philosophy in Germany is that 'continuity is a good thing', and providing they did a good job in their initial term of office presidents and vice-presidents are generally encouraged to stay in office almost indefinitely. The current president is Karl Vägele DK9HU who was elected in May 1997 after having served as vice-president for two years. The vice-chairmen are Walter Schlink DL3OAP (on his second term of office) and Jochen Hindrichs DL9KCG (newly elected in May).

Like the RSGB, the DARC has a combination of one letter codes (represented by the DARC district) and numbers, known as DOK numbers.

Award hunters will be quite familiar with DOK numbers, as they form the basis for a number of awards including the German equivalent to the Worked All Britain Awards. The DOK numbers are made up of a combination of one letter (representing the DARC district) and
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Germany is straightforward for UK travelling by car. Getting on the air in are visiting the country on holiday or DXpedition Country’ it’s well worth

While Germany is not exactly Operating In Germany

DOK numbers are published annually a two-figure number. The lists of DOK numbers are published annually by the DARC.

**Operating In Germany**

While Germany is not exactly DXpedition Country it’s well worth Operating In Germany. This German-Dutch Convention takes in the town of Bad Bentheim in late August and offers a two-day programme of activities and attractions for the whole family. There are also numerous regional events ranging from half-day local flea markets to two-day meetings held over weekends. The two-day events usually include various social activities such as children’s entertainment and a party or dinner dance on the Saturday night.

**Obtaining A Licence**

While theCEPT licence covers short-term visits, those wishing to stay in Germany for more than three months will need to apply for a German Amateur Radio Licence. Holders of UK Class A and B licences may obtain a German licence on the strength of their UK licence without having to take the German RAE. If you do exchange your licence don’t be surprised if your British Class A licence comes back as a German Klasse B, or your British Class B has been turned into a German Klasse C. The designation of German licence classes is somewhat illogical (for historical reasons).

There are three licence classes in Germany. These are Klasse B which is roughly equivalent to UK Class A, Klasse C which is equivalent to UK Class B while Klasse A is an intermediate licence allowing limited access to the h.f. spectrum in addition to v.h.f./u.h.f. privileges.

The written exams are the same for all three licence classes but there are different pass marks for the technical paper. These pass marks are 50% for Klasse C, 65% for Klasse A and 75% for Klasse B.

There is no Morse code requirement for Klasse C. Klasse A requires a pass at 30 characters per minute (c.p.m., approx 6w.p.m.) while a speed of 60c.p.m. (12w.p.m.) is required for Klasse B. There is no Novice Licence in Germany at present, but some discussions have been held between the DARC and the Licensing Authority about the possible introduction of a new licence class for beginners.

The callsign prefixes for Germany are: DF, DJ, DK, and DL for Klasse B, DB, DC and DG for Klasse C and DH for Klasse A. Callsigns starting with DE are not real callsigns but ‘honorary’ ones awarded by the DARC to short wave listeners who have passed the voluntary tests. The DA prefix was reserved for members of Western Allied Forces stationed in Germany but has now been allocated as a prefix for club callsigns.

**Quite A Difference**

When it comes to licensing exams and Morse tests quite a few differences exist between Germany and the UK. The German RAE is a written exam (not multiple choice), and it comes in three parts which consist of a technical paper, a paper on rules and regulations, and a paper covering operating procedures. The Morse test also comes in three parts consisting of random five-letter groups, a passage of clear language, and a passage of typical QSO text.

Unlike the UK, there are no fixed dates for the RAE, as exam dates are set by local centres according to demand. The exam and Morse test are administered by the licensing authority (although this is expected to change in the near future as part of the privatisation process). As the exams are also marked locally it is often possible to take the exam in the morning and pick up your licence before the close of business on the same day. Some people have even been known to take the RAE in the morning, sit the Morse test after lunch and appear on the air a few hours later with a brand new Klasse A or Klasse B callsign!

Until very recently the minimum age for obtaining a licence in Germany was 14, and amateurs under 16 were only able to operate under supervision. Both restrictions have now been lifted.

And finally I would like to thank DARC Head Quartes, and Hans Berg DJ6TJ (Chairman of the International Liaison Committee) for the assistance they have given me in compiling this article.

**More Information**

If you want to find out more about operating in Germany the DARC maintain a large database of information at their headquarters in Baumatal, and their staff will always be more than happy to assist visiting amateurs from abroad. They can provide you with up to date repeater lists, put you in touch with local clubs, and answer any specific questions you may have.

For those who need to apply for a short-term reciprocal licence (i.e., from countries which are not covered by theCEPT agreement) the DARC will handle the paperwork on behalf of the Licensing Authority. You can contact the DARC (in German or English) at Postfach 1155, 34216 Baumatal, Germany or by FAX on 0049 561 9498850.
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The Rev. George Dobbs G3RJV says he’s got a few ‘Tips & Twinkles’ for Christmas this time. And along with providing some useful ideas and experience with light-emitting diodes George says...it’s ‘fun project’ time!

All that time (for some of you...I’m very busy of course!) - all those old films on television - all those relatives to smile at - all those toys which haven’t any batteries - all that food. Is it surprising that the constructor’s idea of a good Christmas is to be locked away in the workshop with a full glass and a hot soldering iron.

Some of my best construction projects began on the evening of a Christmas Day. After work of course! Escaped the family? Closed the door? Switched on the soldering iron? Well here are a few tips and a circuit.

The circuit is by way of a ‘peace maker’ for the season of good spirit and peace. And when you hear the prompt: “Where have you been”? or “What have you been doing all this time”? the answer can be “I have been making this for you”!

But first some handy workshop tips to begin a new year at the bench. After you’ve tidied it up!

Sealing Wax & String

Many years ago I used to keep a supply of waxed string for cable harnessing. Making an harness for loose cable in a project can improve its appearance and help to gain access to the parts on the board. Why make a neat circuit board and then cover it with a rat’s nest of connecting wires? I used to rub wax into normal string and then carefully bind the loose cables, followed by a quick stroke of a hot soldering iron tip across the string melted the wax to keep the cables in place. I said “used to” because I don’t make up wiring harnesses any more. It’s far too tedious even for the most tidy-minded builder!

My direct replacement is the use of mini cable ties. Just slip them over the bundles of cables and pull them tight to have a neat line of cable. No cable ties? Then try the kitchen for freezer bags grips. The small ones do the job very well. Dustbin bag ties work well for larger bundles of cables. I have rarely used sealing wax in the workshop itself but a block of beeswax is always on the side of the bench. This is invaluable stuff which I first came to value through the wisdom of Ian Keyser G3ROO.

The dielectric properties of beeswax are good and it’s easy to use. I use spots of it to hold items on to circuit boards, especially where stability is important, like in a v.f.o. project. The wax melts very easily with the tip of a soldering iron and can be dripped on to the required place. The solder iron comes out of it well - the surplus wax just burns off without any problems.

My favourite use of beeswax is securing the windings in home-made

---

**Fig. 1:** George Dobbs G3RJV’s ‘Nlarpt Clothes Peg’ idea for producing a useful ‘third hand’ (see text).

**Fig. 2:** The modified multivibrator circuit used to provide a flashing i.e.d. novelty circuit.
coils. When the coil is wound, drip a little of the melted wax on the windings.

Then you should gently run the iron along the winding and as the wax melts it runs into the wires to hold them in place. Remember to let the inductor cool before expecting it to be frequency stable.

I have also lightly coated coil formers and toroids with beeswax before making a winding. This helps to hold the wire in place as the coil is wound.

Friendly Hand

One of the more useful small items on an electronics workbench is a 'third hand'. They're really useful because so many of the 'fiddley' jobs associated with the making of electronic circuit boards require manipulation not far short of juggling!

Holding the board, the soldering iron and the solder all at the same time and getting a good joint is not easy. A third hand is very useful!

I have a commercially made 'Third Hand' which consists of a couple of crocodile clips on universal joints, mounted on a heavy base. The work can be held in one, or both of the clip and the operator is free to perform the task.

Before I was bought the useful aid as a Christmas gift (too late to ask for one now?) I had a home-made version. This was a single 'Bulldog' stationery clip (the type you often see attached to 'clipboards' bolted to some stiff wire which was screwed to a heavy wooden block. It worked very well.

'Mans' Clothes Peg

My more recent home-made third hand has been even more useful because it's light and I can carry it around in my tool bag. I call it the 'Mans Clothes Peg'. In reality it's made up from three clothes pegs mounted on flexible wire in a 'triform' shape similar to the 'Three legged' Isle of Man symbol... hence the name! (The photograph in Fig. 1., shows how my version was made).

Choose three household wooden clothes pegs. It's an advantage if one of the three has a stronger than average grip. Loop over and twist some stiff copper wire - say about 16-18s.w.g. Next, the looped end is screwed, or bolted, to the clothes peg. The other end, say about 40mm away, is opened up and soldered to the other three peg wires.

Your finished result will be a very useful little tool. The strongest gripping peg can be the anchor - to any convenient place. The other two pegs are the grips for the work.

The stiff wire should be firm enough to hold the job in place for soldering or other tasks. It only takes five minutes to make and can be put with the other tools ready for use.

Circuit To Please

Finally, here's a little circuit to please the family! And isn't it amazing how they misunderstand our intentions?

So often the family think we are wasting our time, or merely escaping their company. And this belief is amazing because there are so many electronic items about that people love to buy. Yet they do not see any advantage in what we beaver away at in our workshops!

Perhaps if the results did something more interesting in their eyes, they would understand a little more? So, to help overcome the misunderstandings this little circuit, while not exactly a 'cyber pet', might just interest some members of the family!

The circuit is shown in Fig. 2. There's not much to it - and you'll probably recognise the circuit. And of course it's a multivibrator circuit driving l.e.d.s. (in this case six). But what can it do you may ask?

In answering your likely question the circuit does the following: when one transistor is switched 'on', the other is switched 'off'. The 'switched off' transistor will illuminate the l.e.d.s in the respective collector circuit. The end result? - the circuit flashes the l.e.d.s on and off.

But why use six l.e.d.s? Answer: quite simply, it's more interesting and appears to be doing more than it really is doing!

Optical Trickery

The best optical trickery is produced by not having the two pairs of three l.e.d.s together. Mounting them so that they alternate between l.e.d.s from each side produces a good effect.

Your project will be quite 'twinkley' - ideal for a Christmas star, or mini bedroom disco effect. Having different coloured l.e.d.s is even better.

My version used all red l.e.d.s in the first model, as shown in Fig. 3, but changing these to one red, one green and one yellow per side produced a very pleasing effect. The effect goes far beyond what you might expect for a few l.e.d.s flashing alternately!

Try experimenting with the values for C1 and C2, this will vary the flash rate. Some combinations produce more pleasing effects.

Build it - package it nicely and go and show it to them before they come looking for you. The secret of a Happy Christmas and then you can get busy building more projects for yourself and your gift might encourage more of the family to join us in the hobby!
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Over the years, radio and TV receivers have carried news and images of momentous events. Each was in the early hours of Sunday, 31 August 1997, with news of the death of Diana, Princess of Wales. How many of you, like me, will now forever associate the news of that tragic event with one particular radio?

We tend to cherish our vintage radios as simply items of electronic equipment. Too often we forget why the sets were built, the news they carried, and the tears and laughter they generated in their audiences.

So, next time you see a forlorn old radio set, think of the events it may have told of and the people who might have listened so intently. You're looking at a bit of history that helped spread news which became history!

Christmas Is Coming!

On a brighter note, you may have noticed that Christmas is coming... and will soon be here! So, to help anyone who is having trouble I thought I'd mention a few books which might make ideal Christmas presents for the 'thermionically' inclined.

To begin, there are two really excellent books I haven't mentioned before that are now available from the PW Book Store. Both are American volumes that have recently been reprinted by Lindsay Publications Inc. of Illinois.

The first is The 1934 Official Short Wave Radio Manual edited by Hugo Gernsback. The first half is mainly made up of constructional articles about short wave receivers. There are also a few articles of a more general nature, including one entitled 'Can We Radio the Planets?' (Yes, 'moonbounce' was being seriously talked about way back in 1934!)

The remainder of the book is a directory of (supposedly) all the commercial short wave receivers available in the USA at the time. There's also a 'sort-of' radio servicing guide, and each receiver has at least its circuit diagram reproduced and most have servicing information included too. This section is extremely useful for anyone interested in early commercial receivers.

The second book - Henley's 222 Radio Circuit Designs - was originally published in 1923. It has chapters on tuning, antennas, crystal sets, regenerative detectors, audio amplifiers and transmitters.

What interested me were two circuits of very early superheterodyne receivers. Because only triode valves were available the intermediate frequency had to be very low. One circuit even uses resistance-capacitance, as opposed to transformer, interstage coupling.

Still very much available and ideal stocking-fillers are the RCA and General Electric Valve Manual reprints. And don't forget the set of five Radio Valve Guide books, or The Handbook of Radio, TV, Industrial & Transmitting Tube & Valve Equivalents. This last reprint is particularly useful to anyone with an interest in military equipment, as it gives the commercial equivalents of both the British and American Services valve types and the CV series.

I recently got a copy of Shortwave Receivers Past & Present (second edition) by Fred Osterman. This is published by Universal Radio Research of Ohio (also available from the PW Book Store). Shortwave Receivers Past & Present is an extensive guide to over 500 amateur and commercial shortwave receivers that were manufactured between 1945 to 1996. Most of the receivers are from the USA although there are also some from Japan and the UK.

Each set featured has a photograph together with brief details about its specification, variants, reviews, cost and the period during which the receiver was available new. Most receivers have a second-hand (American) guide-price included. I'd recommend this book to any serious collector of short wave receivers, particularly to those whose primary interest lies with American receivers.

Finally, don't forget Radio! Radio! by Jonathan Hill. This popular book is now into its third edition and has been substantially expanded over the previous edition. The only problem is the price - (have a large brandy at the ready now?) - at around £35. I know this is regarded as one of the very best vintage radio books but it does alarm me when prices reach this level.

Those of you with deep pockets can...
Restoration Topics

A couple of subjects relating to the restoration of old radios have arisen since I wrote my last column. The first concerns loudspeakers and that’s my next topic.

In some cases, particularly if a radio has been kept in damp conditions, the loudspeaker cone and its support may have badly deteriorated. Alternatively, the voice-coil may be open-circuit or jammed solid due to the pole-pieces having rusted.

When the original loudspeaker is not easily repairable the question arises as to what to do. And although it is possible to recone the original loudspeaker the cost involved is hardly justified in the majority of cases.

The only realistic option is to replace the original loudspeaker with another. This is one reason why I ought never to simply replace the original loudspeaker the cost in most cases.

If you have to obtain a new unit, you might also find it in the larger book stores.

Restoration Knobs

My second restoration topic has knobs on. Or rather, doesn’t it? Here I’m echoing comments made by Tudor Gwilliam-Rees in issue 159 of The Antique Wireless Newsheet. (This is published by Savoy Hill Publications – see the classified advertisements at the back of PW for the address.)

When a control knob belonging to an otherwise perfectly restorable radio has been either lost or broken it often proves impossible to replace. It’s easy enough to pop on any old knob that ‘ll fit but that’s hardly playing the game.

What we need is a ‘Control Knob Bank’. Don’t laugh, apparently there is a real need for something like this!

So, I ask you that for now, please keep all your ‘orphaned’ control knobs safe and, most important, labelled with their manufacturer, model number and function. The same applies to those irreplaceable old dial scales.

I would also like to include aerial and oscillator coils, intermediate frequency transformers and power and output transformers in any such spares bank. In fact the list could be endless!

The Epilogue

Ah, I see it’s almost time for the Epilogue so, until it’s my turn ‘in the shop’ again, I’ll say cheerio and wish you all a very Merry Christmas and a happy and prosperous New Year.

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Practical Wireless, December 1997
The good news this month is that our reporters have noticed a definite improvement in propagation conditions on the h.f. bands. Most notably is the 14MHz allocation, with strong signals from Australia and New Zealand coming in on the long path at around 0600UTC.

By the time you read this, the dark autumn/winter nights should be upon us, and we'll be working some nice DX with simple dipoles held up with string, perhaps!

Firstly, I have an up-date on the ZB2 callsign 'pirating' reported this year. It started several months ago when I mentioned that the callsign ZB2FUM had been pirated on the h.f. bands by a station reportedly operating from Gibraltar, following information given by Mr W. Guerrero Z828B, Secretary of the Gibraltar Amateur Radio Society.

However, this month I've received a couple of telephone calls from readers who have worked the similarly-titled ZB2FU/M, who has received a couple of telephone calls from readers who have worked the legitimate! Okay?

Your Reports

I'll start your reports this month with the 1.8 and 3.5MHz bands for a change, and the log from Sean Gilbert G6UCJ in Milton Keynes, who says he's been experimenting with a m.w. loop antenna on 1.8MHz, (or 'Top Band' as it's affectionately known).

Using the loop Sean made contacts with VK2JG (Prince Edward Island), J6BB (St. Lucia Island), BV1BV (Taiwan), and 9K2MU (Kuwait), all between 2310 and 2240UTC.

It's a big 'Welcome Back' to Derek Blunden BRS171057 of Swindon, who has been tied up for quite a while with his studies. Hope everything goes well with the 'A' levels, Derek! His long s.w.i. list of this month shows 3.5MHz reception of 2N8UA (USA) working 5DL1FT at 0007, 2U2N1 (Argentina) working E1BHZ in فإرب at 2242, CY1FG (Canada) working G4CBB at 2215, as well as 2A2WVL (USA) in contact with MOAFU at midnight, and KD1WQ working GM3UHT at 2314UTC.

The 7MHz Band

Up to 'Forty' and now straight into the 7MHz band log from newly-licensed reporter Dave Nolan EIS1N from Mulingarr in Co. Westmeath, Ireland, who has been QRPing on the band. With powers of between 1 and 5W of c.w., the log includes contacts with RN4FE (Russia) at 0253, YU1WN (Serbia) at 2236, HB9CM (Switzerland) at 2100, YQ3R (Remanial at 0816, and HG5RVT (Hungary) at 0245. A warm welcome goes out to EIS1N.

Next comes Ted Wroth G2H2K on the Isle of Sheppey in Kent, and of course 'Our Ted' is an all-c.w. man. Ted has been 'invited' to the hospital again of late (hope you are well, Ted), and would like to set the record straight. No problem! So...let's get it straight: ZB2FUM is a callsign that has not been issued in Gibraltar, and is thus illegal. On the other hand ZB2FU, including ZB2FU/M, is legitimate! Okay?

The G3NOF Report

The monthly propagation report from Don McLean G3NOF in Yeovil indicates that conditions on 14MHz and the other bands in August have improved somewhat (his report is a summary of conditions on 14MHz and all the DX bands). Don says 'The long path to New Zealand has been operation lately between 0800 and 1000UTC, although the best conditions have seemed to be on the short path to Asia around 1500 to 1800, with some very strong signals indeed. During this time a few Australians were also heard'.

Don continues: "Around the same time, west coast Americans came in, and African stations were heard mostly between 1500 and 1900. There were a few Africans heard around 2200, and north and south America were good signals around 0900UTC onwards. Ted G2H2K's 14MHz log includes s.s.b. contacts with AE41AJ (United Arab Emirates) at 1800, BV5G0 (Taiwan) at 1745, D44AB (Cape Verde Island) at 1754. He also worked DU1SAN (Iceland) at 1700, Z32FD (Macedonia) at 1245UTC.

And now back to Ted G2H2K to tie up the ribbons for this month. Ted's log shows that at 1500 he contacted TV5UJRI (Iceland), SV3/SMOCMH (Island of Rhodes), and JAT7SSB (Japan), while operating at 1700 he gave a contact with EA3NO/EA3 (Ceuta & Melilla, north Africa).

Signing-Off

Well that just about wraps it up for this month, folks and it's signing-off time! I hoped I managed to squeeze you all in, although it does become difficult sometimes to give all reporters a 'fair crack at the whip' so to speak.

Thanks again, and as usual, reports and information (don't forget to include full details of your equipment, antennas, power inputs and photos!) by the 15th of each month to: Leighton Smart GWOLBI, 33 Nant Gwyn, Treflewis, Mid-Glamorgan CF46 5BN, Wales. Tel: (01443) 61480 or (01443) 710479 (9am - 6pm), Fax: (01443) 710985.
some very good tropospheric propagation occurred on the v.h.f. and u.h.f. bands during September. Contacts from the UK were made with stations as far away as Scandinavia and eastern Europe. There were also a number of weak auroral openings, predominantly on the 50MHz band, enabling contacts to be made with stations in northern England, Scotland and Scandinavia. Sporadic-E (E-P) propagation was still present on the 50MHz band during September although the openings were very much reduced compared to the frenetic activity of previous months. For the very observant, there was also a brief trans-equatorial propagation (i.e.p.) opening to southern Africa on the 50MHz band.

Tropospheric Enhancement
What was probably one of the best periods of tropospheric enhancement for some considerable time occurred in a multitude of openings throughout much of September. At the beginning of the month, September 2, the 144MHz band was reported open from eastern England into Scandinavia. This tropo opening fortunately coincided with one of the regular monthly Scandinavian activity periods (held on a Tuesday).

At the QTH of Alec Trusler G4LBP (JN01) stations worked on s.s.b. contacts were made with EA2LUP, EA3T/P (JN12) and HB9BS/P (JN38). Of course as soon as the contest had finished the conditions improved considerably!

In the period September 8-10 propagation on the v.h.f., u.h.f. and microwave bands were very good in an arc stretching from southern France, through Switzerland, Austria and south-east Germany. Among the DX reported on the 144MHz band were the stations of P5BUU (JN03) and F5SUH (JN33), both located near the Spanish border, F6KEX near the Italian border in JN35, OE3HNI (JN47) and DF1CF (JN87), DR1NP (JN56) and DK0QQ (JN68) all located near the Austrian border. Activity from Switzerland seemed very high especially on the 144MHz band. Among those reported were the stations of HB1AOF, HB1AM, HB1DQ, HB1SNR and HB1STY (all in JN36), HB3AMH/P, HB3BFL, HB3BUQ, HB3DFG and HB9RDE (in JN37), HB9FAP/P (JN46). An 80W solid-state amplifier and two stacked 12-element DJBBV Yagis. In the period September 9-10 he made s.s.b. contacts with GO6NG (J090), G3KEQ (J001), G3HAV (J001), G4DOL (J080), GARRA (J091) and G16ATZ (J074) for his best DX at 1242km.

On the 430MHz band the station of Nick Peckett G4UX (J034) reported working FE5KV (J108), FEBSJ (JN28) at 1000km and FS5EN (JN25) for his best DX in the period at 1162km. Conditions were also very good on the 1.2GHz band with the station of Eric Gedvilas GB8XJ (J083) spotting FS5EN (JN25), F5HRY and F6KDV (in JN18) and HB9AMH/P (JN31). This latter station also managed to work GD4XTT (J074) over a path of some 1140km.

The prevailing high pressure weather system slipped away in the following days but slowly returned to provide yet another period of excellent tropo conditions between September 16-18. This opening was different from the previous event in

Fig. 1: The 448 -element antenna array for the 144MHz band at the QTH of of Michel Winiger HB9JAW.

that propagation was generally restricted to the east of the UK extending into eastern Germany, Austria and the Czech Republic.

Lee Adams G4RKV (J001) reports that during the evening he worked the stations of GO6NG (J090), G3KEQ (J001) and G60DA (J091) on the 144MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi. On the 430MHz band, running 20W into an 18 -element Yagi Ulrich contacted G3KEQ (J001) and G60DA (J091) on the 144MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi. On the 430MHz band, running 20W into an 18 -element Yagi Ulrich contacted G3KEQ (J001) and G60DA (J091) on the 144MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi. On the 430MHz band, running 20W into an 18 -element Yagi Ulrich contacted G3KEQ (J001) and G60DA (J091) on the 144MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi. On the 430MHz band, running 20W into an 18 -element Yagi Ulrich contacted G3KEQ (J001) and G60DA (J091) on the 430MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi. On the 430MHz band, running 20W into an 18 -element Yagi Ulrich contacted G3KEQ (J001) and G60DA (J091) on the 430MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi. On the 430MHz band, running 20W into an 18 -element Yagi Ulrich contacted G3KEQ (J001) and G60DA (J091) on the 430MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi. On the 430MHz band, running 20W into an 18 -element Yagi Ulrich contacted G3KEQ (J001) and G60DA (J091) on the 430MHz band. Ulrich was running 100W into an 11 -element DL6WU long yagi.
stations in IO8, IOB, IOB, IO8, IO8, IO1, IO92, and IO8 and IO94.

Conditions in the following days, September 22-23, were excellent as a pronounced area of ducting formed between the UK and northern Europe. John GI2CW was pleased to catch this opening as it was his first big event since coming onto the 144MHz band. His QTH is situated in locator square J003 which contains very few v.h.f. DXers and he was therefore very keen on any demand during the tropo event. John uses a Yaesu FT-726R transceiver driving into a Nag 144XL amplifier producing about 200W output into a 19 element Yagi.

Numerous s.s.b. contacts were made during the evening of September 22 with operators located in DL, DZ, PA, SM and SP. Among John's best contacts were operators on the stations of SP1E0I (J073), SP2TW0 (J094), SP2S2G (J082), SP5SSF (J093) and SQ3VAA (J072).

All of John's contacts were well received by the DX stations. John situated in locator square J003 onto the 144MHz band. His QTH is situated in northern Europe. John G1ZCW was able to work a number of the DX stations in 1080, 1081, 1082, 1083, and 1084. The only other significant period for these special type of propagation events occurred at the beginning of the autumn equinox period.

Weak openings viaauroral backscatter were reported on September 3, 10,17, 18 and 27. All openings were noted on the 50MHz band and not in the 144MHz frequency band. There are probably two reasons for this.

Firstly the openings were quite weak on the 50MHz band and any propagation was reported on the higher frequency bands such as 144MHz, 230MHz and 430MHz. Secondly auroral openings were occurring on the v.h.f. and u.h.f. bands. It is very easy to miss the weak auroral DX when the band is full of very strong tropo signals.

**Trans-Equatorial**

Exactly one year ago I gave details of the timings of t.e.p. openings and mentioned that you should pay particular attention to the 50MHz band during the September period for these special type of propagation events. Last year there were very brief openings on September 28/29 to Namibia and Malawi. Although very weak there have indeed been a few openings this year during the autumn equinox period.

When was the first t.e.p. event? It was September 23, 1997 UTC when IK00XY (JM5) heard the V51HF beacon (50.018MHz) peak at 579. The next t.e.p. event was on September 25, 1997 UTC when OZ3K (JM8) heard the OZ3Y (JM8) beacon on 50MHz (1790MHz) peak at 579. As you can see this the autumn t.e.p. peak will have disappeared but it may be worthwhile noting that similar conditions could occur next March during the spring equinox period.

**Deadlines**

Please forward any news, views, comments or photographs to reach me no later than Saturday November 21. Send them to: Practical Wireless, Cottage, Lower Maescoed, Herefordshire HR2 OHP. You can also contact me via Packet radio @ GB7MAD, the UK DX Cluster @ G8TDXC or E-mail via davebu@mdst1.lawg.bt.co.uk Alternatively you can telephone me on (01873) 860679.

Practical Wireless, December 1997
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Practical Wireless, December 1997
The DSP Blaster program from Brian Beeley does seem to be causing quite a stir judging by the number of complimentary comments I've been receiving from readers. I've also just heard from Mike Le Ves Conte (UK distributor of registered copies) that the program is now up to version 2.07, so I'd better fill you in with the changes from the version 2.04 that I originally reviewed.

The first change is the elimination of the Noise Reduction 'pop' on start-up. This is supplemented with a new squelch facility which includes ten different settings, digital/analogue deadband all featuring full control from within the a.g.c. box.

The configuration memory selector now highlights on selection and changes colour if the settings are altered. You can also label the selectors with their settings - this looks to be a particularly helpful change.

There has also been a general clean-up of the code and the main Fast Fourier Transform (FFT) is quicker. As a final add-on, all the hot - selectors with their settings - this selector now highlights on selection the a.g.c. box.

Digital Modes

For many amateurs one of the main reasons for introducing a computer into the shack is to start getting into the digital modes that abound all over the spectrum. Whilst you can do this with very little knowledge by using commercial kits, this rather negates the whole point of amateur radio, which is self education.

If you're just going to buy commercial equipment for everything and not even attempt to understand the technicalities you might as well sign up first for Internet access and save the Amateur Radio licence fee! But enough of the controversial stuff.

If you do want to learn more you may have some difficulty in finding publications that approach the subject in a friendly manner. In an attempt to overcome this, I'm going to spend most of this month's column going through some of the basics. If you really think about the purpose of the data modes you will soon realise that the common factor with all the systems is that they have been designed for the movement of information. The most common forms being text messages, programs and pictures.

The systems which are used to transmit pictures are slightly different, so this time I'll concentrate on the transmission of messages and computer programs. In both text and computer programs it's easy to see that even the largest program or message is made up from lots of smaller elements i.e. letters and program bytes.

I can't imagine how you could send a large message or program in one operation, so it's clear that you need to break them up into much more manageable chunks and reassemble them at the far end. But, let's take a closer look at how letters are represented inside a computer.

You probably already know that computers can only think in numbers and binary ones at that. So, how on earth can they handle text characters?

The answer is to convert all the letters into binary numbers. Computers do this by using a simple programming technique called a 'look-up' table.

Everytime you press a key the computer checks against the table to see which number it should use. Whilst this system is pretty simple, what happens when you send this numerical representation of your message to another computer? Fairly obviously the other computer needs to use the same look-up table or your message will turn into gibberish!

Fortunately, the requirement of look-up tables is well documented and there are a number of standards around to make sure all is well. For use within the PC the common standard is known as ASCII, which is an acronym for American Standard Code for Information Exchange.

The ASCII code uses a separate seven digit binary number to represent each letter, figure and a range of punctuation marks. Within the computer this number is usually made up to an eight bit number to align with the computer's standard number length.

It just so happens that computer programs are also built-up from similar eight bit numbers. So, you can now see that the common factor between a computer program and a text message is that they're handled within the computer using identical formats.

Now you need to consider how these eight digit binary numbers can be transmitted over a radio link. To do this you first need to remind yourself what a typical single side band (s.s.b.) transceiver is designed to do best.

The answer is that the s.s.b. transceiver is designed to convey the important parts of the spoken word.
In technical terms this means that it needs to be able to transmit the band of frequencies between around 300Hz and 3kHz, as these contain the important parts of the human voice. In order to send our computer data using a standard s.s.b. transceiver you need to somehow make it fit in this range of frequencies. The solution comes from taking a closer look at an individual bit of data.

This can only ever be one of two states which are ON or OFF. In electrical terms this means 5 or 0V for many computer systems.

If you were to arrange for the binary information to be sent out of the computer over a single wire you would get a varying voltage that would swing between 0 and 5V depending on the value of each bit as it emerged. This highly useful task is carried out by the part of your computer known as a serial port controller. The actual electrical signal appearing on one of the pins of the serial port.

The next step is to connect the signal from the serial port to a special voltage controlled oscillator that can switch between two frequencies in synchronisation with the 5 and 0V signal. If the frequencies were selected so that they fell within the 300Hz to 3kHz band they could be comfortably handled by an ordinary s.s.b. transceiver. This is precisely what happens in a real data transmission system.

As with the selection of an appropriate look-up table for each letter, there needs to be a few standards in place for the system to be really effective. The first thing that needs to be agreed is the rate at which the binary digits are sent from the computer.

The "rate" factor is called the baud rate and in radio based systems can range from 45.5 baud through to 9600 and higher. Rather than using a completely variable figure, there are a number of pre-set rates, a typical example being 300, 600, 1200, 2400, 4800, 9600, etc. this is simply a number of pre-set rates, a typical example being 300, 600, 1200, 2400, 4800, 9600, etc. with some other modes that I'll mention later.

For simple point-to-point communications Radio TeleType (RTTY) is one of these most common standards. The subtle difference with this system is that the International Telegraph Alphabet number 2 (known as ITA2) is used to provide the look-up table. The transceiver controls the two frequencies used and identifies the letters using the basic 5 bit number used to represent each letter. The first is a single bit known as a start bit. When this drops from 5 to 0V the receiver knows a new signal is on the way.

At the other end of each letter a further 1.5 bits are added to show the end of the letter. From this you can see that each letter or number in a RTTY signal comprises of a start bit followed by five data bits and a 1.5 bit stop bit. This is the distinctive pattern that the receiver looks out for to help it find its place when tuning into a new signal.

A number of decoding systems also use this distinctive "fingerprint" to provide fully automated identification of both the transmission mode and speed. To work out the speed of the signal all the program has to do is measure the duration of the shortest element of the signal. This will normally be measured in milliseconds (ms).

The figure can then be used to directly calculate the transmission speed or baud rate. All you have to do is divide the duration in ms into 100 to give the baud rate.

The mode analysis is simply a question of spotting that the signal uses five data bits, one start bit plus 1.5 stop bits. As no other mode uses five bits the signal must therefore be RTTY.

In order to make all this happen on your PC you will need to run a special computer program that can convert your typed messages from the ASCII to the RTTY code and arrange for them to be transmitted from the serial port at the appropriate speed with the various start and stop bits added. If you've sparked an interest in this part of the hobby and you're starting from scratch, the Hamcom program is really very good and is available through many sources including my readers offers of this page. The current version of Hamcom contains all the software necessary to send and receive RTTY plus some other modes that I'll describe another time.

In addition to the software and a PC you will also need an interface lead to connect the modem port on your PC and your receiver. This is more than just a simple lead because it has to convert the audio signal from the receiver into a format that the computer can process.

The electronics are very simple and you will find plenty of interface kits around if you want to build your own. If you are rather impatient like me you can buy excellent quality ready made interface units from

**Convert Tones**

So, the first thing is to convert the varying tones into an electrical signal that varies between 0 and 5V. This can be done in many ways, but is traditionally done with a device called a terminal unit. A terminal unit uses either a filter or phase locked loop system to carry out the required decoding. With the original 0 and 5V signal re-created you just have to apply it to the serial port of your computer if you're back to square one.

There are a few points I need to clear up though. First, the system I've described here using the ASCII look-up table is not generally used on its own, it is combined with the data and basic punctuation.

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The electronics are very simple and you will find plenty of interface kits around if you want to build your own. If you are rather impatient like me you can buy excellent quality ready made interface units from

**Fig. 2: A Typical RTTY Character.**

<table>
<thead>
<tr>
<th>Character bits</th>
<th>Stop bit</th>
<th>Start bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5V</td>
<td>1 0 0 1 0</td>
<td>0V</td>
</tr>
</tbody>
</table>

Weather Update

If you're seriously into v.h.f. DXing then you will no doubt have learned the significant impact that the prevailing weather has on propagation conditions. As result many amateurs develop a very keen interest in the weather and use this knowledge to try and get ahead of the "pile-ups" when an opening occurs.

With all the modern satellite and computer enhanced imagery available, the capture of weather information becomes an art form in itself. However, now many amateurs have access to the Internet there's even more information available. However it can all get rather overwhelming so, I thought it might be helpful if I just run through a few of the sites that I've found to be particularly good. If you want to impress your friends as well as get useful data, the computer generated cloud cover forecast supplied by France Meteo (http://www.meteo.gov.uk) is the best one to be found at the Met Office site at the base is accessed via the excellent Jersey Met site at http://user.super.net.uk/~jnet. If you want satellite pics to check what's going on around Europe then the best ones are to be found at the Met Office site at http://www.meteo.gov.uk

All the Meteosat images are regularly updated and the image quality is really excellent. If you know of any more sites that offer good data for Radio Amateurs please write or E-mail me with the details.

That's all I have room for this time so until next month, chaser and please keep your news and views coming to me Mike Richards G4WNC at PO Box 1863, Ringwood, Hants BH24 2ZD or via E-mail to: mike.richards@dial.pipex.com My Web site address is http://dialspace.dial.pipex.com/mike.richards/
RF Power Modules from TDC & Mitsubishi

Standard parts stocked, replacement parts for many Yaesu/ Icom transceivers, ideal for linear PA designs.

<table>
<thead>
<tr>
<th>Part</th>
<th>Frequency</th>
<th>Pwr/Mode</th>
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<td>M57726</td>
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<td>43W/FM</td>
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<td>144-148MHz</td>
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Many other frequencies/ power combinations available, please call with your requirements.

Call for Amateur/ Education discounts or volume pricing COMING SOON - Linear power amplifier 'Starter Packs' for 2M & 70cm.

TDC also stock Modem, Networking and GPS receiver and antenna products, visit our web site at http://www.tdc.co.uk for more information.

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INTERNET: http://www.g6xbs.co.uk/Eurual/H48 E-MAIL: iasnnotlee@yieces.com

VERULAM RALLY 97
Sunday 14th December
10am to 4pm
WATFORD LEISURE CENTRE
Horseshoe Lane, Garston, Watford
5mins M1 junction 6, M25 junction 21A
off junction A405/412
Food and Bar
Trade stands, Bring and Buy
RSGB stand, PW & SWM stand, Morse Tests
Admission £1.50
(concessions £1.00 - Children under 14 free)
Talk-in S22
INFORMATION 01923 265572
Final Broadcast

Radio Norway International's Fredrikstad transmitting station made its final broadcast on Saturday 18 October. The facility, inaugurated back in 1948, currently has a 500kW Thomson-manufactured transmitter, although it has been radiating just 350kW for most of its life (it was installed in 1976, replacing a 100kW transmitter, which had been on the air since the station opened).

Norway's public broadcaster, NRK, had hoped to lease time on the Fredrikstad facility, but, with a glut in the short wave transmission market which has considerable overcapacity in Europe, could not find clients. The station is now being refurbished.

A special 30 minute broadcast at 1630UTC on 11.68MHz organised in conjunction with the Nordx '97 championships staged by the DX Listeners' Club of Norway, enabled listeners around the world to tune to this much-loved Norwegian transmitting station. The Voice of America's Greenville transmitter also participated in the championships, with an hour-long transmission the following day at 0400UTC on 5.89MHz, and a special QSL card was issued for both broadcasts.

If you heard either of the transmissions but have not yet sent in a report, hurry up! The address is: Nordx '97, DX-Listeners' Club, PO Box 7080 Vestheiene, N-4602 Kristiansand, Norway.

Box 7080 Vestheiene, N-4602 Kristiansand, Norway

Radio Norway continues to broadcast in English and Norwegian world-wide from its transmitters at Sveio. The English winter schedule (Sundays only) is: 0700-0730 on 9.59 and 11.625MHz; 0800-0830 on 11.625MHz; 1300-1330 on 9.59, 9.905, 13.60, 13.805MHz; 1400-1430 on 13.805MHz; 1600-1630 on 15.80, 13.805MHz; 1700-1730 on 7.56MHz; 1900-1930 on 7.485, 9.59 and 9.968MHz, plus 1314kHz medium wave; 2000-2030 on 7.57MHz; 2200-2230 on 7.57MHz; 0100-0130 (Monday) on 7.465 and 7.545MHz; 0200-0230 (Monday) on 7.565MHz and 0400-0430 (Monday) on 7.52 MHz.

Radio Norway celebrates its 50th anniversary next year. Watch out for more news in this column!

Winter Schedule

Radio Prague's winter schedule has been affected by budget cutbacks. The English service can be heard: 0830-0905 on 9.505 and 11.605MHz to Europe; 1000-1030 on 17.485 and 21.705MHz to West Africa, the Middle East and South Asia; 1130-1157 on 7.345 and 9.505MHz to Europe; 1400-1430 on 13.58 and 21.705MHz to N America, South Asia, Australia and East Africa; 1700-1727 on 5.93 and 9.43MHz to Europe and West Africa; 1900-1927 on 5.93 and 9.43MHz to Europe, South Asia and Australia; 2100-2130 on 5.93 and 7.345MHz to Europe, North America and West Africa; 2230-2257 and 0000-0027 on 5.93 and 7.345MHz to Europe, South Asia and Australia; 0100-0127 on 6.20 and 7.345MHz to North America and South West Asia; 0300-0327 on 5.93 and 7.345MHz to North America and South West Asia; 0700-0730 on 9.59 and 11.625MHz.

The book costs £2.50 including postage in the UK, £3.00 in the rest of the world and can be ordered from the British DX Club, 126 Bargery Road, Catford, London, SE6 2LR.

And Finally

That's all for this month - and this year. I'll be back in the January edition, reporting on more of the exciting developments in international short wave broadcasting that will keep you scanning the broadcast bands throughout the New Year. Until then, good listening and Merry Christmas!
Graham Hankins G8EMX rounds off the year with some surprising information together with all your ATV news and views received over the last two months.

In October's 'Focal Point' I hinted at some surprise news - and here it is. Birmingham may soon have its own 10GHz (3cm) and 1.3GHz (24cm) Amateur Television transponders! The 10GHz unit will be located in Sedgley, which is to the west of Birmingham, while a site on a high point north of the city has been offered for the 1.3GHz repeater.

The Beacons Repeater Group, (with Alan Kendal G6WJJ as chairman,) was formed on September 10 1987 to manage the 10 and 3.6GHz ATV services. Alan, who has already built, and is developing, some of the 3cm hardware, says: "The channel that I will be applying for is RT103, which uses frequencies of 10.135 for the transmitter and 10.425GHz for the receiver. In addition to the Radio Amateurs present at the Repeater Group meeting, several others have expressed their interest".

Hardware for the 24cm ATV repeater already exists, too. Your scribe G8EMX has a transmitter; p.a. and receiver available, with a home brew repeater together with a substantial quantity of very high quality professional coaxial feeder in his loft!

In my opinion, putting an ATV repeater into service is no easy task. The Radio Society of Great Britain's Repeater Management Committee (formerly 'Group') provides A Guide to Repeater Licensing and Version 1997 runs to 92 pages. The technical specifications for any repeater are very 'tight' and a Repeater Group's responsibilities for on-going service and close-down compliance are considerable.

Here in Birmingham I have been attempting to start a 1.3GHz ATV repeater for some time. One of the first essential requirements is an available site.

Over the past few years three likely buildings in Birmingham, although offered, failed to become realities for various reasons. Access by closed-down operators, at any time, is essential, so to, I consider, is straightforward access for periodic development - especially during the initial period of service. I trust that both of the sites now offered will prove quite satisfactory in these respects.

Incidentally, the Guide to Repeater Licensing contains an Appendix 'A', titled 'Responsible of a Repeater Keeper'. Appendix 'A' states that the Keeper can delegate but remains ultimately responsible for, among many other things, Communication/Liaison; for example - "To be the contact for other parties who require information about the repeater". So, why is it that some repeater keepers, and occasionally other members of a Repeater Group's committee, are 'Particulars Withheld' in the RSGB Callbook?

**Auckland ATV**

"Hi Graham", says Michael ZL1ABS: "The Auckland ATV Interest Group (of the AK VHF Group inc.) attended the Hamilton Radio Club's sale day at the Claudelands showgrounds, along with a lot of amateurs from the top half of the North Island. Our table raised about $40 NZ for ATV repeater funds from the sale of donated components magazines, cable, meters and old radios."

After the show, some of the ATVers from Auckland went on to Jerry 2L1RN's home for more conversation and to see some of his steam railway tapes. Jerry used to work on the railways and is qualified as a Fireman for steam engines.

But back to ATV in New Zealand. Michael ZL1ABS continues: 'Grant ZL1WWT and Wayne ZL1UJK have just achieved P4 copy on 23cm FM/FM over 15km. They achieved this contact with a home-brew transmitter and a TV Receive Only rig with in-line preamplifier. "Thanks to the Severnside ATV Group (Bristol) for ideas from their newsletter 'PS', the British Amateur TV Club's magazine 'CO-TV' and 'Amateur EYE from the South East Queensland ATV Group for material that helped get things going". The knowledge gained from Wayne and Grant's contact will help with the construction of a translator to 23cm to extend the coverage of the ZL1BO ATV repeater in Auckland."

One of these fine months I am hoping to go to New Zealand for a few weeks, see some of their repeaters and maybe meet up with some of the ATVers in person. When I do, Michael has given me the name of his excellent local fish shop!

**Talking Television**

Some Amateur Radio clubs have responded to my offer to give an ATV talk. The latest Club to request a visit is the Moorlands and District ARC, near Stoke-on-Trent. Moorlands Secretary, Warwick Hutchings, has provided a map for me to find their meeting place and, very helpfully, an audio tape cassette of directions to use in my car as I drive there! Moorlands ARC meets in the area served by the Stoke ATV repeater GB3UD, so we may be able to use the repeater on the night. My offer of an ATV talk and demonstration is still open to any Clubs with a 'speakers calendar' to fill.

**Irish News**

Now some brief but fascinating news from Dublin, Eire. Dave Hooper EI2HR writes: "During the weekend August 9/10, the Dartmoor 1.3GHz repeater GB3WV was received by Dermot E12AK in Monasterboice, County Louth. Some 'P5' pictures (high quality) were exchanged with G8EOG, G1YHN and G6URM; this is the first time that GB3WV has been received in Eire".

So I spread my map out. County Louth is not marked, but the straight-line path length from Dartmoor to Dublin looks like around 400km, which is quite remarkable. Of course, whatever their frequency, r.f. signals can and sometimes do behave in quite extraordinary ways. Thanks for the news Dave! For instance, I remember reports of mobile radio calls propagating around the world, direct from handset to handset, under extremely rare meteorological conditions. Exceptionally long v.h.f., u.h.f. and microwave path lengths can happen, but don't depend on them occurring very often!!!

**Amateur Television A to Z**

Here's the final instalment of my ATV alphabet.

**Up-converter**: Enables a 436MHz ATV signal to be received on a domestic TV.

**Weatherproofing**: To prevent corrosion where a feeder meets its antenna. Self-amalgamating tape is effective.

Y: Symbol for Luminance, or the 'brightness' part of a colour TV waveform.

Z (Z/C): Symbol for impedance. ATV uses two impedances, 50i/ for r.f., cables, 75i/ for video feeds. Mismatching causes standing waves at r.f., picture distortion along vision channels.

So, that has been the ATV 'picture' for 1997. I wish all readers of 'Focal Point' a very Happy Christmas and New Year.

Keep sending those reports, and newsletters to me, Graham Hankins GB8EMX, 11 Cottesbrook Road, Acocks Green, Birmingham B27 6LE, or by Packet to GB8EMX @ GB7SOL.429.GBR.EU

Cheerio for now!!
For Sale

6MHz (50M1Za) station, Spectrum 6-10MHz transceiver, 200MHz CW input, 10MHz 2W linear and oscilloscope, £500; 20MHz (40M1Y1Za) SWPDL top-polar aurora for £900. 28MHz (90M1J1Zb) and useful on 2m (144MHz). £40. Dyneon 2900 3W fm, gcw. £4. Jim on (01202) 578427.

70cm (430MHz) Wide transmitter, 10W linear (homebrew), plus 70MHz (430M1Y1Za) Tuning (430MHz) for buyer collects, £50 the lot. Dave on 0121-552 7560.

4XAA NiCad battery, mains Counter, both still under AR81100 and Opto Scout belt clip, case, manual, two AOR AR8000 hand-held, (0 1285) 860896. carry ease, £125 boxed and AOR AR1000 hand-held also Andrew elliptical wave after 5pm please. Dave G4JXK on (01329) 220753 manual, cost, £400, accept £165.

A large box of bits and pieces from ham radio竭se station, made in the 1950s, phone for details, T.0 1302. Peter GW4CHB, N. Wales. Tel: (0175) 729756.

Alopec DX999, dual-band 14-432MHz, £215,600 boxed, £225. Dual-band just used with only little use base station, comes with Dumbell's 'phone exchange for WXSAT receiver. GRVGH, GTHK. Tel: flat (01487) 909774.

Andrew Vesia DX999, 6m (06M1E1Y1Zb) transceiver, all-mode, mint, boxed. £475. Vesia FT-790R. £425. (06M1E1Y1Zb) multi-mode, boxed. £350. T.0 1300. only 1995 model, £395. £400, accept £365. Dave G4KXK on (01329) 220753 after 4.35pm.

Hoskins & Hawkes wire recorder, pre-1980, offers, plus other items, valves. Universal Avatar, 1.5kW transceiver Super 50, microphones. £50. Elyoxide receiver, wooden cabinet, £75. Tel: Penterfect (01977) 678953 after 3pm.

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box of valves. 100 plus other wares, in excellent condition, for good condition, leakage tester valve estimator, tone square generator Carson 500, £60. T. R. Carless, 10 Anson Green, Bury St. Edmunds (01280) 372461.

brand new boxed and never used IT (I0S1Y1Zb) teleprinter TELEX machine with photogate, fitness, bands free deposit, auto-identity, bought for business that never took off, swap or sell computer, ride, etc. Tom on (01356) 522007, any offers considered.

loop AT5 TX. Tel: SW London area. £9-169-426-15.

Collection of 19 old fashioned transceiver radios. £75 the lot. Also about 80 P.W. SYM and RadioCom magazines, offer. C20. Tel: Guildford (01483) 233830.

Collins Model TC110 transmitter receiver with microphone, £75. Collins Model 1225, £65. £80 for two, annexe. £150 each. Also Collins Model 35-5 MHz, £50 for two.

Clydeval RF for restoration, £40. Clydeval 5MHz, £45, complete in wooden case. £20. Buyer collects or pays carriage. Steve on (01480) 75 1975.

IC-905K1 (144MHz) with motorola, maximum support bracket, counter box, cables, etc. £200. Various IC-706, £150 high end, £200 mid range. £300 or offers, all is good working condition. Steve (01202) 320005 or leave message on answeringphone.

Diamond XD9011 2m/70cm £75 including 2m and 70cm (200MHz) side bands, £60 new condition. Tel: 0116-212 1557 after 8.30pm or 0116-212 1557. Dave (01483) 233830.

Drive a.t.o. - Elvina 500W, will work with any rig. £50. Kentwood mobile antenna, complete. £60. Museum of Radio, £50. Philmore, £50. M. C. Wilson, (01325) 860896.

Loafer & Hawkes wire recorder, pre-1980, offers, plus other items, valves. Universal Avatar, Servo Super 50, microphones. £50. Elyoxide receiver, wooden cabinet, £75. Tel: Penterfect (01977) 678953 after 3pm.

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(144MHz) 210.00. Sangean AST-80A with p.s.u., manual, boxed as new, Post Free. £85. Tel: 0141-632 5408.

Kenpro KR-400 IC horizontal rotocontrol/kit/cables/sets, £50, offers accepted; 1000-1500 kHz, 0.5 MHz. 210.00. Tel: (01305) 2105.

KMS9N -1012261 -74297 I-collect. Tel: West Midlands 2m 1144MHz multi, mains/2V duplexer. 4275, boxed and manual, £695. Tel: (01735) 720756.

KU1000 new 572MHz £300. £532608 1144MHz (6 channels) £30. Tel: (01666) 635055 after 6pm please.

KX2 2m (144MHz) £150. £20 5W. £500830 after 6pm please.

KX2000 CAT power supply, as new. £200.

KXV Wayne Mosk, mic., p.s.u., Philips PCD8, silent key sale. £450. Tel: Southampton (0703) 634309 after 6pm please.

KX651E all-mode, £500. To include 8-element Yagi, also 2m (144/432MHz antenna). £100. £400257 01282) 813892.

KX872 2m (144MHz) £100 inc. £20 New 2m X tonnal. £20. £695.

KXY2000 (with p.s.u.) both in v.g.c. £350.

KX8850 -9070 (430MHz) £275. £100006 0191-10 4377.

KX919060 £100004 0119 2511098 evenings. £100.

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amp/Gafer pre-amp, both tearily now manual, boxed, never used outside stack, £425. postage extra. Tel: Norfolk (01363) 483032.

Yaesu FT-747GX. Lru. band, narrow c.w. filter, boxed, manual, good condition, £350. Tel: Aylesbury (01296) 372013.

Yaesu FT-757GX. f.s. all-mode (100W) TX/FC-757 AT auto a/t. FP-757X sp. d.p.s., FP-757GTX linearity duty sp. TX/FTK2600A hand-held, mini. leather case, will spin, swap w.y.7 up or down. Tel: (0831) 660944 day or (01438) 795400 evening.

Yaesu FT-757GX, plus FP-757HD. g.w.o. £240. Yaesu FRG-7, classic, g.w.o. £125. Republic receiver, 150-151/1600. g.w.o. £45. Lafayette KT320. £60.153, complete, two Jant, spiders, £30. Buyer collects. John on (01795) 880310.

Yaesu FT-767. 2m auto a.t. p.s.s., hand mic, boxed, manual, £725. Richard, Bedford. Tel: (0234) 781662.

Yaesu FT-857D transceiver, mobile, boxed and very little used, in as new condition. buyer collects. B. on (0222) 123401.

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone Number</th>
<th>Address</th>
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<tbody>
<tr>
<td>George</td>
<td>(01327) 763988 after 6pm.</td>
<td>G4ERU, 5 Luther Road, Winton, Hants.</td>
</tr>
<tr>
<td>Pete</td>
<td>(01454) 878740</td>
<td>barnett Court, Station Road, London W3.</td>
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<tr>
<td>Duncan</td>
<td>(01702) 540328</td>
<td>Yupiter VHT-1100 waveband, 100kHz to 150MHz.</td>
</tr>
<tr>
<td>John</td>
<td>(01733) 671212</td>
<td>Wanted</td>
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<tr>
<td>Mike</td>
<td>(01752) 655629</td>
<td>Zetagi C57 8 digit frequency meter, £45.</td>
</tr>
<tr>
<td>Denis</td>
<td>(01827) 594737</td>
<td>Yaesu FT-735X receiver, £300. 4800A.</td>
</tr>
<tr>
<td>Paul</td>
<td>(01903) 660370</td>
<td>Yaesu FT-747D receiver, £150. R390A.</td>
</tr>
<tr>
<td>Denis</td>
<td>(01708) 340304</td>
<td>Yaesu FP-707 power supply wanted, £416.540.</td>
</tr>
<tr>
<td>Mary</td>
<td>(01708) 730590</td>
<td>Yaesu FT-7940 receiver, £10. R390A.</td>
</tr>
<tr>
<td>Mike</td>
<td>(01371) 315839</td>
<td>Yaesu FT-7940 receiver, £10. R390A.</td>
</tr>
<tr>
<td>Richard</td>
<td>(01362) 453628</td>
<td>Yaesu FT-7940 receiver, £10. R390A.</td>
</tr>
<tr>
<td>Paul</td>
<td>(01708) 231010</td>
<td>Yaesu FT-7940 receiver, £10. R390A.</td>
</tr>
<tr>
<td>Julie</td>
<td>(01708) 540345</td>
<td>Yaesu FT-7940 receiver, £10. R390A.</td>
</tr>
<tr>
<td>Bill</td>
<td>(01708) 655629</td>
<td>Yaesu FT-7940 receiver, £10. R390A.</td>
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<tr>
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<td>Alan</td>
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<td>John</td>
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Practical Wireless, December 1997
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Practical Wireless

December 1997

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