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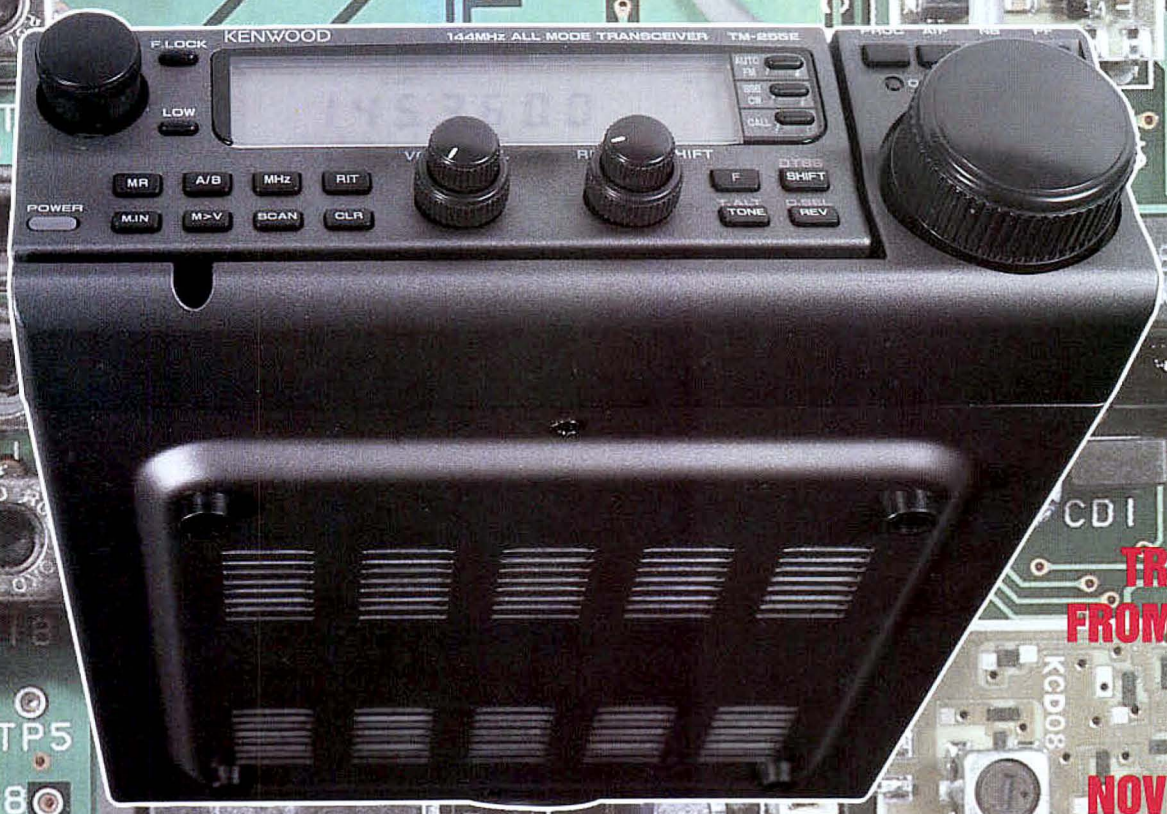
KENWOOD TM-255E Reviewed



ROB MANNION G3XFD LOOKS AT THE VERSATILE TM-255E VHF MULTI-MODE TRANSCEIVER FROM KENWOOD

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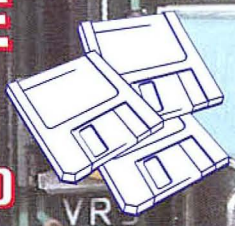

FEATURES

- ✓ A FAX TUNING AID
- ✓ SOLVING COMPUTER HASH
- ✓ BITS & BYTES SPECIAL
- ✓ HUNTER'S HAUL - GOGSZ'S GUIDE ON WHERE TO FIND YOUR COMPUTING BITS & PIECES

ANTENNA REVIEW

- ✓ DAVID BUTLER G4ASR TRIES THE VARGADA 9EL2 144MHZ ANTENNA FROM SWEDEN

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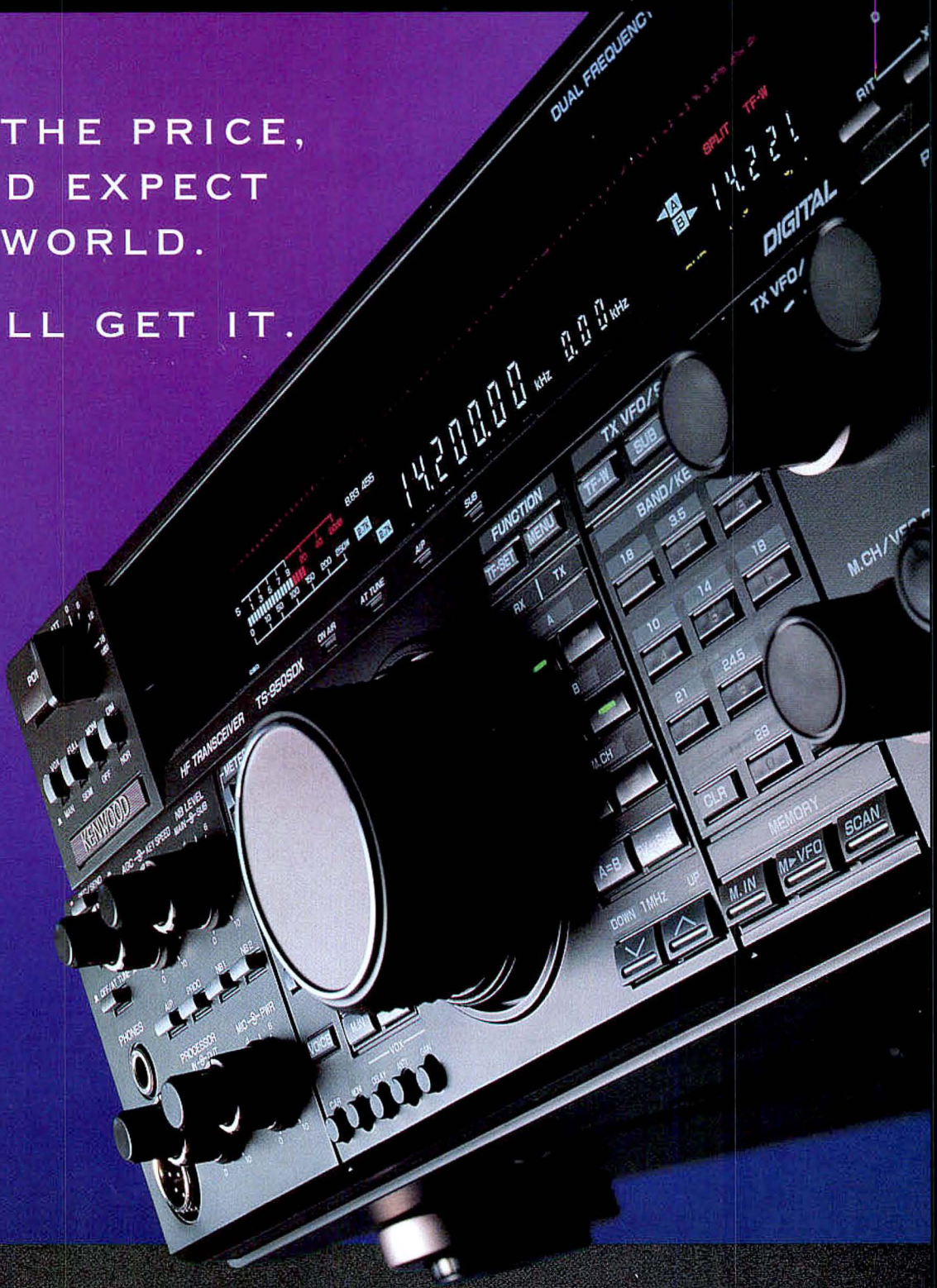

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VOL. 70 NO. 5
ISSUE 1046

NEXT ISSUE (JUNE)
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Arrowsmith Court
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CREDIT CARD ORDERS
(0202) 659930
(Out-of-hours service by answering machine)
FAX (0202) 659950

Editor
Rob Mannion G3XFD
Art Editor
Steve Hunt
Layouts: Richard Gale
Technical Projects Sub-Editor
NG ("Tex") Swann G1TEX
Production/News
Donna Vincent

Editorial Assistant
Zoë Shortland
Advertisement Manager
Roger Hall G4TNT
PO Box 948
London SW6 2DS
071-731 6222
Cellphone (0850) 382666
FAX 071-384 1031

Advert Sales and Copy (Broadstone Office)
Lynn Smith (Sales), Ailsa Turbett (Production)
(0202) 659920 **FAX** (0202) 659950

COVER PHOTOGRAPHY
Tex Swann G1TEX.

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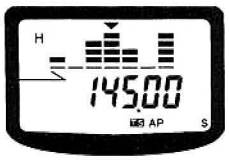

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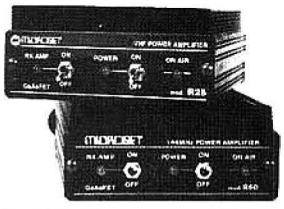

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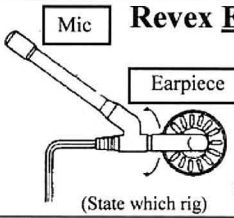

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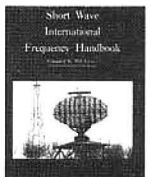

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EDITOR'S keylines

Space is always a problem in a magazine such as *PW* and the editorial team are always striving to pack as much information in each month as we can. The day-to-day decisions as to what is to be published are always discussed between the team members and I'm pleased to report that we all find the system works well.

Recently, as *PW* regulars will know, we conducted a reader survey. The aim was to find out exactly what's required by our readership. As a direct result of the survey, and following discussions with the editorial team, I have to announce some changes in the magazine.

Our survey results show that there's not enough interest in amateur radio satellite operation to warrant a separate page every month on this subject. Because of this, I have decided that 'Satellite Scene' written by Pat Gowen G3IOR will appear for the last time in this issue.

Pat Gowen G3IOR, is very well known as an Ecologist and campaigns for a cleaner environment. Pat often appears on TV and radio in connection with his ecological work and has given up much of his valuable time writing the 'Satellite Scene' column for *PW*. I thank him on behalf of the editorial team and our readers.

Obviously, keen amateur radio via satellite operators must be catered for in *PW*. To this end, the team feel that 'amateur radio in orbit' fits neatly into the 'VHF Report' column written by David Butler G4ASR as most of the operation is on v.h.f., u.h.f. and microwaves.

In other ways, David Butler's column seems to be the ideal choice because he works with satellites every day. In fact, G4ASR works at the huge British Telecom satellite earth station at Madley in Herefordshire!

David is hoping to be active on satellites himself very soon. However, I doubt it he'll be able to use any of the Madley dish antennas which appeared on the *PW* front cover in our 'VHF Special' issue in October 1993!

To make room for more features, I have also had to make a decision on our 'Packet Panorama' column written by Roger Cooke G3LDI. In this case, we have decided to publish Roger's page every other month, alternating with our 'Focal Point' ATV column written by Andy Emmerson G8PTH.

By alternating the specialist packet and ATV columns in the way I've decided, I feel that we can get the most out of our limited editorial space. And, no doubt the authors will continue producing interesting columns for their readers.

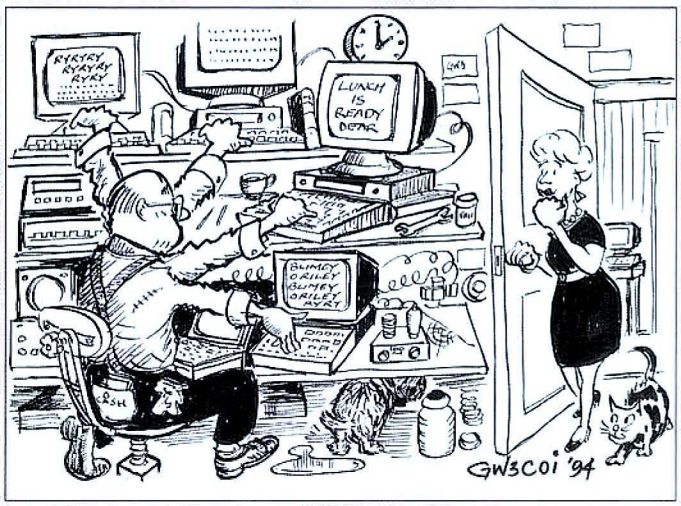
My decisions have been made with the help of our reader's requests via the survey. We shall also be acting on many of the other suggestions made by readers. And don't forget that you can always voice your opinions either through 'Receiving You', by letter to me or chatting to any of the team at rallies and shows during the year.

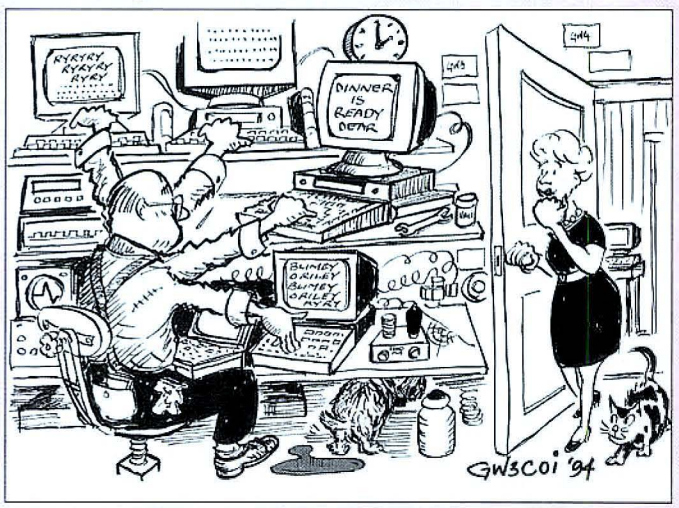
Our aim and pleasure is to produce a magazine which you enjoy. We enjoy producing *PW* and with our many specialist authors we'll continue to make it the best selling independent amateur radio magazine in the UK!

Rob Mannion G3XFD

COMPETITION CORNER

Spot The Difference





Spot The Difference Rules
If you have ever wondered how the keen radio amateur computer enthusiast copes with all the keyboards, you're obviously thinking on the same lines as Worthington our cartoonist! The worthy John GW3COI has produced what could be a useful modification, the multi-armed radio amateur. No doubt, there are quite a few of us who would like an extra arm or two, or even the usual two! **G3XFD**.

There are 12 differences to mark on the right hand version of the cartoon this month, good luck.

This month we have some extra special prizes to give away to the winners of this competition. **Eastern Communications, Cavendish House, Happisburgh, Norfolk NR12 0RU** have kindly donated a couple of their amateur radio world clocks (as featured on page 13 March 1994 *PW*).

FIRST PRIZE: A year's subscription to *Practical Wireless* or a £20 book voucher and an Eastern Communications amateur radio world clock.

SECOND PRIZE: A six month subscription to *Practical Wireless* or a £10 book voucher and an Eastern Communications amateur radio world clock.

❒ **SUBSCRIPTION** ❒ **VOUCHER**

Send your entry (photocopies acceptable with corner flash) to: **Competition Corner, Spot The Difference Competition, May 1994, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.** Editor's decision on the winner is final and no correspondence will be entered into to.

Entries to reach us by Friday 27 May 1994.

Name .....

Address .....

.....

.....

.....

COMPETITION CORNER May 1994

Send your letters to the editorial offices in Broadstone. They must be original, and not duplicated in any other magazine. We reserve the right to edit or shorten any letter. The views expressed in letters are not necessarily those of *Practical Wireless*.

RECEIVING you

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.

Imbalanced View

Dear Sir
It would appear that an imbalanced view, against the RSGB is being expressed in 'Receiving You'. So, in reply to Peter Crowley G0GPF, I do remember, (and *Radcom* backnumbers support this) much debate on members views, on both the Morse test and the Novice Licence. Perhaps Peter and others who didn't READ *Radcom* should do so, becoming members if not already registered.

The comment that "the RSGB is inefficient" I am afraid, only shows how out of touch he and others are now. I have had dealings in recent times with the RSGB, and had very prompt response, from efficient volunteers, as well as employed staff. Morse tests and venues have never been so plentiful, even if my opinion on the (don't) need for Morse, didn't prevail.

In case the latter raises comment on "just lazy", I am known to be active from Fort William to Bristol. Construction to 23cms ATV, in Raynet, and VHF Field Day and the *PW* QRP Contest. 'Toot toot' says my trumpet and 'Do something useful', says my words!
R. Johnstone
GM1YGV
Inverness

The Radio Amateur's Examination

Dear Sir
I have read with interest the many letters published in the *Practical Wireless* concerning the RAE.

And with all due respect to those who have failed the exam, I can't help but feel that if the exam was made any easier, it might as well be done away with altogether. In other words, pay the fee and pick up your licence as they do with CB radio.

I have recently passed the RAE and, in my opinion, all one needs to do is absorb the information given in the *Radio Amateur's Examination Manual* by G. L. Benbow, and also get hold of a copy of a *PW* reprint called *Passport to Amateur Radio*, both of which are excellent publications, and one will learn enough to pass the RAE without any problems.

I bought the manual last August, and the *PW* reprint last November. I took the exam in December, and by the way, I'm still waiting for the callsign.

I hope that this letter will help those who are hesitant about taking the RAE because they are under the impression that it is too difficult. Go ahead, give it a whirl, and the best of luck!
Ken Taylor
Wirral

Prices Of Equipment

Dear Sir
By coincidence just after I read the letter in *PW* about prices of equipment here, and in the USA, there was an item on BBC radio 4 about the same thing. There seems to be no doubt about the fact that we are being 'ripped off'. Not only do we pay more for things imported, we pay more for goods made here, than Americans have to pay for our exports. This obviously has nothing to do with the exchange of rates, etc.

Is there someone who can give us a breakdown of the prices of two pieces of gear, stage by stage, as they travel from Japan to the UK and Japan to the USA?

We are surrounded by nations paying less for British cars, CDs, vacuum cleaners etc. than we do. Sadly this seems to be a case of Britain doing it to the British!
Ken Grover G3KIP
Kent

Valve Type Components

Dear Sir
The list of suppliers for valve-type components in your February issue is certainly very useful for those who enjoy dabbling with the fascinating 'hollow-state' devices. Your readers may also be interested to know, however, that the long-established and very well known company, Jackson Brothers, still manufacturers a full range of variable capacitors and reduction drives.

Many Jackson Brothers components are suitable for valve projects. Others are exact replacements for UK-made transistor radio receivers from the 1960s and 70s - sets which are now becoming very collectable.

Some Jackson Brothers variable capacitors are available from Maplin, Cirkit and Electrovalue, but many other types can be supplied. Readers requiring further information can contact the company on 081-681 2754, or write to Jackson Brothers (London) Ltd., Kingsway, Waddon, Croydon CR9 4DG.
David Ryland
Managing Director
Jackson Brothers (London) Limited

Valve & Vintage

Dear Sir
I had some time 'to kill' one afternoon on the railway station owing to a delay. I wandered into one of the station newsagents and my eye caught *Practical Wireless*, in particular, the Valve & Vintage header that was on the front. I became even more interested by the fact that there was a circuit diagram for a 3.5MHz valve TX.

Incidentally, I'm gathering the components to build this. It is some 20 years since I last bought a copy of *PW* and wonder how many valve diagrams I may have missed.

So, Mr Editor, here's a hopeful plea from someone who can't 'get on' with all this modern micro stuff. How about some more valve TX designs, perhaps of a more multi-band or QRO nature?

By the way, I have already purchased the March issue and am hooked on *PW* again.
B. Taylor G3ZAG
Northants

Editor's comment: Welcome back to *PW* Mr Taylor! From the letters received in the office, it appears our 'V&V' special issue was much appreciated. We hope to do another 'special' in the future and to include further occasional valved projects.

★★ STAR LETTER ★★

Price Differentials

Dear Sir
To add fuel to the debate about US/UK price differentials, please note that the Optoelectronics 3300 counter advertised in your latest issue at £169 was purchased by me in the USA last week for $114. Hoover kindly paid for my flight - now that was a bargain!
John Taylor G0AKN
Middlesex

Editor's comment: It seems that you weren't 'cleaned out' on your trip John and your hobby certainly isn't in a vacuum!

Writing Letters To Practical Wireless

On behalf of the Editorial team on *PW*, I would like to thank readers for the many letters we receive. The letters are all interesting and are on many different, interesting and diverse topics. However, we do have one or two problems and I'd like to ask you to help us to help you by providing the following guidelines:

When sending letters in for possible use in 'Receiving You', please state clearly that the letter is for publication. Please also provide your full name (including 'given' name) and callsign if you have one. (We will not publish your full address). Many letters, although interesting, are far too long. Please make your point as briefly as possible, it avoids us having to shorten the letter preventing any danger of misrepresentation.

Letters for 'Receiving You' can be FAXed, but we prefer them by post. Please **DO NOT TRY TO DICTATE** your letter over our telephone answering machine! The machine 'times out' and invariably we don't know who has left the message or what it's about!

Thank you, and please...do keep writing, everyone at *PW* enjoys your letters.

Rob Mannion G3XFD, Editor.

Eddystone Issue

Dear Sir
I have just received my copy of the February 'Valve & Vintage' ('Eddystone Issue') of *PW* - such a change from all these articles on alien black boxes. It is rare for the Managing Director of a company to show so much interest in the history of his company's products. Chris Pettit deserves the thanks of all *PW* readers for his article.

One feat which he does not mention, but which placed Eddystone Radio in a unique position during the early 1960s, was that with just five models in current production they had receivers covering the full spectrum span from 10kHz to 1GHz. These sets were the 850, 940, 770R, 770U, 770S.

I have spent quite some time researching this and can find no other company in the world who could claim this feat, maybe it should be in the *Guiness Book Of Records*?

Perhaps *PW* should publish more articles such as this one, how about the British manufacturers of radio equipment - both pre-war and post war - whose names were on the tongues of all of us 'hollow-state' devotees during the 1930s and '40s?
Ted Moore
Eddystone User Group

Letters Appreciated

Dear Sir
Please could you print this letter is Receiving You of *Practical Wireless*, it would let the radio amateurs know just how much I appreciate their letters.

I have only been a short wave listener for a short time. The response I've had, after writing off for QSL cards has been tremendous. At the moment, I am collecting British callsigns.

The letters I've received with QSL cards have been so friendly and helpful, and its been a joy receiving them. Also, offers of help have been pouring in. So if any aspect of the hobby puzzles me, I can just ask! I never knew that a hobby could make me so many friends. So, I'd just like to say a **BIG THANK YOU** to all the radio amateurs out there who have helped me so much.
Mrs Tracey Grieve
Essex

Taking The Examination

Dear Sir
I have to concur with the sentiments expressed by various readers in recent issues of *PW*. This last year, I taught myself the RAE course and then started looking around for a suitable place to take the exam.

There was nowhere in Northampton which held the exam in December last year, despite my attempts to find a place. I rang the local Adult Education service, the local Higher Education college, and the local ex-Tech, now University - no joy.

To be fair, I was told by the University that City & Guilds would not let them hold it - they had held it for years, but alas, no more due to their change of status. Had I my own transport, there were several centres in other towns within ten or fifteen miles of Northampton. However, confined to public transport as I am, it took a trip to London to sit the exam, which was an extra £15. Total cost around £60. Plus a two month wait for the result.

Now I learn via another magazine that I could have sat the American exam - orally, for a few quid, done their Morse test (a further £13 or so here - total cost now getting on for £75) been given the result there and then, and with my full US licence, could have applied at once for a British one.

Then there is the matter of the UK licence. Now, on the face of it, £15 for a one year ticket is pretty good value (total cost now ca. £90). But on top of that, there's membership of your local club for perhaps another £10, maybe the RSGB at £30 - it soon mounts up. Looking at the licence alone, though, that's £150 for ten years if I have my sums right. In a lifetime of being an amateur, that is more than the cost of being an HGV licence, without the benefit that the HGV licence is valid for life unless revoked.

Some of todays youngsters are going to end up spending the equivalent of a 'top 3' h.f. rig on licence fees alone at that rate. I have a suggestion. Since passes in the RAE and Morse test are valid for life, how about an amateur radio licence which is either valid for life unless revoked, or failing that, at least with extended validity of lets say five years?

Let's reduce the cost of administration and thence the cost of the ticket by increasing its lifetime. Since it can be called in at any time by 'higher authority', there's no question of loss of regulation involved. One never knows, with around 60,000 licences being renewed each year now - divide that by five - with a lower workload on the issuing body, service might improve too.
Dr. Duncan Cadd
Soon to be G0U??
Northampton

NEWS '94

Test Equipment Service

Hesing Technology who are based in Cambridgeshire have been appointed sales and service agents for the Iwatsu Electric Company's, range of test equipment. The Iwatsu range of products includes oscilloscopes, logic analysers, counters, multimeters plotters and signal generators

Hesing Technology can be contacted at Cromwell Chambers, 8 St. Johns Street, Huntingdon, Cambridgeshire PE18 6DD. Tel: (0408) 433156. They will be pleased to help you with your test equipment requirements.

Jaytee Move

Jaytee Electronic Services have moved. All correspondence should now be sent to **Unit 171/172, John Wilson Business Park, Whitstable, Kent CT5 3RB**. The telephone and FAX numbers have also changed to, **Tel: (0227) 265333, FAX: (0227) 265331.**

S.R.P. Trading

Stuart Plestead's company S.R.P. Trading, who are perhaps better known in the radio world for the comprehensive range of short wave radios and scanners they stock, would like to remind *PW* readers that they also cater for the radio amateur.

In 1993, following the success of their mail order business, S.R.P. opened a shop in Birmingham within easy access of the A38 and surrounding West Midlands area. The S.R.P. Radio Centre, staffed by Graham Dunsford G7AAF and Tony Maguire G8JBA,

has a large selection of new and second-hand goods and boasts the largest floor space catering for the radio enthusiast in the West Midlands. They are also the largest manufacturer in Europe of antenna gutter mountings which are exported to various locations around the world, such as Europe, America and South Africa.

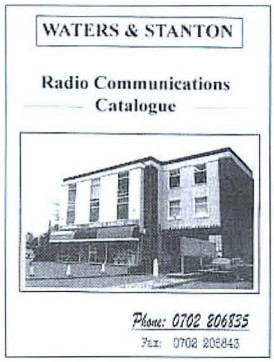
If you are in the West Midlands area why not take a trip to the **S.R.P. Radio Centre, 1686 Bristol Road South, Rednall, Birmingham B45 9TZ. Tel: 021-460 1581.** If you are unable to go along to the shop you can take advantage of the S.R.P. mail order service by contacting them at **Unit 20, Nash Works, Forge Lane, Nr. Stourbridge, Worcs. Tel: (0562) 730672.**

Practical Wireless has also been informed that S.R.P Trading is planning to hold an official opening of their Radio Centre in the near future, we will bring you the news as soon as we have the details.

Communications Catalogue

The new Waters & Stanton Electronics 1994 *Radio Communications Catalogue* has recently landed on the *PW* Newsdesk.

The *Radio Communications Catalogue* is an A4 sized 64 page catalogue in its second edition and contains many of the most popular products from the Waters & Stanton range. It also includes helpful hints and tips for both short wave listeners and radio amateurs.



To obtain a copy of the *Radio Communications Catalogue* just send two first class stamps (UK customers, overseas customers please send £2) together with your name and address to **Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS.**

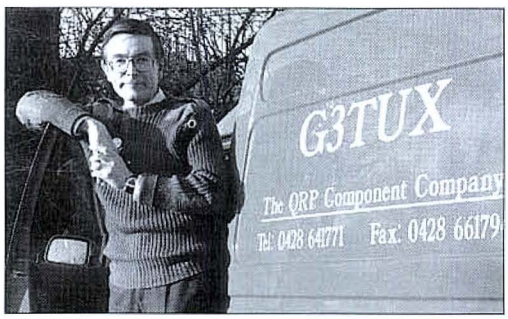
Reward Offered

Waters & Stanton Electronics are offering a £100 reward in return for information leading to the recovery of a Yaesu FT-747 h.f. transceiver.

The brand new Yaesu FT-747, worth £829, was stolen from a display shelf in the Waters & Stanton store at 22 Main Road, Hockley, Essex on the afternoon of March 15 1994. The serial number of the transceiver is 3F960040 and the thieves do not have the d.c. lead, microphone or instruction manual.

If anyone can offer any information to help recover the stolen goods they are asked to contact **Waters & Stanton on (0702) 206835.**

New QRP Component Stockist



Chris Rees G3TUX who is well known as an amateur radio rally trader has set up in business as the QRP Component Company. Chris together with his XYL Eilsa, hopes to provide a service to local amateurs with the emphasis on home-brew and d.i.y. radio.

The QRP Component Company has already secured agreements with C. M. Howes Communications, Vårgåda antennas and Peter Jones Morse keys to stock their products. A catalogue containing a full list of components will be available in April, and surplus components will still be available at rallies.

Chris says that anyone who would like to be put on the mailing list for a catalogue should contact him at **The QRP Component Company, PO Box 88, Haslemere, Surrey GU27 2RF. Tel: (0428) 641771, FAX: (0428) 661794.**

Radio Tunnel

The British Rail Amateur Radio Society (BRARS) will be working together with their French equivalents to activate the special event stations **GB0CT** and **TM5TSM** on May 6 in conjunction with the opening of the Channel Tunnel.

The BRARS will be operating GB0CT from Friday May 6 until Monday May 9 and are hoping to to set up a direct link on u.h.f. with the French Railway (SNCF) Radio Amateurs who will be operating from a town very close the French end of the tunnel.

A special QSL card combining the callsigns **GB0CT** and **TM5TSM** will be issued to commerate the event.

International Marconi Day April 23 1994

The Cornish Amateur Radio Club will be celebrating what is perhaps the most important event in the Amateur Radio Calender on April 23 1994. International Marconi Day celebrates Marconi's achievements in wireless communications and for the first time ever an English station will be participating using only the Amateur Radio Satellite Service for working DX.

The callsign **GB1IMD** will be in operation for as long as possible during the 24 hour period commencing on April 23 at 0001UTC. **John Heath G7HIA** and **Robert Turlington G8ATE** who are members of AMSAT UK will be operating the station.

Operating details are expected to be: Main activity on AO-13 Mode B on a downlink frequency close to 145.930 u.s.b. Uplink 435MHz using 40W into a 21-ele crossed Yagi. Downlink antenna will be a 5-ele crossed Yagi with a GaAsFET pre-amp mounted at the antenna. The station may also be active on Mode S using a 60cm dish with helical feed for the 2.4GHz downlink.

Additional operations will also be carried out via the Russian Satellite RS10 on a downlink frequency of 28.385 MHz. The uplink will be 145MHz using between 2 and 20W into a turnstile antenna. The downlink antenna will be a wire dipole for 28MHz. All Marconi Day transmissions will be made from locations with a Marconi connection wherever possible.

More infomation can be obtained from John Heath, Chestnuts, Desford Lane, Kirkby Mallory, Leicestershire LE9 7QF or via packet radio @GB7SDC.#25.GBR.EU.

Following the success of the 1993 International Marconi Day award, the Cornish Radio Amateur Club are again offering a special award certificate to anyone working International Marconi Day Stations.

To receive the special certificate participants are required to work 12 of the participating stations. Short wave listeners can also claim an award for hearing and logging 12 of the stations. The cost of this year's award is £3.50 UK, $10 US or 12 IRCs. For s.w.l. the award costs £3.00 UK, $5 US or 8 IRCs.

The stations to listen out for on April 23 1994 are:

CT1TGM	Coimbra, Portugal
EI2IMD	Crookhaven, Eire
GB0IMD	Isle Of Wight
GB2GM	Poldhu Cove
GB2MDI	Salisbury Plain
GB2SFL	South Foreland Lighthouse
GB4MD	Old Carnarfon Station, Waunfawr
IY0GA	Sardinia Island
IY0ORP	Rocca Di Pappa, Rome
IY1TTM	Sestri Levante, Genova
I????	Rapallo, Genova
K1VV/IMD	Cape Cod, Mass.
OE???	Radio Austria Int. , Vienna
VE1IMD	Glace Bay, Nova Scotia
VO1IMD	St. Johns, Newfoundland
DA0IMD	Borkum Island
EI4IMD	Glaway, Eire
GB1IMD	Leicester (satellites)
GB2IMD	Rathlin Island, N. Ireland
GB2MID	Sandbanks, Poole, Dorset
GB4IMD	Truro (The CRAC Station)
GB4MDI	Flatholm Island
I????	Caselecchio Di Reno
IY0TCI	Civitavecchia
IY4FGM	Villa Grifone, Pontecchio
KK6H/IMD	Marshall, California
PY1??	Rio De Janerio, Brazil
VK2IMD	Wahroonga, New South Wales
ZS6IMD	Johannesburg, South Africa

Award applications should be sent to Cornish Radio Amateur Club, International Marconi Day Awards Manager, PO Box 100, Truro, Cornwall TR1 1RX.

Icom Radio Tea

Victorian Icom - (left to right) Sara, Chris Gibbs G8GHH Technical Service Manager, Joanne, Paul Nicholson G3VJF Chairman Icom (UK), Gordon Adams G3LEQ Birmingham Store Retail Manager and Dennis Goodwin G4SOT Amateur Radio Sales Manager.

Icom UK recently held their first amateur radio event for dealers at Jonathans Hotel in the West Midlands close to their Birmingham showrooms. Members of the Icom team re-created, with the help of Jonathans' Victorian surroundings, the idea of a 'Radio Tea' and they even dressed appropriately.

The event saw the launch of the latest amateur radio equipment from Icom. The launch included the IC-2340H, a dual-band f.m. transceiver with optional tone scan and voice synthesiser, the IC-281H 144MHz mobile transciever featuring an extra receive band to allow full duplex cross band operation between 144 and 430MHz, as well as scratch pad memories and 60 regular memory channels. The IC-2340H is expected to retail at £689 and the IC-281H at £399.

Also launched was the IC-820, a dual-band all-mode transceiver capable of providing instant satellite communications. Icom say the IC-820 is designed to be compact and fairly priced without sacrificing important functions. The IC-820 has newly designed direct digital synthesis for 1Hz resolution, 50 memory channels, optional tone scan and a high stability crystal unit. The price of the 820 will be £1869.

Finally on display was the IC-2700 which is described as an advanced dual-band f.m. transceiver complete with detachable front panel, scratch pad memories and external DTMF remote control. The detachable front panel allows the user to mount it away from the main body of the transceiver.

The IC-2700 can be supplied with an optional 'wireless' microphone which gives full control of the transceiver via infra red signals. The cost of the IC-2700 will be £829 for the conventional model, with prices for the unit with the infra red microphone yet to be confirmed

For more information on any of the new range of Icom equipment contact Icom (UK) Ltd., Sea Street, Herne Bay, Kent CT6 8LD. Tel: (0227) 741741.

Radio Amateurs Training

Len Buck G0DLR has informed *PW* that due to an increasing demand for an RAE course in preparation for the December 1994 exam, he will be running a course commencing late May. The course will be run from Len's home address in Kent with students sitting the exam at North West Kent College of Technology.

The cost for Len's course will be £60 plus the examination fee and anyone interested in joining should contact **Len on (0732) 823483.**

The Yeovil ARC will be running an RAE course on Thursday evenings at the Red Cross HQ, 72 Grove Avenue, Yeovil, Somerset in preparation for the December 1994 examination. The enrolment night for the course is May 12 and more information can be obtained from **Rob Micklewright G3MYM on (0935) 79027.**

Vintage Communications

The third National Vintage Communications Fair '94 (NVCF '94) is being held on Sunday May 15 from 10.30am to 5pm at Pavilions Hall, National Exhibition Centre, Birmingham. The fair has become Britain's leading fair for collectors of vintage communications and entertainment technology and is expected to attract around 5000 visitors.

Visitors to NVCF '94 can expect to find over 250 stands selling items ranging from vintage radios to classic jukeboxes. As well as experts on hand to offer valuations and advice from many leading clubs and societies.

Further information on NVCF '94 can be obtained from Jonathan Hill, 2-4 Brook Street, Bampton, Devon EX16 9LY. Tel/FAX: (0398) 331532.

NOVICE natter

In this month's column Elaine Richards G4LFM says thank you for all the letters she's received, and she hopes to use all the points you've made as soon as possible.

Elaine Richards G4LFM, PO Box 1863, Ringwood, Hants BH24 3XD.

This month I've found out that Novice Natter is read on the other side of the Atlantic, as I received a letter from **Mike Zane K6URI**. Mike sent me an antenna design for use on the 144 and 430/440MHz bands.

It can be used as a portable antenna in confined spaces as you can just hang it from a convenient curtain rail. If you use it outdoors you'd need to water-proof the BNC connector and solder joints.

Mike's antenna can be built by any individual or even as a club project, but as copyright is pending he asks that it is not made commercially and sold as such. All the constructional information you need is incorporated in the drawing in **Fig. 1**.

He would be very interested in hearing from anyone who builds this antenna and to find out how it performs at various locations and heights - so would I! You can contact **Mike at PO Box 455, Lodi, CA95241, USA** and my address appears at the head of the column. If anyone else has a design they've come up with or a favourite constructional project that you think others should know about, drop me a line.

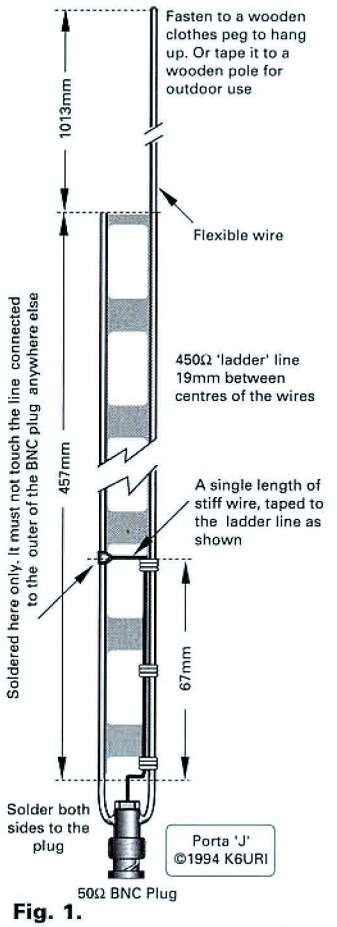


Fig. 1.

First Offers

Following on from something I wrote a couple of months back, I've got our first offers and wants on the equipment score.

Owen Dewberry is just 16 years old and is looking for a job as a trainee gamekeeper. Although he is being helped in his studies by **R. Walker G7RHB**, he is looking for some equipment to get him going at an affordable price for a youngster in his circumstances.

Have you got some kit lying around that you think Owen could use? If you have let me know and I'll pass on the details. To start the ball rolling I've been able to pass on a ready-built Howes Communications s.w.r./power meter, the SWB30. This should be very useful, as full scale deflection on the meter is just 1W and its frequency range is 1 to 200MHz.

Don't forget that C. M. Howes Communications have a good range of kits and ready-built equipment that are very reasonably priced, I'm sure an enquiry will result in a catalogue. **Contact C. M. Howes Communications, Eydon, Daventry, Northants NN11 6PT Tel: (0327) 60178.**

I've also got available a Wood & Douglas 50MHz pre-amp and an Altai Communications Speaker. If you're just starting out and think you could give either of these two small pieces of kit a good home, drop me a line. If I'm swamped with letters it will be the first name out of the hat.

Michael Rowntree has three or four broadcast receivers covering 3.5MHz and most of the useful short wave broadcast bands, as well as 7, 10 and 14MHz, etc. These radios don't have b.f.o.s, but it is possible to resolve s.s.b. by tuning one radio to the original frequency and another radio with the volume turned down to a frequency the i.f. away from the first. Or you can build the b.f.o. project *Practical Wireless* published several years ago.

If any youngster or unemployed person would like one or two, Michael says they are available free of charge if collected, or he could deliver them within 20 miles of Wellingborough. Send your requests to me and I'll pass them all onto Michael. Many thanks for his generous offer.

Busy Learning

With so many of you busy learning about electronics I thought you might be interested in a problem sent to me by **Charles Morris** of Penylan. Charles wanted to try building a simple oscillator and looked around for a suitable circuit.

Unfortunately, the only one he could find was designed to work with a 24V power supply. As he wanted to use it with a PP3 size 9V battery, he set about trying to work out how to modify the circuit for a lower voltage.

After some careful consideration Charles decided that the resistor values needed changing to keep all the current flows the same. The formula used was as follows; 24V/old resistor value = current (I) : new resistor value = 9V/current (I).

Although this was a reasonable assumption, some manipulation of the formulae shows that this is simply scaling the resistor value in line with the voltage change. A simpler way would be to work out the scaling factor using just the voltages, e.g. 24V/9V = 2.67. All you have to do now is divide all the resistor values by 2.67 to give the new values. Just to bring the problem to life, I've shown the 24V circuit in **Fig. 2** and the modified 9V circuit in **Fig. 3**.

Having completed the circuit changes, Charles was most disappointed to find that the circuit didn't work. Not being easily beaten, he decided to prove his theory by using the same formula to calculate the values for a circuit working with a 40V supply.

Charles' approach proved to be much more successful as the circuit burst into life with no apparent problems. So, if the formula works when you increase the voltage, why doesn't it work the other way?

The answer lies in the bias voltage needed between the

Morse Football

Did you know that fans at football matches are Morse experts? Well I didn't either until **Mike Stott G0NEE** told me. Apparently, if you listen to the shouts and the clapping, one of the clapping sequences is:

CLAP CLAP clap clap clap clap clap clap CLAP CLAP (- - ... . - -).

This, as you can see represents 73 in Morse. After some investigation Mike has come up with the facts. It all started just after the start of the Second World War and the earliest date of its use that he can find was in the winter of 1940.

This was used by the fans as a way of sending 'Best Wishes' to their football team. Morse code was used because at that time a large number of the general public could read and send Morse code - not only from its use in being a member of the armed forces but also in every day from the youth organisations at the time! So now you know.

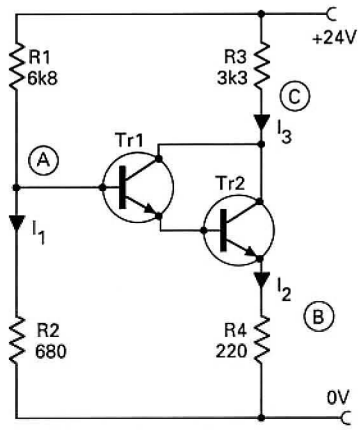


Fig. 2.

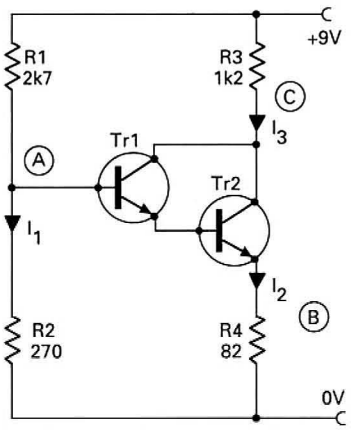


Fig. 3.

base and emitter of a transistor to make it start to work. With a common silicon transistor you have to allow between 0.6 and 0.7V to bias the base-emitter junction. You will find that different people have favourite standard values for this voltage, but for the purposes of our calculations I'm going to use 0.7V.

Let's start by calculating the main voltages in the 24V circuit (**Fig. 2**). The most important voltage is **point A** as all the others relate directly to this one. Using Ohm's Law, first calculate the current flow I_1 = 24/(6800+680) = 0.0032A.

Rather than work in Amps, let's change this to the more manageable milliamps (mA) by working with resistor values in kΩ, e.g. 24/(6.8+0.68) = 3.2mA. You can now use this current to calculate the voltage at point A, which is simply the voltage drop across the 680Ω resistor. VA = 0.68kΩ x 3.2mA = 2.18V.

The next important voltage is **point B**. Remembering what I said earlier about transistor bias voltages, this must be 0.7V + 0.7V (e.g. 1.4V) less than point A. This is therefore 2.18 - 1.4 = 0.78V. From this you can now work out the current I_2, which is 0.78V/0.22Ω = 3.5mA.

At this stage you can also make an assumption that I_3 will be the same as I_2, which enables you to complete your calculations by working out the voltage at point C. This becomes 24V - (3.3k x 3.5mA) = 12.45V.

As I'm feeling a bit sneaky this month, I want you to use the formula and method shown here to tell me why the 9V version shown in **Fig. 3** doesn't work! I'll get the Editor to rustle up a prize for the first person out of the biscuit tin who sends me the right answer. If you're feeling lazy you'll have to wait till next month for my explanation. **(Nevada Communications of Portsmouth have kindly offered to give away a Scanmaster Desk Stand as the prize. Ed.)**

More About JVFAX

I know I said last time that I'd tell you more about JVFAX this month, but I've run out of space. Hopefully by next month I'll have got a couple of good SSTV screen prints to illustrate the article and make it worth while talking about. Cheerio for now.

CLUB news

Antrim

Carrickfergus ARG. Tuesdays, 7pm. Downshire Secondary School, Downshire Road, Carrickfergus. April 19 - Quiz Night, May 3 - Talk by GI0NMV. **GI0JOF on (0960) 351807.**

Avon

City Of Bristol Group. Last Tuesdays, 7pm. New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. April 26 - Somerset Range Of Kits by Tim Walford. **Dave Bailey G4NKT on (0272) 672124.**

North Bristol ARC. Fridays, 7pm. Self Help Enterprise, 7 Braemar Crescent, Northville, Bristol. RAE & Morse tuition available for members. April 15 - Relax & Chat, 22nd - How To Use An SWR Meter, 29th - Naval Communications by Lt/Cdr R. Love, May 6 - Committee Meeting, 13th - A Display Of Radios For All. **Tony G4ROX on (0272) 513573.**

Shirehampton ARC. April 15 - Digital Direction Finding, 22nd - Chat Night, 29th - PCB Techniques, May 6 - CW Night , 13th - HF NFD Planning. Fridays. **Ron Ford on (0272) 770504.**

South Bristol ARC. Wednesdays. Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Avon BS14 0LN. April 20 - Radio Controlled Model Boat Exhibition, 27th - History Of W.D & H.O Wills by G7LPP, May 4 - 20m Activity Evening, 11th - Cellular Radio. **(0275) 834282.**

Bedfordshire

Shefford & DARS. Thursdays, 8pm. Church Hall, Ampthill Road, Shefford, Bedfordshire. May 5 - Coopering by Brian Palfrey. **Paul G1GSN on (0462) 700618.**

Berkshire

Maidenhead & DARC. The Red Cross Hall, The Crescent, Maidenhead, 7.45pm. April 19 - DIY Satellite TV by Mike G3VXZ, May 5 - Static Electricity by Paul Sallom G3BGL. **Neil G8XYN on (0628) 25952.**

Newbury & DARS. 4th Wednesdays, 7.30pm. Bucklebury Memorial Hall. April 27 - AGM. **Norman on (0635) 863310.**

Buckinghamshire

Aylesbury Vale RS. 1st & 3rd Wednesdays, 8pm. Village Hall at Hardwick. May 4 - Direction Finding by Alan Simmonds. **Martyn G4XZJ on (0296) 81097.**

Cheshire

Mid-Cheshire ARS. Wednesdays, Morse & RAE classes held. Cotebrook Village Hall, Cotebrook, Nr. Northwich, Cheshire. April 27 - Rally Planning Night, May 2 - MIDCARS Rally, Winsford, 4th - On Air/Construction Night, 11th - Canals Pt. 1 by Phil G0UCQ. **Mike Baguley G7LQD on (0606) 331210.**

Stockport RS. 2nd & 4th Wednesdays, 7.45pm. Room 14, Dialstone Centre, Lisburne Lane, Offerton, Stockport, Cheshire. April 14 - A Beginners View Of TCP/IP by G0UDC, May 6 - Circuit Diagrams On TurboCad by Frank Lunt. **Jim France G3KAF on 061-439 4952.**

Wirral ARS. 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrowe Park Road, Birkenhead, Wirral. April 20 - Packet Radio Update by Neil G4OAR, May 3 - Funny Police Postcards by Constable Bill Johnston. **Alec Seed G3FOO on 051-644 6094.**

Clwyd

Wrexham ARS. Maesgwyn Community Centre, Maesgwyn Road, Wrexham. April 19 - Quiz Night, May 3 - Annual Constructors Contest. **Ian Wright GW1MVL on (0978) 845858.**

Cornwall

Poldhu ARC. Tuesdays and Fridays, Wednesdays HF Net, 7.30pm. April 12 - Club Monthly Meeting, 23rd - International Marconi Day, May 1 - Committee Meeting. **(0326) 290638.**

Derbyshire

Buxton Radio Amateurs. Lee Wood Hotel, Buxton, 8pm. April 26 - My Best Radio Contact, May 10 - Fox Hunt. **Derek Carson G4IHO on (0298) 25506.**

Derby & DARS. Wednesdays, 7.30pm. 119 Green Lane, Derby. April 27 - Quiz, May 4 - Surplus Sale, 11th - Wideband Receivers by Richard Hillier G4NAD of AOR. **Hayley Winfield G7PXA on (0773) 856904.**

Devon

Appledore & DARC (Devon). 3rd Mondays, 7.30pm. Appledore Football Clubroom. April 18 - Talk On Tesla by Ian Moore. **Reg Lyddon G4ETJ, QTHR on (0237) 477301.**

Axe Vale ARC. 1st Fridays, 7.30pm. 'New Commercial', Trinity Square, Axminster, Devon. **Pat Cross G0GHH on (0297) 33756.**

Exeter ARS. 2nd Mondays, 8pm. The Moose International Centre, Blackboy Road, Exeter. May 9 - Club Station Operating Night. **Ray Donno on (0392) 78710.**

Plymouth RC. Tuesdays, 6.30pm RAE class, 7.30pm Morse class, 8pm club activities. (As from June for the summer, meetings will be fortnightly). The Basement, The Royal Fleet Club, Devonport. April 19 - Business Meeting/Natter Night, 26th - Quiz Final Night, May 3 - Checking And Overhauling The Contesting Equipment, 10th - Data Transmission Demonstration Night, 11th - Visit To Crownhill Police Station Comms Room. **F. P. Russell G7LUL, 63 Fleet Street, Keyham, Plymouth PL2 2BU on (0752) 563222.**

Dorset Police ARS. The Dorset Police ARS will now be holding regular monthly meetings, at Force HQ on the first and third Thursdays of every month, at 7.30pm. Membership is open to Police Officers, serving and retired, civilian employees, Special Constables and their immediate family. The club welcomes contact from other local clubs. Further info from April 21 - RAE Revision/Committee Meeting, 23rd - Wimborne St. John Ambulance Badgers visit, May 5 - RAE Revision, 8th - Yeovil QRP Convention, 9th - Radio Amateur Examination. **PC915 Richard Newton at Ferndown Police Station on (0202) 229351 or (0202) 229342.**

Flight Refuelling ARS. Sundays, 8pm. Flight Refuelling HQ, Merley, Wimborne, Dorset. April 17 - The Little Brown Book by G4VCQ, 24th - Construction Trophy. **John Hart on (0425) 653404.**

South Dorset RS. 1st Tuesdays, 7.30pm. Wessex Lounge of Weymouth Football Club. May 3 - Planning Regs by Mike Kelly. **Mike Lenzi G7HNY on (0305) 773860.**

Down

Bangor & DARS. 1st Fridays, 8pm. Bangor Technical College, Room A13. May 6 - Test Equipment Talk and Demonstration by Norman. **Keith GI0SSA on (0247) 883315.**

Dfyed

Aberystwyth & DARS. 2nd Thursdays, 8pm. Scout Hut, Plascrug Avenue, Aberystwyth. April 14 - RAYNET AGM/Construction from Les GW3SON, 28th - GW0ARA On The Air, May 12 - DF Hunt by Ray GW3LNM. **Kathy GW0SFO on (0545) 580675.**

East Sussex

Crowborough & DARS. Thursdays, 8pm. Plough & Horses, Crowborough. April 24 - Concorde by Keith G8HGM. **Michael Smith G6UUO on (0892) 661807.**

Southdown ARS. 1st Mondays, 7.30pm. Main Hall of the Chaseley Home for Disabled Ex-Servicemen, South Cliff, Eastbourne. Wednesdays (Morse) & Fridays (Novice & RAE), 7.30pm at the clubrooms, Hailsham Leisure Centre, Vicarage Road, Hailsham. May 9 - Aerial Polar Diagrams And Aerial Modelling by G3GRO. **Bob Fox G7LHX on (0323) 484282 or G7LHX @ GB7HAS.**

Essex

Vange ARS. Thursdays, 8pm. Barnstaple Community Centre, Long Riding, Basildon, Essex. April 14 - Steam Trains by Bob G7JJX. **Doris on (0268) 552606.**

Fife

Dunfermline & DARC. Thursdays, 7.30pm. Former RAF Station, Outh Muir located by the A823 Dunfermline to Crief Road. April 14 - HF Operating Evening, 21st - JVFAX Demonstration by Graham GM6WBV, 28th - The Packet System by Stuart GM1VBE, May 5 - Natter Night, 12th - HF Operating Evening. **Wallace Shackleton GM0GNT, QTHR.**

Grampian Region

Aberdeen ARS. Fridays, 8pm. Queen Mother House, Aberdeen. April 29 - Wet String Listening Competition, May 6 - Junk Sale. **Gordon Stuart GM7PXW on (0224) 780591.**

Greater London

Clifton ARS. Kidbrooke House Community Centre, Room 9, 90 Mycenae Road, Blackheath SE3 7SE. April 22 - Quiz Evening. **Keith Lewis on 081-859 7630.**

Cray Valley RS. 1st & 3rd Thursdays, 8pm. Progress Hall, Admiral Seymour Road, Eltham SE9. April 21 - AGM, May 5 - Ballooning With Branson by G4SOT. **Bob Treacher on 081-850 1386.**

Crystal Palace & DRC. 3rd Saturdays, 7.30pm. All Saints Parish Rooms, Beulah Hill, London SE19 (opposite junction with Grange Road). April 16 - Electronic And Construction Workshops. **Wilf Taylor G3DSC on 081-699 5732** or **Bob Burns G3OOU on (0737) 552170.**

Edgware & DRS. Watling Community Centre, 145 Orange Hill Road, Burnt Oak, 8pm. April 14 - Computer PCs by John Cobley G4RMD, 28th - Morse Training Evening, May 12 - F. J. Camm - The Man And His 'Comic' by Steve Slater G0PQB. **Rod Bishop G0SQL on 081- 204 1868.**

Loughton & DARS. Room 12 of Loughton Hall, 7.45pm. April 15 - AGM. **John Ray G8DZH on 081-508 3434.**

Southgate ARC. 2nd & 4th Thursdays, 8pm. Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. April 14 - The Grand Surplus Sale, 28th - London Amateur Radio & Computer Show Debrief. **Brian Shelton G0MEE on 081-360 2453.**

Greater Manchester

Rochdale & DARS. Mondays, 8pm. The Cemetery Hotel, 470 Bury Road, Rochdale, Lancs. April 18 - Contests by G3RTU. **Brian on 061-653 8316 or John on (0706) 376204.**

Gwynedd

Dragon ARC. 1st & 3rd Mondays, 7.30pm. Four Crosses Hotel, Menai Bridge. April 18 - VK2WAH Video And Preparation For GB4MD, May 2 - Afghanistan The Forgotten Fighting. **Tony Rees GW0FMQ on (0248) 600963.**

Porthmadog & DARS. 3rd Thursdays, 8pm. Harbour Cafe, Ffestiniog Railway, Porthmadog. April 21 - Moonbounce. **Pat Vernalls (0766) 770546.**

Hampshire

Horndean & DARC. 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross (off Catherington Lane), Horndean, Hants. May 5 - RAYNET by Dick Grindley G0MNL. **Stuart Swain G0FYX on (0705) 472846.**

Itchen Valley RC. 2nd & 4th Fridays, 7.30pm. Scout Hut, Brickfield Lane, Chandlers Ford. April 22 - Visit From Peter Kirby G0TWW General Manager RSGB. **Les Kennard G3ABA on (0703) 732997.**

The Three Counties ARC. Every other Wednesday, 8pm. Railway Hotel, Liphook, Hampshire. April 27 - AGM, May 11 - Computer Night. **Tom Milne on (0428) 606298.**

Hereford & Worcester

Bromsgrove ARS. 2nd & 4th Tuesdays, 8pm. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. April 26 - Technical Topics, May 10 - AGM. **Mr B. Taylor G0TPG on (0527) 542266.**

Hertfordshire

Hoddesdon RC. Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon, Herts. April 14 - Inter Club Dart Match, 28th - Talk by John Tyalor from Radiocommunications Agency Radio Investigation, May 12 - Junk Sale/Natter Night. **John G7OCI on (0920) 466639.**

Humberside

Goole R & ES. Fridays, 7.30pm. West Park Pavilion, West Park, Goole, last Fridays at the 'Old George Inn', Market Place, Goole. April 15 - Packet by G4DBN, 22nd - Construction Project, 29th - Social Evening, May 6 - On Air. **Steve Price G8VHL on (0405) 769130.**

Isle Of Wight

Isle of Wight RS. Unity Hall, Mill Square, Wootton, Isle of Wight PO33 4HS. April 23 - International Marconi Day. **(0983) 872620.**

Kent

Dover RC. Wednesdays. Duke Of York's School, Guston, Nr. Dover. April 20 - Video Choice, 27th - AGM, May 4 - Novice Evening/Committee Meeting, 11th - Squares WAB Style. **Mike Bowers G7NOR on (0304) 825030.**

Medway AR & TS. Fridays. Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. Visitors & new members welcome. April 15 - Radar The Heavy Weight Radio by Alistari Dunlop G7IET, May 6 - Satellite TV by Colin Turner G3VTT. **Mrs Gloria Ackerley G7OVI, 40 Linwood Avenue, Strood, Rochester, Kent ME2 3TR. Tel: (0634) 710023.**

Lancashire

Fylde ARS. 2nd & 4th Tuesdays, 7.45pm. Blackpool South Shore Lawn Tennis Club, Midgeland Road, South Shore, Blackpool. April 26 - Informal, May 10 - DF Foxhunt. **Eric Fielding G4IHF on (0253) 726685.**

Lincolnshire

Grantham RC. 1st & 3rd Tuesdays, 8pm. Kontak Sports & Social Club, Barrowby Road, Grantham. April 19 - Visit To Lincolnshire Police HQ. **John Kirton G8WWJ on (0476) 65743.**

Merseyside

Liverpool & DARS. Tuesdays, 8pm. Churchill Club, Church Road, Wavertree, Liverpool. April 19 - Demonstration by Radiocommunications Agency, 26th - Surplus Sale, May 3 - Novice Course Post Mortem, 10th - GX3AHD. **Ian Mant G4WWX on 051-722 1178.**

Norfolk

Dereham ARC. 2nd Thursdays, 8pm. St. Johns Ambulance Hall, Yaxham Road, Dereham. April 14 - Discussion On Your Own Antennas, May 12 - Trip To Eastern Communications. **Mark Taylor G0LGJ on (0362) 691099.**

Fakenham ARC. 1st Tuesdays, 7.30pm. Trinity Church Room, Hempton. May 3 - Used Equipment Sale. **Dave G4DCJ on (0485) 528633.**

Norfolk ARC. Wednesdays, 7.30pm. University Arms, South Park Avenue, Norwich. April 20 - Night On Air/Construction QRP/Morse Practice, 27th - Quiz, May 4 - Night On Air/Construction QRP/Morse Practice, 11th - Simple Frequency Counter by Mike G4EOL. **Dale Simkin on (0603) 37393.**

Nottinghamshire

Mansfield ARS. 2nd Mondays, 7.30pm. Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. May 9 - AGM. **Mary G0NZA on (0623) 755288.**

Nottingham ARC. Thursdays, 7.30pm. Sherwood Community Centre, Mansfield Road, Nottingham. April 14 - Forum/Night On The Air, 21st - Fox Hunt No. 1, 28th - Construction/Activity Night. May 5 - Forum/Night On The Air, 12th - The Secret War by Henry G4MHB. **Simon G0IEG on (0602) 501733,**

Shropshire

Salop ARS. Thursdays, 8pm. Oak Hotel, Shrewsbury. April 14 - Talk by Specialist Antenna Systems, 21st - Foxhunt Chase 1, 28th - The Under A Fiver Construction Contest Competition, May 5 - Natter Night, 12th - Junk Sale. **Sheila Blumfield G0SST on (0743) 361935.**

Somerset

Yeovil ARC. Thursdays. Red Cross HQ, Grove Avenue, Yeovil, Somerset. May 5 - Discussion/Preparation For QRP Convention,12th - Post Mortem on QRP Convention/Enrolment For RAE Classes. **Cedric White G4JBL on (0258) 73845.**

Sheffield ARC. Mondays 7.30pm. Firth Park Pavilion, Firth Park Road, Sheffield. April 18 - I Was A Huff Duff In The Gulf by Ron G4UMQ, 19th - Ten Pin Bowling, 25th - Operation OF Club's Rig/Committee Meeting. **(0742) 446282.**

Staffordshire

Bloxwich RS. 2nd & 4th Mondays, 7.30pm. All meetings are non-smoking. April 25 - A Low Power Award by G0MLY, May 9 - Construction Project. **Rob Briggs G0TDF on (0902) 722830.**

Strathclyde

Paisley ARC. Alternate Wednesdays, 7.30pm. 5 New Street, Paisley. RAE/Morse classes on Tuesdays. April 27 - The Junk Sale, May 11 - SARDA by Mr J W Armstrong. **Stuart GM0UKD on (0505) 335195.**

Suffolk

Ipswich RC. April 20 - AGM, 27th - CW Evening, May 4 - Slim Jim Construction, 11th - Social In The Bar. **Mrs S. Elden G8HYE, 124 Larchcroft Road, Ipswich IP1 6PQ.**

Sudbury & DRA. 1st Tuesdays, 8pm. Wells Hall Old School, Great Conrad, Sudbury, Suffolk. 3rd Tuesdays, 8pm. Five Bells Public House, Bures Road, Great Conrad, Sudbury. April 19 - Natter & Noggin, May 3 - Operating Evening/Magnetic Loop Aerials by Tony G4ZVR. **Tony Harman G8LTY on (0787) 313212 or G8LTY @ GB7NNA.**

Surrey

Dorking & DRS. The Friends Meeting House, South Street, Dorking, 7.45pm. April 26 - Bonsai Antennae by Derek Atter

Please send in all of your 'Club News' items to Donna Vincent at the editorial offices in Broadstone.

G3GRO, May 8 - Visit To Tangmere Military & Aviation Museum, 10th - Informal Evening. **John Greenwell G3AEZ on (0306) 631236.**

Horsham ARC. Guide Hall, Denne Road, Horsham, West Sussex, 8pm. May 5 - Home-Brew Evening. **Peter Stevens G8SUI on 0737) 842150.**

Surrey RCC. 'Terra Nova' The Waldrons, Waddon, Croydon, Surrey. April 25 - Natter Night, May 9 - Construction Contest. **Berni G8TB on 081-660 7517.**

Sutton & Cheam RS. 3rd Thursdays, 7.30pm. Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey. Natter Nights - 1st Thursdays. April 21 - Junk Sale, May 5 - Natter Night, 8th - Visit To Dungeness B Nuclear Power Station. **John Puttock G0BWV, 53 Alexandra Avenue, Sutton SM1 2PA.**

The Kingston & DARS. 3rd Wednesdays, 8pm. Alfriston, 3 Berrylands Road, Surrey KT5 8RB. April 20 - The Seventh Cavalry, The Pogo Stick & A Guide To Personal Communicatons by Brian Cannon G8DIU. **Ray Fuller on 081-398 1128.**

Wimbledon & DARS. 2nd & last Fridays. St. Andrews Church Hall, Herbert Road, Wimbledon SW19. April 29 - The Simple Spectrum Analyser by Bernard G8TB. **George Cripps G3DWW on 081-540 2120.**

Tayside

Dundee ARC. Tuesdays, 7pm. College of Further Education, Graham Street, Dundee. April 19 - Construction Night, 26th - Morse Enthusiasts Group Scotland Lecture, May 3 - Construction Night, 10th - Lectfure by C. H. Matthews, Curator of Museum Of Communicaitons, Boness. **George Millar GM4FSB, 30 Albert Crescent, Newport-on-Tay, Fife DD6 8DT.**

Warwickshire

Coventry ARS. Fridays, 8pm. Baden Powell House, 121 St. Nicholas Street, Radford, Coventry. April 15 - Night On The Air, 22nd - Indoor DF Contest, 29th - Night On The Air, May 6 - 144MHz Fox Hunt. **David G1ORG on (0203) 311468.**

Stratford-Upon-Avon & DRS. 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Road, Tiddington, Stratford-Upon-Avon, Warwickshire. April 25 - Cables & SWR by Peter Chadwick G3RZP, May 9 - Old Pye Communications Equipment by The Pyeman from Bewdley. **Alan Beasley G0CXJ on (0608) 82495.**

West Sussex

Worthing & DARC. Wednesdays 7.30pm. Parish Hall , South Street, Lancing, Worthing, West Sussex. April 20 - Discussion Evening, 24th - Treasure Hunt, May 8 - 144MHz Portable Competition, May 11 - Antennas & Feeder Systems by G5RV. **G4GPX on (0903) 753893.**

West Yorkshire

Denby Dale & DARS. Pie Hall, Denby Dale, Nr. Huddersfield, 8pm. April 20 - A Day In The Life Of The Wakefield Coroner by David Hincliffe, 27th - Visit To Police Air Support Unit (provisonal). **Ivan Lee, Clayton Lodge, Sunnyside, Edgerton, Huddersfield HD3 3AD.**

Halifax & DARS. 1st & 3rd Tuesdays, 7.30pm. March 15 - Talk by George Dobbs G3RJV. **David Moss G0DLM on (0422) 202306.**

Keighley ARS. The Ingrow Cricket Club, Ingrow, Keighley, 8pm. April 14 - Computer Logging by G0MDO, 21st - Night On The Air, 28th - Log Periodic Yagis by G3FDW, May 5 - Natter Night, 12 - Visit by RSGB RLO G0RZP. **Kathy Conlon G0RLO on (0274) 496222.**

Spen Valley ARS. Thursdays, 8pm. Old Bank Working Men's Club, Mirfield. Alternate Thursdays - 'Noggin & Natter Nights'. April 21 - ATV On Air, May 5 - Spring Surplus Sale. **Tony Galvin G0IKD on (0532) 534437.**

Wiltshire

Salisbury R & ES. Tuesdays, 7.30pm. 3rd Salisbury Sea Scout Hut, St Marks Avenue, Salisbury. April 19 - Construction Evening, 23rd - Marconi Day International, 26th - Marconi Day Debriefing, May 3 - Microwave Pt. 2 by G4LDR & G8OFA, 10th - RAYNET by Gordon G6ZHJ. **David Kennedy G7GWF on (0722) 330971.**

Trowbridge & DARC. 1st & 3rd Wednesdays, 8pm. Southwick Village Hall, 8pm. April 20 - Social Night, May 4 - Amateur Satellites by G7AZP. **Ian G0GRI on (0225) 864698.**

C.M.HOWES COMMUNICATIONS

Mail Order to: Eydon, Daventry, Northants NN11 3PT
Tel: 0327 60178

Single Band Receiver

RECEIVER KITS

TRF3 Shortwave Broadcast TRF receiver for AM/SSB/CW, 5.7 to 12.8MHz. Complete electronics kit plus Hardware Pack: **£41.40**

DcRx Single Band SSB/CW for 80, 40, 20M amateur bands or 5.45MHz HF Air. Complete kit with HA80R Hardware Pack and DCS2 "S Meter": **£57.70**

DXR10 Three band 10,12 & 15M SSB/CW complete kit with HA10R Hardware Pack and DCS2 "S Meter": **£64.30**

The above items are also available with assembled PCB modules, and as basic electronics kits without the hardware.

		Kit	Assembled PCB
ACCESSORY KITS – optional hardware packs also available			
AP3	Automatic Speech Processor	£16.80	£24.90
DFD4	Add-on Digital Read-out for superhet radios	£49.90	£69.90
CTU30	ATU covers all HF bands + 6M for receiving or 30W TX	£39.90	£46.90
CTU150	ATU – all HF Bands up to 150W	£49.90	£57.90
ST2	Morse Side-tone or practice oscillator	£9.80	£15.90
XM1	Crystal Calibrator for frequency checking	£16.90	£22.90
TRANSMITTER KITS – expandible into transceivers with matching receiver and VFO kits			
CTX	40 or 80M Band versions very popular QRP TX	£15.50	£22.90
MTX20	20M 10W CW TX - work the World!	£29.90	£39.90
AT160	Dual Band 80 & 160M AM/DSB/CW .5 to 10W PEP	£39.90	£62.90
HTX10	10 & 15M SSB/CW Exciter (matching PA etc. available)	£49.90	£79.90

AA2 150kHz to 30MHz ACTIVE ANTENNA

The **HOWES AA2** is the active antenna for general coverage HF reception. Broad-band performance that does not tail off at the higher frequencies. The neat compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V). Good strong signal performance, IP3 +38dBm. Easy to build, and much liked by customers!

AA2 Kit: £8.90 **Assembled PCB Module: £13.90**

AA4 ACTIVE ANTENNA FOR SCANNERS

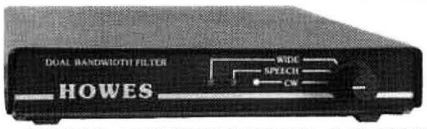
Covers 25 to 1300MHz. Broad-band performance in a neat, compact package. Just over 16 inches long – the answer to space/visibility problems for home or portable use. A low noise microwave IC gives good performance with a low parts count, making construction straightforward. Excellent performance in a small space!

AA4 Kit: £19.90 **Assembled PCB Modules: £27.90**

AB118 AIR-BAND ACTIVE ANTENNA

Optimised for the VHF air-band, 118 to 137MHz. Excellent long range reception with omni-directional coverage using an end-fed half-wave antenna element with low noise pre-amplifier, band-pass filter and switchable 10dB attenuator. Fits standard 1.5 inch plastic water pipe for easy weather-proof installation, or use it "naked" in the loft. Should transform your air-band reception if you are still using a general purpose antenna!

AB118 Kit: £18.80 **Assembled PCB modules: £25.90**



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73 from Dave G4KQH, Technical Manager.

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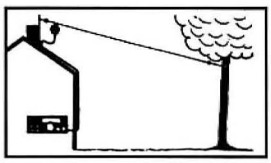

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Kenwood TM-255E Multi-mode 144MHz T

The Kenwood TM-255E 144MHz multi-mode transceiver shown with the detachable front control panel docked into the main transceiver.

Although the Editor of Practical Wireless, Rob Mannion G3XFD, is perhaps better known as a keen h.f. operator, he's often to be heard on 144MHz operating mobile. Recently Rob had the chance of a brief weekend tryout of the newly-introduced TM-255E from Kenwood and here's what he thinks....

It's interesting to see how the various amateur radio equipment manufacturers seem to be taking note of changing trends in presentation. And when it comes to designing new amateur radio mobile equipment, they're having to take many things into consideration.

I've recently discovered how much car styling has changed, and I'm afraid it caused me one or two problems when I 'retired' my well travelled Ford Escort. In December I bought a Citroën diesel estate car and I immediately realised that there was not going to be a lot of room in the front for amateur radio equipment.

My old Escort managed a gallant 220,000 miles. It also had roof gutters (ideal for antenna mounting) and space underneath the dashboard for my 70 and 144MHz rigs. Not so the modern cars!

So, when I replaced my 11 year-old Ford Escort for the four year old Citroën BX19D diesel estate, I had to sit back and think how I could fit my v.h.f. rigs into the new car. Three months later, I've got some ideas on how to attach antennas but I'm still undecided on how to install my rigs in the car.

However, it seems that the various manufacturers are coming to terms with one of the biggest problems nowadays - finding somewhere to fit the rig into the car! As I was searching for a transceiver which could fit comfortably in the new vehicle, it seemed appropriate that I reviewed the newly-introduced 144MHz multi-mode TM-255E from Kenwood.

So, just after the Picketts Lock Show in March I was given a brief opportunity to try out the TM-255E. The transceiver arrived just as we were preparing *PW* for press and my review is in the form of first impressions and has not been written as an 'in depth' review.

The Concept

The concept behind many new amateur radio mobile transceivers is versatility and the Kenwood TM-255E is certainly no exception. It's small, attractively styled and incorporates a detachable, remote control head.

Personally, in the very near future I think transceivers with detachable control heads will be required both for convenience and insurance purposes. The convenience aspect will allow the bulk of the transceiver to be mounted away from the dashboard of the vehicle and improve security at the same time.

Kenwood have obviously put a great deal of thought into the TM-255E. There are various kits enabling the control head to be remotely sited at either 3, 4 or 7 metres.

Basically, the TM-255E is a 40W output multi-mode transceiver, capable of operation on c.w., s.s.b. and f.m. It's fully controllable either with the main control panel attached to the transceiver body or with the two units are separated.

A backlit l.c.d. panel provides the main tuning frequency display, selected v.f.o., mode, relative power levels and S-meter. The frequency display is exceptionally clear and I found it to be excellent for night-time working.

'Fuzzy Logic' is built in to the tuning system on the rig and I soon got used to 'the faster you turn the knob the faster the transceiver tunes' facility. The main tuning knob is a reasonable size, and the auxiliary knob (slightly smaller and attached to the removable control head) is positive in action.

Most of the control functions on the TM-255E apart from the tuning, volume, squelch, RIT and i.f. shift, are provided by small (slightly recessed) control buttons. These buttons were virtually the only aspects of this transceiver to cause me any difficulty because of their small size.

The TM-255E also has menu control facilities, which considerably simplify operation (once you've learned to use it!). Additional, very useful control features are provided on the microphone, with the microphone (or so it appears at first sight!) taking a back seat as it's provided with an amazingly small sound input aperture.

However, in operation the microphone provided excellent audio quality. I also found the remote control facilities incorporated very easy to use, despite my large hand.

The control facilities, memories and other delights of this transmitter literally fill the control manual. I don't have the space to mention all the facilities, but they were all found to be most useful.

On The Air

When they're testing newly-introduced transceivers, I think many reviewers can forget the vital question 'How does it perform on the air'? However, I'm not going to fall into that trap as it is of course vitally important!

I'm very pleased to say that the Kenwood TM-255E proved to be an

Transceiver

excellent transceiver. And although I did not have any QSOs on c.w. or s.s.b. I listened to other operators working on sideband and was impressed with the TM-255's sensitivity.

Although this review is not the place to introduce a c.w. debate, I am left wondering about operating on the key at v.h.f. Where have all the 144MHz c.w. operators gone? (to h.f. every one?).

Once the TM-255E was fitted temporarily into my car, I found it would have been the ideal transceiver for me. The review model was not supplied with the (optional) extension lead. If the transceiver had arrived in our Broadstone offices with the longer cable, I would have been able to take full advantage of what will no doubt be the TM-255E's most useful innovation - the remote control facility.

However, even though the rig had to be used without the full remote facility, I had a foretaste of how useful it would have been. I did this by mounting the detachable mini-panel to the left of the steering wheel in the car.

Estimating size is always a problem for magazine articles and Tex Swann G1TEX our photographer often provides an article in the background to provide an idea of scale. However, it's extremely simple to provide a comparison for the TM-255E's detachable control head as it is the same size as many TV remote controls!

As the detachable control head is only slightly thicker than the average TV remote control, you'll realise that this fact alone makes it extremely versatile. In fact, I can see many uses for this facility other than in cars. I have several friends confined to wheelchairs who would find the Kenwood TM-255E useful.

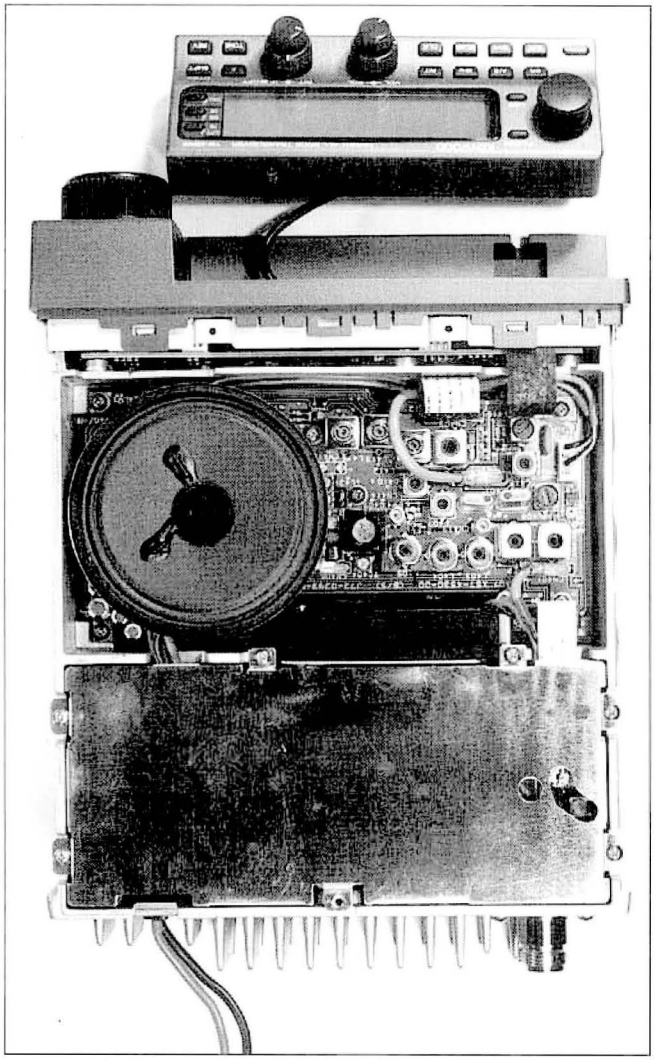
For the purposes of the review however, I mounted the transceiver in the car and set off for some high ground in the New Forest. I was most impressed with the reports on transmission quality I received from other operators. The audio quality (both ways) was impressive.

The antenna I used was the quarter-wave whip I had on my old Ford Escort. Using this antenna both on high (40W) and low (5W) power settings I had many conversations with old friends.

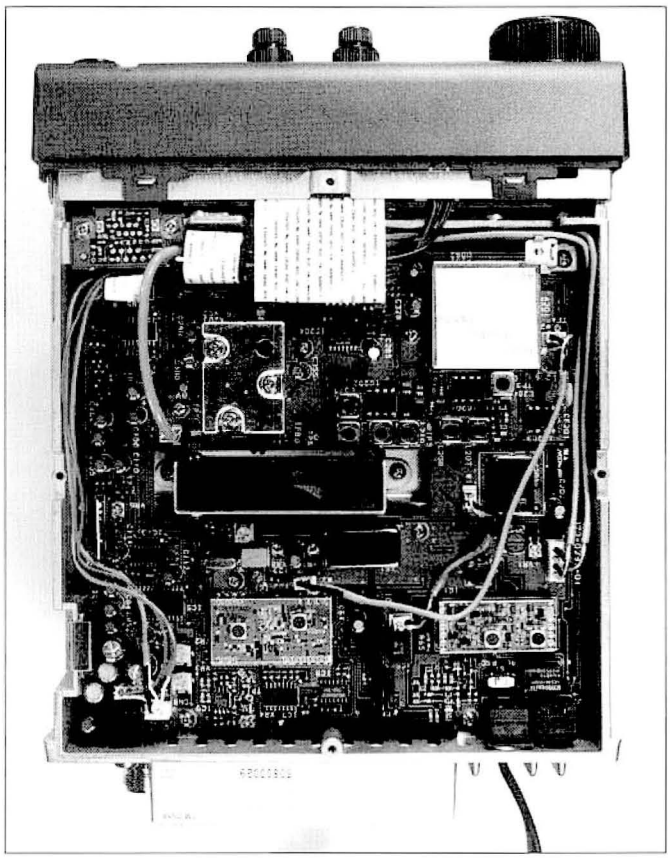
I found that the TM-255's receiver (particularly on f.m.) was **extremely** sensitive. The site I used overlooked the Solent and I had a clear view over to the Isle of Wight and because of marine ducting I could hear a lot of French stations working each other.

Over the years I've found that long distance sea pathways for radio communications cause deep fading. The deep QSB on this occasion caused by the marine ducting didn't prove to be a problem for the Kenwood TM-255E.

The tremendous variations in signal strength (from just about copyable to S9+40dB) caused no discernible difficulties for the transceiver. At no time did I lose any of the French QSOs I was listening in to. What a pity my poor command of the language wasn't able to keep up with the receiver's automatic gain control (a.g.c.)!



The TM-255E transceiver shown with the removable main front panel detached. With the optional accessory remote control cables (see text) the transceiver can be mounted as far as 7m from the operating position.The relatively large speaker incorporated into the Kenwood TM-255E assists in providing excellent audio reproduction (see text for comments).



A view from above the TM-255E, with cover removed. The integral cooling fan is shown in the middle of the picture, just off centre.

Find A Site

At weekends, you're unlikely to find a good v.h.f. site on the south coast that's not in use by another operator. The New Forest, near to Ringwood, attracts a lot of visitors (even in early spring) and I found another amateur using 144MHz on the same site when I arrived at my favourite parking spot.

Another mobile operating nearby on the same site and the same band is an asset when you're testing a transceiver! Before I left the site (after all he was there first!) I discovered just how selective the TM-255E was.

Even when I was within 100m of the other station, it was only when I was within one channel on f.m. that the QRM made operation difficult. It turned out to be a good (if unplanned) practical field test.

When operating on the move, I found the small buttons difficult to operate. However, it's not really fair to blame Kenwood for this because the small buttons are a direct result of the detachable remote control head being so small itself!

If the transceiver had been used in conjunction with the extension cable, I could have had the head mounted conveniently near to the steering wheel. So, my criticism that the control buttons are rather small should be borne in mind, but it may not be valid in every case.

Summing Up

In summing up my opinions on the Kenwood TM-255E transceiver, I must state I was most impressed. The only possible criticism I would have concerns the price.

With complex equipment such as the TM-255E a good instruction manual is essential and on the whole I think Kenwood's technical authors have done a fairly good job. I say this with a little caution because there's no mention of the TM-255E, only its 430MHz counterpart.

Obviously, there won't be a great deal of difference between the basic specifications on the 144 and 430MHz version. Despite this, I was surprised that there was no mention at all on the specifications of the 144MHz version included in what may have been a pre-production manual.

There are many benefits to be had by any prospective purchaser of the Kenwood TM-255E. The main benefit has got to be the fact you can remove the control head entirely. This fact alone, when considered that the transceiver is approaching £1000 (the u.h.f. model is actually just under the 1k mark) will help deter any possible thief.

Another advantage, and one that appeals to me in particular is that the TM-255's design solves a problem that I probably share with others. The difficulty is that I can't justify having a dedicated mobile transceiver, but now I won't have to because it will be possible to have two remote heads and one main unit. All you would have to do is mount the main transceiver wherever you needed it.

As the Kenwood transceiver is a considerable investment for any v.h.f. enthusiast, I think that any extra versatility will help. So, I for one hope that the TM-255E will be sold with the option of extra control heads available at reasonable (perhaps even with a discount?) prices for purchasers.

Finally, I must thank Trio-Kenwood (UK) Ltd., Kenwood House, Dwight Road, Watford, Hertfordshire WD1 8EB. Tel: (0923) 816444 for giving me the opportunity to try the TM-255E which is available from around £899.95.

Manufacturer's Specifications

General	
Frequency range	144.0 to 145.999.9MHz(✔)
Modes	J3E (l.s.b./u.s.b.), A1A (c.w.), F3E (f.m.)(✔+)
Number of memory channels	100
Antenna impedance	50Ω
Power supply voltage	13.8V d.c, ±15%(negative ground)
Current consumption	Transmit 15A or less, Receive (no signal) 900mA or less(✔)
Transmitter	
Power output	40W (High) 5 (Low)(✔)
Modulation	Balanced (s.s.b.) Reactance (f.m.)
Carrier suppression	40dB or more(✔)
Unwanted sideband suppression	40dB or more(✔+)
Spurious emissions	-60dB or less(✔)
Transmission bandwidth (s.s.b.)	400Hz to 2.6kHz (within -6dB)(✔)
Maximum deviation (f.m.)	±5kHz or less(✔ see below)
Microphone impedance	600Ω
Receiver	
Type	Double conversion superhet (s.s.b./c.w.) Triple conversion (f.m.)
Intermediate frequencies	1st 41.415MHz, 2nd. 10.965MHz, 3rd 455kHz (f.m. only)
Sensitivity	0.11μV or less on s.s.b. or c.w.,(10dB(S+N)/N(✔+) 0.18μV or less on f.m.(✔++)
Selectivity at -6dB	2.1kHz or more on s.s.b./c.w.(✔+)
Selectivity at -6dB	12kHz or more on f.m.,(✔+)
Selectivity at -60dB	4.8kHz or less on s.s.b./c.w.(✔+)
Selectivity at -60dB	28kHz or less on f.m.(✔++)
Squelch sensitivity	0.13μV or less on s.s.b./c.w.(✔+)
Squelch sensitivity	0.09μV or less on f.m.(✔+)
Audio output	2W (into 8Ω at 5% distortion)
Receiver incremental tuning range	10Hz steps ±1.1kHz or more, 20Hz steps ±2.2kHz or more
Dimensions	180 x 68.5 x 250mm
Weight	2.8kg (approx.)

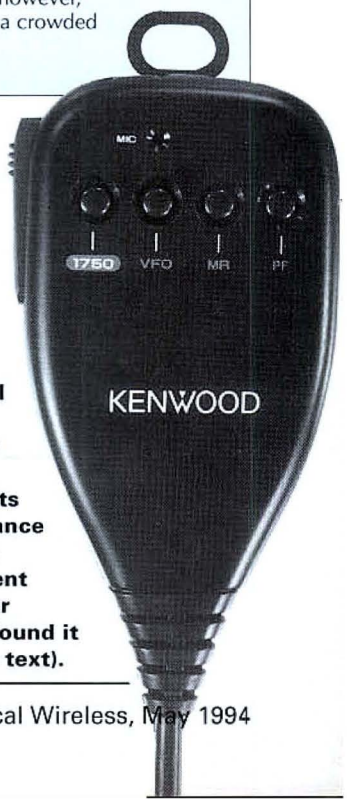
What the (✔) means!

When we have a rig in for review in *PW*, we check the rig on our test equipment to see how well it measures up to the manufacturer's quoted specification. The specification figures we feel are important to you, the reader, we checkout and highlight with our *PW* (✔).

We use a (✔) sign after a measurement figure, to mean that the reviewed rig matched (within measurement limits) the quoted specification. We use a (✔+) sign to means the rig bettered the specification by a good margin. The ultimate accolade is a (✔++) sign, meaning the margin was excellent.

On f.m. the maximum deviation was found to very well controlled at ±4.7kHz. This level would cause few problems with a similarly specified transceiver. I felt however, that the deviation was a little wide for some circumstances, such as in a crowded area.

'Tex'



Find the microphone on the microphone! The remote control facilities on the Kenwood TM-255E microphone dwarf the actual sound input aperture for the micro-phone insert. Despite its unusual appearance the microphone provided excellent audio reports for G3XFD and he found it easy to use (see text).

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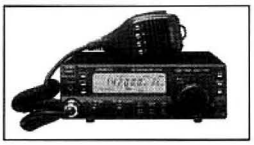

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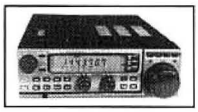

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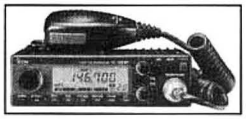

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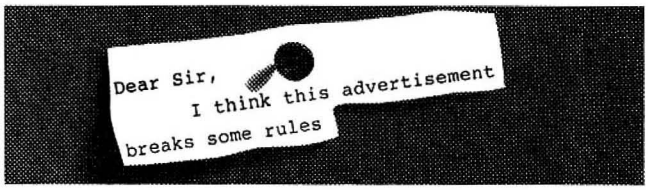

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BITS & BYTES

The Computer in Your Shack

This month, as PW has a Computing In Radio theme, Peter Hunter G0GSZ takes an extended look at the computer in your shack. Peter starts off by clarifying a point about keeping logs.

I'll start this month's Bits & Bytes by clarifying a point about logbook keeping. One reader, **Tony Jaques G3PTD**, has shown concern about the fact that the G4TYF program has to be installed to a hard disk (PC version), while the licence states that the 'log' must be kept on a 'separate' disk used **only** for the log.

The licence requirement doesn't mean that you need a separate hard disk for your logbook. Most 'good' logbook programs require the space of a hard disk, but all give the option of saving the 'log' to a floppy disk. This is of course what you (in the UK) **should** do. It doesn't mean that a back-up copy can't be kept on the hard disk. And, of course, the licence doesn't say that the logbook program has to be on the floppy.

Keep in mind that all good amateur radio programs are written to cater for amateurs around the world and not all users have the same restrictions that we in the UK have. This is why the 'save to floppy' is an 'option'.

Most countries allow the log (if they have to keep one that is) to stay on the hard disk. And as *PW* is read around the world, by people who use mainly PCs, I try to only review programs that are suitable to **all** our readers. If you have any problems about this I'll be glad to hear from you and I'll do my best to help.

Shack Computers

Now onto the more 'mundane' matters! Many of you have written in (again) asking about the best kind of computers for the shack, stating that an IBM PC clone is far too expensive, etc.

Well, I still maintain (and will for the foreseeable future) that, because of the current low cost of good second hand IBM clones, a PC is the best thing to get. If for no other reason it's because of the massive quantity of good quality software available.

I have been hunting high and low, and have found a good, regular source of supply of suitable computers for shack use at a realistic price. There are two types available from this source.

The first computer I've found is the Epson PCe. PC/XT running at 10MHz. It comes with 640K of RAM, 5.25-360K floppy, 21Mb hard disk, one serial (RS232C) and one parallel (printer) port, green screen mono monitor (but with EGA video card) 102 key enhanced keyboard, and all cables. The second type is the COMPAQ Deskpro, with much the same specifications as the Epson.

The Compaq is built like a tank and very sturdy, but the Epson is smaller and nicer looking. Both are labelled as meeting FCC standards of interference suppression (see the review in this column).

Now for the crunch line. The price of these units (until further notice) is just £95 each, complete. These are not subject to VAT but delivery must be added unless you collect. For further details please contact me at the address/telephone number given at the end of this column.

Morse Code Reader

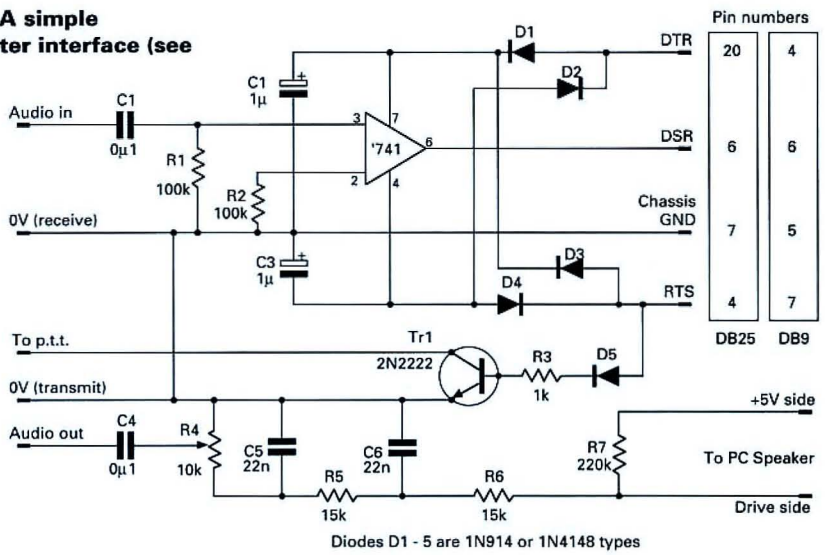
I've been busy following my request for a program that will read Morse code off air and display it as normal text on the monitor screen. I was absolutely overwhelmed with letters, phone calls and packet messages!

While such programs as Supermorse and Cwpro were mentioned, the vast majority of you seemed to go for Hamcomm (I'll be sending disks and replies back soon to those still waiting). So, I'll give a short review of Hamcomm 2.2 this time.

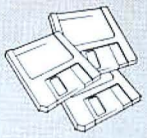
Hamcomm version 2.2 was written by **W. F. Schroeder DL5YEC**. Hamcomm supports reception **and** transmission of **RTTY** and **Morse Code**, it also allows the decoding of **SHIP** and **SYNOP** weather station reports. The program and documentation give full instructions for building a 'simple' converter interface (see **Fig. 1**).

The converter I have used for this review was built for me by 'Tex' G1TEX, *PW*'s technical projects sub-editor.

Fig. 1: A simple converter interface (see text).



Diodes D1 - 5 are 1N914 or 1N4148 types



(so if it doesn't work it isn't my fault, Hi!).

The manual (which is on disk, in English) states the System Requirements as being: Any PC/XT/AT - compatible computer with at least 320K of free memory, running MS-DOS 3.x or higher. A hard disk is recommended but not required. Any type of monitor can be used and this is automatically detected when the program loads.

Armed with the information, I decided to load the program onto my 'shack XT'. This is one of the Compaq Deskpros I've mentioned above. It has an 8086 processor, runs DOS 3.31, has a CGA video card (but with a mono monitor) and, most important of all, sits right beside my h.f. radio equipment (and I mean so close they are touching!).

Yaesu Loaned

The rig is the Yaesu FT-757GX kindly loaned to me by RAIBC. To my surprise, and delight, there wasn't the slightest hint of interference on any band, either from the computer or monitor. So I tuned into some c.w. on the 3.5MHz band.

Loading and running Hamcomm is just a matter of typing **HC** and pressing enter. The program automatically configures to your computer setup, although I had to tell it to use COM1 as it assumes a mouse is on COM1 and configures itself to COM2. Then, you press ALT M and then C to select the c.w. mode.

My system immediately started receiving the code from the radio and displaying it on the screen. I was very surprised at this as I was expecting to do a lot more fine tuning than this. Also, the signal I was tuned into wasn't particularly strong, or clear and I had tuned it in with all controls 'wide open'.

I've tried Hamcomm with a wide variety of signals, and on most bands, without any complaints. As I had only wired the interface for receive, I couldn't try the transmit mode, but I'm told by others though that it works fine in transmit. I didn't try any of the other modes either, so I'll be having lots of fun with Hamcomm over the next few weeks.

Hamcomm is Shareware, and I've been given authorisation to give copies in return for postage and a 720K disk.

Interesting Goods

The Public Domain and Shareware Library (PDSL) have recently sent me a copy of their latest catalogue (issue 17a), together with some interesting goods. The first is UK Callbook, on disk, for use on any IBM compatible computer. However, you will require a hard disk drive with around 7Mb of free space. The software came to me on two high density floppy disks, which included an installation program that uncompresses the files onto your hard disk.

The UK Callbook on disk is shareware, and is written by a UK amateur. The shareware version is 'restricted' in the sense that some of its functions are not available until you register. However, it is still very easy to make full use of the program so as to evaluate its suitability for your use.

After installing the program, it's a simple matter of pressing C <enter> to run it. You can then press the **F1** key to search for a callsign. Type in the callsign and full details will be displayed on screen (unless the station is **not** QTHR) it's that easy. I was amazed at the speed it searched on this 'basic' XT machine.

Data Protection

Several people have commented on the data protection aspect of callbook software. So I made enquiries with the Data Protection Registrar, who sent me a full package of information. While you **must** register if you are going to store personal details on your computer, there **are** exemptions.

Part A and sub-section **A.2.3** of the 'Exemptions Guideline' (revised March 1992) states that "The exemption is likely to apply to individuals who use a computer as, or in connection with, a hobby. It does not apply to individuals who hold personal data for business or professional purposes."

So, I'll leave you to draw your own conclusions on exemptions. Don't forget that any operators details that appear in the callbook (printed version) have already agreed to their details being on computer. If, however, you wish to add details of any station that is 'particulars withheld' then you **must** obtain their permission to do so.

I have seen the full registered version of the callbook program. And, apart from callsign search it also allows you to search by surname or postcode, as well as many other options.

PDSL CD-ROM

The second item sent to me by PDSL is their latest CD-ROM Libris Britannia issue 3. This contains the entire PDSL library of software up to disk 3972 and H388, around 1.2Gb compressed into 630Mb of space.

If you ever need a program (for whatever reason) you'll find it here. The CD-COM is accompanied by a 132 page 'catalogue' book. This lists programs in their categories, and disk number, making it extremely easy and quick to find and download files from the CD (unlike the majority of shareware CDs available).

The PDSL catalogue is available by post for £2, but **free** to anyone making a purchase at the same time as requesting a catalogue. The UK Callbook on disk, which is on 2 HD floppys, costs £10.40 (phone for details if you can't handle High Density disks).

The Libris Britannia CD-ROM is £49 all prices are inclusive of VAT and Postage. Contact address is: **PDSL, Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL. Tel: (0892) 663298 Fax: (0892) 667473 BBS (8n1) (0892) 661149**. Many thanks to **Rob Smith G4DQY**, of PDSL, for sending the disks etc., to me.

Suredata

Suredata is a name well known to users of Amstrad PCW and PC machines. They have spent many years buying, selling and repairing these machines, as well as supplying spare parts to those wanting to do their own upgrading, etc. Just recently, however, they have started to handle computers from a company they've been dealing with for several years, by the name of **Badger**.

Suredata can supply the Badger range of computers either as a complete system, or just the system unit only. They will also supply whatever parts you need if you're upgrading your computer yourself. Part exchange is possible, 'phone them for details.

Badger have a wide variety of computers, from a 386SX-40 to a 486DX2-66, in whatever configuration suits your needs or pocket. Prices are very competitive. With the added advantage of the backing of Suredata you know you can rely on quality of goods and service.

I have dealt with Suredata quite a lot over the years and have had nothing but good friendly service from them. So credit must go where credit's due, and I can't speak too highly of them.

For more information, contact John Serlin G3TLU, at **Suredata, Unit 5, Stanley House, Stanley Avenue, Wembley, Middlesex HA0 4JB. Tel/Fax: 081-902 5218**.

That's it for this month, keep the mail flowing, happy computering, DE Peter Hunter G0GSZ 2, Mayes Close, Bowthorpe, Norwich NR5 9AR. Tel/Fax: (0603) 748338. Packet mail @ GB7LDI.#35.GBR.EU

THE FAX TUNING AID

Interested in FAX, but can't get a good picture because of tuning errors? Martin Michaelis DK1MM has an answer to the problem with his tuning aid project.

The facsimile mode, short and briefly called 'FAX', is becoming more and more important. But there is one major difference between 'ear-decoded' modes (speech and c.w.) and FAX. If you're tuning your receiver in 'phone or c.w. mode, your ears indicate the best tuning point.

However, when tuning in a FAX station, the operator's ears are a poor tuning method. What you need is another indicator. This is where my FAX tuning aid comes into play.

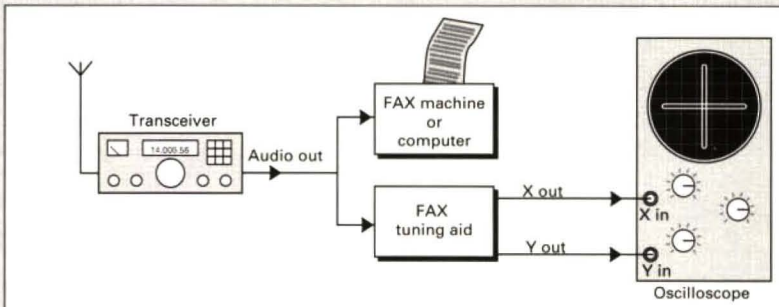


Fig. 1: This is the way the FAX Tuning Aid, described by Martin Michaelis DK1MM, is used.

A little Theory

Let's look at a little theory first. A transmitted (FAX or computer) picture is made up of discrete dots.

Each of the discrete dots, or picture elements (pixels) has to be transmitted exactly if the picture is to be made up again at the remote location. A weather chart, for example, will be transmitted pixel by pixel.

Each pixel is translated into a tone for transmission. The FAX signal is a succession of mixed 1500Hz tones (for black) and 2300Hz tones (for white).

To make tuning easier the tones are transmitted on a subcarrier of 1900Hz (±400Hz). The receiver has to be tuned up to produce audio signals with both 1500 and 2300Hz tones correctly reproduced.

There are other FAX tuning aids, with l.e.d.s to produce a bargraph (such as is commonly used in commercial FAX or RTTY converters). But the most accurate way is a tuning aid using an oscilloscope display.

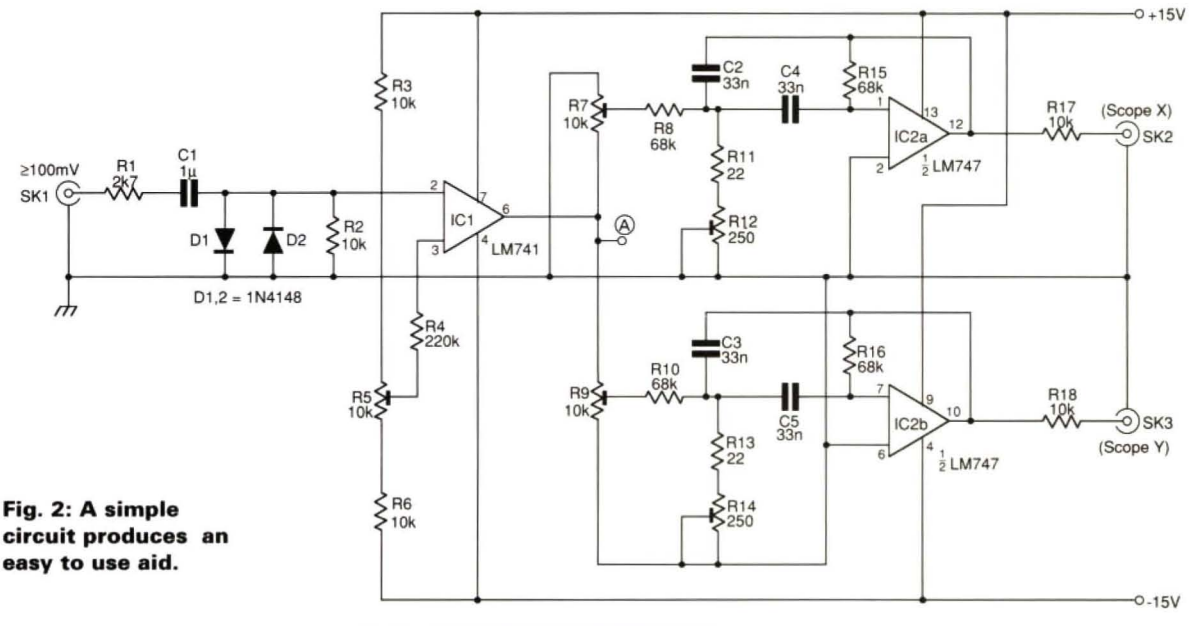


Fig. 2: A simple circuit produces an easy to use aid.

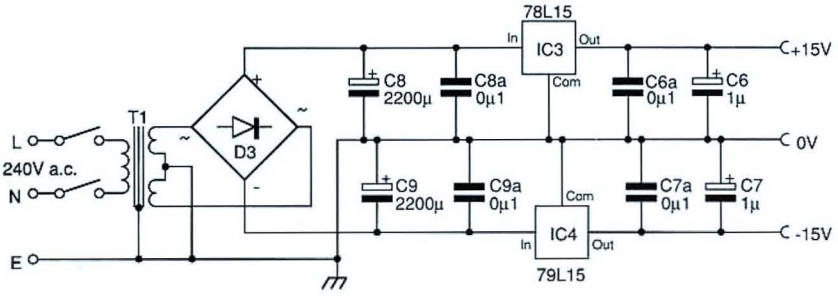


Fig. 3 : Single integrated circuits produce the dual 15V supplies.

The 1500Hz signal are shown as horizontally, and the 2300Hz signals vertically.

Look at **Fig. 1** and you'll see the block diagram of a FAX receiving system. One part of the audio output is connected to the FAX machine. Another is connected to the FAX tuning aid.

From the FAX tuning aid, one output goes to the 'scope's X input and the other to the Y input. The oscilloscope used doesn't have to be an expensive model (see the setting up instructions later).

The Circuit

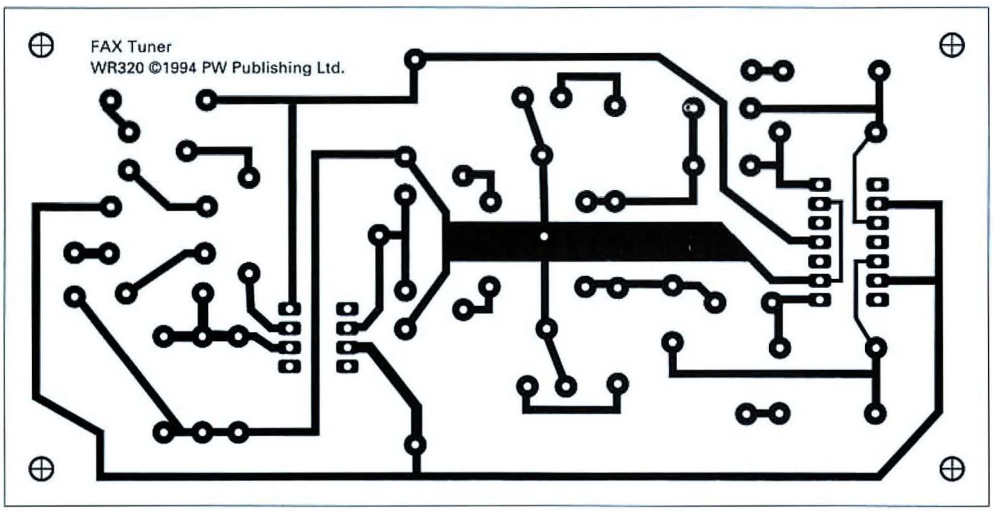
The circuit cannot be described as all my own. It leans very heavily on a design published in 1983 by Hans-Jurgen Schalk DJ8BT. In his book (*FAX fur Einsteiger* [FAX for beginners]) a clever tuning aid was published.

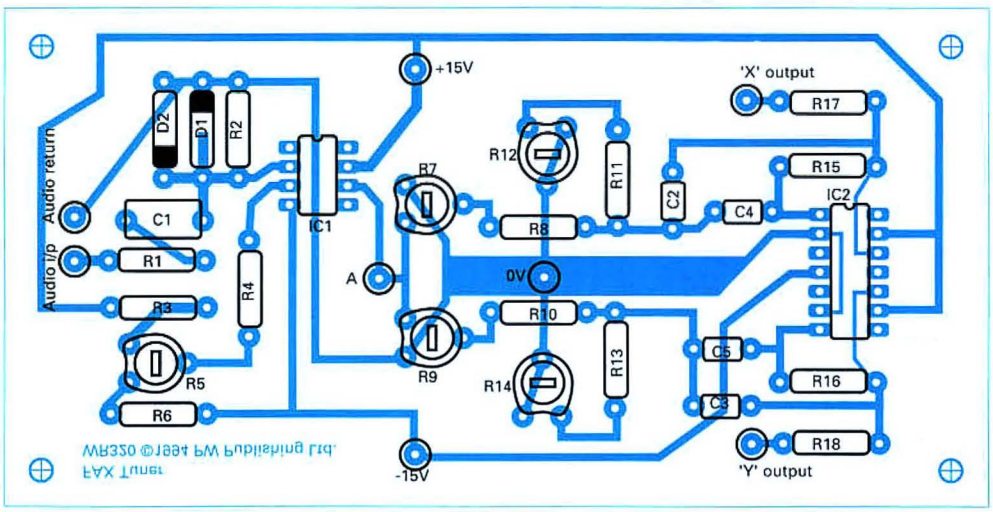
It seems to me this circuit is the cheapest, simplest and the most effective. I modified the circuit and designed printed circuit boards to suit - and now share it with *PW* readers.

The circuit shown in **Fig. 2** consists of the first (limiter) stage, with audio input via SK1 (>100mV). Diodes D1 and 2 protect the input of IC1, an LM741 working as a limiter.

Two active bandpass filters for 2300Hz (IC2a) and for 1500Hz (IC2b) follow the first stage. Each filter consists of one half of an LM747 (a dual '741type). Being

Fig. 5: Track pattern and overlay for the main p.c.b.





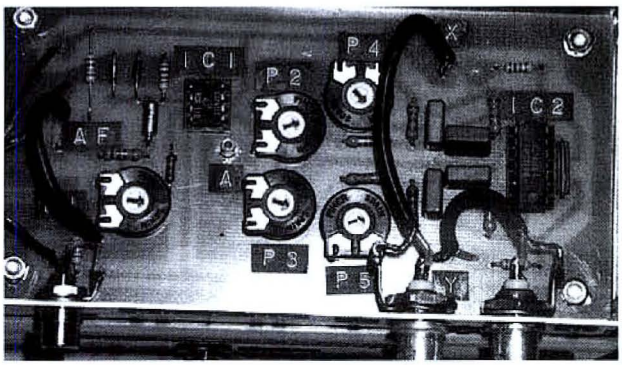


Fig. 4: Inside the author's prototype FAX Tuning Aid. It's marginly different in the *PW* project.

identical, each filter is capable of tuning to either of the two tones.

The dual 15V supply for the project is shown in **Fig. 3**. This is a simple low power linear regulator and needs little explanation.

Construction

I'll now describe the construction stages. The p.c.b.s and component overlays are shown in **Fig. 4** and **5** . It should be relatively easy to follow these diagrams.

Though easy to build, for screening and safety reasons, the unit and the power supply must be built into an earthed metal box.

A word of caution at this point, for increased safety the power supply should be further housed (in a well insulated plastics box).

Adjust And Use

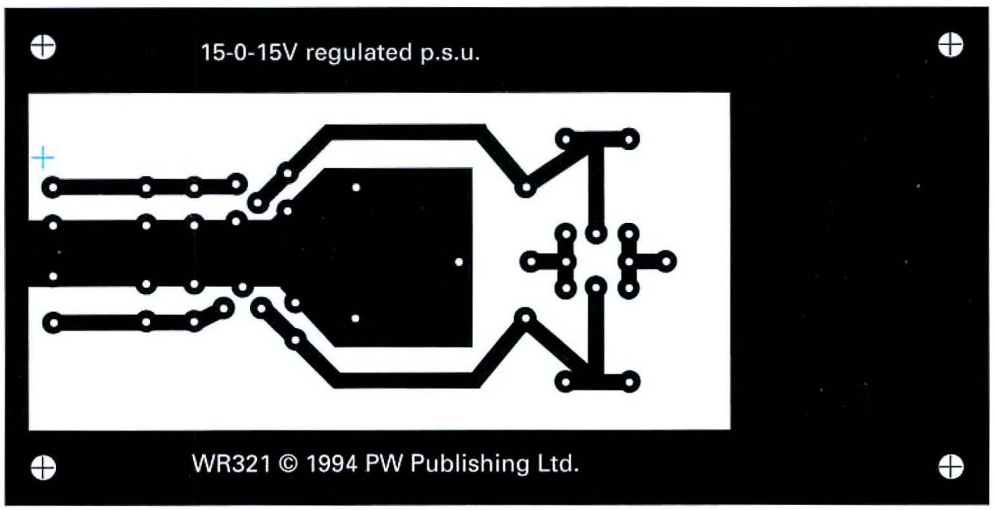
To adjust and use the FAX tuning aid we need access to some measuring equipment. These items are, an oscilloscope with X and Y inputs, an a.f. signal generator, a high input impedance (digital)-voltmeter and a frequency counter for audio frequencies.

To initially set up resistor R5, apply power to the unit without an audio input. Measure the voltage (meter set to read 20V) on point A with reference to 0V, adjust R5 until the voltage just swings from one rail to the other.

In most cases no other adjustment will need to be made to R5. Set R7 and 9 to about mid position.

With an audio oscillator, accurately set to 2300Hz connected, using R12 adjust the active filter IC2a for a maximum response (at SK1) to (white) 2300Hz. Then reset the oscillator to 1500Hz (black) and tune filter IC2b (at SK2) using R14.

The trim-potentiometers R7 and 9 set, the voltage levels for the 'scope inputs. Connect the 2300Hz (IC2a) output to the X input of the 'scope, and the 1500Hz output to the Y input.



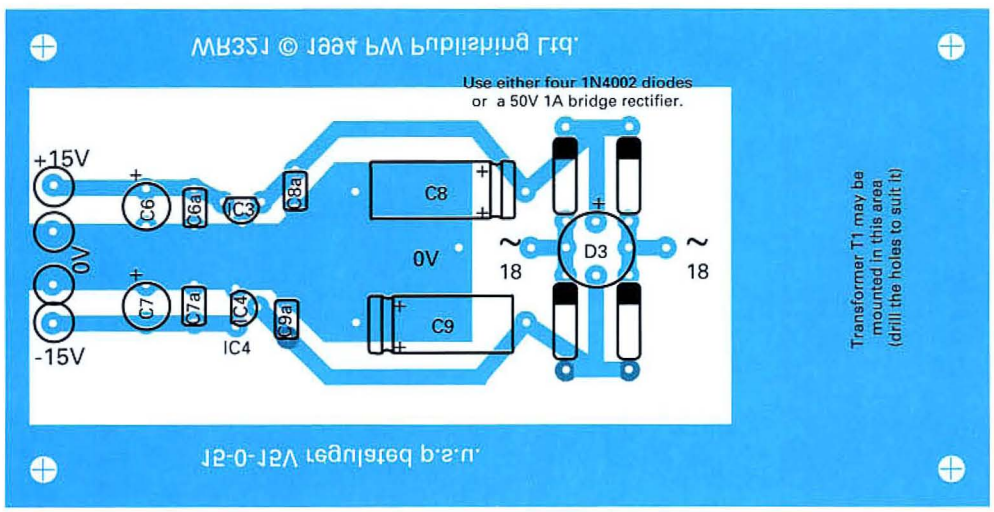


Fig. 6: The track and overlay of the simple dual 15V p.s.u.

The Alignment

To start the alignment, connect the a.f. signal generator to SK1 and tune it to 2300Hz and check the signal with the counter for correct frequency. Now connect a voltmeter to point A and 0V and adjust P1 for symmetrical a.c. voltage level. Then disconnect VTVM or DVM. Connect J2 with X input and J3 with Y input of the scope. With the 2300Hz signal at J1 adjust P4 for maximum - refer to **Fig. 8.**

Now re-tune the a.f. signal generator to 1500Hz, check the signal with the counter for correct frequency and adjust R14 for maximum - refer to **Fig. 8.** If the X-pattern at 2300Hz and the Y-pattern at 1500Hz are not in the same length, correct it by adjusting R7 for 2300Hz and R9 for 1500Hz.

In Use

When it's in use with the systems set up as shown, you should search for a station such as Bracknell Meteo on 4.610MHz or 11.0865MHz and adjust the fine tuning. When correctly tuned the 'scope display should look like the cross pattern, **Fig. 8.** Happy FAX hunting. **PW**

Further Reading

***FAX fur Einsteiger*, by H. J. Schalk, DJ 8 BT, DARC-Verlag.**

***Radio Communications Handbook*, Part 2 RSGB publications.**

***ARRL Handbook For The Radio Amateur* ARRL publications.**

***Active Filter Cookbook* by Don Lancaster, Howard W. Sams & Inc.**

***Introducing RTTY*, by J. Maynard G4EJA (a *PW* reprint).**

***Guide to Facsimile Stations*, Klingenfuss.**

KW Amateurbildfunk SSTV and FAX. by H. J. Pietsch DJ6HP, Franzis-Verlag.

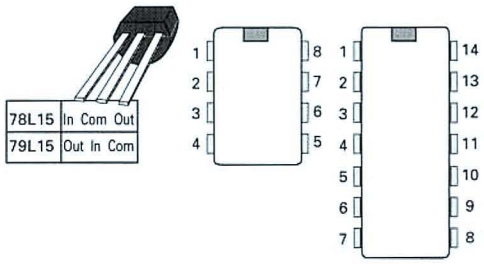


Fig. 7: Pinouts for the three i.c.s used. Both the '741 and '747 i.c. pins are counted from above.

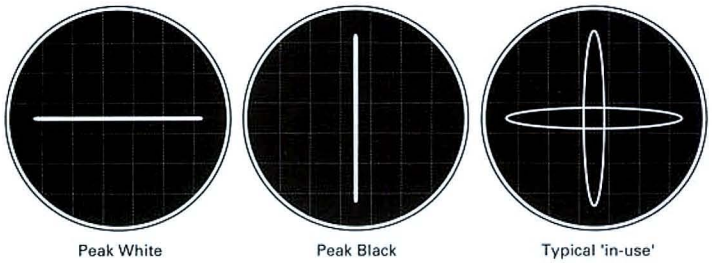


Fig. 8: Sample 'scope displays. The left display represents peak white the middle display is peak black, and the right hand display is typical when the unit is in use.

Shopping List

Resistors

Carbon film 0.3W		
22Ω	2	R11, 13
2k7	1	R1
10k	5	R2, 3, 6, 17, 18
68k	4	R8, 10, 15, 16
220k	1	R4
Trimmer (horizontal mounting)		
250Ω	2	R12, 14
10k	3	R5, 7, 9

Capacitors

Polyester 60V working minimum		
33nF	4	C2-5
100nF	4	C6a, 7a, 8a, 9a (mounted close to IC3 and 4)
1µF	1	C1
Miniature axial Electroylic (35V min.)		
2200µF	2	C8, 9
Tantalum bead (35V min.)		
1µF	2	C6, 7

Semiconductors

LM741	1	IC1
LM747	1	IC2
78L15	1	IC3
79L15	1	IC4
IN4148	2	D1, 2
W01	1	D3 (100V 1.5A, bridge rectifier or 4 off 1N4004)

Miscellaneous

Miniature 18-0-18V 100mA transformer, (also a 1A fuse and holder if not fitted in the mains plug) suitable metal and plastics boxes, Plugs and sockets to suit. You will also need screws, nuts, washers, connecting wire, (including approximately 300mm coaxial cable RG 174U), Veropins

SOLVING Computer Hash Problems

Ben Nock G4BXD describes how you can share his success in tackling computer hash radio frequency interference problems and enjoy your amateur radio and computer operations.

Since I acquired a terminal node controller (TNC to you and me), the operation of the computer in the shack coincided with the operation of the radio station and the bringing together of the two technologies also brought associated problems!

Noise, hash and carriers were evident on the h.f. station and the u.h.f. station when the computer was on and problems with the computer were encountered when the h.f. rig fired up.

The radio frequency intereference (r.f.i.) stemmed from the fact that in most computers there are several oscillators. These oscillators, either singularly or by mixing together, produce signals that can reach up into the v.h.f. frequencies.

Placing a modern, highly sensitive receiver next to the computer can result in interference. Similarly, placing a high powered transmitter next to a box full of diode junctions, each one being able to rectify the r.f. and produce a voltage, is asking for trouble!

In my case, the equipment consisted of a Trio TS-430S h.f. transceiver, a Japanese 144MHz rig and an Apricot Xen-i PC type computer. The computer runs an 80286 processor at 10MHz with a KAM TNC connected.

Eagerly Awaited

I was very keen to get my system working. Once the equipment had been connected together the great moment of switch on was eagerly awaited!

Eventualy, when all the buttons were pressed, the software loaded and the v.h.f. transceiver switched to 144.675MHz it worked. Great joy (and relief) was experienced when words began to appear. I'd doubted that the mess would ever work. (The layout of a typical set-up is shown in **Fig. 1**).

After a little time for the excitement of working a new mode, I realised I had problems. I noticed (for example) that the S-meter on the 144MHz rig never seemed to fall back to zero as it used to.

When I investigated, unplugging the connection to the TNC from the loudspeaker socket proved that a high noise or hash level was present. The hash disappeared and the S-meter fell to zero when the computer was turned off. The hash it generated was sufficient to drown out all but the strongest local signals.

Fortunately, at the higher frequencies the levels of hash coming from the computer were considerably lower. Simply moving the 144MHz rig to the other end of the operating table provided a worthwile reduction in hash on this band.

To improve the situation even further I carried out other tests. And, in the course of these experiments, I found that removing the s.w.r. meter from in-line to plugging the antenna coaxial cable straight into the 144MHz rig, totally stopped the hash pick-up.

A separation of aproximately one metre or so between equipment seemed to cure the 144MHz hash. This certainly seemed to be the solution of the problem for the combination of equipment used in my shack.

Hash Story

On h.f. the hash story was the same as on v.h.f. There were high hash levels across the spectrum. But of course (Murphy's Law!) the highest hash level was on 14MHz, just where I wanted to operate!

Moving the computer away from the h.f. rig did little to reduce the hash, unlike the succesful treatment for the 144MHz rig. It seemed that nothing short of having the computer in another room would reduce the hash level on the h.f. receiver.

I also noted, whilst tuning up the p.a. stage on the h.f. rig, that any power above 10W produced random characters to appear on the monitor screen. It gave me the impression that the keyboard was being affected and stimulated into producing random letters, etc. It was obvious that some sort of screening and filtering were needed to cure this problem.

Looking At Screening

I decided to start looking at the screening problem first. I

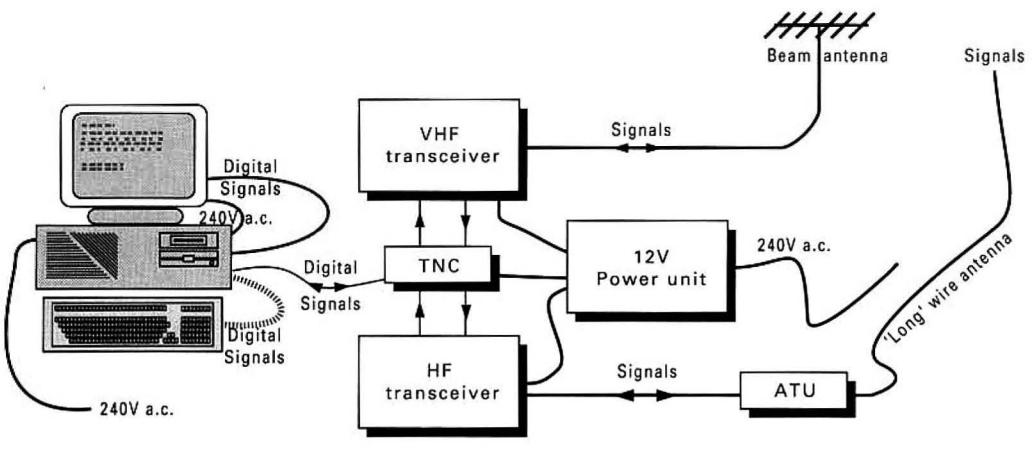


Fig. 1: Typical interconnections in an amateur radio/computing installation (see text).

Fig. 2: A ferrite rod filter (see text).

had realised that the case of the Apricot computer was made from plastics.

My previous work on the computer had showed that the outer case was made from plastics with a little metalwork at the rear for the various sockets, etc. There was also a metal cover that went over the disk drives.

The metal cover only extended half way from the front of the computer towards the rear. Some method of extending this metal screen was needed. One solution could have been to use an aerosol spray that puts a thin film of electrically conductive material onto the plastics.

I didn't have any special aerosols in the junk box and thought that it might be expensive to purchase (**It is! Ed.**). So, an alternative was sought by an ingenious Ben!

What was in the junk box (or at least it ended up there after I filched it from the kitchen!) was the XYL's aluminium foil for use in the oven.

Using some spray mounting adhesive (used for mounting photographs), I used the foil to cover the inside of the case lid. I also stuck a layer of the foil to the inside of the case.

I made sure enough of the foil was left at the rear of the computer case. This was so that when the case lid was replaced, the foil would cover the screw holes, to provide an effective grounding for the foil when the screws were replaced.

Enough foil was also used to allow it to cover any unused holes in the back plate. Any ventilation slots were cleared with a sharp knife. This simple modification reduced the general hash to a much lower (almost acceptable) level.

I also found that by pulling out the various RS232, keyboard, screen, and leads, that the hash could be reduced even further. However, as these connections were indispensable, then obviously some extra form of filtering was needed!

Ferrite Rings

To start the next stage of screening, several large ferrite rings were purchased when I attended the next mobile rally. The grades of the ferrite were not stated on the rings I bought, so it was a case of try them and see the result.

The RS232 lead connecting the TNC to the computer was wound through one of the ferrite rings. The same procedure was adopted for the keyboard lead, see **Fig. 3**, but the monitor screen lead proved to be too thick to pass through the ferrite ring centre.

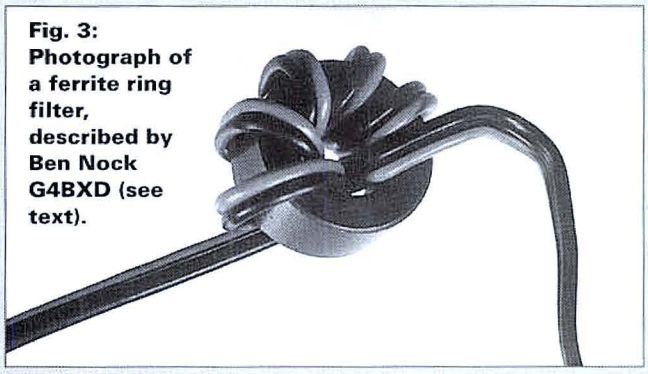


Fig. 3: Photograph of a ferrite ring filter, described by Ben Nock G4BXD (see text).

The results of the filtering were dramatic. The reduction in the hash was near total and reception was possible on all but certain spot frequencies. The problem areas were the oscillator frequencies which would have been very hard to reduce, but I could live with this little problem.

I then turned my attention to the r.f. interference from the transmitter. This was necessary because, despite the rings on the computer leads, character generation was still evident if a power level of more than 25 to 30W was used.

The antenna I was using was a 33m long wire. Being end fed, the wire came through a window to the a.t.u. in the shack.

Obviously, there was too much r.f. in the shack, but what could be done to reduce it? I decided to try and shield the wire, at least until it got outside of the building.

Furtunately, the run of wire from the a.t.u. to the window was only 2m. So, a short length of coaxial cable was run from the a.t.u. output to the window.

The coaxial was routed along the floor in a direction away from the computer. This cable affected the position of the a.t.u. controls, but I found it reduced the r.f. level in the shack, enough to be able to run the full output of the TS-430S (100W) without any problem on the computer system.

General Solutions

While the solutions I've discussed worked for me, they are very general methods and they should assist in most shacks where similar problems occur. The methods can be grouped into three areas as I've noted in the folowing summary:

1: Re-site equipment and cable runs. As far as is possible keep the computer and rig apart. Opposite ends of the shack table at least. Placing your 'all singing all dancing' h.f. rig on top of the computer case is asking for trouble. Short runs on the cables. Keep the computer away from the antenna cables.

2: Shielding. If you have the unfortunate situation of computer with a plastics case, then it **will** need screening. Aluminium foil is an easy solution, it moulds easily into any shaped case and can be grounded either by screwing through it (as already mentioned). You can even solder a lead into it and ground that to a suitable terminal in the computer. Remember though, to leave any ventilation holes clear! Use screened cable for the interconnections like the RS232 lead.

3: Filtering. Ferrite rings make simple and effective filters. If you cannot get the cable plug through a ring, then a ferrite rod antenna (see **Fig. 2**), can have the cable wound around it and taped to form another effective filter. A mains filter on both the computer and h.f. rig leads will also assist in reducing interference (both to your equipment and that of others!). Removing the mains earth from the transmitter plug can also be undertaken, but unless you have a very good knowledge of mains electronics and a suitable low impedance outside earth this should not be considered.

A Little Effort

With a little effort and a small cost any r.f.i. problems can be overcome. Alternatively, they can at least be reduced enough to allow operation of computer radio on most bands.

I'm busy operating RTTY and packet on 14 and 144MHz now with very little interference. I hope my suggestions will help you to enjoy using the computer alongside your radio equipment.

PW

FOLLOW THE ROAD

The sunny weather is here so there's no excuse not to treat yourself to that new MOBILE installation you've been thinking about. H.F. or V.H.F., the choice of equipment and accessories has never been so great - call into the shop and see for yourself! Better still, give me a blast on or around 1.933MHz, "TopBand" and we'll have a rag chew, you'll be amazed at the activity. By the way, there's no repeaters, so you won't need a tone burst - but you will work at least 100-150 miles mobile to mobile in the evening. Who needs a repeater anyway?

Most of the offers this month include a minimum extra of £25 gift vouchers, rising to a massive £100 on some items. The vouchers are redeemable against any future purchase, have no time limit or catch. Despite the excellent service from MARTIN LYNCH, you still get unbeatable value!

Kenwood TS-50S

O.K., I'll admit I use one myself together with auto ATU. The amount of people I've worked and the reports received always brings a smile to my face and I haven't got a linear hidden in the boot! It'll take you a couple of hours to fit (or use my fitting service), the complete system and like me, you won't leave it alone!

FREE £50 Martin Lynch Gift Voucher

How's this for a complete package?

- ❍ TS-50S Mobile Transceiver
- ❍ AT-50 Auto Antenna Tuner
- ❍ PRO-AM Single band Antenna 10/15/20 or 40m
- ❍ Body mount for the above
- ❍ Free Coax and plugs

Only £325.00 deposit and 12 payments of £83.33 INTEREST FREE + Martin Lynch £50 Gift Voucher!

Yaesu FT-840

Either as a base or mobile, the new HF transceiver from Yaesu scores high. This month I've put together two systems, one for home one for your car. You choose.

FREE £50 Martin Lynch Gift Voucher

- ❍ FT-840 H.F. Transceiver
- ❍ FC-10 Auto Antenna Tuner
- ❍ MMB-38 Mobile Bracket
- ❍ Pro-Am Single band Antenna 10/15/20 or 40m
- ❍ Body mount for the above
- ❍ Free Coax & plugs

Only £225 deposit and 12 payments of £83.33 INTEREST FREE + Martin Lynch £50 Gift Voucher!

FREE £50 Martin Lynch Gift Voucher

Alternatively, how about this for a base Station set up:

- ❍ FT-840 H.F. Transceiver
- ❍ Manson EP 925 Heavy Duty 25A PSU
- ❍ MFJ 948 Antenna Tuner
- ❍ Full Size G5RV Antenna
- ❍ Free 50ft Coax & plugs

Only £225 deposit and 12 payments of £75.00 INTEREST FREE + Martin Lynch £50 Gift Voucher!

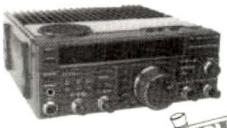
Yaesu FT-747GX

Yaesu have just finished production and I've got 50 pieces at a spectacular money saving offer. The most cost efficient way of working H.F. mobile or base and at a price that harks back to B&B days! All right Bern?

FREE £100 Martin Lynch Gift Voucher

- ❍ FT-747GX H.F. Transceiver
- ❍ MFJ 945D Mobile Antenna Matcher
- ❍ MMB-38 Mobile Bracket
- ❍ Pro-Am Single band Antenna 10/15/20 or 40m
- ❍ Body Mount for above
- ❍ Free Coax and plugs

Only £175 deposit and 12 payments of £66.66 INTEREST FREE + Martin Lynch £100 Gift Voucher



FT-890

Luxury mobile or base station, the FT-890 is as good in the car as it is in doors. All the facilities of a big base station, it's the worlds smallest 100W H.F.'er with an internal auto atu.

FREE £100 Martin Lynch Gift Voucher

- ❍ FT-890 H.F. Transceiver with Auto ATU
- ❍ MMB-38 Mobile Bracket
- ❍ Pro-Am Single band Antenna 10/15/20 or 40m
- ❍ Body Mount for above
- ❍ Free Coax and plugs

Only £439 deposit and 12 payments of £91.66 INTEREST FREE + Martin Lynch £100 Gift Voucher!

FREE £100 Martin Lynch Gift Voucher

or as a base station:

- ❍ FT-890 H.F Transceiver with Auto ATU
- ❍ Manson EP925 Heavy Duty 25a PSU
- ❍ Full Size G5RV Antenna
- ❍ Free 50ft coax & plugs

Only £449 deposit and 12 payments of £100 INTEREST FREE + Martin Lynch £100 Gift Vouchers!

NEW!!

ICOM IC-820H

The very latest Dual Band 2/70 Multimode base station from Icom has already found a place in my shack! 35 Watts on 70cm and 45W on 2m, the performance has finally surpassed that offered by the IC275/475 series and it's all neatly packaged into a box no larger than a single bander. It's available on INTEREST FREE and I will take in your part-exchanges as deposit!

Only £489 deposit and EIGHTEEN PAYMENTS of £77.77, interest free.

THE NEW ICOM IC-736

100 watts on HF + 100 watts on SIX!

The IC-736 is a worlds first all mode all band 100w transceiver including the brilliant SIX METRE BAND. No other manufacturer has given you so much in one package. Based on the already best selling IC-737 introduced last year, just look at the additional features:

- ❍ 100 watts from 160m - 6m inclusive YES! 100 watts on Six!
- ❍ Built in Mains PSU
- ❍ Dual Antenna ports
- ❍ Now with R.F Gain control
- ❍ Dual display
- ❍ See & check second VFO instantly
- ❍ Mid-size package

No other radio offers you so much - for so less. Have Icom got it right? I should say so! Call now for the best advice and price!

These 'early birds' not only grabbed the best deals, they were also treated to breakfast too!

VHF/UHF HAND PORTABLES

Can't bear the thought of drilling holes or making a semi-permanent install into your vehicle? then cast your eyes on my Handie range! Same rules apply, small deposit then FREE FINANCE over 12 months and claim your FREE £25 Martin Lynch Gift Voucher!

	deposit	twelve payments
Yaesu FT530 The best selling Dual Bander + EXT RX	£46	£35.75
Yaesu FT11R The neatest full feature 2M Handie	£39	£21.66
Yaesu FT41R As above but 70cm, both EXT. RX	£41	£24.00
Kenwood TH78E Dual Band does everything Handie	£89	£33.33

How about these over SIX MONTHS INTEREST FREE. (Sorry no FREE VOUCHERS!)

	deposit	six payments
Yaesu FT23R The toughest of all the 2m Handies	£39	£35.00
Kenwood TH22E 2m Handie, Something to do with a HAT?	£29	£35.00
Kenwood TH42E As above but on 70cm. Nice and easy op.	£59	£35.00

MARTIN LYNCH
G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE

Access VISA RSGB SWITCH AMERICAN EXPRESS

081 566 1120
Fax: 081 566 1207
£10 carriage on all items

140-142 NORTHFIELD AVE

- TO MARTIN LYNCH

If you can't handle H.F. mobile operation, (you don't know what you're missing!), then how about some money savers on my VHF/UHF range? All are payable on INTEREST FREE and come with a £25 Martin Lynch Gift Voucher!

	Deposit	Twelve Payments
Icom IC281H *NEW* 50W 84 Memo's Ext RX 2M FM mobile	£99	£25
Icom IC2340 *NEW* 35/45W Dual Band Ext RX FM mobile	£149	£45
Icom IC2700 *NEW* Remote Head 35/50W 120 Memo's Mob	£169	£55
Yaesu FT2400 Built like a tank 45-50W Mobile 2M rig	£89	£25
Yaesu FT2200 As above but on "SlimFast" diet+ AIR RX	£69	£25
Yaesu FT5200 Dual Bander, Quick Release Head, 35/45W	£145	£42
Yaesu FT290R Mk2 2m all mode transportable, 2.5W	£79	£35
Yaesu FT790R Mk2 as above but on 70cm. Ideal novice	£119	£40
Kenwood TM251E Latest 2m 50W FM with 70cm RX+9600Baud	£79	£25
Kenwood TM451E As above but 70Cm, 35W with 2M RX	£85	£27
Kenwood TR255E Latest Remote Head 45W 2m Multimode	£179	£60
Kenwood TR455E As above, but 35W on 70CM 9600 Baud	£219	£65
Kenwood TM732E Remote head dual bander, extended RX	£149	£45
Kenwood TM742E The only Remote head with 3rd band Opt.	£169	£55

DID YOU KNOW

Martin Lynch offers a fitting service to anyone who travels to the shop for his or her very own H.F. or VHF system? It's carried out professionally and we set the antenna up for you.

Please call the sales team first for a booking.

"If you don't want the super Finance offers and just want to pay money or plastic, then ring for your very own tailor made quotation. My package price promise applies" By the time you read this advert, (sometime in April probably), we will have been in our new superstore premises for over six months. On moving in, I had to display four times the amount of product both new and used. For those of you who have visited us you may have noticed duplications on some of the big H.F. demonstrators. We always underline how fresh the stock is and it's time to "sell off" some of the demo stock. It's not pre-owned and will be offered with a proper twelve month warranty. For the sake of it sitting in the display cabinets and the manuals being read for a few months, you can save a fortune. First come, first served. Offers will not be repeated on my "vaulted" stock items. All are available on INTEREST FREE. Please phone first - don't send your money - there are only one or two of each!

1. YAESU FT1000	List £3499.00	Display model	£2995.00
2. YAESU FT990DC	List £2199.00	Display model	£1699.00
3. YAESU FT890	List £1299.00	Display model	£1079.00
4. YAESU FT840	List £ 879.00	Display model	£799.00
5. YAESU FT747GX	List £ 829.00	Display model	£669.00
6. YAESU FT767GX	List £1799.00	Display model	£1499.00
7. YAESU FT736R	List £1699.00	Display model	£1449.00
8. ICOM IC737	List £1549.00	Display model	£1349.00
9. ICOM IC729	List £1325.00	Display model	£1225.00
10. KENWOOD TS950SDX	List £3799.95	Display model	£3599.00
11. KENWOOD TL922	List £1749.95	Display model	£1599.00
12. KENWOOD TS850S	List £1699.95	Display model	£1569.00
13. KENWOOD TS450S	List £1399.95	Display model	£1299.00
14. KENWOOD TS50S	List £ 999.95	Display model	£899.00

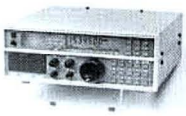
I also have a selection of Handies and mobiles that require shifting... If you want something in particular and don't mind a "demo" but new model, then ring the sales team NOW!

DIGITAL FILTERS

The full range of Digital filters including JPS, J-Com W9GR, TimeWave and others are now available. They all fit in line with your A.F. output and are fitted in seconds!

W9GR DSP Multimode filter	£299.00
TimeWave DSP-9 Noise Filter	£169.00
TimeWave DSP-59 320 filter variations	£299.00
JPS NTR-1 Wide band noise & tone remover	£199.00
JPS NFR-7 As above with selectable centre frequency	£279.00
JPS NIR-10 As above with notch filter, removing multiple hets.	£399.00

AOR NEW AR3030



The AR3030, is the very first in a range of ShortWave receivers from AOR. Using the famous "Collins" filters, the performance over the entire range (50KHz-30MHz) in uncompromised So get your order in now!

AA&A 'CAPCO LOOPS'

Whether you're using a FT747 or a top flight FT1000, if the space is limited, try the new range of CAPCO LOOPS for yourself.

Magnetic Loops

AMA-3 200W 13.9 - 30 Mhz	£249.95
AMA-4 100W 1.8 - 4.2Mhz	£399.50
AMA-5 150W 3.5 - 11Mhz	£299.95
AMA-6 150W 6.9 - 24Mhz	£279.95

(£20 Carriage on these items)

Antenna Tuning Units

SPC-300D Roller Coaster, 300W RMS, 1kW pep	£299.95
SPC-3000D Roller coaster 1kW RMS, 3Kw pep	£399.95
VFA. Variable frequency antenna	£99.95

And don't forget the high power range of baluns, all ratio's.

VARGARDA ANTENNAS

Recently appointed the only London retailer for this excellent range of Swedish antennas, the full Vargarda range is now available from stock.

In addition to the antenna range, the range of stacking kits can be obtained. Call for free catalogue.

3	ele	6m beam	**£85.55**
3	ele	2m beam	**£38.35**
6	ele	2m beam	**£47.00**
9	ele	2m beam	**£61.10**
6	ele	70cm beam	**£39.00**
13	ele	70cm beam	**£54.10**
19	ele	70cm beam	**£76.00**

PACKET & DECODERS

Moving to a larger premises has also enabled us to show off our massive range of new & used datacomms equipment. Here is just some of the range stocked:

AEA PK-900	**£549.95**
AEA PK-232MBX	**£385.00**
AEA PK-88	**£169.95**
Tiny 2 TNC	**£139.00**
KAM	**PHONE!!**
KPC-3	**£139.00**
MFJ 1278	**£339.95**
Universal M400	**£399.95**
M900	**£529.00**
M1200	**£399.95**
M8000	**£1279.00**
Momentum MCL 1200	**£229.00**
ERA Microreader	**£189.00**

MFJ PRODUCTS

Here are just a few examples of their unbeatable range:

MFJ-249 Digital SWR Analyser	**£229.00**
MFJ-1786 Super Mag. Loop	**£299.00**
MFJ-949E Antenna Tuner with load	**£169.00**
MFJ-948 Antenna Tuner	**£149.00**
MFJ-1278BX All mode Packet Controller	**£339.95**

You Want Antennas...I've Got Antennas!

★ HOWES KITS NOW STOCKED ★

The New Improved CobWebb Antenna

The latest design from Steve G3TPW is his new CobWebb antenna, covering 14/18/21/24/28MHz, 1Kw input. Only 8ft x 8ft (when erected), maximum 3:1 v.s.w.r. at band edges, stainless steel fittings and only 6 kilos in weight. **£199.00**

THE LEGENDARY OUTBACKER

From our Foster Lager drinking mates down under, the "OutBacker" Mobile antenna range is the ultimate in discreet looking H.F. antenna systems. If you don't want your car to look as if it's just run off a bumper car track at a fair ground, then thank NEVADA for distributing the product in the U.K. Then buy one from me...

9561 Outbacker 80-10m 6ft multi band antenna	**£189.95**
9562 Outbacker (T), as above with TopBand	**£219.00**
9565 Outbacker Junior. No TopBand, only 4ft	**£179.95**
9568 Perth 80-10m 7.5ft THE BUSINESS antenna	**£199.95**
9569 Perth (T), as above, with TopBand. Lovely.	**£235.00**
9571 Sprung Mobile Mount for any of the above	**£59.95**

CUSHCRAFT ANTENNAS

Hands up those of you that have been waiting months for you beloved Cushcraft R5 or R7? Since the middle of last year we've always had them in stock, and provided there hasn't been a mad rush, (the word's been spreading fast), I should still have some! Here is the part of the range that is off the shelf or only 3-4 weeks away on back order.

R7 Vertical. 40-10M now in it's mk2 state, it really is a winner	**£420.00**
R5 Vertical 20-10M, as above, no radials required with this one either!	**£315.00**
A4S 4 ele Beam, for those who take H.F. seriously	**£468.00**
A3S 3 ele Beam, almost as above!	**£390.00**
A3WS 18/24Mhz 3 ele beam	**£306.00**
D3W 10/18/24 MHz rotary dipole	**£191.00**

VALOR PRO-AM

The Valor "PRO-AM" series of antennas for H.F. Mobile use have been around for years. Their quality and robustness is not reflected in the price - they are brilliant value! I've tried them all and the L.F. ones in particular are unbeatable. Here's their range:

PHF-160 Enormous 160M Centre Loaded Whip	**£54.95**
PHF- 80 Almost as big 80m Centre Loaded Whip	**£24.95**
PHF- 40 The muts nuts on 40m, at a mere	**£22.95**
PHF- 20 The way to DX, (safely) on 20m	**£19.95**
PHF- 15 You guessed it, the same but on 15m	**£19.95**
PHF- 10 I'll give you one guess	**£19.95**
AB-5 5 bander 10-80 in one antenna. It works!	**£89.95**
BB-2 Massive Spring mount for L.F. Whips	**£49.95**
116-NP gutter mount with 3/8 thread	**£ 6.95**
142-ADP Body mount with 3/8 to SO239	**£ 9.95**

THE TAIWAN SYRENE ANTENNA SELECTION

The perfect answer to either a mobile or base station aerial. The quality is at the top but the prices are still some 20% lower than the competition. We now have a full range of mounts. Call in or Mail Order.

MOBILE RANGE				
TSM-1005	2m 7/8th	5.2dbi	1.89m long	£39.95
TSM-1320	2m/70cms	2.1/3.8dbi	0.44m long	£21.95
TSM-1310	2m/70cms	2.1/5.0dbi	0.80m long	£29.95
TSM-1326	2m/70cms	2.1/5.0dbi	0.77m long	£29.95
TSM-1332	2m/70cms	4.5/7.2dbi	1.50m long	£44.95
TSM-1607	2m/70cm/23cms	2.8/6.0/8.4dbi	0.78m long	£49.95
BASE RANGE				
TSB-3002	2m (2 section)	6.5dbi	2.87m long	£44.95
TSB-3003	2m (3 section)	7.8dbi	4.50m long	£69.95
TSB-3303	2m/70cms	3.0/6.0dbi	1.15m long	£49.95
TSB-3302	2m/70cms	4.5/7.2dbi	1.79m long	£69.95
TSB-3304	2m/70cms	6.0/8.4dbi	2.15m long	£69.95

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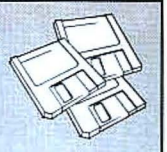
Super Low Finance Available On All Products... Wouldn't You Rather Buy From Martin Lynch?

Computing In Radio



HUNTER'S HAUL

Peter Hunter GOGSZ tells you where to find all those computer related bargains and information.

Computer Books

To start off, I suggest you take a look in the *PW* book shop pages for a wide range of computer/amateur radio books.There's a good selction available

Computer Clubs

Personally I think specialist computer clubs are helpful, so let's take a look at a few.

Amiga Amateur Radio User Group. Bob Wellbeloved G3LMH, 8 Orchard Close, South Wonston, Winchester, Hants SO21 3EY. This is a club set up to help Radio Amateurs who are using Commodore Amiga computers. Membership, as well as all other aspects of the club, is **free**. The club library has a very large collection of amateur radio software for its members. Members receive a regular newsletter, called Amiga Airwaves. Send an A5 self addressed and stamped (25p) envelope, plus a formatted blank disk, to the above address for full details.

British Amateur Radio Teledata Group (BARTG). It's well worth joining the **only** group that caters for **all** data needs. Contact: Peter Adams G6LZB, 464 Whippendale Road, Watford, Herts WD1 7PT. Tel: (0923) 220774.

MSX Computer User Group. David Webb G7JAK, 11, Ayscough Avenue, Spalding PE11 2QB. Tel: (0775) 711108. This user group, dedicated to the MSX computers, has a large PD/Shareware library (which includes programs for c.w., Packet, Amtor etc). Annual fee is £12. Please send an s.s.a.e. to the above address if you need more information.

UKEUG (Einstein User Group). If you are using an Einstein computer, then you may find it worth while contacting the UKEUG. The contact address is: Graham Bettany, Upland Centre, 2 Upland Road, Ipswich IP4 5BT.

Computer Supplies And Consumables.

CLP Computer Supplies Ltd. Unit 7, Holland Way, Blandford, Dorset DT11 7TA. Tel: (0258) 459544. If you need **anything** for your computer site then CLP are worth a call. Floppy disks, disk boxes, paper, envelopes, continuous (fan-fold) card (ideal for DIY QSL cards or 'calling' cards). Address labels, disk labels, label remover sprays. They even sell a range of Software. One of the only mail order firms I know that will sell you printer ribbons individually (most only sell five or six at a time). And all prices **include** postage. If you use a computer then you need CLP. Free samples of paper and card etc available on request, as is their extensive catalogue.

Computers And Computer Bits

Computers for the shack. A choice of either Epson PCe, 10MHz PC/XT, with 640K of RAM, 360K 5.25in floppy, 21Mb hard disk, mono monitor, and keyboard; or, Compaq Deskpro PC/XT, 640K of RAM, 360K 5.25in floppy, 21Mb hard disk, Mono monitor and keyboard. Price complete (collected) just £95. Send cheques to: P. Hunter, 2 Mayes Close, Bowthorpe, Norwich NR5 9AR. Tel: (0603) 748338 for more information.

Express Micro. Unit 14, The Old Brewery Yard, Kilton Road, Worksop, Notts S80 2DE. Tel: (0909) 530242. This is the place to go if you want the cheapest prices, together with a friendly and helpful service. Complete systems or all the bits to build your own.

Hobbykit Ltd. Unit 19, Capitol Industrial Park, Capitol Way, London NW9 0EQ. Tel: 081-205 7485. This really is one of the cheapest places to buy the bits you need to build, or upgrade, a computer. They will even build the computer for you, to your own specifications.

Matmos Limited Electronics. Unit 11, Lindfield Enterprise Park, Lewes Road, Lindfield, West Sussex RH16 2LX. Tel: (0444) 482091, FAX: (0444) 484258. Matmos have a constantly changing stock of complete computer systems, as well as all the individual parts needed to build or upgrade your own PC. Their prices are very competitive. Phone or FAX them for a current stock/price list.

Suredata. Unit 5, Stanley House, Stanley Avenue, Wembley, Middlesex HA0 4JB. Tel: 081-902 5218. If you want a good second hand Amstrad (PC or PCW), or some replacement parts, or a repair job by someone you can trust. Maybe you'd like a nice new 'Badger' computer (see 'Bits and Bytes', this issue) then look no further. Suredata can also help with upgrading your tired old XT to a 286 or 386 'flying machine'. Look out for Suredata at all the good rallies.

Data Communications Equipment

Time to look at suppliers of data communications equipment.

AMDAT. 4 Northville Road, Northville, Bristol BS7 0RG.Tel: (0272) 699352. Amdat carry a wide range of data communications equipment, especially packet TNCs on cards that slot inside your PC.

ICS Electronics Ltd. Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD. Tel: (0903) 731101. This is the place to go if you want a wide selection of FAX and Weather-FAX equipment, especially if you intend operating /MM. All you need is a computer and lots of enthusiasm (not to mention money of course).

j.Com. Box 194, Ben Lomond, CA 95005. USA. Tel: (408) 335 9120. While j.com is not strictly a data comms supplier, they do produce a wide range of economically priced Transceiver Control Computer Interfaces. They also produce a very

interesting range of amateur radio software, and non computer related add-ons for your shack equipment. Their catalogue is packed with interesting goods.

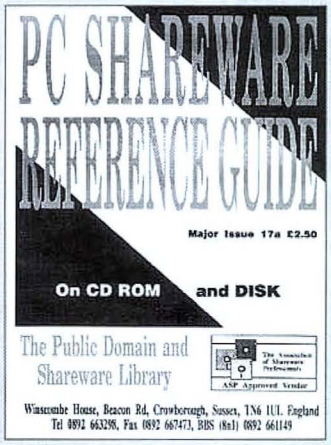
J & P Electronics Ltd. Unit 45, Meadowmill Estate, Dixon Street, Kidderminster, Worcestershire DY10 1HH. Tel: (0562) 753893. If you have an IBM PC or clone, and you want to enter the world of data communications but your budget is tight. Or, if you have almost **any** non IBM computer, then these are the lads to contact. Their packet modem for the PC is just £55! This same price will also get you on packet with an Atari ST or a Commodore 64. If you have a Spectrum never fear, you can get a Deluxe modem (with **free** software) for £75 or £85 if you want a printer port as well. Not bad prices, when compared to the cost of a 'normal' TNC. Ask J & P what they have for your computer, you may be pleasantly surprised.

Siskin Electronics Ltd. 2 South Street, Hythe, Southampton SO4 6EB. Tel: (0703) 207155/207587. If you need **anything** for data communications, then these are the people to contact. Not only PacTor, Packet, AMTOR and RTTY controllers, but all the other bits as well. Most of their data controllers come with **free** cables and software. Their range of multi-modes is second to none (like the new AEA PK900). Siskin can get you up and running regardless of your computer make. If you need advice or information they are glad to help.

Public Domain And Shareware Software

All Software is for the IBM PC and compatibles, unless otherwise stated.

Norwich City Shareware Library (NCSL). 6 Gurney Close, Costessey, Norwich, Norfolk NR5 0HB. Tel: (0603) 747782. NCSL has only been in operation for just over a year, but in that time they have grown to be one of the biggest PC Shareware libraries in the area, mainly achieved by giving good service coupled with value for money. They have thousands of programs to choose from. Disks are £3.00 each, inclusive of P&P. Catalogues are supplied on disk free of charge.



Public Domain and Shareware Library (PDSL). Winscombe House, Beacon Road, Crowborough, East Sussex TN6 1UL. Tel: (0892) 663298. If it is in the Public Domain, either as Shareware or Freeware, and its worth having, then you will find it in this **very** comprehensive catalogue. Fancy your own library? Then PDSL also produce a CD-ROM disk called 'Libris Britannia' (now on issue 3) which has over 2,500 disk volumes on, and costs £49. They also have an extensive range of other CD-ROMs. They carry the widest range of CP/M software that I know of, and, with over 10 years of service as a Shareware Library, you know they are good. A copy of their latest catalogue, in printed form, is now available by post for £2 (**free** if you make a purchase at the same time).

Readycrest Ltd. Terry Dansey G0BIX. 19 Hill Chase, Walderslade, Kent ME5 9HE. Tel: (0634) 687168. Contact these for 'All things Computer', from Hewlett Packard to WordPerfect and beyond. Their 23 dealerships include: NEC, Borland, Microsoft and Miracom Modems. Readycrest is the UK agent for **all** software produced by Joe Kasser W3/G3ZCZ. There is always a large quantity of Modems in stock so that you can make use of their BBS (The BIX-BOX) on (0634) 200931.

Softville Computer Supplies. 35 Market Parade, Havant, Hampshire PO9 1PY. Tel: (0705) 498199. I have been using Softville almost since they started, and have had pleasure watching them grow from strength to strength, and they have done it by giving good, reliable service. Not only are Softville's prices **very** competitive, they are **three** libraries in **one**. They cater for the PC, Atari ST, and Commodore Amiga. The Atari and Amiga catalogues are on disk only, (cost 75p), whereas the PC is in printed form. Phone them for more information and/or a copy of their latest catalogue.

Software

Round to software now. The **G4TYF LOG** is a logbook program that is available for a wide range of computers, namely: PC, Amiga, Commodore 64, Atari ST and BBC. Try before you buy with the offer of a **free** demo disk. Send an s.a.s.e., together with a blank formatted disk for your computer, giving details of computer type etc., to 64 Gurney Valley, Bishop Auckland DL14 8RW. Tel: (0388) 607500

Hamcomm is an amateur radio communications decode program. It will receive and transmit Morse code and RTTY direct to and from your radio. Undoubtedly the best program of its kind I have ever seen. Available from: W.F. Schroeder DL5YEC. Augsburger Weg 63, D-33102 Paderborn, Germany. Price is DM30 plus a further DM10 if you are sending a cheque, this is to cover the cost of the cheque being cleared.

Shacklog is a log book program for your shack. It will do everything you could ever want from an 'electronic' logbook. It's available from its creator Alan Jubb G3PMR. 30 West Street, Great Gransden, Sandy, Bedfordshire SG19 3AU. Also available from Alan Jubb, but written by John Linford G3WGV and distributed on behalf of the Chiltern DX Club, is a program called **LOG**. This is a Contest Logging Program which allows you to concentrate on making contacts. It comes with a very well written printed manual.

Super-Duper is a contest logging program. If you want to log stations as fast as you can work them, then this is for you. Super-Duper is written, and sold, by Paul O'Kane EI5DI. 36 Cookill, Sandyford, Dublin 18, Republic of Ireland.

The Disk Trader. 85 Curzon Street, Derby DE1 1LN. Tel: (0332) 362770. This is the place to go for CD-ROMs. They have a very large selection of CDs to cater for every taste, including CDs especially for radio use. Ask for a copy of their latest catalogue. Of special interest to UK amateurs will be the CD 'QRZ Ham Radio' which, among other things, has the entire 1993 USA callbook on it, together with an extremely fast search program.

UK Amateur Radio Callbook on disk. The full UK callbook on your hard disk is no longer a dream. Send three high density floppy disks plus £20 to: Mr Pat Smith G7FHY, 149 Leaf Road, Houghton Regis, Dunstable, Beds LU5 5JQ. Tel: (0582) 868683. Don't forget to mention your callsign if you have one.

Miscellaneous Items/Suppliers

Interconnections Ltd. 322 Guildford Road, Bisley, Surrey GU24 9AD. Tel: (0483) 797418. For all cables, connectors and accessories for the PC. If these people don't have what you need I will be amazed!

Lightwave. Unit 18, Wirral Business Centre, Dock Road, Birkenhead, Merseyside L41 1JW. Tel: 051-630 5003. For quality tested computer cables and accessories. Cables and connectors for any use, not just computers. Minimum order value of £10.

This 'showcase' is only a small sample of what is available for the radio amateur with an interest in computers. I'm sorry if I haven't included your favourite supplier, I've tried to include a little of everything. If you know of any other items of interest you can send me the details for possible inclusion in 'Bits & Bytes'. G0GSZ

IN DEFENCE OF RATTY and other Jargon

Edward Linguard G3WNQ defends the use of acronymns and jargon in amateur radio.

The November 1992 issue of *PW* carried an article by Patrick Allely GW3KJW called 'Plain Speaking' While agreeing with most of the points he makes, especially regarding the use of phrases such as 'the personal this end would be Wayne....' etc., I think he is being pedantic when it comes to the use of RTTY and 73.

The essence of good radio communications is to be perfectly understood in the shortest possible airtime. The term 'RATTY' or 'RITTY' is quite acceptable as, by common usage, it is perfectly understood by amateurs (except by GW3KJW). I am not saying that it is correct English, but then there are not more than about a dozen people in Great Britain who can and do speak perfect English all of the time.

The habit of making a noun out of an abbreviation is acceptable if its meaning is clear. I'm fairly sure that GW3KJW doesn't go around saying 'Light Amplification by Stimulated Emission of Radiation' instead of using its common acronym LASER.

Other examples in everyday use are RADAR, NATO, ERNIE and RADCOM. Whether the abbreviation has a vowel or not is immaterial, the user will insert one of his choice and when enough people understand it and use it. It becomes acceptable in speech and between persons having a common knowledge of the subject that they are discussing.

Many of the abbreviations spoken today by amateurs using Radio Telephony (RT) have been passed down by those masters of rapid and succinct communications, like the Morse code telegraphists and the c.w. Merchant Navy (MN) radio operators. They even used a foreign word if it was quicker than the English word to send in code eg. the French 'de' for 'of' and the French 'et' for 'and'.

See You

The MN operators always used SU for 'see you' (as in see you again) and not CU as in amateur use. Why? Because it's quicker to send S than C. You might think that this is taking things a bit too far, but Morse code was never a high speed means of communication at best and when there were dozens of stations waiting to communicate, the last thing needed was a dimwitted operator who had to spell everything out in full.

For instance, if you were sending a ship's voyage particulars to a coastal station it would go something like this: SILVERSEA/GBZZ QTO GCC DD BND PGFO VIA ZDK/SUP NW ANCHD 10SE FLMBRO HD WID ENG TBLE+. Which translates as Silversea (ship's name) GBZZ (ship's radio callsign) has left Tyne drydock bound Persian Gulf for orders via Gibraltar and Suez now anchored 10 miles southeast of Flamborough Head with engine trouble.

The letters GCC, ZDK and SUP are the radio callsigns of Cullercoates (near the Tyne), Gibraltar and Port Said radio stations respectively. There would also be a figure group indicating the date and the time of origin of the message. The difference between the two in airtime is quite considerable when using c.w. - try it.

Obviously, and thankfully, not all such abbreviations have been passed down for use on RT. But some have survived where they are useful such as LEFO - pronounced 'Leefoe' - meaning Land's End For Orders.

Complete Loss

Patrick GW3KJW says that he is at a complete loss as to the meaning of 'earwigging' other than to think it means the collecting of earwigs. The concise Oxford dictionary states that, in times gone by, earwigging was 'the influencing of some person by sending to him secret communications'.

In recent times earwigging has come to mean to deliberately overhear another person's conversation and is quite a common phrase in some parts of England. In radio usage it means to 'listen in', illicitly or otherwise.

Latterly 'earwigging' has been reduced to 'wigging' by some operators! When a coastal radio station instructs the skipper of a Grimsby fishing vessel to change frequency and to standby there for further information, it is not uncommon to receive the reply: 'Okay, I'll be wigging for you on that channel.'

Boring Amateurs

Once, while waiting to use a repeater, I had to endure a most inane and boring QSO between two amateurs on the merits or otherwise of liquorice cigarette papers for 'rolling one's own!'. So, by all means let's cut the waffle but don't throw away our heritage of old wireless words and phrases, rather let's keep on using them so, occasionally someone, somewhere will stop and think 'I wonder where that word came from' (Earwigging maybe) and set off on a lesson of discovery and education.

Dats it fer nw, hpe it was of intrst. I'm earwigging on 144MHz s.s.b. clg ch most days. LOC J))3CI. All de best fer 93. 73 de GW3WNQ.

PW

Edward Linguard G3WNQ is determined to defend old wireless words such as RTTY and 'earwigging' from Pedantic Predators!

Vårgårda 9EL2 144MHz Antenna

David Butler G4ASR takes time off from his 'VHF Report' column in PW to try out an interesting 144MHz antenna from Sweden.

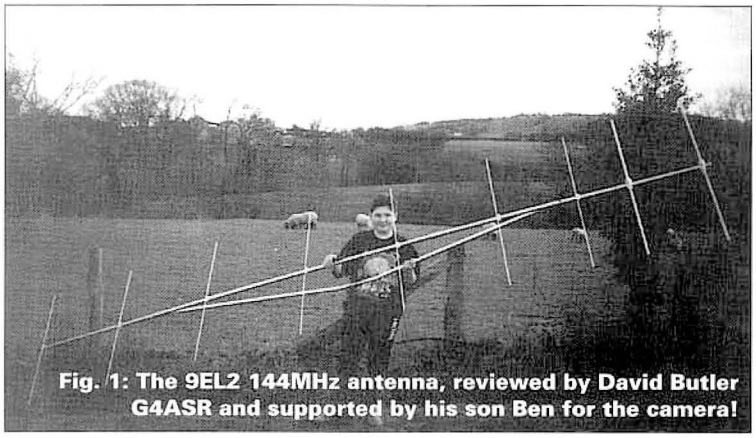


Fig. 1: The 9EL2 144MHz antenna, reviewed by David Butler G4ASR and supported by his son Ben for the camera!

The antenna I had the chance to review was the Vårgårda 9EL2. As its name suggests, it's a 9-element Yagi designed for use on the 144MHz band.

The 9EL2 is manufactured in Sweden. Although only recently introduced into the UK, it has been widely used in Scandinavia for over 15 years.

Interestingly, the 9EL2 is better known to v.h.f. DXers as the OZ5HF 9-element design. In fact the review model had '5HF' stamped on it.

The reasons for the different names are probably due to a contractual arrangement. But I think it's a pity that the antenna can't be marketed by the name with which it is more well known.

Boom Length

The 9EL2 Yagi has a boom length of 4.5m and weighs in at 2.65kg. The main boom is made from aluminium box section 18mm square and it's strengthened by a support boom of similar material.

Because of the support arrangements it's only possible to mount the antenna for horizontal polarisation. Clamps are incorporated allowing attachment to masts of 38-65mm diameter.

All elements are made of an aluminium alloy which according to the manufacturers is resistant to corrosion. They certainly appear very robust. All other antenna hardware, such as nuts, bolts, washers, element and boom clamps are made from non-corrosive steel.

Assembly Easy

Assembly of the antenna is very easy. The box was unpacked and items located. At this stage, I noticed that no overall parts list was provided. So, it was therefore not possible for me to check if any item was missing.

The main boom, in three sections, was easily identified. Each end is colour-coded and it is a simple matter of matching up the colours.

The boom joints are connected together by support clamps and screws 25mm long. This is where the first minor problem was encountered.

With an 18mm boom section, two clamps and a serrated washer it is only just possible to fit the nut on. I would have preferred a screw length of 30mm.

The dipole was already attached to the boom and it was only necessary to rotate it and tighten up the fixing nut. Next to be attached was the reflector and then it was the turn of the 7 director elements.

The elements taper in size, the longest being placed next to the dipole and the shortest at the front end of the boom. The elements are held to the top of the boom by a special clip.

All the directors have a small mark in the centre of the element and this is aligned with the middle of the element clip. This method of centering the element and fixing to the boom is neat and simple.

To complete the antenna assembly the support boom was attached to the main boom. This should have been straightforward, but some inaccuracies in production meant that the required holes didn't line up.

Although the hole problem was quickly resolved with a file it was nonetheless irritating. It took my 11-year old son 35 minutes to assemble the antenna. With all mechanical problems resolved and the benefit of knowing exactly where all the pieces went, I was able to complete the assembly in 15 minutes.

Feed Balun

The feed to the antenna incorporates a built-in balun. This is necessary to match the impedance of the unbalanced coaxial cable to that of the balanced dipole element.

The balun is made from coaxial cable a half-wavelength long and is wound inside the feeder connection box. This method is state-of-the-art and is preferred to other ways of creating balance.

The coaxial cable is very thin and my first thoughts were that it would breakdown at very high power levels. However, it's made of Teflon and was capable of handling considerably more power than the 500W for which it's rated.

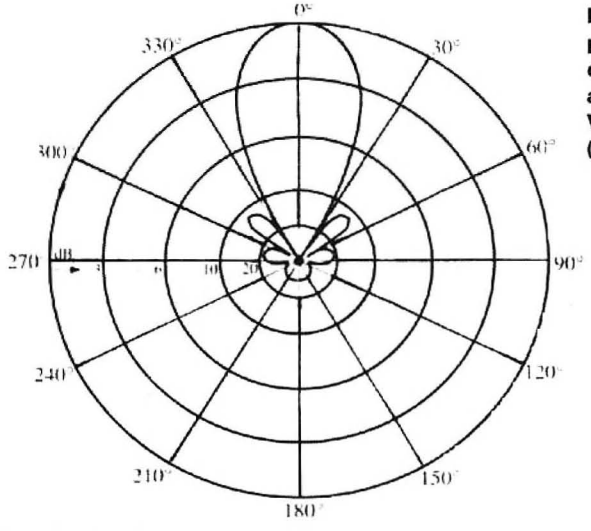


Fig. 2: The E-plane polar diagram pattern as measured by Vårgårda Radio (see text).

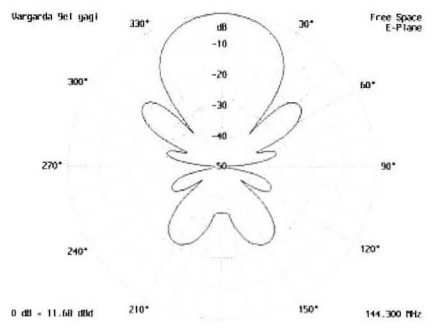


Fig. 3: The E-plane polar diagram pattern calculated by G3SEK using 'NEC For Yagis' (see text).

Unlike Other Designs

Unlike many other Yagi antenna designs, no coaxial connectors are used on the 9EL2. Connection of the feeder cable is made inside a special water-proof box bolted to the driven element.

The integrity of the connection between antenna and feeder is of paramount importance. It doesn't matter what the performance of the antenna is, if water migrates into the feeder. If water does enter the feeder, the cable will slowly degrade and losses build up.

An advantage of having a coaxial connector, is that it can form part of the driven element. The whole assembly can then be moulded together to form a water-proof joint.

The disadvantage of the 9EL2 system is that care needs to be taken to select a connector that has integral water-resistant capabilities. The termination of a coaxial connector in my opinion is not easy and few people get it right first time.

Connecting the feeder to the balun container is a simple operation. The outer covering of the cable is cut away to expose the shielding.

The shielding is prepared to enable it to be placed inside a semi-circular clamp. The inner conductor is similarly prepared leaving about 5mm exposed to wrap around a screw connection.

I decided to use a length of Westflex 103 cable to connect to the Yagi. The outer shielding was easily placed in the clamp without any need for soldering.

However, this cable has a solid inner conductor which could not be attached to the screw connector. I removed the screw and soldered the inner conductor in place.

The antenna instructions mention this as an option if you are using heavy duty feeder. I think this should be the preferred method no matter what size of cable you use.

To ensure that no moisture enters the cable, I covered all connections with glue from a hot glue gun. I have used this method many times in the past and it is very effective. Provided that care is taken when making the connections, I don't think any water will find its way into the 9EL2 antenna.

No Tuning Required

One of the advantages of the 9EL2 Yagi is that no tuning is required. So, once you've connected the feeder it really is ready to go.

To confirm this, I checked the impedance-matching (v.s.w.r.) bandwidth. The results were very good.

Between 144.000 and 146.00MHz the v.s.w.r. was very flat and measured less than 1.2:1. The antenna therefore doesn't have an excessively narrow bandwidth and is very frequency-tolerant.

Gain is obviously one of the most important parameters of a beam antenna. It's also one of the most difficult to measure properly.

Claimed Gain

The claimed gain for the Vårgårda 9EL2 is 13dBd. This may seem surprisingly high for an antenna only 2.17 wavelengths long. In fact, it's virtually the same as a well known 17-element Yagi which has a claimed gain of 13.1dBd!

To give some idea of the gain of the antenna, I asked Ian White G3SEK to help. Ian calculated it using the K6STI 'NEC for Yagis' simulation software.

The computer analysis gave a gain figure at 144.300MHz of 11.7dBd. By way of comparison, Rainer Bertelsmeier DJ9BV using NEC-II software calculated the gain as 11.9dBd at 144.500MHz.

For a practical point of view I spoke to two UK operators. They both used a group of four 9EL2 Yagis for e.m.e. work.

Both operators independently reported that the gain seemed to be about 1dB down (i.e. 12dBd) on four 17-element Yagis previously used. These results indicate that the 9EL2 Yagi has at least 12dBd gain. In my opinion the manufacturers claimed gain should not be disputed.

The information sheet from Vårgårda includes a polar pattern of the antenna. This is shown in the diagram, **Fig. 2**.

Most scientific and serious manufacturers present this type of data on a power scale ideally reading to -50dB. Regrettably, Vårgårda have used a voltage plot with a dynamic range of 30dB.

The manufacturers choice of a plot makes most side- lobes disappear and conceals other features. I think it's unfortunate that they have presented the polar diagram in this way.

The Yagi is actually quite good. It has a very good pattern and good efficiency and there really is no need to hype up the figures in this manner.

The K6STI Yagi simulation software also calculates the beam- pattern and this is shown in the diagram, **Fig. 3**. Note the difference between the two presentations.

Vårgårda claim that the 9EL2 has a E-plane half-power (3dB) beamwidth of 35°. The NEC computer simulation shows a good correlation with the claimed figure.

Auroral Openings

During the review period I was fortunate to catch a few auroral openings. This allowed me to put the Yagi through it paces at the c.w. end of the 144MHz band.

The antenna pattern enabled me to easily locate the various auroral scattering points. Many contacts were made in the range 1000 to 1600kms.

During the auroral events I also listened for various beacons around 145MHz. I heard SK4MPI, DL0PR, GB3LER and GB3ANG. All are relatively low powered, confirming that the antenna has a reasonable amount of gain.

As the antenna is designed for horizontal polarisation I didn't make any useful operational tests with it above 145MHz. However I did make a few contacts via the RS10 satellite on 145.850MHz to confirm that it works at the top end of the band.

Summing Up

In summing up, I think from the mechanical point of view the construction of the 9EL2 Yagi is very sound and it is made of good quality aluminium. Assembly was easy and although I experienced a few assembly problems, these were very minor.

The feeder connection to the driven element is simple and with care it will produce a water-tight joint. Considering its boom-size the Yagi packs quite a punch.

The 9EL2 has a clean polar pattern, high efficiency and is well optimised. Four of these antennas will make a compact but very effective e.m.e. array.

My thanks for the loan of the Vårgårda 9EL2 go to the UK agent, Jaytee Electronic Services. The 9EL2 antenna is available from any of the Jaytee approved dealers for £61.10 inclusive.

After seeing a copy of the G4ASR review, Jaytee Electronic Services sent us the following comments.

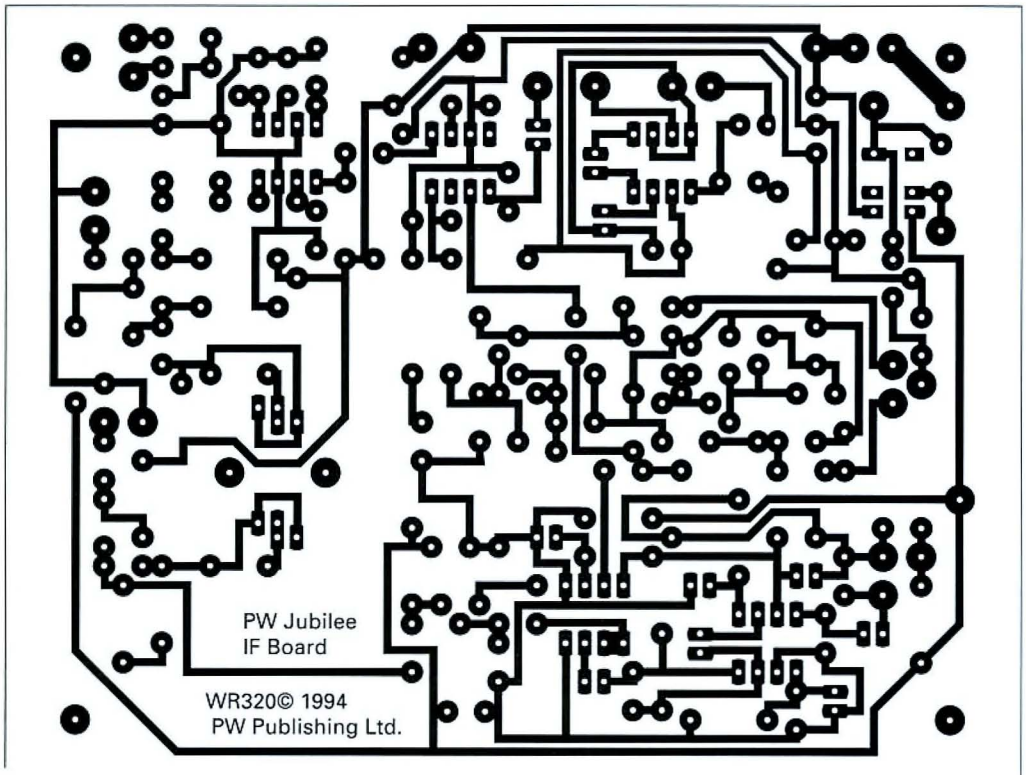
We welcome the comments made by David Butler G4ASR and are working with Vårgårda on revised literature and data. Please note that a parts list is now incorporated in the assembly instructions.

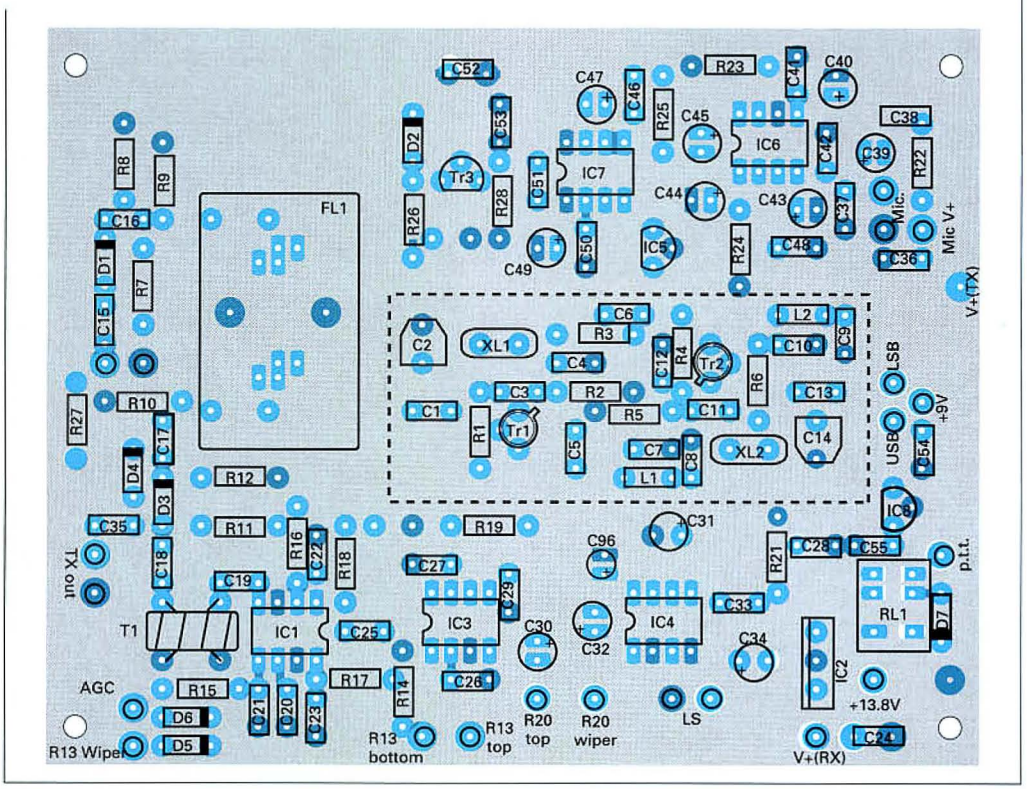
Jaytee Electronic Services have recently been appointed sole UK importer for the range of Vårgårda v.h.f./u.h.f. antennas and are setting up a dealer network to ensure availability in retail amateur outlets and at rallies - please refer to our advertisements.

Jaytee provide full technical support and assistance and our staff includes several licenced amateurs.

Jaytee Electronic Services, Unit 171/172, John Wilson Business Park, Whitstable, Kent CT5 3RB. Tel: (0227) 265333, FAX: (0227) 265331.

The PW Jubilee 14MHz SSB Mobile Transceiver Part 3





This month, as I have described most of the circuitry, I'm going to discuss the two printed circuit boards being published. Of course, you can make the p.c.b.s yourself, but I've no doubt that many of you will take the opportunity of buying the ready-made boards from the *PW* PCB Service.

The diagram, **Fig. 3.1**, shows the board for the 'heart' of the Jubilee, the main i.f. and filter p.c.b. To make it as easy as possible to follow, you will see two views of the p.c.b.

The track pattern above is easy to see and appreciate. However, on the overlay and component placing diagram the coloured blobs are the pads as you would see them through the earth plane side.

The main i.f. and filter board p.c.b. overlay is shown as if you're looking down on it from above. The actual component overlay is shown 'from the top' with the earth plane and the outline of the actual p.c.b. tracks at the bottom of the 'layer,' so to speak.

Although I'll be providing the full shopping list at the end of the project, it's perhaps a good idea to consider major components now. Obviously, the major component to bear in mind here is the filter.

Fig. 3. 1: The printed circuit board design, ground plane and associated overlays for the main 9MHz i.f. and filter used in the PW Jubilee 14MHz s.s.b. mobile transceiver. The dotted line surround XL1, 2 and Tr1 and 2 indicate where screening of the section could be applied (see text for comments).

The Rev. George Dobbs G3RJV continues his description and moves on to the next stage of his h.f. mobile transceiver design, providing the first of the p.c.b.s for the QRP project.

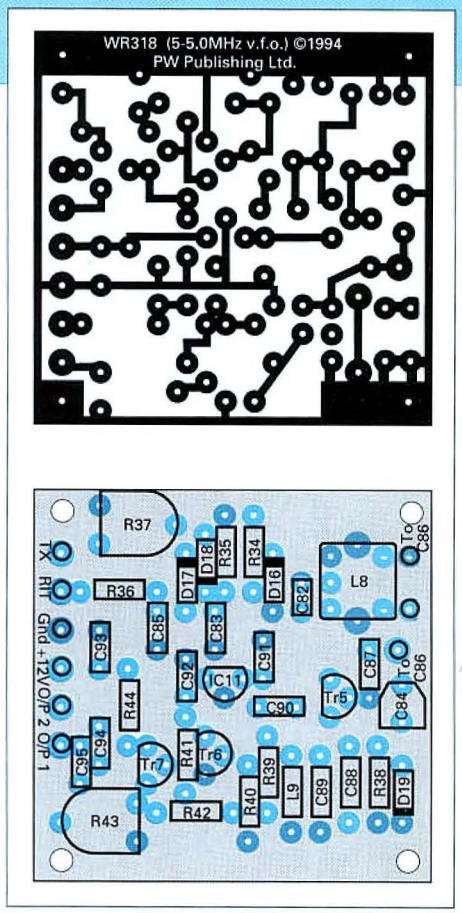


Fig. 3.2: The printed circuit board, ground plane and associated component overlay for the variable frequency oscillator (v.f.o.) used in the Jubilee.

The Filter

Although there's some room around the filter allowing some variation in the type used, I've actually designed the Jubilee around a reasonably priced unit. This is available from the G-QRP Club.

The filter used in the Jubilee is a Japanese type, the 'Showa' 9MHz 2.2kHz bandwidth s.s.b. unit, costing £16. This price includes the upper and lower sideband crystals.

You can obtain your filter direct from the G-QRP Club by sending £16 plus £1 P&P to: **Ian Wye G0OKY at New House, Hook Road, Amcotts, Scunthorpe, Lincolnshire DN17 4AZ**. Incidentally, the G-QRP Club can also supply the SL6440 mixer i.c.s for £2.50 (half price) including postage, again from Ian.

Complete kits for the PW Jubilee transceiver will be available. I'm mentioning the availability of the filter separately for those of you who would like to gather everything together themselves.

Assembling The Board

Assembling the main i.f. and filter board should not be too difficult. From **Fig. 3.1**, you can see the various off-board connections mentioned. You can cross check these with the circuits published in Parts 1 and 2. (But remember that the circuit diagrams were produced in separate sections for clarity. On the actual p.c.b.s, parts of different circuits from several sections appear on one board.

The p.c.b. overlay design published in *PW* this month is slightly different from my original prototype unit as shown in Figs 1.5 and 1.6 on page 27 of the March issue. However, the basic layout of the boards are the same and you can still of course refer to the diagrams for general guidance.

Another point I should mention, is that the prototype Jubilee shown on page 27 in the March issue of *PW*, has extra features built-in. These additions will form the basis of further articles on the Jubilee to appear in future issues. The p.c.b.s used on the Jubilee have an earth plane,. if you're building the transceiver using the p.c.b.s, which will be available from the *PW* PCB Service via John Badger. Where a component has no clear area around the pins, these pins should be soldered to the earth plane. Any free component leads should also be soldered to the earth plane.

It really does pay at this stage to proceed carefully - backwards, by assembling the audio stage first! The audio output stage is provided by the i.c., IC4, which is the well-known LM386. (***Editorial note**: please see the 'errors and updates' section in this article, dealing with this and other circuits*).

There are obvious advantages in building the audio output stage first. Although I realise that some constructors prefer to assemble the whole board first.

The dotted line surrounding the carrier insertion oscillator section on the main p.c.b. (XL1, Tr1, 2, etc.) is provided for guidance purposes. It shows where you can place screening if it proves to be necessary on your transceiver.

Screening around the carrier insertion oscillators did not prove to be necessary on my prototypes. However, I've included the position of a screen with the drawings of the *PW* Jubilee, as screening might be required in some cases.

The VFO Board

Now it's time to turn to the v.f.o. board. I've often said in the past that v.f.o.s cause difficulties for many constructors. Fortunately, the Jubilee v.f.o. and its associated p.c.b. together form a straightforward design which should cause no bother.

The v.f.o. has its own p.c.b. and this is shown in **Fig. 3.2**. In my prototypes the v.f.o. was mounted inside a die-cast aluminium box for screening purposes. Alternatively, you could use a box formed from aluminium sheet or one of the tin-plate screened boxes which are commonly available.

It makes sense to assemble, build and test the v.f.o. as a separate unit. Once this is done, it can be placed with its associated tuning capacitor in the screened box.

Although the Receiver Incremental Tuning (RIT) facility is provided by diode D16, a BB405 varactor, the main tuning is carried by the variable capacitor C86. A really good quality capacitor will repay your investment in this application.

A variable capacitor of doubtful quality or origin could cause you to waste a lot of valuable time in tracking down frequency stability problems, especially in a mobile transceiver. So, to reduce the possibility of problems, I strongly recommend that you obtain a Jackson variable type, or other well-

made capacitor.

The final advice I'll give on the v.f.o. comes from experience! The final result, in terms of stability and reliability of operation depends very much on the quality of components you use, accompanied by the care you take in assembly and construction.

That's it for this time. Next month I'll continue with the project and describe the other main p.c.b.s to complete the project. ***PW***

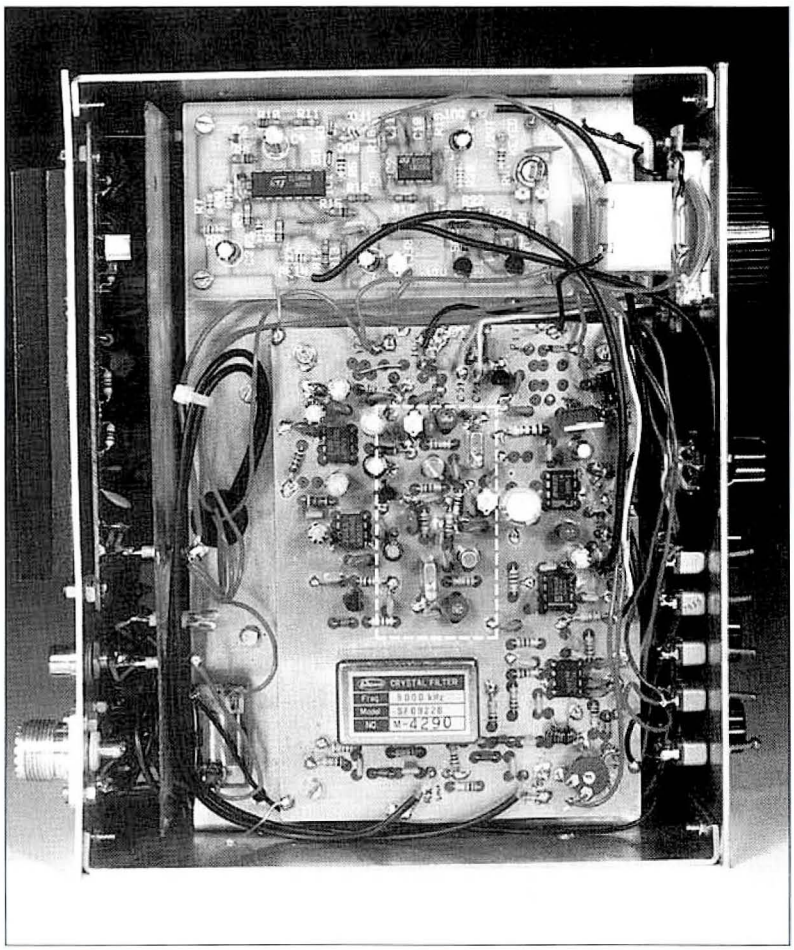


Fig. 3.3: Photograph showing one of the prototype PW Jubilee transceivers as built by G3RJV. The main 9MHz filter (see text for source of supply) is shown in the lower centre of the picture. Although the transceiver is designed around the 'Showa' unit incorporated in this version, there is enough room to allow other types to be used. The dotted line around the carrier insertion oscillator circuitry represents the suggested area for possible screening, as incorporated in the final PW p.c.b. (see text).

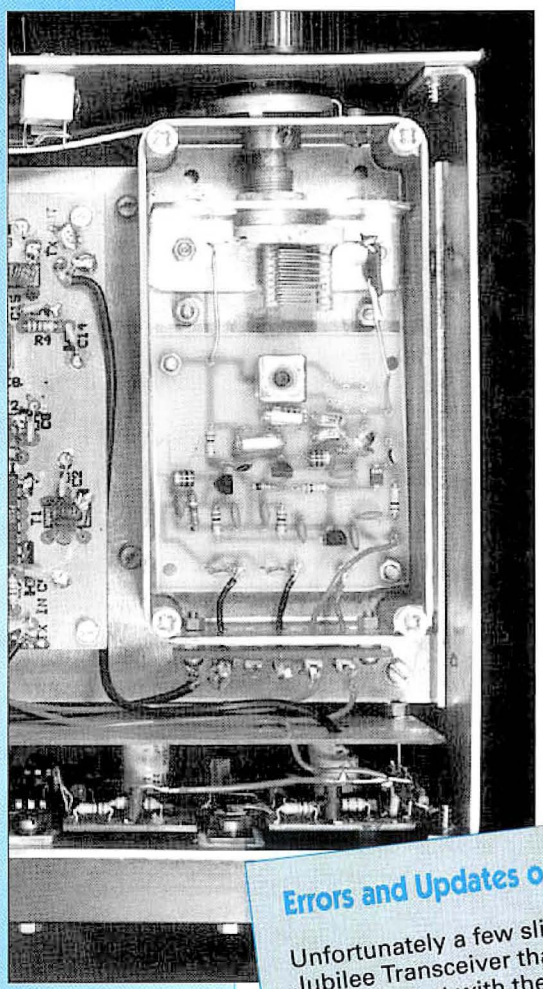


Fig. 3.4: Close up view of the v.f.o. section of one of the prototype Jubilee transceivers. To ensure the best possible stability in the circuit G3RJV recommends that care is taken when assembling the v.f.o. and the best quality variable capacitor is used (see text).

Errors and Updates on the PW Jubilee Transceiver

Unfortunately a few slips of the 'drafting' mouse occurred in drawings for the PW Jubilee Transceiver that have appeared in the previous two issues.

Let us start with the March issue of *PW*, on page 26 **Fig. 1.2**, the comment 'D5-8 = BA244', (low left on the diagram) should have read 'D1-4 = BA244'. Still with this drawing. Pin 7 of IC4, an LM386 audio amplifier, should have an electrolytic capacitor, C96, to the 0V rail.

Turn now and look at page 27 of the March issue, and **Fig. 1.4**. on the right hand side between pins 'c' and 'e' the comment 'To D8/C35' should have read 'To D4/C35'. Just underneath this the comment 'To D6 anode' should be altered to read 'To D2 anode'.

Now onto the April issue of *PW*. On page 18 **Fig. 2.1** the contacts of relays RL1 and 2 have been swapped over. The relay next to D9 should be marked 'RL1a'. This means that the relay above D7, should now be marked 'RL2a'.

On page 19 of the April issue, figures **Fig. 2.3** and **2.4** need additional connections. In **Fig. 2.3** connect the junction of C66 and the centre winding of T3 to the +12V line. Similarly in **Fig. 2.4** on that page, connect the junction of C73 and the centre winding of T5, to the junction of R30/31 and D15 anode.

Please accept our apologies for these errors. **Editor**

Specifications – The Mysteries Explained

In the fourth part of his series dealing with equipment specification mysteries Ian Poole G3YWX takes a look at the terminology hiding under the SINAD acronym.

Last time I took a look at the signal to noise ratio which is used to specify the sensitivity of many h.f. radios. To recap, this is normally given as a certain signal level to produce a 10dB signal to noise ratio.

While the signal to noise specification is very useful, it's not always seen in this basic form. This is because there are a number of problems which can be encountered when using it. To investigate how these occur you need to take a look at a simple set-up used for making the measurements.

Basic Equipment

The diagram, **Fig. 1** shows the basic equipment required for signal to noise evaluation. A signal generator is connected to the antenna to give the signal source. This also provides a 50Ω match to the input of the receiver when no signal is present.

To measure the output of the set an audio voltmeter is needed. This can be connected across the speaker or headphone output.

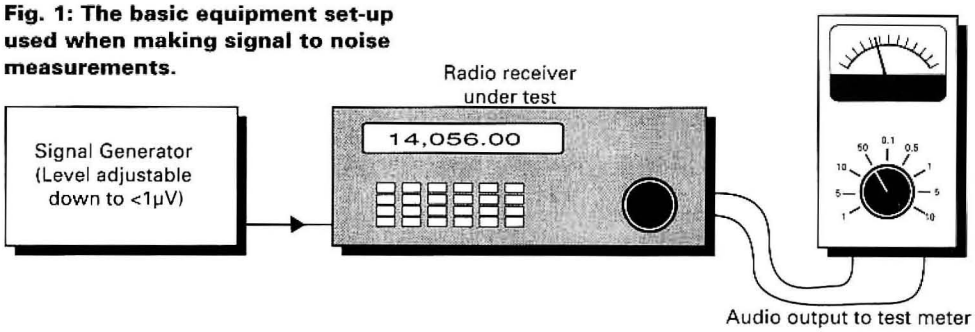
With no signal present from the generator the level at the output is set to a suitable point on the meter using the audio volume control. Normally this will be the -10dB point on the meter. The actual value is not important because the final measurement is simply a ratio.

The next measurement involves turning the signal from the generator on. The level of the generator is then adjusted until the meter reads a value of 0dB (i.e. 10dB higher than the noise level). This gives the level needed to produce the 10dB signal to noise ratio.

You probably realise that you're not really measuring the signal to noise ratio. The noise measurement is perfectly accurate.

However, the second measurement is a reading of the signal, plus a small amount of noise. It is for this reason that we often see specifications of signal plus noise to noise ratio (S+N/N).

Fig. 1: The basic equipment set-up used when making signal to noise measurements.



Another problem arises in the use of the signal generators themselves. The signal to noise ratio (or signal to noise plus noise ratio) should state whether the signal level corresponds to the electromotive force (e.m.f.) or potential difference (p.d.). This is very important because the e.m.f. is the voltage when the generator is open circuit. When it is applied to a 50Ω load i.e. the receiver input, it will fall to half. In other words a figure of 1μV e.m.f. for a 10dB signal to noise ratio is the same as a 0.5μV p.d for a 10dB signal to noise ratio.

Normally, amateur radio equipment is specified in terms of potential difference, even if this is not directly mentioned. However, if the input impedance of the radio does not exactly correspond to 50Ω then there will be an error because the signal generator will not be able to monitor the output level right on the output of the generator itself.

Another Measurement

Where f.m. is concerned another form of measurement is often encountered, and it's often known as Signal to Noise And Distortion (SINAD). Often SINAD figures will be quoted for v.h.f. and u.h.f. f.m. sets, as well as CB radios.

While the SINAD figure may appear to be a completely different form of reading it is very similar in essence to the Signal + Noise to Noise ratio. This method involves applying a modulated signal to the input of the radio, and then notching out the wanted audio. By doing this it is possible to obtain a reading of the Signal + Noise + Distortion to Noise + Distortion ratio.

Using the SINAD system the sensitivity of the set is quoted in terms of a certain input voltage (μV) to give a certain SINAD ratio. Normally a standard SINAD ratio of 12dB is chosen because this corresponds to a distortion factor reading of 25%.

Although SINAD measurements are normally seen on f.m. sets, there is no reason why they cannot be used on other modes. For a.m. it is only necessary to change the type of modulation used and the system can be used in exactly the same way.

For s.s.b. employing SINAD is a little more difficult. This is because the set has to be tuned to give the correct beat note frequency which can then be notched out, when required, to make the measurement.

When using SINAD measurements, a comparison of the different sets can be made by investigating the input voltage needed to give the 12dB SINAD reading. Typically a mobile set may have a sensitivity of around 0.2μV to give a 12 SINAD reading and a portable set may be a little less sensitive.

PW

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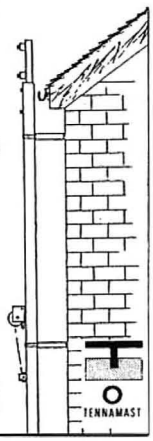

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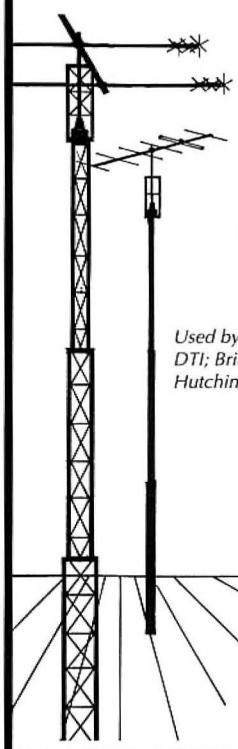

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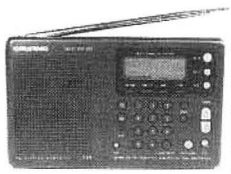

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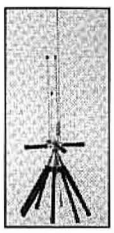

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RADIO DIARY

*Practical Wireless and Short Wave Magazine in attendance.

April 16: The Spring All Micro Show Radio Rally and Electronics Fair is being held at Bingley Hall, Staffordshire Showground, Weston Road, Stafford (A518 Stafford-Uttoxeter Road) AA signposted from Junction 14 on M6. Doors open 10am, adults £2 on day (advance tickets £1.50), children under 14 free. As usual we are supporting local charity stalls, free parking, licensed bar from 11am, refreshments, meals and a cafeteria. **(0473) 272002**

April 17: Bury Radio Society will be holding a rally at the Castle Leisure Centre, Bolton St. Bury. Doors open at 11am, 10.30am for disabled visitors. Bring & Buy, talk-in on S22, refreshments and bar available. **Laurence** on **061-762 9308 evenings.**

April 17: The Cambridgeshire Repeater Rally Group will be held at the Philips Telecom - Catering Centre, St. Andrews Road, Chesterton, Cambridge. Doors open at 10.30am. There will be a Bring & Buy, trade stands and an auction. **Darren Salter** on **(0223) 358985 extension 3265.**

May 1: The BATC Rally, Sports Connextion, Coventry will be among the largest indoor radio events of 1994 - around 320 trading tables, flea market, outside TV displays etc. **Mike Wooding G6IQM.**

May 2: Dartmoor Radio Rally will be held at Yelverton Memorial Village Hall, Meavy Lane, Yelverton, Devon. Trade stands, Bring & Buy, refreshments etc. Parking, access for disabled, doors open 10.30, talk-in on S22. **Ron** on **(0822) 852586.**

May 2: Mid-Cheshire ARS Rally will be held at Civic Hall, Winsford, Cheshire. Doors open at 11am, (10.30am for disabled visitors). £1 entry and ample free car parking, full catering and bar plus Bring & Buy. **Dave G4XUV** on **(0606) 77787.**

May 8: Midland Amateur Radio Society/Drayton Mobile Radio Rally is being held at Drayton Manor Park, Tamworth, Staffs (A4091). Doors open at 10.30am, usual traders, flea market, car boot and club stands. **Peter G6DRN** on **021-443 1189.**

May 8: The 10th Yeovil QRP Convention will be held at the Preston Centre, Yeovil, Somerset. Doors open 9am - 5pm, free car parking. Traders, QRP kits and components plus club Bring & Buy and QRP club stand. Natter area and refreshments. **Peter G3CQR, QTHR** on **(0935) 813054.**

May 15: The Mid-Ulster Amateur Radio Club GI3VFW are holding their Parkanaur Rally at the Silverwood Hotel, Lurgan. Doors open at 12.00 noon. Proceeds in aid of The Stanley Eakins Memorial Fund.

May 22: The 37th Northern Mobile Rally will take place at the Flower Show Hall on the Great Yorkshire Show Ground, Harrogate, North Yorkshire. **Mike G0MKK. (0423) 507653 evenings** or **G0MKK @ GB7CYM.**

May 29: The 18th Annual East Suffolk Wireless Revival will be held at The Maidenhall Sports Centre, Stoke Park Drive, Ipswich, Suffolk. Attractions will include vintage radio display, Novice stall, RAIBC, BYLARA, RAYNET. Non-radio stalls and refreshments. Talk-in on S22. **Bob Baal** on **(0394) 271257.**

May 29: The Plymouth Radio and Electronics Fair will be held at Plymstock Comprehensive School, Plymstock. Doors open 10.30am. Over 25 stalls selling electronic and computer and radio components, many second-hand bargains for the enthusiast. Free parking, Bring & Buy stand, club station on air, bookstall, hot and cold buffet and a grand raffle. Admission £1 at the door. **(0752) 364152.**

***June 12:** The Elvaston Castle National Radio Rally will be held at the showground of the Elvaston Castle Country Park, situated five miles south east of Derby. This is the 25th Radio rally and should be the most spectacular to date. **Keith Ellis G1ZLQ** on **(0332) 662896.**

June 12: The Royal Navy Amateur Radio Society is holding its annual rally on the sports field HMS *Collingwood*, Fareham, Hants between 10am and 5pm on Sunday. This site, with its easy road access and good car parking, is a splendid successor to the previous venue. Trade stands, Bring & Buy, flea market, local repeater and radio clubs and also a large arts and crafts exhibition. A full range of entertainment for all the family along with refreshments. Talk in on 144 and 432MHz to guide visitors from the nearby M27 (leave at junction 11 and follow the A27 towards Fareham). **Clive Kidd G3YTQ** on **(0705) 3327621 daytime or (0329) 234143 evenings.**

June 19: Denby Dale & DARS Annual Mobile Rally will be held at Shelley High School. **Phil G4FSQ** on **(0484) 644827.**

June 19: The 5th Belfast Radio Rally is to be held in the Chimney Corner Hotel, 630 Antrim Road, Glengormley. Starts at 12noon. There will be a Bring & Buy, the usual trade stands and attractions, with a chance to have a drink or a meal in the hotel restaurant. Entrance fee is £1, accompanied children only 50p each. **D. Caldwell** on **(0232) 471370.**

June 19: The Newbury and District Amateur Radio Society are holding a car boot sale at Acland Hall, Cold Ash, Nr. Thatcham, Nr. Newbury. 9am to 3pm, free admission and parking, talk-in GB4NBS S22. For more information contact **George** on **(0488) 682814.**

***June 24-26:** Ham Radio '94 Friedrichshafen, Germany. The largest amateur radio show in Europe and well worth a visit. The Flea Market alone is worth the journey and Friedrichshafen situated on the Bodensee - Lake Constance to the English - and within easy reach of Austria and Switzerland is a fantastic area for a holiday.

June 25 & 26: The Wrexham ARS Mobile Rally and Boot Sale together with Shropshire Astronomical Society's Star Party is being held in conjunction with the Clwyd Veteran and Vintage Machinery Society's 18th Annual Steam Rally at the Plassey, Eyton, Nr. Wrexham. Doors open 10am to 5pm. **Ian Wright GW1MVL** on **(0978) 845858.**

***June 26:** The 37th Longleat Amateur Radio Rally is being held at Longleat House, Warminster, Wiltshire. **Shaun O'Sullivan G8VPG** on **(0272) 860422 (office hours)** or **(0225) 873098.**

June 26: The Norfolk Raynet Barford Rally will be held at the Village Hall, Barford on B1108 Norwich-Watton Road. Doors open 10am, there will be trade stands, a raffle, refreshments. Free car parking and talk-in on S22. Further details from **Bill G4TWT, QTHR. (0603) 427008.**

If you're travelling long distances to rallies, it could be worth 'phoning the contact number to check all is well, before setting off.

DAVID BUTLER G4ASR

VHF Report

This month I've got reports of numerous auroral openings during February. There's news about a 50MHz expedition to Jordan and important information about a re-organisation of the 144MHz band plan. And finally, for the enthusiast, I've got details of a v.h.f./u.h.f. DX convention and dinner.

The month of February is normally reckoned to be the best for auroral activity. However, I'm not saying that the biggest events always occur in that month, far from it.

However, the period around the equinox February-March always brings many openings. In January I only recorded one opening.

During the month of February, 14 events were noted in central England. Auroral back-scatter was observed on the v.h.f. bands between February 5-16 and 21-22.

The event commencing on February 5 was triggered by a coronal hole passing over the southern region of the sun. These openings may have come as no surprise to those of you who keep records of past events.

The auroral calendar, **Fig. 1**, shows how it is possible to spot 27-day repeats. Note the events on November 18, December 15, January 11 occurring on each solar rotation.

The calendar shows that 54 auroral events were recorded in central England during 1993. In the February 1993 issue of *PW* there's a similar calendar for the previous year showing a total of 58 events observed during 1992.

The 50MHz Band

Now I'll start with the 50MHz band reports with one from **Dave Ackrill G0DJA** (IO93). His 50MHz station consists of an Icom IC-726 and a 5-element MET Yagi.

The photograph, **Fig. 2**, shows the antenna mounted on a chimney at 10m a.g.l. Although the IC-726 transceiver can provide up to 10W output Dave usually runs it at the 3W level.

Dave's report shows what can be worked with QRP from an urban environment. In the opening on February 5 Dave made a number of contacts, including GD3AHV, LA8XP and SM3JGG.

At 2146UTC the beacon OH1SIX was heard by Dave via Auroral-Es at 599. This propagation mode eventually faded out to be replaced by auroral back-scatter.

The OH1SIX beacon went fully auroral and the signal level dropped to 52A. Other beacons copied at this time included ES0SIX and OH9SIX.

Dave reports that conditions were better on February 6. During the afternoon from 1450UTC he worked stations in DL, G, GI, GM, LA, OZ, PA and SM.

From 1610UTC on February 21 the beacons GB3LER, GB3NGI and GB3RMK were all heard aurorally at G0DJA. However, activity was very low and it was not until 1740UTC that QSOs were made with ON9CFB and PA0JMH.

At 2240UTC the beacon ES0CW (50.037MHz) was heard via Auroral-Es. Later in the evening a contact via this mode was made with ES1CW. Still on the low power theme G0DJA mentions that his best QRP DX during 1993 were c.w. contacts with VE1MQ and 7Q7RM.

Another 50MHz band operator is **Philip Lancaster G0ISW** (IO84). He uses a Kenwood TS-690 and a Create 25-element log-periodic antenna.

Incidentally, a log-periodic array consists of a system of driven dipole elements. Not all the elements in the system are active on any particular frequency of operation.

The Create antenna, for example, might only have four or five elements active when used on the 50MHz band. The advantage of a log-periodic array is that it can be operated over a wide frequency range.

Philip mentions that he also uses the Create antenna on the 430MHz band. Over this frequency range its electrical characteristics, gain, feed-point impedance, front to back ratio, etc., remain more or less constant.

During the aurora on February 6, Philip made contacts with G1LMZ (IO95), GM0EUA (IO85) and GM0PKW (IO68) on the Isle of Lewis.

Activity On 144MHz

Now for some reports of activity on the 144MHz band. **Richard Gardner G4WKN** (IO92) first noticed the aurora on February 5 at 1630UTC. It was a standard northerly event allowing contacts with stations in LA and SM.

Using a group of four 9-element OZ5HF Yagis and 300W from a single 4CX-250B p.a. Richard worked LA3NGA (JO49), LA9BM (JP40), SM0FMT and SM5BSZ both in JO89. The Latvian station of YL2MB/A (KO07) was heard but he couldn't break the pile-up.

Conditions were even better during the event on February 6. Richard first detected it at 1500UTC and c.w. contacts were easily made with LY2FR (KO15), OH2NPH (KP20), SM3BEI (JP81), SM7NUN (JO86) and YL2MB/A.

The stations of OH2TI and OH3EX both located in KP20 were heard by Richard but not worked. All of these QSOs were made on a beam-heading (QTF) of 10-15°.

Later in the event, from 1950UTC, the scattering point had moved to the west. Richard found the best reflections were at a QTF of 310°.

Richard comments that the event continued at various strengths for 10 days. The Lerwick beacon GB3LER was audible every night and stations such as GM4YXI and SM5BSZ were frequently heard.

Time now for a report from **Jim Smith G0OFE** (IO90). On the 144MHz band he uses a Trio TR751E, a 170W solid-state amplifier and 12-element Yagi.

A solitary contact with GM4YXI (IO87) was made by Jim on February 5. On February 6, between 1410-1910UTC he worked a number of stations in G, GI, GM, DL and PA.

Contacts were also made by Jim with DF7OG (JO52) and SM5BSZ (JO89). Unfortunately he didn't hear the LY and YL stations spotted by stations further to the north.

Auroral Monitoring

I always detect the first whiff of auroral openings by monitoring frequencies just below the 50MHz band. Unfortunately my Yagi antenna was damaged in the gales and I've temporarily had to resort to using my 3.5MHz dipole.

Although the 3.5MHz antenna is grossly mis-matched it works and gives me an early warning system. And to prove it, on the afternoon of February 6 the Kenwood TS-690S burst into life.

I had left the TS-690S scanning the Band II TV channels and it detected the beginnings of an auroral opening. Using an FT-221, a pair of 8874 triodes and a Vårgårda 9-element Yagi (reviewed in this issue) I made 52 QSOs on the 144MHz band.

A total of 25 c.w. contacts were with DL stations in locator squares JN49, JO30, JO31, JO32, JO40, JO41, JO42, JO43, JO44 and JO54. Further c.w. contacts were made with stations in F, G, ON and PA.

The best DX were with SM0FMT (JO89) at 1550kms and SM5MIX (JO78). The next opening at my QTH of any note was on February 21. I only had time to sneak in a few contacts with DL1KDA (JO31), DL9GJW (JO54), PA3FJY (JO32) and GM4CXM (IO75) before the event faded with me at 1800UTC.

Janne Ottinger SM0FMT, sends a report from Scandinavia. During the events on February 5-6 he made 121 contacts on the 144MHz band with stations in 59 locator squares. In total Janne worked 20 countries.

Operation From Jordan

In the April issue it was reported that the UK Six Metre Group (UKSMG) will be making the first 50MHz

operation from the Hashemite Kingdom of Jordan between May 29 to June 26.

I also mentioned that the group had started a "JY equipment fund". The intention was to purchase a 50MHz transceiver and antenna and leave them behind after the expedition.

Following a recent telephone call with Amman, Chris Gare G3WOS (Secretary of the UKSMG) learned that the Royal Jordanian Amateur Radio Society (RJARS) already had plans in place to purchase such equipment. Because of this the RJARS turned down the offer and there's now no need for the UKSMG to ask for funds for equipment.

With the permission of all those that have already donated money, the fund will be used to defray the high baggage and flight costs. Through the medium of this column the UKSMG would like to thank **His Majesty King Hussein JY1** for his generous permission to allow the 50MHz expedition to go ahead. The group would also like to thank **Colonel Ali Shukri JY3AK** and **Mohammad Balbisi JY4MB**.

Band Plan

Re-organisation of the 144MHz band plan is in the air. Last year at the International Amateur Radio Union (IARU) Region 1 Conference it was agreed that a sub-committee, chaired by myself, would formulate a plan leading to the re-organisation of the band between 144.000 to 145.000MHz.

A review of this sub-band is necessary because modes of operation and technologies change with time. Also, activity levels alter and new techniques are adopted.

Currently the IARU Region 1 band plan below 145MHz has assigned the following useage; c.w. 150kHz, s.s.b. 350kHz, all modes 345kHz, beacons 145kHz. Do **you** think these proportions are correct?

What changes would you want to see on the 144MHz band? Before altering the band below 145MHz, the following points need to be considered. Remember that this is a European-wide initiative. The band plan will only be adopted if it's suitable for all Societies in IARU Region 1.

Your suggestions should be kept simple! The aim is to produce a basic framework of allocations below 145MHz. It's not necessary to allocate specific usage of the various sub-sections. Packet radio for example, can simply be designated as digital communications without the need to specify the actual usage of various frequencies.

Many of the transmission modes and techniques currently in use may not be compatible with each other. Therefore it's important to assign frequencies in such a way that all current users can practice the various modes with a minimum of mutual interference.

Although the all-mode section is designated as being non-channelised, the current usage is inherently based on 25kHz channels. Any changes to this, possibly by moving to 12.5kHz channels, will have an impact on the usage above 145MHz.

Above all try not to be too revolutionary! Changes will need to be implemented by all band users.

One suggestion I've seen is that 144.000 to 144.500MHz should be allocated to DX modes. This will include c.w. and s.s.b.

Beacons could be in the top 75kHz of this section. The area 144.500 to 144.750MHz could be allocated to digital modes.

The digital sub-band would eventually have allocations for specific technologies, bandwidth, speeds and modes. This would need to be discussed after a proper digital sub-band is agreed.

Finally the area 144.750 to 144.990MHz could be used as an all modes section. What do you think of this idea? Please send your suggestions to me at the address given at the end of this column or via packet radio @ GB7MAD.

Convention News

Now I'll turn to news of a v.h.f./u.h.f. DX convention. This event has been organised by the 'Northern Lights' and will be held at Reaseheath College, Nantwich, Cheshire on July 9-10.

A full programme of events has been organised to run between 10am to 6pm. Lectures arranged for Saturday morning are 'Six Metres - past and present' by Chris Gare G3WOS.

This will be followed with a talk by Ian White G3SEK on 'Computer Optimised Yagis'. He will also describe a practical 430MHz e.m.e. system.

The afternoon programme will start with a lecture for the microwave enthusiast by Sam Jewell G4DDK entitled 'A year on 3cm'. Television weatherman Jim Bacon G3YLA will follow with 'Sporadic-E observations'.

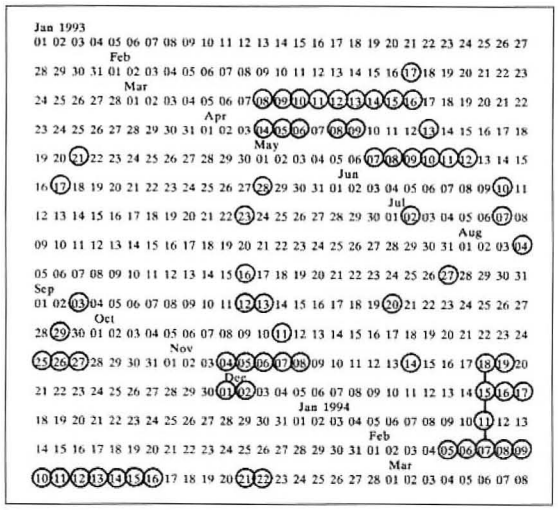


Fig. 1: A 27-day auroral calendar (see text).

Finally top DX'er Andy Cook G4PIQ will deliver a talk entitled 'How to work 70 hours a week and still work the DX' (or most of it!).

In addition to the full lecture programme there will also be specialist v.h.f. and u.h.f. trade stands and PC software demonstrations. Licensed bars and catering facilities have been arranged and these will be open throughout the day.

A DX dinner has been organised and will be held on campus during the Saturday evening. This should be the highlight of the weekend and is highly recommended.

Come along to the convention and meet the top v.h.f. and u.h.f. DXers. During the evening there will be an informal slide presentation by David Johnson G4DHF on the recent expedition to Iceland.

Overnight accommodation (to include breakfast) can be provided on request. This is mainly single rooms but doubles, including en-suite facilities, are also available.

The Northern Lights have arranged a visit to Jodrell Bank Observatory to take place on Sunday. It includes a tour of the visitors centre, laboratories and a lecture.

Entry to the convention day event on Saturday is £3. The DX dinner is £12.50 and overnight accommodation (including breakfast) is only £15.

The visit to Jodrell Bank on Sunday is £6. Further details of this specialist event can be obtained from **Tony Ashcombe G4APA. Tel: (0270) 761805.**

Advance bookings are required for this event. Either full payment or a £10 deposit are required. Cheques should be made payable to 'The Northern Lights' and sent to: **Bob Harrison G4UJS, Green Lane House, Whixall, Shropshire SY13 2PT.** You can telephone him on **(0948) 880392.**

Deadline Time

It's deadline time again! Don't forget I always look forward to receiving photographs of your shack, antennas or any v.h.f. activity.

If you make some interesting contacts on whatever mode you use (including repeaters, packet, satellites) let me know about it.

Please send your letters to me at **Yew Tree Cottage, Lower Maescoed, Herefordshire HR2 0HP. I can also be contacted via packet radio @ GB7MAD or at my DX cluster GB7DXC.**

E N D

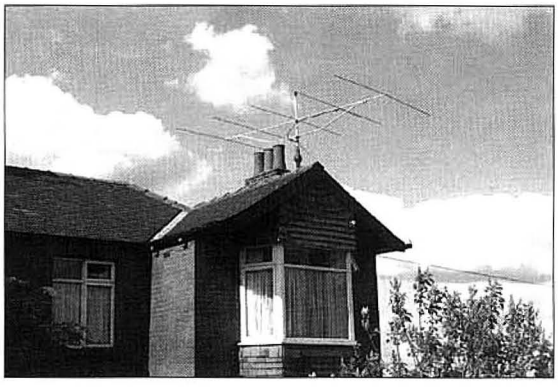


Fig. 2: The 50MHz antenna used by G0DJA.

Valve &

Ron Ham invites you to enter the *PW* vintage wireless shop once again. And if you listen carefully you may just catch the strains of the BBC 'ITMA' programme and Tommy Handley's answer to "Can I do you now sir"?

When the Second World War began in September 1939, the British radio industry gave all priority to the manufacture of radio communications equipment for the armed forces. This meant an immediate halt to production for the domestic market.

Most households, where there was no mains electricity, then had either a battery operated set or one of those handsome table models of the 1930s. These sets were usually prominently displayed in the living room.

During the war, wireless was used more than ever before. It was important to the Government that everyone heard the news and ministerial broadcasts, because this was their contact with the people.

Following the outbreak of war, a lack of spare parts prevented many sets being repaired. There was also great demand for second-hand receivers.

But, without new wireless set sales, there were no part-exchange models about. So, like everything else in wartime, it was a case of 'make do and mend'.

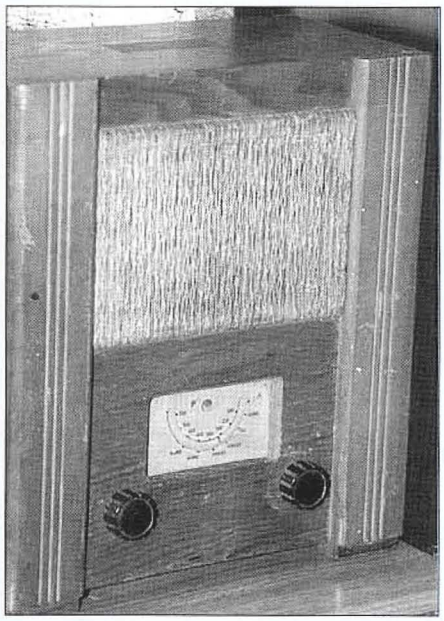


Fig. 1: An example of the famous wartime 'Utility Receiver' (see text).

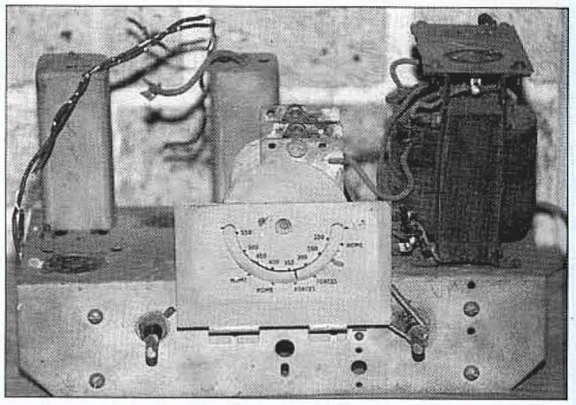


Fig. 2: The 'Utility Receiver' separated from its cabinet, showing the very basic tuning scale which was not protected by the usual glass plate (see text).

Kept Working

Older radio engineers who were not called up kept sets working. Sometimes they managed it by unwinding energising coils, smoothing chokes and mains and speaker transformers, to locate and repair breaks in the wires.

Often, the faults were caused by 'green-spot' corrosion near a terminal post. But, at which end was the fault, the inner or the outer? The outer was a straight forward repair, but the inner wire meant a complete and careful unwind and rewind.

In a.c./d.c. receivers, series heater chains were kept going with wire-wound resistors to replace open circuit dial bulbs. And electric light bulbs became substitutes for unobtainable line-cords, mains droppers and barretter lamps.

In 1944, some radio manufacturers were allowed to produce a quantity of battery and mains receivers, such as that in **Fig. 1**, for the home market. They looked 'utility' but had a label on the top of the cabinet stating 'Wartime Civilian Receiver'.

Wartime Civilian Receiver

The 'Wartime Civilian Receiver' label, just visible in **Fig. 1**, is an important feature to collectors. The 'civvy' set was basic, but reliable, radio engineering.

The receiver's cabinet was unpolished and it was medium-wave only. Additionally, there was no glass to protect the yellow painted metal dial.

The dial-cord drum was the same colour apart from a carefully positioned black mark which was the 'pointer', **Fig. 2**. The utility receiver's pointer is aligned to the scale by the screw that can be seen in the centre of the scale-plate.

Three basic controls are used. These were: a mains on/off toggle switch, mounted below the mains transformer on the rear of the chassis, **Figs. 3**, **4** and **7**, a dial cord tuning spindle, right of **Fig. 2** and left in **Figs. 4** and **6** and a volume control, on the left in **Figs. 1**, **2** and **5** and right **Fig. 6**.

The receiver used a simple dial-drive assembly. And the plain scale, scribed with the **Home** and **Forces** stations, is obvious in **Fig. 2**.

As Found Condition

Apart from a good clean, this particular, 50 year old, mains 'civvy' receiver I've illustrated, is in 'as found' condition. Note the perished insulation on the wires to the speaker transformer, on the top right of **Fig. 3**.

The leads in **Fig. 3**, carry high tension voltage. A short circuit to earth here, where the wires pass through the chassis, could ruin the rectifier, top left of **Fig. 3**. And a short between the wires would bypass the speaker transformer primary and damage the output valve, on the far right of **Fig. 3**.

The permanent magnet speaker, top of **Fig. 3**, is secured to the front panel by four nuts with star washers. This is done to keep them tight and the unit free from vibration.

You should carefully remove the speaker and all the accumulated dust, especially in the centre and around the outer edge of the cone. The cone must have free movement so that it can quickly respond to the audio signals presented at its voice coil.

The voice-coil at the centre of the cone, must move freely in its frame and around the pole in the middle of the magnet. This is a close fit and a slight 'rub' will cause audio distortion.

Both the voice-coil and the secondary winding of the speaker transformer are low resistance, so they must be disconnected in order to test each section. The voice-coil terminals are the two solder tags on the left of the speaker-magnet, **Fig. 3**.

An open circuit, voice-coil or either transformer winding will result in a 'dead' set. No h.t. on the anode of the output valve is a sure sign of a 'dud' speaker transformer primary.

Special Interest

Each end of the chassis on the utility receiver has special interest. The illustration, **Fig. 4**, shows the mains transformer on top, the on/off switch (centre right) the original mains lead, now perished and the smoothing capacitors (centre) within their clamp.

Make sure that the insulation on that single lead to the right of the transformer and the through chassis grommet is in good condition. This is because it carries the mains feed to the voltage adjustment tags on the top plate of the transformer. (See also centre left **Fig. 3**).

Don't forget to lubricate the dial drive spindle, on the centre left of **Fig. 4**. You should also be aware of mains and high-tension voltages around this end of the set.

In addition to the MU14 rectifier, top left **Fig. 3**, the 'civvy' has a frequency changer, right of mains transformer **Fig. 3**. There's also an i.f. amplifier, between the cans, **Fig. 3**, a Westector detector, centre lower chassis, **Fig. 5** and an audio output valve.

The i.f. cans on the utility receiver are removable for the replacement of perished wires and shorted capacitors. One of the fixing nuts is visible on the bottom right of **Fig. 5**. Finally, you should lubricate the shaft of the volume control on the left.

Replace Capacitors

Unless the set is to remain in original condition, I suggest that you replace the smoothing capacitors. The replacements should include all the 'small' fixed capacitors and resistors along and around the central tag board shown in **Fig. 6** and that electrolytic bias capacitor at the central and top right of **Figs. 5** and **6** respectively.

Now, I suggest you take a good look at the upper chassis layout in **Fig. 7**. Note the (now rusty) plate on top of the mains transformer. This carries a British 4-pin base for the rectifier and

Vintage

By Ron Ham

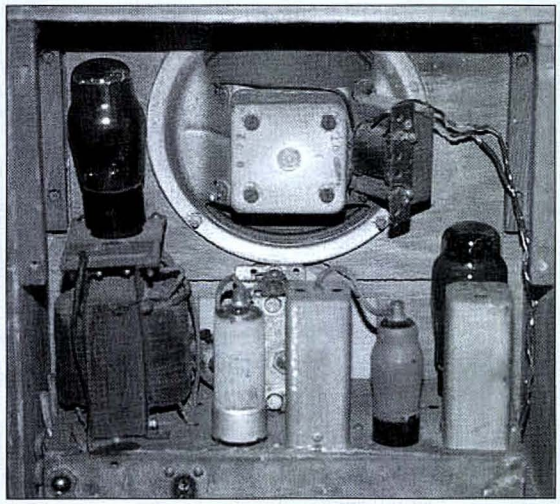
the mains voltage adjustment panel. Make sure a rubber grommet is fitted where the 'mains' wire goes through the chassis near the base of the transformer from the left hand terminal.

The input and output trimmers, at the top of each i.f. can is adjustable through the holes. This adjustment is done with a strong non-conductive tool.

Also, don't forget to lubricate the bearings at each end of the tuning capacitor's central shaft and clean the earthing wipers, in the middle of the shaft. It's also wise to fit grommets in the holes at the right of the mains-transformer where leads pass through the chassis.

The r.f. and oscillator trimmers, on top of the tuning capacitor, require careful adjustment. Check for corrosion inside the pins of the three international octal valve holders and the antenna input sockets, on the right of the toggle switch.

One of the young Ron Ham's jobs, at the age of 14, was to fit the receiver's valves. These were packed separately, or supplied from our firm's pre-1939 stock and I then tested each 'civvy' before it went on display.



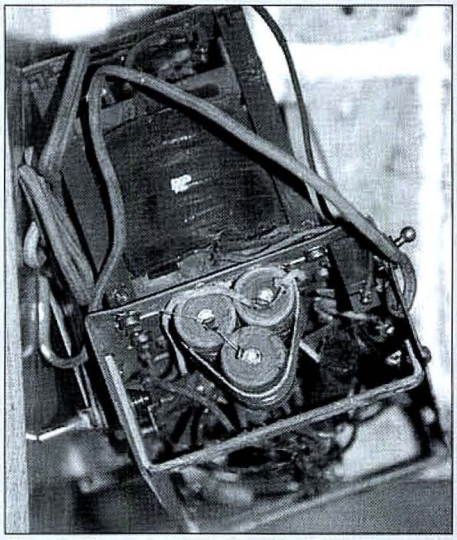


Fig. 4: Illustration showing the smoothing capacitors in the power supply of the wartime 'Utility Receiver' (see text).

Fig. 3: In side of the Second World War civilian 'Utility Receiver'. The valve mounted above the mains transformer is the rectifier (see text).

Incidentally, the valves used were identified by their 'BVA' (British Valve Association) number which was all part of wartime security. For instance, the i.f. amplifier and output valves are marked BVA 246 and BVA 266 respectively.

Long Tuning Scales

Around 40 years ago, long tuning scales became popular with radio manufacturers and users of communications receivers. Sets like the Racal RA17 and the military R216 had several feet to tune through.

The long dials were ideal for precise frequency selection and, when the set was used as a tuneable i.f. amplifier. I was reminded of this by **Ken Jones** who has an ex-RAF R1475 in his collection and is keen to learn more about its history.

I have not seen one of the 1475 sets for years Ken. However, I do remember the big 'sectioned' dial along the top of the casing with its lengthy tuning scale. I also the need to remove the central wavechange switch shaft to repair one of the line of sub-assemblies.

Regarding the R1475's history, you could try one of our specialist advertisers for a handbook or check some back issues of *PW* or *Wireless World* (1950-1963). This way, you could see if there were any articles or informative adverts about the R1475.

Well, it's time to close up the 'shop' once again, but don't forget that you'll always find I'm open when it comes to receiving your letters. Keep writing, and I look forward to hearing from you at 'Faraday', Greyfriars, Storrington, West Sussex RH20 2HE.

Fig. 5: The 'Utility' set employed a 'Westector' detector, which can be seen between the potentiometer and the large capacitor (see text).

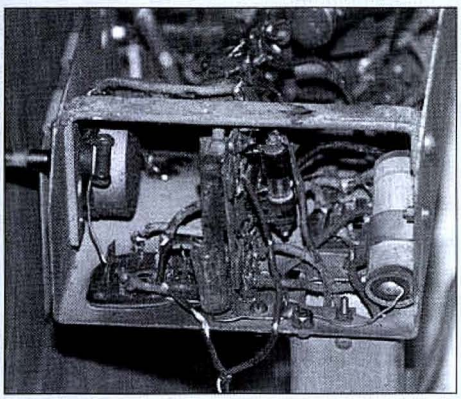
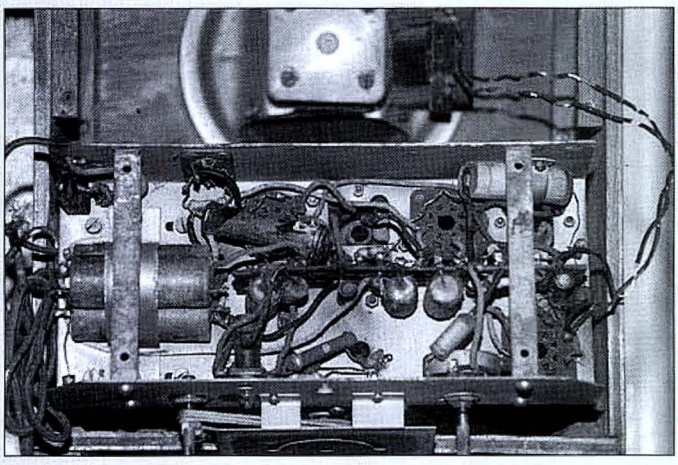
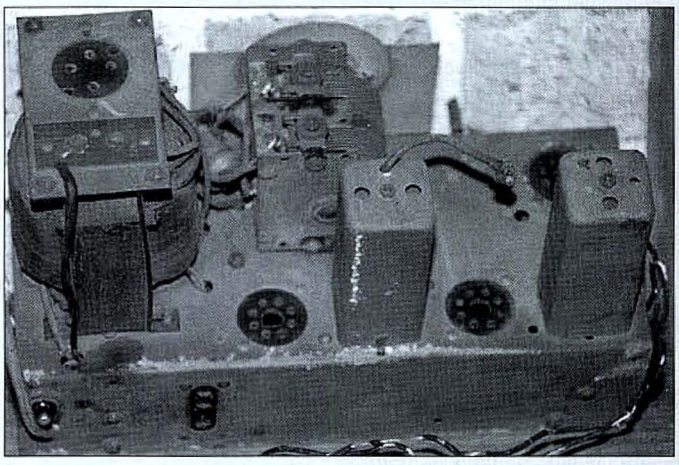


Fig. 6: Ron Ham suggests replacement of various capacitors and resistors if a wartime 'Utility Receiver' is being considered as a working exhibit (see text).

Fig. 7: The receiver chassis, minus valves, awaiting attention. The i.f. transformer screening cans are removable for maintenance checks.





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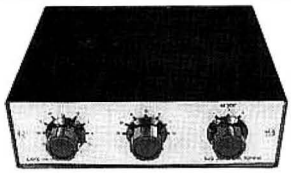

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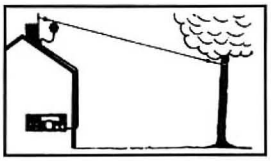

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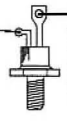

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Panorama

PACKET

This month Roger Cooke G3LDI, provides us with a resumé of a packet radio set up. Roger also looks at some books useful to packet users at all levels.

Packet radio started gaining popularity some ten years ago, and has become more popular. A decade ago, the ubiquitous TNC-1 was the only TNC available, and even that was a home-construction project.

In just ten years, packet has expanded from an across-town v.h.f. experimental mode, into what is now a world-wide network covering just about every corner of the globe. There is an extensive h.f. to s.h.f. forwarding network, handling thousands of bulletins and personal messages daily.

Packet has expanded into satellite links, with fully automated stations using low orbiting satellites. It even has chat nodes that use channels on commercial satellites. The Lonny Link is an example of the way in which amateurs can communicating via packet across continents.

Bewildering Jargon

The newcomer is often bewildered by all the jargon associated with packet. Fortunately this state of affairs is easily remedied, by reading, asking questions and trying it out. But to help I've provided a brief resumé of how to set up a packet station.

Equipment that you will need to set up a packet radio station is:

1. A 'dumb' terminal, or computer with communications software.
2. A terminal node controller (TNC).
3. An f.m. transceiver for 144 or 430MHz.
4. A vertically polarised antenna of course, and I won't discus this further.

That's the basic list, now let's look at each part individually.

The Computer.

The most used computer for packet radio is probably the PC (Personal Computer) in its various forms. These can range from an (old) XT (using an 8086/88 microprocessor), to a '386 or '486 based machine.

All types will handle packet programs. More powerful computers may run several different programs simultaneously (multi-tasking), but an old XT would be quite adequate for packet and may be very cheap.

There are communications (terminal) programs available for just about every make of computer. No computer? Don't worry there are many programs that make expensive computers, seem to be a very cheap (to buy) dumb terminals. There are even some old CPM machines (such as the one I started a BBS with in 1985) still being used for this.

In operation a dumb terminal unit just passes the letters from the keyboard to the TNC, putting the letters returned from the TNC on screen.

The TNC

There is quite a range of TNCs to choose from. My first one, a TNC-1 that I still have, may be found on the second-hand market. Just scan the small ads each month in *PW* or *RADCOM*, you can sometimes pick up a bargain.

When choosing a TNC, you should decide exactly what you would like it to do. If it's for packet only, then something like a Tiny-2 would suffice. However, if you want to use it for Amtor, SSTV, RTTY, c.w., Pactor, FAX, etc., then one of the multi-mode TNCs, such as the KAM, PK-232, or MFJ-1278 should be considered.

If you want the cutting edge of technology, aim for the latest in DSP (Digital Signal Processing) controllers, such as the DSP-2232. However, you will need to re-mortgage the house to buy it!

Cost is another factor to consider, so plan carefully before making a purchase. **Don't** be afraid to ask, we all had to start at some time, and only gained information by asking.

Transceiver

For a dedicated packet link to a BBS, a converted p.m.r. f.m. rig is the most common type of transceiver used. There's quite a range to choose from, Pye Westminster, Storno, Maxon, Phillips, Tait to mention a few.

Ask around, find out what is available and you won't have to spend a fortune. If you can, pick one with diode switching, as this will add to the efficiency of the link as the turnover time will be less.

Mechanical relays, and some fully synthesised rigs can be a nuisance. The synthesiser may take a finite time to lock frequency and can also cause problems.

Wiring Up.

Once you've obtained the gear, wiring it up is relatively easy. Most new TNCs, come with the leads already made up. You may have to fiddle with the connection to the transceiver (audio in, audio out, p.t.t. and ground).

Provided you're careful, few problems should be encountered. The most important points to watch are the audio levels and the transceiver deviation .

The levels are usually given in the TNC manual, and the deviation should not exceed 3.5KHz for 1200baud operation. If you're not sure how to wire your radio to the TNC, ask around. Somebody is sure to have the answer or be willing to help.

Once you've linked all the equipment up, watch what goes on for a while. Try connecting to yourself using the local repeater and prove the system. Once you connect to your local BBS and start learning how to use it, life will never be the same again..

Books Available

There are quite a few books around covering most aspects of packet and here's a few that are useful.

1. *Your Gateway to Packet Radio*, by Stan Horzepa, WA1LOU. Available from the RSGB. Very good coverage of just about all you need to know in packet and reasonably priced.
2. *Basic Packet Radio* by Joe Kasser, G3ZCZ. Available from Readicrest Ltd., Chatham ME5 9DL. Again, good coverage, half of the book is dedicated to Lan-link, of which Joe is the author. This book is expensive but good.
3. *Practical Guide to Packet Operation* in the UK by Mike Mansfield G6AWD. Contains some basic information and also a lot of operational information. Printed on one side of page only, reasonably priced, available from the RSGB.
4. *Packet Radio Primer* by Dave Coomber G8UYZ and Martyn Croft G8NZU, available from the RSGB. Very similar to the above, but in a small book format. Expensive for its size.
5. *NOSintro* by Ian Wade G3NRW. This is a book for the more experienced user, specialising in TCP/IP. Very well written, articulate and good value.
6. *BBS Survival for the Beginner* by yours truly G3LDI. A book purely aimed at the BBS and how to use it completely. Available only from G3LDI direct.

User Groups

Join your local user group and help the network grow. The cost of running nodes, and similar installations is all due to support from the user. There is probably an active group near you.

I hope this short introduction will encourage the undecided to try packet. Of course there is lots more to it than I have room to discuss, but you will find that out for yourself when you become active.

News views and pictures to G3LDI @ GB7LDI, QTHR, Tel: (0508) 570278

END

Antenna Wo

In the last 'Antenna Workshop' I described the sort of measurements that can be done with a field strength meter (f.s.m.). I also described a method of using a communications receiver or transceiver, with a switched attenuator, to make antenna gain measurements.

In this 'Antenna Workshop', I will be discussing using f.s.m.s in general terms and some of the uses to which they may be put. I'll also describe some of the instruments that I have collected over the years.

The most well known form of field strength meter is of course the diode f.s.m. It comprises a tuned circuit, a diode detector and a meter. The r.f. voltage developed across the tuned circuit is detected by the diode and measured with the meter.

Average Amateur

If you asked an average radio amateur what uses a diode f.s.m. has, you'd be probably be told that it was for checking the field strength level of a transmitter-antenna combination. If the same question were asked about an absorption wavemeter, the answer would probably be that it's an instrument for checking transmitter output quality. The output is on the frequency it's supposed to be on, and that the level of harmonics (and spurious signals) are at an acceptably low level.

Both the above answers are correct, yet the circuit of an absorption wavemeter and a diode f.s.m. are the same. Both instruments are simple receivers. In fact they are crystal sets. The only difference is that a crystal set would use headphones instead of a meter.

Fig. 1: Designed originally for domestic v.h.f. radio and TV signal strength metering, this f.s.m. from Sadelta is nonetheless very useful for amateur frequencies.

The diode f.s.m. has been described many times, so I'll not overdo it (‡). Although the diode f.s.m. is not without its limitations. The most noticeable being its lack of sensitivity.

If you look at **Fig. 1** you will see that the range of signal strengths over which it will operate (its dynamic range) is restricted to about 35-40dB (0.5-50V input). Its other limitation is that at less than 500mV input, the diode is operating in a non-linear region.

The net result is that the scale is markedly non-linear as the signal is reduced. Nevertheless the diode f.s.m. is a useful instrument, provided it's used with a fairly strong signal strength.

A suitable application for the diode f.s.m. would be adjusting a mobile antenna for maximum output. Because the field strength level decreases rapidly as the distance between the antenna and sensing elements is increased, the sensitivity and dynamic range is not really a problem. You can merely adjust the measurement distance until the field strength is within the range of the meter.

If the instrument were being used as an absorption wavemeter, then the transmitter output would be fed into a dummy load. The instrument would then be placed very close to the coaxial cable, connecting the transmitter to the dummy load so that the output could be checked for harmonics, etc.

Fig. 2: Has any reader more information about this signal (field) strength meter. Peter Dodd owns one, but has little information on the set.

Signal Strength

In many cases where we need to measure signal strength we do not have the control as in the examples just described. Supposing that we want to make some comparison field strength measurements at h.f. In use you need to place the f.s.m. a few wavelengths away from the antenna if we are to get accurate electrical field results. If all we have to energise the antenna is a QRP transmitter, then the field strength at the meter will be too low to register on the meter because it does not have enough sensitivity.

The sensitivity problem can be overcome by fitting an r.f. amplifier ahead of the diode voltmeter. A switched attenuator can also be used to adjust the instrument to the signal strength being measured.

The uses of an f.s.m. are listed below:

1. Make comparative measurements of various antennas to assess gain.
2. Plot a polar diagram to record antenna directivity.
3. Enable a transmitter antenna to be tuned for

rkshop

This month, continuing his theme of antenna testing, Peter Dodd G3LDO, carries on describing uses for field strength meters and absorption wavemeters.

maximum efficiency or gain.

4. Align a v.h.f. radio or TV antenna to obtain the greatest signal strength from a transmitter.

There are many designs for field strength meters around and I used to make them myself. While I am all in favour of home-brew equipment, I found that to make an instrument capable of performing all the jobs so far described was a more complicated job than I thought it would be.

If you think about it, the reason an f.s.m. receiver is complicated, is that it is a fairly complex receiver covering a wide frequency range with a calibrated signal strength measuring facility. However I've found that you can occasionally obtain instruments for measuring signal strength fairly cheaply from radio rallies, provided you know what to look for.

Tuned Circuit

At the start of this 'Antenna Workshop' I mentioned that an instrument with a tuned circuit, diode and meter could be called a field strength meter or an absorption wavemeter. The point that I am trying to make is: if you are looking for an instrument to measure antenna radiated field strength, then such instruments come in many different guises and may not have the label 'Field Strength Meter' on them. The following is a description of part of my collection.

The instrument in **Fig. 1** is a Sadelta f.s.m. type TC-40. As you can see is labelled 'Field Strength Meter'.

The Sadelta is designed for aligning domestic TV and f.m. radio antennas. This is an old instrument which covers the old v.h.f. television bands. It also covers the 50, 70 and 144MHz bands and I have found it very useful for adjusting my 145MHz model antennas.

The Sadelta is a superhetrodyne receiver with good sensitivity to allow it to be used in areas of weak signal strength. To enable it to be used over a wide range of signal levels it has a range of attenuators.

The attenuator is calibrated so that the f.s.d. of the signal level meter can be selected as follows: 100µV, 300µV, 1mV, 3mV, 10mV and 30mV. Using more familiar units, it will measure signal from about S2/3 to S9+50dB.

The instrument shown in **Fig. 2** is described as a 'Radio Interference Measuring Set 0.15-30MHz, Model No: R.M.S.I.'

No Information

I have no information on the R.S.M.I. but it is obvious from its construction that it is some type of specialised f.s.m. for investigating the source and signal strength of unwelcome radio signals. (Some readers might like to enlighten me of its original purpose). I found that it was particularly useful for measuring the performance of h.f. antennas. It just shows that a f.s.m. designed for one purpose can used for another.

The meter used on the R.S.M.I set has a scale that can be read from 100m away using binoculars. The signal strength attenuators on the front of the instrument are calibrated in dB. A combination of the four switches allows levels of between 0 and 90 dB to be set.

Fig. 3: Peter Dodd considers this is the 'Rolls Royce' of field strength meters'.

However, it was built in the days when portability had a different meaning and is guaranteed to flatten a fully charged car battery in a relatively short space of time.

But by far the most useful piece of equipment that I have acquired so far is an instrument called a 'Heterodyne Voltmeter'. This description gave little clue as to what its original use was. I found that it could be used as f.s.m. with a continuous frequency coverage from 100kHz to 230MHz in four ranges. It can measure signal strength in the region of 5uV to 50 mV and has a switched selectivity of 2 or 200kHz.

Loudspeaker Monitor

The Heterodyne Voltmeter also has a loudspeaker monitor and internal chargeable batteries that can be charged from an internal mains charger. This has turned out to be a 'Rolls Royce' of an f.s.m. and is used for the bulk of my antenna experiment measurements. I have found other uses for this instrument as a noise level detector when using the antenna RX noise bridge.

The subject of dB in field strength measurement is beyond the scope of this Antenna Workshop but is described in *The Antenna Experimenter's Guide*, available from the *PW* bookshop.

Further Reading On Antenna Topics

The recent *PW* survey has indicated very strongly the interest our readers have on antennas and related topics. There are a large number of books available on antennas, projects and theory. To help provide you with the best 'further reading' back-up service possible, the Editorial team have recently selected a number of new titles which have now been added to the PW Book Service. **G3XFD**

PAUL ESSERY GW3KFE

HF BANDS Report

Paul Essery GW3KFE looks at the reasons behind the poor conditions on the h.f. bands and dips into his postbag to comment on your letters.

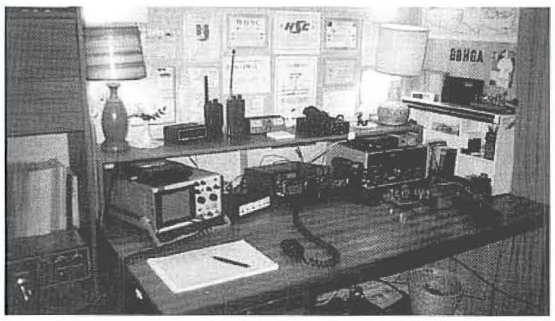


Fig. 1: Keen operator Angie Sitton G0HGA, based in Stevenage, Hertfordshire is a regular contributor to the PW 'HF Bands Report'. The photograph shows a corner of her shack.

Welcome once again to our monthly look at what's happening on the h.f. bands. The big c.w. contest is on as I write, and I have never heard so many hopefuls, all calling CQ and getting nowhere.

The cause? A large coronal hole, which was according to the RSGB News Bulletin, GB2RS thought to be the oddest in 17 years of reporting. On February 20, although I couldn't see the sun, I could guess it was still 'doing its thing.'

By the time this reaches you, spring will have 'started springing'. So, don't forget that the equinox periods are traditionally the peak times of the year for amateur radio.

The tradition has developed of course because the sun illuminates all the world equally. While around the solstices of June and December it favours one or other hemisphere.

Your Letters

I'll take a look at your letters now, starting with **Angie G0HGA** in Stevenage. Angie wrote in mid-February and noted that conditions had been pretty rotten since the aurora.

Angie's QSO with 9H2ML was a new one for her on c.w., hooked at the first call, though she had raised a few on sideband. Another 14MHz signal was W2BA just after lunch one day.

However, Angie has some EMC problems. Sometimes she just can't hear anything on the low bands unless the signal is a good strong 59.

In **Trelewis, South Wales, Leighton Smart GW0LBI** is still firmly wedded to low power. He's now seriously listing the 'Top Band' countries worked on 1W or less, although Leighton chose to call into our local net on the evening yours truly was missing!

Leighton's 1.8MHz report showed nine countries in the one-watt-or-less class. There was also G3AAQ (another contributor from the past!).

On 7MHz GW0LBI worked DL3KUD/P, and EI8W, plus 10MHz c.w. to SO3JE, and 14MHz s.s.b. to a couple of IKs, SM6GRP and OE5BTM. Finally, Leighton says next month he's going to try real QRP - raising DX with the rig switched off!

Down in East Sussex, **G3BDQ** notes that the Hastings OT group have found it very difficult working their friends on 21MHz. At the time of John's letter, there had been no contacts over the pond for several days.

The 'Big One' for G3BDQ was 3Y0PI on 21MHz s.s.b. for country number 300. It was mainly Europeans on 1.8MHz, but on 7MHz John mentions VU2OXX, 9Q7AB, 5V5ADE, 9K2MU and 'ZZ, 4L7AA, EY8VV (=UJ8), YI9CW, and ZS6MG - pick the 'best' out of that crop!

On 10MHz John came up with 4K2BY. And 14MHz offered LI3OWG from the Winter Olympic Games, and HS0ZAR. Finally, others on 21MHz included a brace of 9X5s (OM and DX), XE2SO, and HI8LPP.

Island Expedition

The Peter 1 Island DXpedition found their contact rate was substantially hampered by the generally ill-mannered behaviour of European stations. In addition they had equipment troubles on the RTTY gear, and of course the horrible weather, with 128kph winds and temperatures down to minus 35°C!

However, the operating tent temperature has been maintained at 21°C. The Russian icebreaker was to arrive and take them off on February 16th. Despite all the problems, over 60,000 contacts had been knocked up some days before the closedown. (Late Flash: final total well over 65000 contacts).

Andorra

The Radio Society of Andorra have stated that C31/OZ3JK/M (s.s.b.), C31LX (c.w.), C31NP on c.w./s.s.b./RTTY, C30EJA and C31AZ (both s.s.b.), were all illegal. Note that Andorra is NOT a party to the CEPT agreements. Present licences are of the form C31xxx for residents with all privileges, C32xxx and C33xxx limited operation on certain bands.

Still with pirates, Yerevan Slim turned up as 'EK7M' operator Bob, asking for cards to N7RO says the Armenian Radiosport Federation. Seemingly this is the same guy who posed as 4J8GC (op. Arsen) in 1993, asking for cards via RA4CDE and then IK7MCJ. The latter has shipped all cards to RA4CDE.

Top Band

After all the bad news it's a pleasure to turn to *The Top Band News Letter*. During the November CQ WW CW Contest, K1AR (who writes the invaluable 'Contest Calendar' in *CQ Magazine*) worked 82 countries, while our own GW3YDX operated a single-band entry and raised 75 countries in 19 Zones and 1102 contacts.

Alas, the Europeans have had a lot of trouble from wideband noise from an Argo navigation system.

Silent Keys

John Woodham G4IJW, died on January 25 of a heart attack. An avid DXer with modest antennas and just 100W, he will surely be missed on the bands.

Another amateur who will be missed is **Paddy Smyth EI9J**, who passed on at the age of 81. Paddy had not been too active in the recent past, but was well known to many of us.

Yet another to pass on was **Howie W2QHH**. He was a 'Top Band' addict who will be sorely missed. Our condolences go to their relatives.

Poor Conditions

Like everyone else, **Don G3NOF** in Yeovil commented on the poor conditions. However, he did manage 3Y0PI on 14, 18, 21, 24 and 28MHz! Also, in his 3.5MHz report Don noted JA5AQC and VK3EW, both around 1900. He also worked ZS8MI on 14MHz, FR5DX on 18MHz, YI1HS on 21MHz, 9G1SD on 24MHz and VP5JM on 28MHz.

On a different tack, Don agrees with me about the problems of getting the required QSL card. And, particularly those managers who refuse to answer bureau-routed cards.

Don points out that W6BSY of Yasme has a 'routine.' Once the winter expedition was over, he would start on the direct cards. When the next trip started, he would then have time to handle the 'via Bureau' cards.

Don also reminded me that while W2GHK for example, had a team of helpers on the cards, many managers today try to do it all themselves.

As I'm preparing the column, G2HKU is off to the Royal Military Hospital, Woolwich. That's a long way to walk from Sheppey!

Meanwhile Ted was busy on 1.8MHz, working 4X4NJ and OY9JD. Up on 3.5MHz he managed V2/VE3BW, VP5/K9BG, plus a 7MHz QSO to PZ1DY, ZL2AKW and 4X4NJ. It all goes to show what can be done with about 70W and the G5RV antenna.

Meanwhile, QRP contacts using the IC-721S on 10 and 14MHz netted Ted SP9XLN and IK7TAM respectively. A move back to the higher power added EA6ZY (who used to be a regular as G3ZY), W6s, EA8AB, VE9HF and OY3QN.

For 18MHz Ted used the Icom fleapower plus HF6, with 9H4R and 3V8AS. His 21/24/28MHz work called for the HF6 vertical and the Omni-V at 70W: for the former, K9UIY, BV7FC, ZS6ME,9J2BO, EA8AB and VQ9CM, and on 24MHz East coast W and VE. Finally 28MHz where 4X4NJ, TR8XX, 9J2BO, P4/K2LE and VA3CH/W4 were all netted.

E N D

Input please, by mid-month as usual, to 287 Heol-y-Coleg, Vaynor, Newtown, Powys SY16 1RA.

SATELLITE Scene

PAT GOWEN G3IOR

In this, the final edition of 'Satellite Scene', Pat Gowen G3IOR provides a guide to the numerous sources of satellite information available.

Welcome to my final report on the world of amateur radio in orbit, where I'm going to take a look at finding information. Active and prospective satellite enthusiasts all need information such as elements for tracking, uplink and downlink frequencies, modes, and methods of use. To help, I've listed some of the readily available sources that you can access.

Keplerian Elements

In seeking updated Keplerian elements from which to track satellites by using your computers, you come across 'two-line' sets on telephone and packet radio bulletin boards. They come in a format that at first sight seem confusing, with numbers having little apparent order or relationship to the parameters required.

Have no fear, here's the deciphering key (Fig 1,2)! Let's take the following typical example of a two-line format as it appears on your screen in **Fig. 1**. You can decode it to meaningful values by first giving each section of the set letters that translate, like the layout provided in **Fig. 2**.

```
AO-13
1 19216U 88 51  B 93032.13316424  .00000004  00000-0
99999-4 0  2367
2 19216  56.8337 112.6755 7116426 246.2331  27.6333
2.09698990 20208
```

Fig. 1: A two line Keplerian element set format.

```
1 AAAAAU OO   O   O BBBBB.BBBBBBBB  .CCCCCCCC  00000-0
OOOOO-O O  DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII
 JJ.JJJJJJJJKKKKKZ
```

Fig. 2: Key to the two line Keplerian element sets.

Catalogue Number

In the layout I've provided, the 'A's give us the listed NASA Catalogue Number. Next come the 'O's showing the object number as the last two digits of the year of launch, the number of the launch that year, followed by an A for the first object placed by that launch, B for the second, C the third and so on.

The 'B's give the Epoch time expressed as the last two digits of the year, the Julian day and decimal day of the actual time that the sighting was made.

The 'C's provide the frictional decay or drag expressed in decimal form as revolutions per day squared. The 'D' is just the element set number applied and not required for the calculation.

The 'E' is the inclination of the satellite to Earth's equator in degrees. The 'F' is the Right Ascension of Ascending Node also in degrees, and 'G' is the Eccentricity relative to a purely circular orbit.

The 'H' is the Argument of Perigee in degrees and 'I' the Mean Anomaly in degrees. The 'J' is the Mean Motion in the number of orbits made around the earth per day .

The 'K' is the orbit or revolution number when measured. While 'Z' is merely the checksum to confirm non-scrambling of the numbers took place.

By translating them from the block, you can place them into the labelled sets to type into your programme to enable your computerised tracking. Some programs will even take the file directly as input saving you the typing.

Adequate For Tracking

You should bear in mind that the elements I've provided aren't intended for precision analysis. But they are adequate for tracking well within the limitations of the beam width capture and timing of the average amateur station.

It's not necessary to update the elements I've provided more than about once every six months for the high satellites, or for the lower orbiters more than every two months.

The only exception is the MIR space station, which is subject to drag and manoeuvres, and normally boosts its orbit every six to eight weeks. This orbiter really needs to be kept updated on at least a weekly basis.

Updated Sources

Updated sources of changing element sets may be found in various ways. They're on UoSAT-3, the AMSAT-UK Nets, Sundays 10.15 am, 7.00pm Mondays and Wednesdays on 3.780MHz, the AMSAT-Eu Net Saturdays at 1000UTC on 14.280MHz and 1030 on 7.080MHz. Information is also on the AMSAT International Net warm-up session conducted on 14.282MHz from 1800 to 1900UTC (when the News Broadcast commences) each Sunday.

The amateur packet radio network BBS will also carry information. They'll include incoming sets that are listed under @AMSAT, @GBR, or ALL@AMSAT from G3RWL, W3IWI, 4X1RU, N3FKV, SV3KH and other sources.

The main BBS microsats will also hold the latest 'KEP' files. Regularly updated MIR elements may be found from weekly inputs by FB1RCI on the packet network under AMSAT@EU, KEPS@EU, KEPS@AMSAT, etc.

Your local BBS also most probably uses FBB software to give access to the Server files. If when connected you press 'F' you will enter this mode. A typed 'T' will then take you to the satellite information files, when you have the choice of 'C', 'P' or 'T'.

The 'C' gives the characteristics for MIR and all the amateur satellites. It also provides their history, transponder modes, powers, beacons frequencies and user requirements.

The 'P' shows all the satellite parameters, i.e. the very latest automatically uploaded Keplerian elements. The 'T' provides timed tracking of all the satellites from your QTH in azimuth and elevation. It also gives the Doppler shift, distance, range and sub-satellite points for each successive pass.

Signing Off

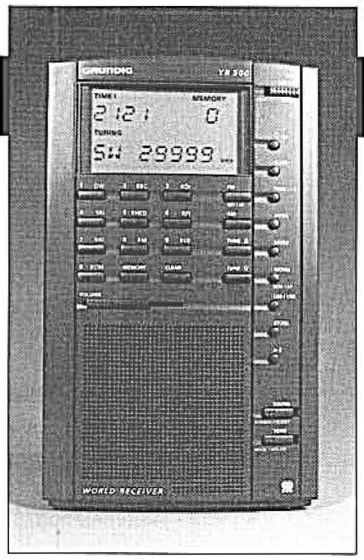
Now it's time to sign off from my last 'Satellite Scene'. I would like to thank all the regular readers who have written in with their ideas, information, photographs, suggestions and queries. I wish you all 73, good tracking and many satellite DX QSOs.

END

PETER SHORE

BROADCAST Round-up

Peter Shore has some news of two new short wave radios from Grundig International along with details of summer broadcasting schedules.



The new Yacht Boy 500 receiver from Grundig.

This column last month was due to have news of a new radio receiver, unfortunately the set that I'd hoped to look at, had not arrived by the time the copy date came around, so please accept my apologies!

However, this month I can tell you something about not just one but two short wave radios, both from the German manufacturer, Grundig.

Budget Priced Set

The first receiver, the Ocean Boy 340 is a relatively budget priced set. The 340 retails here in the UK for around £40 and offers digital tuning on f.m., m.w., l.w. and s.w. (from 5.90 to 15.50MHz). It has five memory positions on each of the four wavebands and for tuning there are two push buttons alongside the digital frequency read-out.

A search facility allows rapid scanning of the bands. There is also a clock with alarm and sleep facility. The set is designed for the holiday maker so it's not going to suit an ardent DXer as sensitivity can only be described as average.

However, for tuning into the major international broadcasters when you are sunning yourself on vacation, it is all right. Especially so, since it weighs just 460g without the 4 x AA size batteries needed to power the radio, and the 2 x AAA size cells for the memory and clock facility.

New Yacht Boy

The second new receiver, which costs rather more than the Ocean Boy 340 is the new Yacht Boy 500. The Yacht Boy 500 is a set for the DXer and for the holiday maker too.

Launched last autumn, the Yacht Boy 500 has unique styling, with an upright look instead of the normal horizontal.one It tunes the f.m., m.w. and l.w. bands, as well as s.w. continuously from 1.6 to 30MHz.

Frequencies of the nine most popular European radio broadcasters have been programmed in at Grundig's Portuguese factory. This plant is well known for producing the range of large Satellit-brand receivers over the years.

In addition to the preprogrammed frequencies, the user can store a further 40 channels and assign an individual alphanumeric code to each. When the memory is called up, the codes are displayed in the large liquid crystal display (l.c.d.) at the top of the front panel.

The Yacht Boy 500 can be switched to either the lower or upper sideband for amateur reception and there is a fine tuning wheel to tune in to signals very precisely. On f.m., stereo signals are decoded through headphones and there is Radio Data System (RDS), which shows a station's name in the l.c.d.

More comprehensive information on the new Yacht Boy 500, which retails at about £190 in the UK, can be found in the April 1994 edition of *PW*'s sister publication *Short Wave Magazine*.

Further details on the Yacht Boy 500 and the Ocean Boy 340 can be obtained from Grundig International Ltd., Mill Road, Rugby, Warwickshire CV21 1PR. Tel: (0788) 577155 or any authorised Grundig dealer.

Less Congested Bands

Now on to some news from around the bands. The short wave bands may be a little less congested from the end of March when the summer schedules take effect.

The BBC World Service has cut back on the number of frequencies it uses for English and some of the language services because of budget cutbacks imposed by the Government. Listeners may well find some frequencies on for fewer hours and some dropped altogether.

There is better news for people with satellite equipment, though. All five national BBC channels are now on Astra.

Radio 1 has moved to transponder 34, UK Living television, and is in stereo on the subcarriers at 7.38 and 7.56MHz. Radio 2 is on UK Gold, transponder 23, and the subcarrier on 7.74MHz. Radio 3 goes extra terrestrial for the first time, in stereo on UK Living and the subcarriers of 7.74 and 7.92MHz. Radio 4 is on UK Gold at 7.56 and relaunched Radio 5 Live is on UK Gold at 7.92MHz, with the World Service in English on UK Gold at 7.38MHz.

At the end of February, the BBC's relays on the Albanian medium wave transmitters on 1215 and 1458kHz were suspended. The Voice of America were expected to take over the time previously allocated to the BBC's Albanian, Serbian and Croatian services.

The reason for the sudden change of allegiance by the Albanian authorities was not known as *PW* went to press. Although maybe the number of dollars offered by the Americans was greater than the amount that the impoverished British were paying!

Radio Free Europe launched a Serbo-Croat service in February for two hours a day. There are 60 minute programmes at 1700 and 2100 on 15.37, 11.815, 9.695, 7.145, 7.115 and 5.985MHz.

Radio Bosnia Hercegovina's short wave service has been noted on a new short wave channel. Previously in upper sideband on 7.06 and 6.22kHz, the station now appears to have settled on 6.89MHz in normal a.m. mode.

International Broadcaster

A new international broadcaster was launched at the beginning of February when the Singapore Broadcasting Corporation started Radio Singapore International.

Programmes are beamed exclusively to Asia, but it may be worth trying for the English transmissions at 1100 to 1300 on 9.530 and again at 2300 to 0000 on the same frequency. Chinese is heard at 1100 to 1400 and from 2300 to 0000 on 9.59MHz, and Malay is at 1200 to 1400 and 2300 to 0000 on 9.635MHz. **The station's address is RSI, PO Box 5300, Singapore 9128.**

Estonia has restarted in short wave service on 5.925MHz. English is carried on weekdays at 1620 for ten minutes, and for half an hour at 2000 on Monday and Thursday.

In neighbouring Lithuania, Radio Vilnius seems to have settled down to a pattern with just half-an-hour of programmes beamed from hired transmitters in Russia The rest of the station's output is transmitted from Lithuania itself.

English to Europe is on 9.71MHz at 2000-2030 and 2230-2300, and to North America at 0000 on 7.15MHz. On Sunday and Monday the English service to America is 30 minutes long, but for the rest of the week it is just 5 minutes with the remaining 25 minutes in Lithuanian.

That's all the room I have for this month, so good listening. Please write to me at the *PW* Editorial Office in Broadstone if you hear something interesting on the bands as your fellow listeners will more than likely be very interested in it too!

E N D

ARCADE

The *PW* Shopping Arcade

Welcome to the *Practical Wireless* 'Arcade'. In this section of the magazine, you'll be able to find all those important services 'under one roof' - just like the shopping arcades you see in the High Street.

Let you eyes 'stroll through' the Arcade every month and you'll find all departments open for business including: The Book Service, PCB Service, Binders and details of other *PW* Services. Make a regular habit of 'visiting' the Arcade, because in future, you'll have the chance of seeing special book offers and other bargains. And don't forget, this Arcade is open wherever you're reading *PW*!

Services

Queries:
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PW Publishing Ltd., Arrowsmith Court,
Station Approach,
Broadstone, Dorset BH18 8PW.

We will always try to help readers having difficulties with *Practical Wireless* projects, but please note the following simple rules:
1: We **cannot** deal with technical queries over the telephone.
2: We **cannot** give advice on modifications either to our designs, to commercial radio , TV or electronic equipment.
3: All letters asking for advice **must** be accompanied by a stamped self-addressed envelope (or envelope plus IRCs for overseas readers).
4: Make sure you describe the problem adequately, with as much detail as you can possibly supply.
5: Only one problem per letter please.

Back Numbers

Limited stocks of many issues of *PW* for past years are available at £2.00 each including post and packing. If the issue you want is not available, we can photocopy a specific article at a cost of £1.50 per article or part of article. Over the years, *PW* has reviewed many items of radio related equipment. A list of all the available reviews and their cost can be obtained from the Editorial Offices at Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW for a stamped self-addressed envelope.

Binders

PW can provide a choice of binders for readers' use. Plain blue binders are available, each holding 12 issues of any A4 format magazine. Alternatively, blue binders embossed with the *PW* logo in silver can be supplied. The price for either type of binder is £5.50 each (£1 P&P for one, £2 for two or more).
Send all orders to PW Publishing Ltd., FREEPOST, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

Constructional Projects

Components for *PW* projects are usually readily available from component suppliers. For unusual or specialised components, a source or sources will be quoted.
Each constructional project is given a rating to guide readers as to the complexity.
Beginner: A project that can be tackled by a beginner who is able to identify components and handle a soldering iron.
Intermediate: A fair degree of experience of building radio or electronic projects is assumed, but only basic test equipment will be needed to complete any tests and adjustments.
Advanced: A project likely to appeal to the experienced constructor. Access to workshop facilities and test equipment will often be required. Definitely not for the beginner to attempt without assistance.

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All items from *PW* are available Mail Order, either by post or using the 24hr Mail Order Hotline (0202) 659930. Payment should be by cheque, postal order, money order or credit card (Mastercard and Visa only). All payments **must** be in sterling and overseas orders **must** be drawn on a London Clearing Bank.

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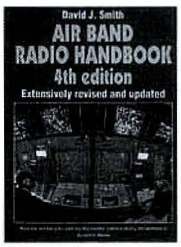

AIR BAND RADIO HANDBOOK
4th Edition
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Extensively revised & updated (October 1992). Air band radio listening enables you to listen-in on the conversations between aircraft and those on the ground who control them, and is an increasingly popular and fascinating hobby. A new chapter on military air band has been added. The author, an air traffic controller, explains more about this listening hobby. *190 pages.* **£7.99**

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DIAL SEARCH 1992/94
George Wilcox
The listener's check list and guide to European radio broadcasting. Covers m.w., l.w., v.h.f. & s.w., including two special fold-out maps. Also includes a full list of British stations, a select list of European stations, broadcasts in English and 'Making the Most of Your Portable'. *46 pages.* **£4.25**

FLIGHT ROUTINGS 1993
Compiled by T.T. & S.J. Williams
This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America. *122 pages.* **O/P**

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Spirally bound, this easy-to-use reference book covers 1.6 - 28MHz in great depth, all modes and utility services, with new reverse frequency listing showing every known frequency against each callsign, who's using what frequency and mode, what's that callsign? These are some of the answers this book will help you find. *544 pages.* **£17.95**

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WORLD RADIO TV HANDBOOK 1994
Country-by-country listing of l.w., m.w. & s.w. broadcast and TV stations. Receiver test reports, English language broadcasts. The s.w.l.'s 'bible'. **£15.95.**

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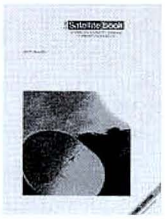

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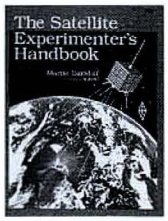
This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by a expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology. *280 pages.* **£30.00**



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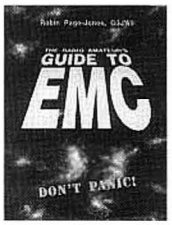

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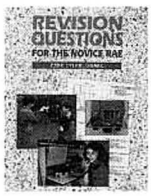

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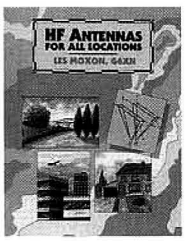

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Kenwood communications RX, R2000. m.w.-30MHz, all-mode, memories, scan, clock, mint, a gift at £299. Clark mast seals, £60. SEM I QRM eliminator, £39. Tel: Kent (0634) 379140.

Kenwood TL922 linear, 28/1.8MHz, 2kW output, absolutely mint, boxed with instructions, as new from Lowe's. Used 14MHz only (less than two hours), sale at, £1350 (list £1750), carriage extra, no offers please. G2FZU, QTHR. Tel: Notts (0636) 813847.

Kenwood TS-440S fitted a.t.u., s.s.b. filter, SPH30 speaker, mic and manual, boxed, all v.g.c., £700 o.v.n.o. Peter G0NDL, Avon. Tel: (0275) 852216.

Kenwood TS-450 SAT with auto a.t.u., boxed with manuals, six months old, so as new, house purchase forces reluctant sale, £895. S. Apps, West Sussex. Tel: (0243) 814326.

Kenwood TS-50, now surplus to requirement, used for holiday abroad, boxed, complete and unmarked, £790 o.n.o. Also h.f. beam, Moseley tribander, good condition, £150 o.n.o. John GM0GFV, Glasgow. Tel: (0236) 726989.

Kenwood TW4100E f.m. dual bander 144/430MHz with mobile bracket, microphone and manual etc., v.g.c. in original box, £325 o.n.o. Paul G4IJE, Essex. Tel: (0279) 734482 anytime.

KW207 supermatch antenna tuning unit in excellent condition with instruction manual, £80. Tel: Kidderminster (0562) 515305.

Lake 'Carlton' receiver and p.s.u., £80 o.n.o. Datong v.h.f. converter with p.s.u., £40 o.n.o. ERA BP34 audio filter, £70 o.n.o. All with instructions, all excellent condition. Phil, West Midlands. Tel: (0902) 843447.

Log periodic wideband aerial 50-1300MHz, model CLP 5130-1, aerial rotator AR300 XL, both six weeks old, genuine reason for sale, £250, buyer collects. Tel: West Midlands (0922) 59402.

Lowe HF-125 receiver, very similar spec., and same appearance as HF-225, including narrow c.w. filter and mains supply, v.g.c., boxed, £200 or **swap for 144MHz multi-mode mobile transceiver**. Tel: Mid Glamorgan (0685) 723426 evenings.

Nevada MS1000 base mobile scanner, five months old, in excellent condition, £180 or **exchange for PRO-2006 base scanner**, can travel in area to forty miles, to view, sell etc. Tel Swansea (0792) 480189 after 5pm.

PK87 packet TNC upgraded to PK88, latest firmware with all manuals, £90. FT-400 h.f. transceiver, c.w. matching speaker and manual, non-worker, spares or repair. G0LDM, Gosport. Tel: (0705) 601174 evenings and weekends.

R.N. Electronics 50/28MHz converter and low-noise masthead amplifier with cable/'N' connectors, £65. Good home-brew *PW* 'Meon' 50/144MHz transverter inc. built-in "spectrum comms", 20W linear, £45. *PW* 'Otter' 50MHz RX, £25. Ian GM3LGU, March Cottage, Toward, Dunoon, Argyll PA23 7UB. Tel: (0369) 87341.

RCA AR88D, £200. Trio TS-700 transceiver, £150. KW2000E plus p.s.u., £150. KW2000A plus p.s.u., £125. Trio TR2300, £75. Trio TS-700, £150. Bereavement sale, more items available, ask for list. Tel: Aylesbury (0296) 86578 evenings.

Shack clearance! Diamond SX400 s.w.r. meter, 144/430MHz, £40. AKD WA1 wavemeter for 144MHz. £15. Revex 15/100 watt dummy load, £15. Coax switch, £15, all in v.g.c. Nick G7IYG, Middlesex. Tel: (0895) 236397.

Sommerkamp FT-2772D, not WARC, good working order, mod. to 10m, cheap h.f., £225. Tel: Godalming (0428) 683189.

Sommerkamp TS280 f.m. mobile transceiver, 80 channels (channelised), 50W, mint, boxed with manual etc., £175. Neil G7MZL, Kent. Tel: (0892) 542884 or (0850) 638212 mobile.

Standard C78 430MHz portable inc. mobile mount and 10W P.A., £150. Icom IC4E inc. accessories, £100. Jaybeam C5 144MHz colinear, £30. Pye F460, £20. 50MHz f.m. Westminster, £25. PF2UB, £15. Martin G4VZO, not QTHR. Tel: West Midlands (0384) 287454. Buyer collects.

Star memory keyer, £25. Tokyo 7MHz s.s.b./c.w. transceiver, £130. RS signal generator 150MHz, mint, £110. Bencher paddles, £20. Vibroplex bug key, £35. Tokyo HL-45U 430MHz linear amp, £100. John, Leics. Tel: (0455) 209125 evenings or weekends, Millside, Mill Road, Ullesthorpe, Lutterworth, Leics LE17 5DE.

Storno CQM5000 v.h.f. Hi-band p.m.r. radios, 25W single channel, three Stornophone 500s, three Commtak 'M', some require mics and power leads, unused for sometime so they will require work and crystals. Jim Walker, West Lothian. Tel: (0506) 56502 after 5pm.

Trio TS-120S 100W h.f. transceiver s.s.b./c.w. VOX, mint condition, boxed with manual, £365. Racal RA17L h.f. receiver, excellent condition, £150. Eddystone 850/4 I.f. receiver, excellent condition, £80. 2x70cms beams, £25 (MBM48 + Tonna). G4YAZ, Kent. Tel: (0679) 64393.

TS-120S h.f. transceiver 100W s.s.b./c.w. VOX, mint with manual and boxed, £365, Racal RA17L, excellent with manual, £150. Eddystone 850/4 I.f., excellent with manual, £80. Both receivers work extremely well, buyer collects. G4YAZ, Kent. Tel: (0679) 64393.

TS-450 Kenwood h.f. transceiver, six months old, mint, offers. 3 element h.f. beam Amitron, mini-size, £75. Ex-military metal aerial pole, £20. Tel: London 071-995 7119 weekends.

TS-530S h.f. transceiver 100W WARC bands, c.w. filter, mic, v.g.c., manual, £400, little used, buying PC and moving house. Jonathan, Ipswich. Tel: (0473) 227836 office hours only.

Welz 3-15V/45A metered p.s.u. (mint), £35. Gould OS250 15MHz d/beam scope (excellent) probes/manual, £70. Advance DMM3 digital (mains) precision m/meter (excellent), £40. All plus carriage or collect. Paul G4XHF, West Sussex. Tel: (0293) 515201 evenings.

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Bargain Basement May 1994

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Yaesu FRG-7700 receiver, FRT-7700, FRV-7700X2, FRA-7700 l.f. filter, FF5 memory unit, operating manual and workshop manual, good condition, £450. No offers, no split. Phil Brouder, 169 North Road, Bristol, Avon BS12 6PH. Tel: (0272) 691025.

Yaesu FT-290RII, accessories, FL2025, £350 o.n.o. Yaesu FT-102, £300 o.n.o. ET-1 Econo tuner, £60. ERA audio filter BB34, £75. Sony AIR7, £150. Steve, Liverpool. Tel: 051-734 4906.

Yaesu FT-480R multi-mode 144MHz transceiver, perfect condition, £200 o.n.o. Tel: Kent (0843) 587810.

Wanted

Car radio/s.w. converter, car radio with l.w./m.w./s.w./f.m. and tape player, or multi-band s.w. car converter. Andrew Lovell SM6MOJ @ SK6YW. Bogärdesgatan 5, 416 54 Göteborg, Sweden. Tel/FAX: 01046-31 213025.

Eddystone 5698 bug and/or Vibroplex J-36, no mods, and g.w.o. Eddystone large ribbed plug-in coil former and base. Few FT-243 crystals and base. Phil G3XUP, West Yorks. Tel: (0532) 440378 (office) or 812064 (home) 'till 10pm.

Eddystone radios, 960, EB35, EB36, EB37, EC10, EC10 MkII, diecast speakers, 820 tuner for cash. £10 each offered for non-workers, please phone anytime. Peter Lepino, Surrey. Tel: (0374) 128170 or FAX: (0372) 454381.

HF receiver or transceiver for newly licensed operator, must be cheap, can travel about 60 miles radius. Tel: Staffs (0827) 58605.

Icom ICR9000 private or dealer, if successful, will have AR3000A, Kenwood 5000 for sale or will deal for R9000 plus cash. Can travel. Tel: Leamington Spa (0926) 334974.

Racal TA349 linear amp., in original cabinet, must be complete. Creed 75 teleprinter with four row keyboard, tape reader and transmitter attachments, silence cover sync. motor 250/120V 50/60Hz toolkit and spares. Nigel Boyd, 2 Church Close, Lower Wellington, Eastbourne, East Sussex BN20 9QY.

Tuner unit No. 12 EXRX210 rectifier unit No. 28 EXRX210 circuit RX62H AP61357 circuit, RX646068. All ex WD, full price paid. Tel: Southport (0704) 548528.

Up down units for 144MHz a.t.v., or any information help to get started. Also chess game for BBC micro, tape or disc. Mr. Carrigan, Rochdale. Tel: (0706) 373339.

Exchange

FT-290R v.g.c. boxed with carrying case, flexi whip, NiCads charger, swap for FT-690R, must be in v.g.c., would like matching linear with cash adjustment. Tel: Co. Durham 091-4100 305.

Nevada p.s.u. 13.8V 30A twin illuminated meters, coarse and fine tune controls, fully protected against short circuit. Boxed and unused, **exchange for general coverage receiver**. Ray G0GQM, Cheshire. Tel: (0928) 580960 after 5pm.

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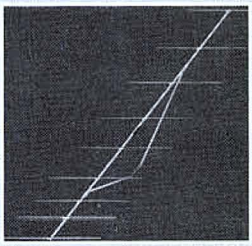
Be sure of your copy of *Practical Wireless* every month and qualify for the Subscribers' Club as well. Special offers and discounts are normally available to members, including those abroad.

Keen v.h.f. operators will be in their element with our *Practical Wireless* Subscribers' Club special offer this month. They'll be able to take advantage of the special offer and buy the Vårgårda 9EL2 144MHz antenna from Sweden (reviewed on page 40 of this issue).



Members of the Subscribers' Club not only get the chance of buying this quality antenna (see David Butler's comments in his review) but they'll also be assured of getting their *PW* regularly delivered straight to the door.

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Subscribers' Club Members can buy the Vårgårda 9EL2 144 - 146MHz 9-element antenna for just £48 plus £5 P&P (UK), normal price £61.10 (overseas subscribers please apply for details of postal charges).

Don't miss out - get your new antenna in time for the *Practical Wireless* 144MHz QRP Contest on Sunday June 19!

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HEATHKIT EDUCATIONAL PRODUCTS/UK DISTRIBUTOR Spares and Service Centre. Cedar Electronics. 12 Isbourne Way, Broadway Road, Winchcombe, Cheltenham. Glos. GL54 5NS. Tel: (0242) 602402.

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WR313	10MHz Transmitter	Nov 92
WR312	Receive/Mixer (Getting Started)	Nov 92
WR311	Oscillator BFO (Getting Started)	Sept 92
WR310	1.2GHz Pre-scaler	Aug 92
WR309	Volt Reg/Divide by 100	Aug 92
WR308	TTL 1MHz Oscillator (Getting Started)	July 92
WR307	Crystal Checker (Getting Started)	June 92
SET	WR303/304/305/306 Inductance Bridge	Apr 92
WR302	GDO (Getting Started)	Apr 92
WR301	Challenger Receiver	Feb 92
WR300a	OSCAMP Oscillator	Mar 92
WR300	OSCAMP Amplifier	Feb 92
WR299	Multivibrator (Getting Started)	Jan 92
WR297/298	Additional Beaver boards	
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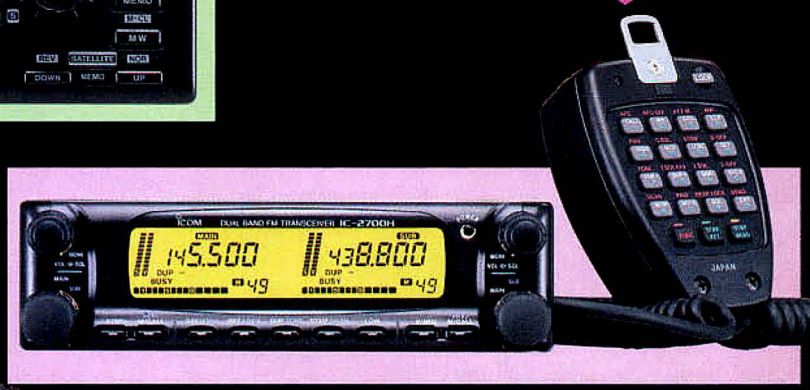

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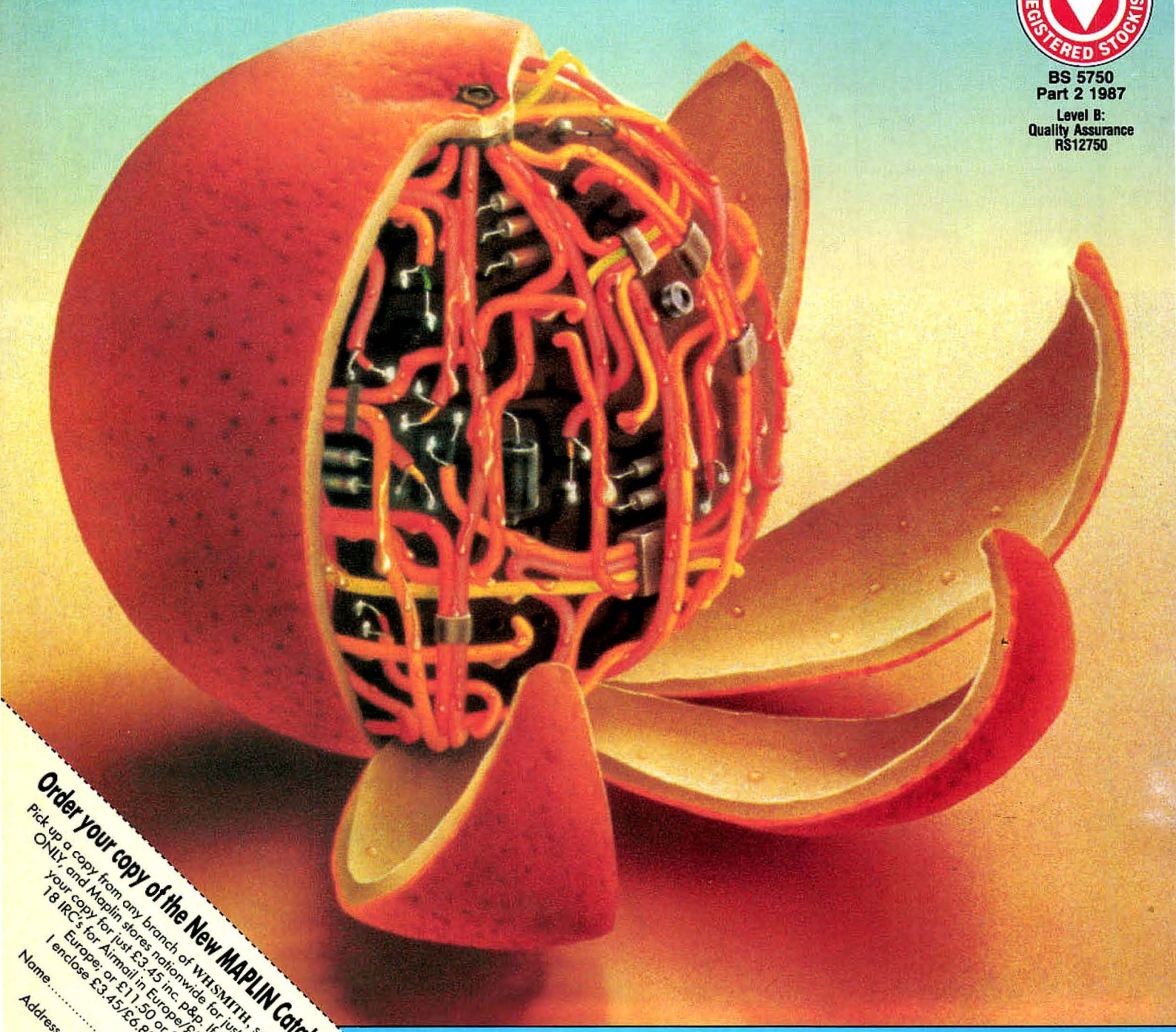

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