

Dawley Bank Community Centre, Bank Road, Dawley, Telford, Shropshire. TF4 2AZ

## Forthcoming programme

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Dec 14	Christmas Dinner—Allscott Inn.
Dec 21	Christmas Social at Club HQ. Talk to those you missed last week!
Dec 28	HQ Closed. TDARS Net on 3657 KHz and 144.6 MHz after 8 pm.
Jan 4	Open Evening / OTA / Committee. Welcome 2006
Jan 11	Crystal Sets, using real galena & Cat's Whiskers. M1RKH
Jan 18	Video Evening. Another special selection
Jan 25	Ten Minute Topics. Short talks, including the New TDARS Operating Competition
Feb 1	First-in-the-Month—G3ZME net on 3.657 KHz +/- QRM, Committee
Feb 8	Under a Fiver Construction Competition
Feb 15	Club Project—Product Recall (!). Bring it along—finished or un-built.
Feb 22	"Climbing K2" - Mike's (G3JKX) Elecraft K2 Project in the flesh.
March 1	Open Evening / OTA / Committee
March 8	Stan Brown G4LU. Topic T.B.D. Not to be missed

CLUB MEETINGS EVERY WEDNESDAY AT Bank Road Community Centre, Bank Road, Dawley Bank. Rooms available from 7:30 pm. Note: HQ Closed Dec. 28th 2005 ALL WELCOME. COME AND MEET EVERYONE!

For Foundation & Intermediate training, contact Mike G3JKX tel: 01952 299677, mjstreetg3jkx@aol.com). Advanced course contact Eric M0KZB tel: 01743 240286,

# Editorial

Propagation conditions on the HF bands have been almost as miserable as the weather lately. So, it's a good time to do a bit of home construction indoors.

Amateur Radio has lots of facets, from 'rag-chewing' to contesting, from making your own basic antenna tuning unit to interfacing your PC with the latest software and radio. Luckily, none are mutually exclusive—you can be a 'dabbler' in all sides of the hobby, or even make a serious stab at just one or two aspects.

However, I would maintain that if you don't do any home construction beyond putting a plug on the end of a lead, you're missing out on one of the most enjoyable and rewarding aspects of the hobby. At one time there wasn't much choice—you made your own equipment or you were rich! For example, the equivalent to a multi testmeter which you can buy today from as little as £5 in Maplin cost 11 guineas (£11.55)—or about £250 in today's money! So, my first couple of testmeters were built in a wooden box, using a meter given to me by Harry G3FRY and odd resistors scrounged from the local Radio Club in Cheltenham. The test-prods were bared ends of insulated wire stiffened with solder and filed to a point. As all equipment then used valves with at least 250 volts on the anodes, one took considerable care when checking circuits! However, as a survivor from a 3KV TWT PSU that bit me a few years ago, 250 jolts were no big deal. The rule, I was told, was always to test higher voltages with one hand in your pocket, so there wasn't an electron path via your heart... Actually, that didn't really work in practice as you needed both hands just to hold the test prods in the right places, and of course the negative prod usually was at ground potential, so.......

Usually, we've had a modest number of entries in our two annual Club Construction Competitions. The first in February is called the 'Under a Fiver' - the idea being that the main components, excluding case and perhaps an odd chip that cost several quid, cost no more than about £5; in other words it's a simple weekender type of widget. I suggest the latest club project would be OK for entry. The second follows in March and can be almost anything. This year's entries were down in number. Will you do something to put that right in 2006?

MIV

### TDARS Information and pictures Web Site www.tdars.org.uk

CHAIRMAN: Dylan Jones M1IHM (276400)

VICE-CHAIRMAN: Malcolm Seeby 2E1DJM (282418)

SECRETARY: Mike Street G3JKX (299677)

TREASURER: Jim Wakenell G8UGL (684173)

CURATOR: Derek Southey G0EYX (01785 604904)

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Assistant Curator: Kevin Hutchinson G8UPF (01746 764556) QSL Manager: Malcolm 2E1DJM; Trophies Manager: Eric M0KZB

CLUB NET: SUNDAYS 144.600 FM AFTER 9 PM. GB3TF ALSO MONITORED FOR ANYONE NOT ABLE TO OPERATE ON 2 METRES.

ALSO FIRST WEDNESDAY IN MONTH AFTER 2000 HRS LOCAL TIME ON 3657 KHz +/- QRM.

# Ephemera: Club News

About 28 Members, wives and friends have booked a <u>Christmas Dinner this year.</u> Apologies to anyone who did not receive a Booking Form, but at the time of the October newsletter, I did not have a menu etc available. I circulated the Form at every meeting in November, and sent it out on the Club Reflector as well as pinning spares on the Noticeboard. I also phoned round people who I knew had come in previous years.

The Club Project (Low voltage PSU protection circuit) has been

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one.

- adopted by no less than 16 members. If you've not yet got your "bits", speak to Dylan (Tel 276400) ASAP. The cost is £12 for everything.

  One slight mod: Some loads (eg a transceiver) may have capacitors across the 13.8 volt line which hold their charge for a while, even when the supply volts are removed. In such cases, if the over-voltage trip cuts out due to excess voltage, there is a problem. The 741 chip sees a residual voltage (from the load) as a "reset", and so the relay closes. Again the over-voltage is detected, and the relay opens. The result is that the relay "chatters", and the over-voltage continues. So, it's important that a diode (any silicon—eg 1N4148) is fitted between pins 3 and 6 of the chip. It's easiest to retro fit it on the track side of the board. The + end
- A second note for this project. The relay supplied is a bit different to the prototype shown on the construction notes. The relay coil connections use the pins marked 85 and 86. The centre pin is not used. The remaining pins marked 30 and 87 have the heavy current flow and form the switch when the reset button is pressed. Use heavy gauge wire to these pins, which can be connected either way round. If any of this is not clear, or you want help in any way, don't hesitate to contact one of the Committee. We'll get it working for you!

(banded) goes to pin 3. This mod cures the problem. I have spare diodes if needed by any-

- The November <u>surplus equipment sale</u> was not very well supported in terms of members bringing items to sell. However, about £26 was raised for club funds, and we had a fair number of 'belly laughs' & groans. As usual, a number of Free Gifts accompanied some sales!
- Richard's (G0VXG) talk about <u>making Printed Circuit Boards</u> was well received, and as a result the Club's PCB developing light-box has been booked-out for the first time for many moons. Richard showed us software for drawing up circuits and arranging PCB layout (from Maplin, about £20) as well as his bubble-bath and sundry items for etching the board. It was all done in a very short time, with excellent results. The other Richard (M1RKH) showed us an alternative method whilst copper etching was taking place. This uses iron-on etch-resist film (instead of photo-resist), and also gives excellent results. For this, a laser printer or photo-copier is used to transfer the etch-resist layout. Maplin now stock an alternative etching chemical (sodium persulphate?) to the rather corrosive Ferric Chroride.

- ж <u>The AGM takes place</u> on the usual last Wednesday in March—March 29th 2006. Please return any Trophy you hold well before that date, to avoid a last minute flap.
- ж A new Intermediate Licence course is starting at Club HQ on MONDAYS for 7 weeks, starting on Mon. 9th January at 7pm. The exam has been booked for Mon. 20th February. If you know of any M3s who want to join the group, ask them to contact Mike 'JKX on Telford 299677 (mjstreetg3jkx@aol.com) to add their name.
- Full details of a new, <a href="special TDARS Activity Competition">special TDARS Activity Competition</a> will be revealed at the Club Meeting arranged for January 25th—part of the popular 10 Minute Talks series. It covers both HF and VHF operating. Essentially, the HF version encourages members to work as many different countries as possible on 160-10 metres, whilst the VHF/UHF challenge is to work as many TDARS members covering as many Postcode areas as possible. It will last for 4 months, March to June 2006 inclusive, and a £15 first prize will be given in each section, with a runner's-up prize of £5 on offer. As we want everyone to take part, the HF section is 'phone only (no CW or data modes) and QRP 10 watts maximum output, so that an M3 is on an equal footing to a full licence holder with 400 watts! Entry charge is just £1 for each section. The full rules, plus special logging sheets, will also be included in the next Newsletter (February). If it's successful, it may be repeated another year too—but that's up to you. We've tried to keep it simple, whilst still giving everyone a fair chance. Above all, we want to stimulate members to come on the air much more!
- ж Only about two members sent their <u>full address / phone / e-mail details</u> to Jim G8UGL for inclusion in the Club database after the last Newsletter request. It's not too late. Jim's e-mail is < jim@g8ugl.wanadoo.co.uk >.
- The Committee has decided to arrange that a <u>permanent HF station at Club HQ</u> is available for Members' use. It will use the IC 756 rig, plus ATU to match the HF antenna. This should avoid the chore of having to unlock the store cupboard and connect up the rig each time anyone wishes to operate G3/G6ZME. The main change required is to ensure a secure cover for the equipment is constructed on the existing work bench. It needs to be adaptable, easy to unlock, but secure at all other times.
- At the last couple of Committee meetings, discussions have focused around how to start Wednesday meetings on time (8 o'clock). This is an old chestnut—but things have slipped in the last year or so. Everyone can help by 'coming to order' at that time, and perhaps helping to arrange chairs etc. a few minutes earlier. Thank you in anticipation! Remember, we hire the rooms from 7.30 pm, so let's use the facility to the full ...

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It is critically important not to let blue smoke escape from electronic apparatus. Blue smoke is the fundamental stuff by which means electronic apparatus functions. When it escapes the apparatus is "Stuffed"!

REMINDER: Paid up Members are welcome to borrow almost any item of Club Equipment, so long as it is returned the following week and the usual "signing out" process is followed strictly. That's a privilege of TDARS Membership. If you can't return it on time, please find someone else who can, or don't borrow it that week!

### Mike's Piece

Why do QRP projects have to be so SMALL? Why can't the front panel be large with big knobs and switches even if the electronics are tiny?

If you are like me, most modern rigs are annoying because the knobs are too small and too close together. The radios that I grew up with, like the AR88, BC342 & 348, R1155 etc usually had a big weighted tuning knob which, when spun, would take you to the other end of the band in a hurry. There were also RF and AF gain controls, with integral on/off switch, a band-switch and a switch for the AGC. If you were lucky there was a crystal filter knob to twiddle as well. What a delight that was. A single crystal at the IF frequency with a variable capacitor to adjust the bandwidth. Cheap and cheerful and it worked well. Oh, yes, a BFO control too, for SSB and CW operating.

Do we *really* need anything better? I think not. Valve sets could also cope with high power adjacent transmitters really well, which modern sets have trouble doing. Valve PAs could also cope with a very big SWR too, without the ALC shutting everything down. Commonly, modern rigs shut the PA right down at an SWR of 3:1. So tune up carefully before using.

What we need is High Q tuning in Rx RF stages, to reduce the bandwidth and keep out unwanted adjacent band rubbish. We don't need wide band 'receive everything' sets. In other words, 'amateur band only', with an RF stage tuning control to peak up that weak signal. A classic example appears in the latest RadCom. This uses four 100pf ganged tuning capacitors with lots of inductances, just to tune across Top Band (1.81 to 2 MHz) Yes, it does mean re-tuning the thing as you go up and down the band, but that is necessary for peak performance. Narrower bandwidth also means less noise for the rest of the Rx to have to handle as well.

In the old days, a firm called Denco used to make a beautiful multi-band turret with a set of coils for each of the amateur bands, mounted on a multi-way rotary Yaxley switch. I used one of these to make a Q5er, which is basically an add-on, narrow band RF stage, to stick in front of the Rx. The result was amazing. Really easy listening to weak stations, previously very difficult to hear. Yes, it meant another couple of knobs to use but you soon got used to them and there were still less than 10 knobs to worry about. Some modern sets have dozens and have multiple uses for some, using menus to alter other functions. Notice how, as the rigs get smaller, the instruction book gets increasingly larger! Any amateur confronted with an all bells and whistles rig has a lot of learning to do. It took me 6 months of hard DX operating to get really good use from my (1992) Kenwood TS690S. I bitterly regret selling it for a small, more modern thing, which shall be nameless.

Some new Amateurs (& old) do have difficulty coping with modern rigs. What is needed are sets with larger panels and knobs, to recreate the simplicity of yester-year, but using modern components and techniques. When you can operate this set really well you could then add tailor-made modules such as a DSP unit, an FM demodulator maybe, a noise limiter, or an internal AMU. This stretches the cost out too and enables the operator to get used to one change at a time. Some kit sets are brilliant in this respect.

New hams don't want to need BAs in ergonomics and computing to get on the air quickly with a decent signal. The manufacturers will not give us what we need so it means building one yourself. The K1 and K2 kits are not cheap but they are superb. Easy to build and a delight to operate.

That's it for now. 73 Mike G3JKX mjstreetg3jkx@aol.com 01952 299677

### **Techno Talk—By Richard M1RKH**

I think that many of you are aware of the many wireless technologies available to Amateurs, but have you stopped to consider what is out there commercially? In particular, what is available around the PC market.

Now I say PC market because if one thing is going to drive cost down it is making squillions of them, and the PC market is probably the biggest volume driver we have in the world today. Many Radio Amateurs scoff at the mere mention of personal computers but I think a more open approach may be in order as we can learn a lot by thinking a little about the technology they use and noticing some of the parallels.

Lets look at Local Arean Networks (LANs). There are wired and more recently wireless. A way to connect multiple computers together to share files, the Internet etc.

In the old days computers were linked with coax cable, which was plugged into a card in the back of the PC. Each computer was daisy chained to the next, if you wanted to talk, you listened to the network, if it was quiet you talked, if not you held back for a time and then tried again. This was called CSMA-CD: carrier sense multiple access with collision detection, ie there is a load of people who can speak, but you listen before you speak to make sure you are not doubling. Notice a connection here to radio. Obviously not very efficient in big networks.

Then came the twisted pair wires. These use unshielded or shielded cables. Each cable has four pairs (so eight wires). Over the last 5 years Gigabit speeds have become achievable (and cheap enough) to become accessible by anyone. I saw gigabit cards in Fry's for less than \$20.00 – Fry's, now that is really a place to visit if anyone happens to be Holidaying in the US. They are huge electronics stores, which stock pretty much everything, including computer bits, aerials, ccd cameras, components – I think you get the picture. The Cat5 cables as they are called are connected to switches normally, in a star topology.

So there is another connection, comparable to ladder lines and parallel feeds. Twisted pairs, obviously twisted to maintain an impedance down the length of the cable, and as with all pairs with differential receivers, they have some immunity to common mode interferers (ie something that interferes on both wires or in the pair fairly equally can be cancelled out at the receiver). Lengths of cable in excess of 100m can easily support Gigabit speeds. What is interesting is that the front end technology these days is smart enough to cope with a number of anomalies. They can cope with pairs that may have been stretched relative to others in the cable, like when being pulled through ducting and have longer signal paths, they can detect whether all the pairs are connected at the connector, they can detect cable faults by using time domain reflectometry to put pulses down the line and analyse the reflections to work out impedance mismatches or open and short circuits. All this can happen in real time, with data flowing, and all this happens with transmit and receive happening on the same pair with some fancy signal processing doing the equalisation and signal mixing and extraction. And all this happens for less than \$5 per Gigabit Ethernet port.

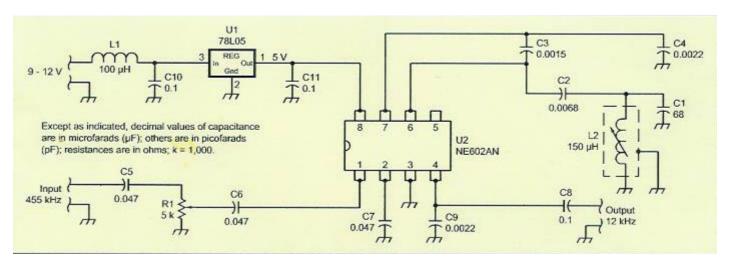
In the last few years wired LANS have been replaced with wireless LANs (WLAN). To set the scene here, what we are looking at is an RF system, with a maximum output power of 100mW, capable of transmitting at speeds up to 54Mb/s (depending on which standard is used) and more recently operating on 5GHz as well as the ISM (Industrial Scientific and Military) band of 2.4GHz. Look at the DB6NT website to see how much this kind of kit costs for sideband operation in a similar part of the spectrum.

Reach is dependent on a lot of things, including the coding technique used (as it changes for different rates and standards) and signal to noise ratio in the particular channel the devices are transmitting on. What's more is that the bit of spectrum used is split into multiple channels (ever wondered why your wireless LAN setup on your pc refers to channels 1, 6 or 11?). These devices will change speed depending on the Signal to Noice ratio of the link, going slower with a noisier channel. In open air conditions distances with standard client cards are of the order of a few hundred metres. With assistance from horns and dishes, many kilometres are achievable (do you remember our Pringle packet antenna?). This is one cross over area where keen Radio Amateurs have excelled, by setting up world record WLAN links based on knowledge of RF transmission theory and antennas.

Anyway that's enough for now, maybe we can think again about the useful technology around us in a different light.

#### Digital Radio Mondiale (DRM) —Edited extract from QST Oct. 2003

Locally, there has been some interest shown in DRM—a digital AM radio system with near FM quality sound. It can integrate data with text, and can even show images with a suitable receiver. Already there are 5, 9 and 10 KHz bandwidth versions, and they are appearing rapidly on the short wave broadcast bands, especially in the day-time. All the information is contained within a large number of closely spaced carriers. The first transmissions came 'live' in 2003. To convert an existing receiver, tap in from a normal receiver *before* the IF filtering (455 Khz in the circuit below), then down-convert to 12 Khz (circuit below) and feed into a PC sound card. Finally download suitable software (eg www.drmrx.org/) to decode the data. (60 euros). (If you're interested, I can let you have a copy of the full October 2003 QST article. Richard M1RKH is also building a suitable receiver from recent Elektor Mag. —Ed.)





A new trophy was presented to the RSGB on 25 February by members of the Telford & District ARS in recognition of the acquisition of the 50 MHz band. The 'Telford Trophy' is to be awarded to the winner of the RSGB's 50 MHz contest each year, at the VHF Convention. The trophy is a scale model of Telford's famous Iron Bridge and is constructed from more than 2,000 screws, nails, nuts and hooks and was created for the Telford & DARS by Gerry Foxall, a local artist specialising in scrap metal sculptures. Seen in the photograph (taken at RSGB HQ) are GSIMP, the RIO for Shropshire, GSUKV, GOCZD and GSUGL.

Photo taken for RSGB Rad-Com-May 1988- at RSGB HQ. The caption reads "...in recognition of the acquisition of the 50 MHz band. The Telford Trophy is to be awarded to the winner of the RSGB's 50 MHz contest each year...a scale model of Telford's (sic—actually Abraham Darby's) famous Iron Bridge and is constructed from more than 2000 screws, nails, nuts and hooks..... Created by Gerry Foxall, a local artist specialising in scrap metal sculptures. "

From L to R, a youthful G3UKV, G8UGL, G3IMP (Syd Poole, silent key 1993) and Martyn Kinder G0CZD (who now lives near Crewe).

### The joys of cruising!

Is your next holiday going to be a cruise?

If that answer is 'yes', perhaps you should read the following questions that have been asked of booking agents & cruise ships personnel before you make that final decision.....

#### For example:

'Are there any portholes in inside cabins?'

'Is there a possibility of balconies below the water line?' (It's okay as long as you don't step outside to view the sunset!)

Tour agents have been asked if, 'a picture window means there is a picture of a window in the cabin?'

'Do the crew sleep on board?' (Apparently one irate passenger actually complained he was woken up every night by the helicopters taking the crew ashore to bed)! That could be interesting crossing the Atlantic.

#### Geography throws people too.

One American passenger complained after his visit the Windsor Castle, 'The visit was great, but why did they build it so close to Heathrow?'

Another, when booking an Alaskan cruise, asked if the glaciers are always there and yet another having possibly seen the film 'Titanic', asked how many icebergs would be in the Caribbean.

On a round Japan trip, passing the volcano Mt. Surabaya a passenger wanted to know what time it erupts so he could take a photo!

On an Antarctic cruise a passenger wanted to know where the best shopping was! Also 'Why do the Greeks build so many ruins?'

Life on board a modern cruise liner can create some unusual queries. 'Will there be any non-smoking chairs in the smoking area?' and 'Is there a likelihood of a pool table on the ship?' That should prove interesting in a Force 10 gale.

At dinner an American passenger (who else!), enquired, 'What is caviar, waiter?' 'Fish eggs sir' came the reply.

'Great I'll have two, easy over'. Another refused smoked salmon, saying he was a non- smoker! Question to the ship's photographer, 'How will we know which photos will be ours?'

**To the entertainments director**, 'Why don't we have a Late Night Comedy Spot in the afternoons?'

**To the Head Waiter**, 'Who's driving the ship during the Captain's Cocktail Party?' also 'Why isn't there a midnight buffet during the day?'

The best quote must surely go to the passenger asking the officer in charge of water sports, 'Will I get wet if I go snorkling?'

Do you still want to have a cruise with individuals who sound as if they should be in some sort of institution?

Derek GØEYX

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My thanks to Mike 'JKX, Derek 'EYX and Richard 'RKH for input to this Newsletter.

HAVE A GREAT CHRISTMAS EVERYONE—AND HERE'S TO 2006!