
BeechLog

The Magazine of Burnham Beeches Radio Club

February 1999



SoHO

Earlier this year, space scientists managed to "rediscover" their lost Solar and Heliospheric Observatory, the "SoHO" satellite. It was interesting reading about this in the press, but not as intriguing as the reason why it is sitting 1.6 million kilometres from the earth.

Most of us have heard of the orbit 36,000 kilometres above the earth, where all the geostationary satellites fly. Here the speed of orbit is identical to the rotation speed of the earth, so the birds appear to hover in the same spot. But there also are a few other locations where objects may be placed without them drifting about in space. These are called the Lagrange points, where objects are held in place by the interaction of the gravity of the Sun

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Software Review

QSL Card Maker

In the run-up to Christmas, being at a loose end during lunch time at work, I idly called up the RSGB web pages. Clicking through a couple of links, I found this interesting application by John McDonough, WB8RCR.

QSL Maker is a floppy-sized download, about 1.3 megs. The zip file extracts to two setup disks. The program installation uses the InstallShield method, so is very polished, with nothing to go wrong. I tried it on my Windows 95 machine, but possibly it will work with NT4, although I have not tried this yet. The application is free to any radio amateur, so there are no licence fees to pay.

The web page (can't remember the

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URL!) list loads of limitations and bugs, but in reality it works very well.

To get a card like the one illustrated above, takes only a few minutes. From a menu, you can enter your address, callsign, a greetings line ("73 de..."), and up to two lines of additional information. You can use a bitmap for the background, which is of course in colour. The text in the report box is fixed, but the box can either be clear, or allow the background picture to show through.

You can alter the fonts of all items, the text colours, and the background colour all independantly. All the items can be positioned as required, and you can have up to 4 cards printed on one sheet.

The only drawback is that the program was probably made for US paper sizes, so you cannot quite get 4 cards on an A4 landscape sheet unless your printer can print very close to the edges. I

suppose you can do this by making the right hand cards slightly overlap the left hand cards, and print without the cutting marks. A bit of fiddling about and it should be easily possible. However 3 cards on a portrait A4 sheet requires no fiddling.

You can choose any bitmap for your background image, but ideally it should be scaled to fit the card. A bitmap 1650 x 1050 pixels is right for a 300 dpi printer, but an image half these dimensions will work OK. You can also have a plain coloured background if you wish.

I suppose it is not too difficult to achieve much the same effect using a word processor, however this application makes it very easy. The cards produced will of course have a similar layout, and not a very original one! However QSL Maker does its intended job quite well, and provides a good starting point to explore the field of homebrew QSLs.

Roger G0HZK

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and Earth, and "centrifugal" force. The first and most stable of these points is where the SoHO satellite is to be found. Another one will be used by the successor to the Hubble Space Telescope.

These Lagrange points were calculated by a French mathematician in the eighteenth century, and occur wherever a small object is rotating around a large object. So such points also exist in the Earth - Moon system.

Another strange feature of two-object systems is the Hohmann ellipse. This ellipse has the Earth at one end, and the moon at the other. This give rise to the idea that an object orbiting the Earth might somehow be persuaded to follow the ellipse and end up orbiting the Moon. This is in fact possible, but it would take many thousands of years to get there!

However during orbits of the earth, interaction with the moon sometimes gives rise to situations which can be used to alter the path of an orbit. This uses the often quoted chaos theory, and when these situations arise only a small amount of fuel is needed to switch orbit. Mathematician have calculated that by exploiting these situations during 48 Earth orbits, an object can be sent to the moon. When it gets there, another 10 Moon orbit adjustments are need before the object gets into a stable Moon orbit. This procedure is also lengthy, taking about 2 years, but could be useful for supplying a colony on the Moon!

Another interesting project is the "Genesis mission". Not to be confused with the Star Trek machine, this mission involves sending a probe to collect particles of the solar wind. The actual collection will take place at a Lagrange point. This is a "cheap" mission, so a fuel-economic route home is needed. What NASA intends to do is to route the probe back via another Lagrange point. This whole

procedure meant finding an unstable path between the two points, where a small fuel burn now and then will keep the probe on course. It's like rolling a ball down one hill, up another, over the top and finally to a third destination. In this case the way the probe gets to the second Lagrange point will leave it in an ideal trajectory for an economic return to Earth.

All this contrasts with current methods of space travel. Previous Moon missions meant many Earth orbits build up speed to break the Earths gravitational pull. These future plans have traded fuel for maths, and very involved maths too. This is difficult and time-consuming, but the rewards are great.

Rogs PC

Over the Christmas holiday, Rogers PC has evolved yet again, by moving a single step forward in technology. I have replaced the 486 motherboard by a Pentium version.

Once again I used a motherboard thrown out by someone else when they upgraded. This is a plain Pentium type, with an Intel VX chipset, and a 100MHz CPU! It will cope with a 200MHz Pentium, so if anyones chucking one out...

Of course, things didn't go smoothly, although I have managed to avoid a format and re-installation to my hard disk. There was an initial unexpected problem with the hard disk. This was a 3.5 GB model, which was larger than my 486 board could handle unaided. However, by installing MaxBlast software, I got over this problem. I had expected to be able to remove MaxBlast, but it was not to be so. I initially disabled it, and let my new motherboard try to determine the correct settings. While it got the size correct, it failed to determine the correct number of heads etc., so I have had to retain MaxBlast. But it's no big

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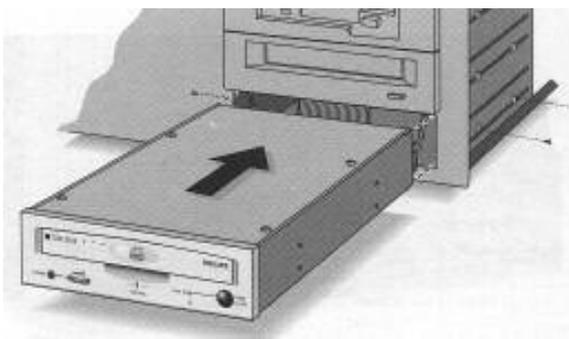
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deal, and causes no problems.

One reason for upgrading the motherboard was to free up the ISA and PCI slots. My original board had no floppy controller, and no serial or parallel ports. The new one has all these, and USB ports too. However my attempts to get the dual IDE controller working correctly all failed. Whenever I enabled the secondary controller, I got an interrupt conflict with the display card, and some mysterious system device! So back in went a Creative CD controller card. I have never ever got the secondary IDE controller on the sound card going either. Anyway, with my hard disk and CD on the primary IDE, and my Zip drive on the Creative CD card, all functions well.

I must say I went through about a dozen re-boots as Windows 95 found "new hardware" relating to the Intel chipset. But after about six hours, everything worked as before, only faster!

A couple of weeks later I replaced my CD drive by a CR-RW version. These things are not supposed to share the same IDE port as the hard drive, so I decided to swap things round a bit, so that the CD-RW had the Creative CD



card to itself. Ha, some hope! The CD-RW refused to acknowledge the existence of any CD I inserted. Looking in "Device Manager" it's name was in hieroglyphics. So it had to share the same port as my hard drive, Where it reads disks faultlessly.

Luckily it seems to write CD's properly

too. I am learning all sorts of funny things about CD writing now. I have discovered that even my olde CD ROM drive can read multisession CD-R properly, but it cannot read CR-RW discs. My wifes fancy laptop (Toshiba Satellite 320CDT) reads both types of CD. I gather it's something to do with "Multiread" capabilities...

Although CR-RW drives are still quite expensive, the media costs are low. A blank CD-R disk costs less than £1.50, a CD-R disk between £5 and £9. Both types hold about 650 megabytes, and come in CD cases. My backups of data (I don't wish to lose) are about 150 megabytes, so I can fit about four backups to a CD. At weekly intervals, this means roughly 13 CD's per year, which I can store for posterity! I have a couple of boxes of Beechlog floppies, so a Beechlog CD will free these up. A Beechlog cover disk is unlikely - since club members seem to prefer strange computers whose file names seem to start with odd characters.

SSTV

At the moment I am playing with SSTV. I found a program called W95SSTV (or similar) that uses the sound card to encode and decode SSTV.

Initially I plugged my HF radio into the PC and tuned into some SSTV on 14MHz. Unfortunately I have only a 28MHz vertical, so signal levels only just moved off the noise level, and I had trouble tuning them in properly. But I did get some half-pictures! So I tried recording the output from the program onto my 20 year old Sony cassette recorder. At this point I discovered that the latter, unused for about 15 years, went unstable on record! But the bits of picture decoded between the motor-boating looked really good. Maybe I can get some club members to send me some SSTV on VHF or UHF.

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The program has some oddities, but looks really promising. All you need to do is to make up a record and transmit cable between the PC and Transceiver. It costs \$50 to register the program, but the unregistered version seems to have only one restriction - it can send only Windows bitmap files. It's easy enough to convert anything to a .bmp file.

Roger

ADSL

Over Christmas I treated myself to a couple of computer magazines, and read an article about the changes happening to Internet Service Providers at the moment. I really get annoyed when I read some of the rubbish published by so-called experts, indeed some of the predictions were so unlikely it made me wonder whether the author was capable of reasoned thought.

The scene set out was this: only those ISPs who could support ADSL at 2 Mbit/s would survive.

On the surface this seems reasonable, but the press seems to think that ADSL will soon replace modems and ISDN (in 2 years, according to the article). I believe that the technical and economic issues which ISPs and telecom companies would have to face will ensure that this will not happen.

Firstly the economic reasons. If you want a dial-up data link today, you have 2 choices. Either modems at up to 56kbit/s, or ISDN at multiples of 64kbits. A normal analogue line costs about £7 a month rental, and an ISDN2 basic rate line is several times that amount. ISDN2 delivers 128kbit/s at the cost of two phone calls. In my lab I have lots of ISDN2 lines, and also a few primary rate ISDN30 lines (1920kbit/s). I don't know the rental on the ISDN30, but I'll guess at a 30% discount over 15 basic rate lines, e.g.

about £300 a month.

Now ISDN30 is roughly the same rate as the ADSL prediction, so here is the rub. If BT offer dial-up ADSL at less than £300 per month, it will lose lots of ISDN30 subscriptions, all other things being equal.

My guess is that if BT do offer dial-up ADSL, it will be wrapped up in a complex financial deal so that customers will have difficulty comparing it to ISDN30. And it won't be cheap!

However the magazine article was suggesting that ordinary domestic customers would be using ADSL for connections to their ISP. Most of these pay £7 or £8 per month for their phone line. A small few use ISDN2, so is the article suggesting that ADSL will be between £8 and £30? If it is, BT will have to say bye-bye to most of its ISDN customers, and suffer a huge loss of income.

I suppose it is possible that ADSL will not be a dial-up service, i.e. it will be a leased-line to a fixed point, e.g. an ISP (The current BT ADSL trial connects the subscriber to a BT Interactive service, at £30 per month). This would be fine for traditional internet usage, but if were used to replace other high capacity data links, the internet would grind to a halt. It is possible that the ISP might offer services on a par with ISDN, but they would have to add a huge infrastructure, with interconnects to all other ISPs and Telecom companies. Companies like BT would end up providing interconnects, which would provide them with a means of recovering all the lost revenue - so up goes your call costs.

This leads to technical considerations. Say a current ISP copes with 1,000 simultaneous connections. Assuming these are at 56k, that adds up to a maximum throughput of 56Mbit/s. OK, make that 1,000 ADSL connections - now a theoretical maximum of 2

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gigabits per second. Of course the likely data rates would be very much less than this, but the ISPs throughput would have to increase by a similar factor. This would have to apply to all equipment used in the internet. It's all very well talking about browsing at 2Mbits, but one factor never mentioned is the web server output rate. This is very often what governs your browsing speed at the moment. It is not only the size of the pipe connected to the server, but its capability to handle numerous simultaneous connections. So to keep current browsing speeds, servers will need to increase their throughput 40 fold.

I do wonder whether ADSL will provide a service that folks like us really want? Or whether it will merely be a vehicle for on-line commercial activity? This does seem to be in the minds of the big players in computer networking. AOL's purchase of Netscape was most likely governed by the success of Netscape's portal site in attracting millions of potential spenders. Apparently those (whose browsers home page points to one of these portal sites) are actually purchasing goods from the sites advertisers!

An ADSL link to an ISP could effectively link you to the ISP's portal, with no opportunity for you to change this. The ISP will be able to trace your activity while you are connected, and prepare unwanted commercial junk to "push" to your terminal. This doesn't happen now, because bandwidth is limited, and internet connections use standard software to handle standard services. If your current ISP pushes unwanted junk at you, this is soon sorted by a change in ISP.

By tying you one ISP, ADSL may change all this. As it is unlikely to be a dial-up connection, you can't easily change ISP, without losing your ADSL line, which you will probably be contracted into.

I remain a sceptic! NorWeb's trials of data via the electricity supply has apparently led to reports of lamp posts acting as short-wave radiators! Well, what a surprise! Will telegraph poles be any different?

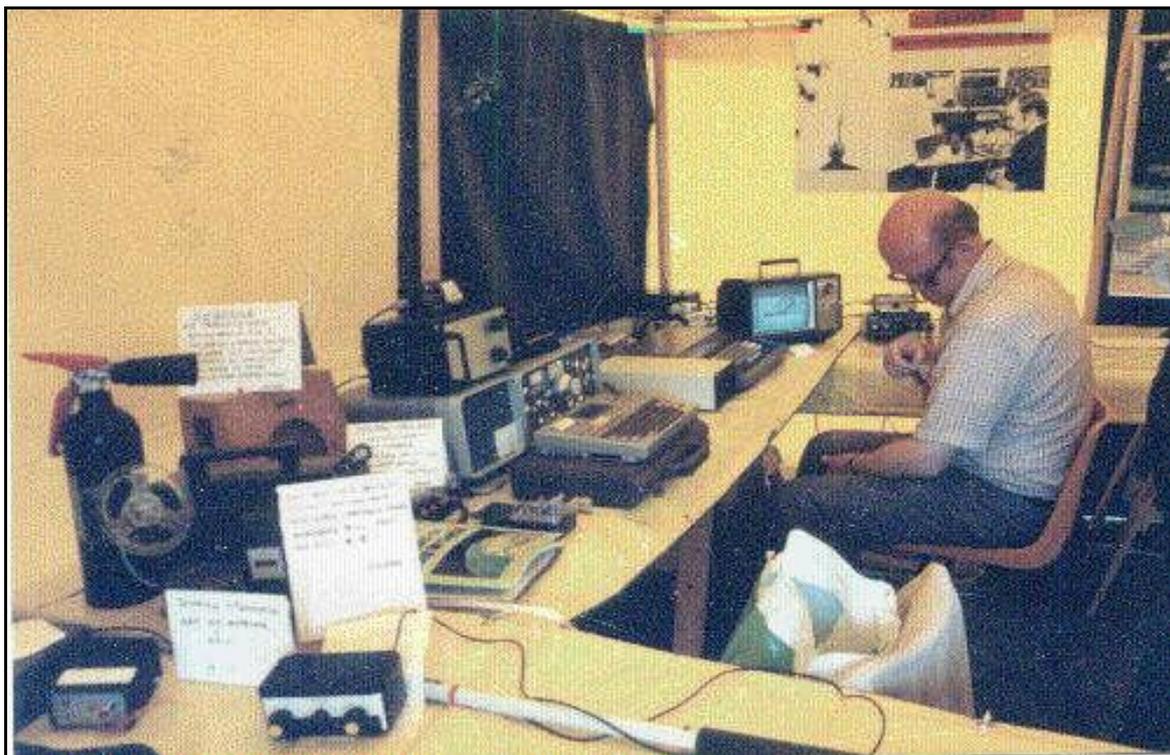
Also in the magazines were predictions of other changes, mainly set-top boxes delivering internet material. Well, this might happen, if the TV companies can make any money out of it. However, try this simple test: borrow a VGA to composite video scan converter, and look at your PC output on your TV screen. You will soon discover why a 15 computer monitor costs more than a 15 inch TV!

While I'm poo-pooing all this stuff, I just have to mention Java. 1999 will be the year for Java, I read it the magazine! In my opinion, Java is a waste of time. I actually use a couple of Java applications - the Nationwide BS home banking system, and a defect tracking system hosted in the USA.

The banking system uses Java code running in a standard web browser. However, since I "upgraded" to the latest version of Netscape, the text has reduced in size to about 1mm! The previous Netscape was OK! The service displays the usual Java handicap - it is abysmally slow on my PC. However it is a free and genuinely useful service.

The DDTS is a Unix hosted system for tracking defects in software and hardware. I use the Web/Java because the 7000 mile round trip to echo my typing makes it unuseable. Now this Java runs on Netscape 3 or 4, but won't run on IE3, and causes crashes when printing from IE4. It is also abysmally slow and has a terrible user interface.

Both these systems will run on a Java enabled browser on any workstation, but it seems they are fussy about the browser - banking likes IE, DDTS likes Netscape. Personally I think it's not good enough. Perhaps during this



A blast from the club past - here is Tony G4LQD at the first McMichael Rally at Stoke
Back in the USA - Return to Boston !

Saturday.

Well, here we go again! After I thought my business travelling days were over, here I am sitting in seat 57B somewhere above the Atlantic!

Suddenly on Wednesday, my employer decided I had to go to Boston on Saturday. Of course, Thursday was Thanksgiving in the U.S., so it was a right job booking hotels etc., but hopefully it was done - anyway I'll soon find out!

In the blink of an eyelid the taxi was waiting at the door, and a few minutes later I was checking in at terminal 4. And a couple of hours later, here I am on a British Airways Jumbo, watching a hostage film on the screen in front.

I think I've been up at 35,000 feet for about 2 1/2 hours. Quite eventful so far. The runway was shrouded in rain, visibility was only a few hundred metres, but soon enough we were airborne. After about 3 minutes there was a terrific shudder and the plane bucked about like a fairground ride for a couple of minutes. If the engine had come off, no-one told us, but when

we got above the clouds into the sunshine everything calmed down.

Soon lunch was served, not bad, although just after I started eating the fair began again. Eating became quite interesting, one hand holding the tray, another trying to stop the Chardonnay from spilling. When I finally finished, calm returned and I was able to settle down. However just a moment ago one of the cabin crew walked down the passage carrying an axe with a long spike sticking out behind the blade. For the last few minutes there have been axe-against-metal noises. Hmm. Can't be anything serious? I think someone's got locked in the toilet, or maybe the ailerons have got stuck.

I've got a good seat though, on the top deck just behind the flight deck. I can stretch my legs out about 5 feet in front of me, and being at the front it's much quieter than most of the seats below. And since there are only about 36 passengers up here, meals and drinks get served fairly quickly (sudden shudder as axe hits

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metal).

Later on, we safely landed at Boston a few minutes ahead of schedule. Disembarking was uneventful, apart from the fact that I was picked out of the crowd by a customs man and given a short grilling. But he didn't want to look at my luggage, so I was soon off to pick up the hire car.

The woman at Avis was totally foxed by my driving licence. She could not even decide which country issued it! Eventually with some help by her companions she managed to fill in everything her computer demanded, and I had a car! Now would I remember how to drive it? Actually it all came back to me, which was just as well. Boston airport totally confuses me, and of course I took the wrong road. However after about 20 miles in the wrong direction, I managed to find my way to the hotel. Great sigh of relief. I don't know how John GCL managed his trips to Germany, where all the road signs have words with thirty-six letters on them. Here the signs are in English, but they say "No turn" after I miss the road I should have

gone down. Just as well I took an early flight and managed to do all the driving in daylight. I'm not sure where the lights are on this car. There are so many switches and twisty stalks. Thankfully it didn't rain - I remember last time I had trouble with the wipers. Now to unpack and investigate the bar.

Only got to reset my body clock now. It's only 8 pm here, but I'm listening to the BBC news for 1.00 am tomorrow. There is an 8 foot square bed beckoning. Have a shower, unpack my case, I'm trying to drag it out to 9 pm (2 am real time). A 2½ hour adjustment today, and another one tomorrow should sort me out.

Tomorrow's Sunday, what on earth am I going to do? The Hotel here in Andover (a few miles from Tewkesbury) is in the middle of nowhere. If I go out, will I be able to find my way back?

Sunday

Of course my body clock was confused, and I woke up several times during the night. But I soon got back to sleep, and was able to get up feeling refreshed at

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about 7.30 am Boston time.

I ventured down to the restaurant a little later. I have memories of what the Americans eat for breakfast, but they did not have the usual "stacks" of pancakes so often encountered before. Instead they had fresh waffles. These were the size of a dinner plate and several inches thick. Even slender ladies were eating these! All the other usual things were available, the globe shaped containers of bacon, sausages, fried potato, etc. There were eggs in all forms made while you wait, including omlettes with combinations of about 20 different ingredients. Pastries - Danish, muffins both English and Americans, bagels and bread in other mysterious forms. Fresh fruit - different kinds of melon, strawberries, other berries, and so on, the list was endless. Anyway I tucked in and emerged set up for the day.

I decided to explore some of Boston, about 25 miles south of here. I asked at the front desk "where's the best place to park?". "Oh, go about half way in the car. Go on the 95 South to North Station, and take the T." The "T" is for Transportation, i.e. the subway. In fact "half way" turned out to be 99% of the way, North Station being about 10 minutes walk from the town centre. North Station consisted of roads in all directions, and all totally confusing. This area of Boston is undergoing great change, many roads are temporary and unlike anything on maps. Anyway I somehow didn't find the car park I thought I was looking for, but after being hooted at a few times I finally found an underground park which cost me \$18 for the four hours I was there. Oh well, I'll claim it back somehow. After my perilous driving my mouth was dried up, so I went to Quincy Market, next to Faneul Hall, where all the food stalls are. To us English, this is an amazing place. Counters selling all kinds of decent fast food. Sushi and other Japanese meals, Italian, Chinese, Greek, American, and all manner of things, none of your MacDonaldis here, all quality nosh. I

settled for a swordfish kebob (looked like a Swordfish kebab to me), and some fresh lemonade (made with lemons).

I've never seen anything like it in England. I think the Americans must be more adventurous in their eating than us Brits. Boston has a huge number of restaurants, in fact the historic part consists mostly of restaurants and pubs.

I walked off after an excessive food intake. I tried to find the replica tea clipper (Boston Tea Party) where you can go aboard and throw a chest of British tea from the deck (I kid you not), but when I got to the river there was something like the M25 roadworks in the way. Boston seems to have several M25's running through it. You walk down quiet streets, and suddenly there is some sort of huge confusing junction in front of you, with numerous lanes going in all directions, and too many road signs to take in.

There was a lot of hooting going on. They have some odd rules out here, like turning right on red lights, and flashing traffic lights. Here in Boston they have roundabouts too, usually with a big sign saying "Rotary" warning you of impending chaos. I don't think they really understand them. It is a strange sensation going round the wrong way!

Anyway I gave up on the tea clipper and turned back. Suddenly, as I walked through Post Office Square, there was the sound of sirens, and another noise like an ocean liners hooter. This was the Boston fire brigade. They were really well organised, and within minutes there were every kind of vehicle which could be fitted with flashing lights at the scene. I didn't see any fire though, only the steam rising from manhole covers.

I'm not one of those ghouls who wait to see charred bodies, so I continued on my walk and somehow ended up in the Italian part of the city. This consisted of large numbers of Italian restaurants, of course. Eventually I found the river, and over the other side I could see the masts of some ancient warship. I followed the river bank

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the 28, which eventually had access to the 95 North, so I found my way back.

American roads are really quite well organised, one you learn how the system works. As long as you don't take the wrong turning. Freeway junctions never have rotaries, so turning round and going back is not so easy as it is in the UK.

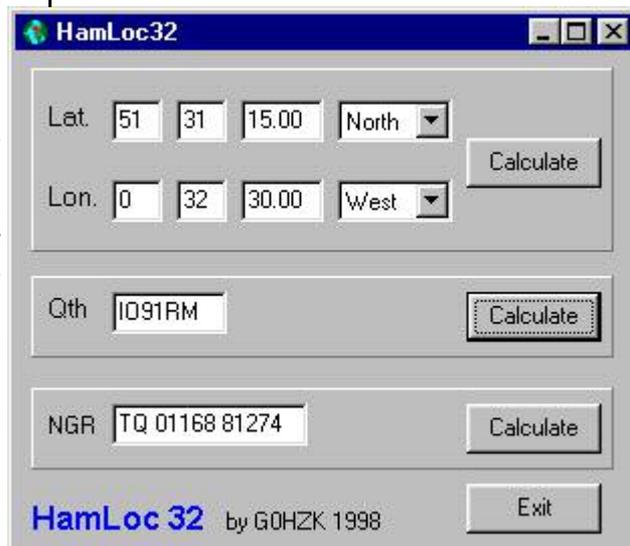
To be continued...

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to the next bridge, and went across. Even the bridge was unusual, for although it carried one of the M25's, most of the carriageway and all of the footpath were made of some sort of steel mesh. If you looked down at your feet, you could see the Charles River. I found this most unnerving, and had visions of my car keys, car park ticket, passport, wallet, etc., dropping through the mesh. These Americans are crazy.

Anyway, across the bridge I found this rather old dockyard ahead, where the warship was floating. It was the USS Constitution, launched in 1797. This ship was involved in a battle with a British frigate, where the British cannonballs bounced off the thick oak hull. The cries of the British sailors were heard (the early Americans had good hearing despite cannons going off), "she must have iron sides", hence the name "Old Ironsides" was attached to the ship from then onwards.

Back across the key-swallowing bridge, where I manage to smash the present I bought my wife against the wall. I got lost finding the car park, not a surprise. When I found it I asked the attendant "How do I get to the 95 North?". She said "Turn left, then left at the lights, and follow the sign when you reach the rotary". As you may have guessed, I never found the rotary. But I did find a sign saying "Route 1, 28 to 95". Some roads here have up to three numbers. But Route 1 allowed me onto



Apart from the Psion stuff, I am busy trying to write some Windows programs. Above is one of my early attempts, which uses some of the maths shown in the last **BeechLog**.

Roger.

What's On

February 15th	GPS by G6TSF.
March 1st	AGM, wine & nibbles.
March 15th	ACARS by G4CVF.
April 5th	Foxhunt, Fox is G3SID.
June 7th	9K6 and up with G8XCK.

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