

Number 85 – March/April 2003

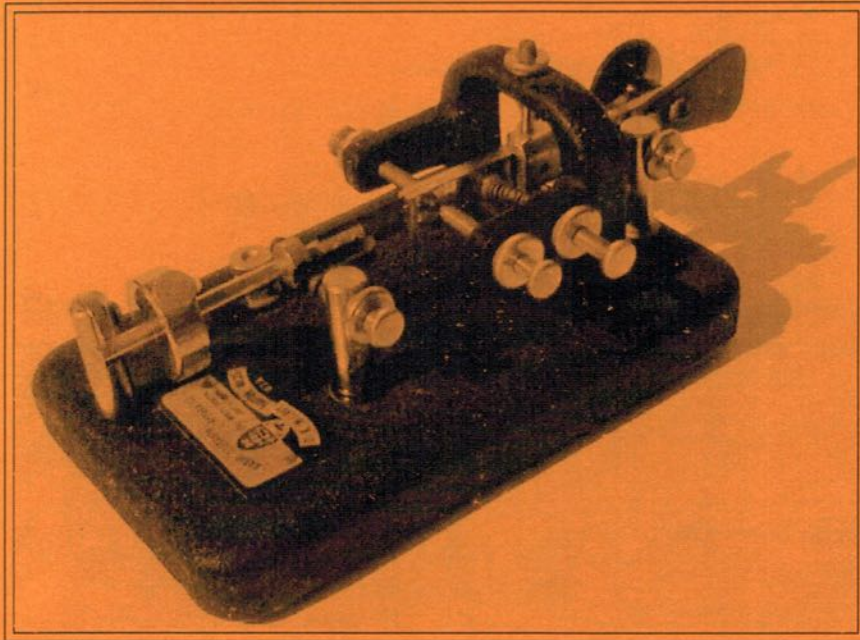
Flying  
the flag  
for  
Morse

# Morsum Magnificat

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*The Morse Magazine*



*McElroy P-500 Bug Key*



The International Journal of Morse Telegraphy

Flying  
the flag  
for  
Morse

# Morsum Magnificat

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SUBSCRIPTION OFFICES:**  
Morsum Magnificat, The Poplars,  
Wistanswick, Market Drayton,  
Shropshire TF9 2BA, England.  
Phone: +44 (0) 1630 638306  
FAX: +44 (0) 1630 638051

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**EDITOR:** Zyg Nilski, G3OKD

e-mail: editor@MorseMag.com

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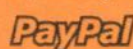
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**FRONT COVER**

1941 McElroy bug key, model P-500, also  
called "Professional Model"

Photo/Collection: John Francis, G3LWI.

## Comment

For a second issue in a row, I have to announce the passing of another great contributor MM. Dr. E. Geoffrey Walsh, GM4FH died on 26<sup>th</sup> March. He was an enthusiastic contributor to MM as well as to "Transmitter", the newsletter of the Museum of Communication Foundation Trust, at Bo'ness near Edinburgh. He was an eminent medical physiologist at the University of Edinburgh, with medical degrees at Oxford and Harvard, but in his retirement years applied his research skills to many lifelong practical interests, especially Morse. He has written fascinating articles for MM, some as yet unpublished. To be greatly missed.

*Zyg Nilski, G3OKD*

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## Auction of Surplus BT Museum Items

Thousands of historic telecommunications objects, such as switchboards, telephones and vehicles went under the hammer at a one day public auction in February 2003 when British Telecom's Connected Earth project entered its final phase.

The auction was held at BT's

museum store at Ashford, Middlesex. BT's £6 million investment in the future conservation of the UK's uniquely rich telecommunications heritage has already produced three major, new, permanent telecommunications galleries, with a further three in the planning stage.

Also an award-winning Museum on the Internet, [www.connected-earth.com](http://www.connected-earth.com), and two new curatorial and

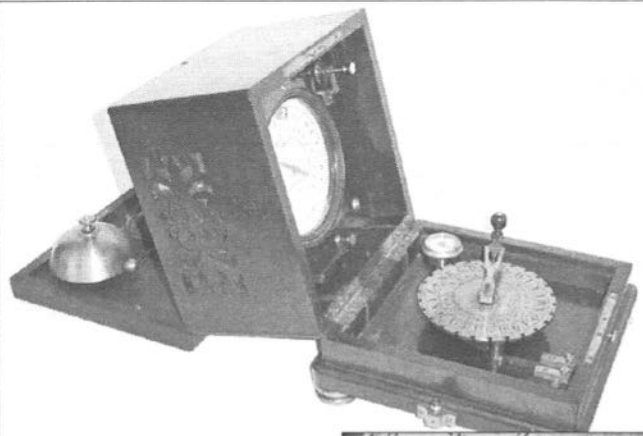
research posts have been created at the National Museums of Scotland and the Science Museum in London. The new galleries are at BT's Goonhilly Satellite Earth Station in Cornwall, Amberley Working Museum in Sussex and Avoncroft Museum of Historic Buildings in the West Midlands.

Photo/Collection: Fons Vanden Berghen, Halle, Belgium



Keyboard for Baudot telegraph (1870's). The Frenchman Emile Baudot devised his telegraph so that he could apply a mechanical time division multiplier allowing to concentrate up to 6 stations on 1 line. This was possible by using a 5 element /character code (forerunner of the teleprinter code !), therefore the 5 keys on his transmitter.





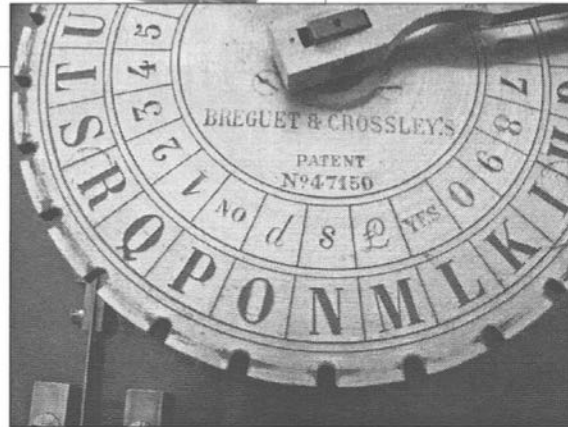
*Portable Breguet. This is a quite unique version of the ABC- or Dial telegraph by Breguet (1850's). It is a portable version including transmitter, receiver, galvanometer and bell and was made in association with Crossley's. Observe the typical English characters (e.g. £) at the Tx and Rx scales.*

Plans for further galleries are underway at the National Museums of Scotland (due to open Autumn 2003), The Museum of Science and Industry Manchester (2004), and the Museum of London (2006).

During the Autumn, recognised museums around the UK were invited to take their pick from BT's remaining historic material, to enhance their collections and exhibitions on social history, science and technology.

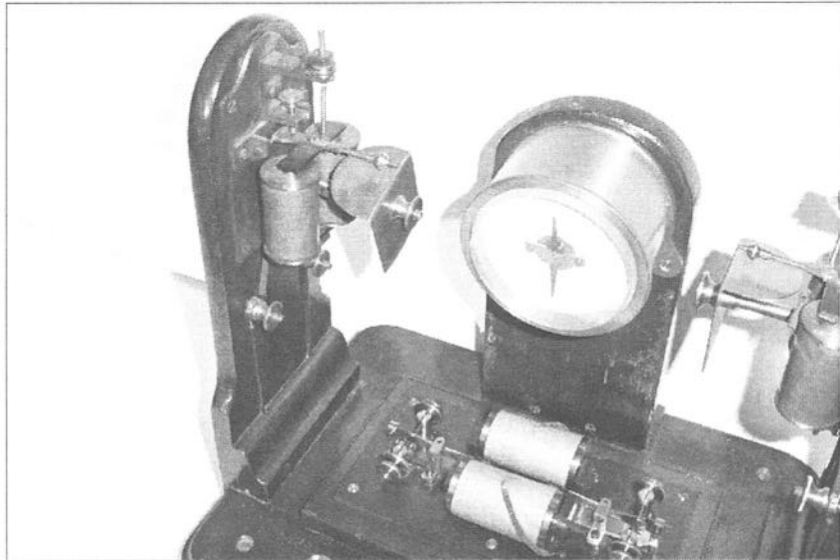
An open week at Ashford, Middlesex in October attracted interest from over 40 institutions from around the country. Museums which have benefited include both large and small organisations: the Great Western Railway Society took some telegraph instruments relating to the development of the railway, and the Hunterian Museum in Glasgow has acquired objects relating to the Scottish inventor

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Lord Kelvin. All these artefacts have been supplied free of charge.

Private individuals, collectors and enthusiasts were able to bid for the remaining items. These were mainly duplicates or incomplete objects of no museological importance. Funds raised from the auction have been ploughed back into the Connected Earth project. Examples of objects in the sale included valves, telephones, switchboards, old telegraph instruments, old vehicles, posters, publications and ephemera, amounting to over 2000 lots.



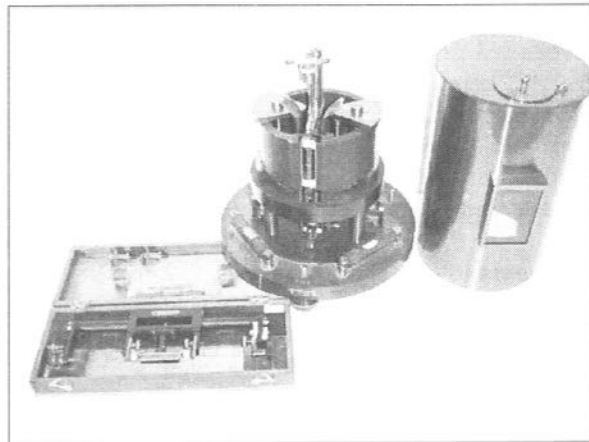
Photo/Collection: Fons Vanden Berghen, Halle, Belgium

*Bright Bell's. Already patented in 1853. The forerunner of the Double Plate Sounder, this one with a galvanometer*

Richard Lloyd, project director for Connected Earth, said: "We've had a tremendous response from museums around the UK, who have had their opportunity to choose something from our telecommunications heritage for their own collections. Now it's the turn of the general public and we expect a lot of interest from people nostalgic for the early days of the telegraph and telephone."

BT's responsibility for the telecommunications heritage will continue through the Museum on the Internet, [www.connected-earth.com](http://www.connected-earth.com), with support

from BT's historian and curator of collections, Neil Johannessen.



Photo/Collection: Fons Vanden Berghen, Halle, Belgium

*Sullivan Mirror Galvanometer based upon the Deprez-d'Arsonval principle. It was used for measurements but also as a receiver for undersea links because of its high sensitivity. A detailed description can be found in the reference book by Karrass of 1909.*

## **GBR Rugby Radio Closes on 16 kHz**

GBR, Rugby Radio, the VLF station that operated a CW service on 16 kHz officially closed down at midnight on Monday 31st March 2003 after 77 years of operation.

It was conceived in 1910 to help provide a reliable world-wide wireless service mainly for the Royal Navy, but it was not until 1926 that the station was completed on the 910 acre site. Other transmitters and antennae were added to the site over time including those for Portishead Radio GKA. All other short, medium and long wave telegraphy transmissions from the site have also ceased except for the MSK time and frequency signals on 60 kHz, for the National Physical Laboratory, which will continue for the time being.

A special close-down message was transmitted at 0000 and 0020 GMT on 1st April 2003. This was copied by Paul, G4KHU and the transcript reads:

VVV DE GBR VVV DE GBR

**AFTER 77 YEARS 3 MONTHS  
OF ALMOST CONTINUOUS  
OPERATION THE GBR 16 KHZ  
SERVICE FROM BT RADIO  
STATION RUGBY CEASES  
TODAY. A THANK YOU TO  
OUR CUSTOMERS MAINLY THE  
ROYAL NAVY, WITHOUT WHOM  
THE SERVICE WOULD NOT**

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**HAVE BEEN REQUIRED AND  
WHOSE COOPERATION HAS  
ENABLED THE SERVICE TO  
RUN SO SMOOTHLY. A BIG  
THANK YOU MUST GO TO ALL  
OF THOSE WHO OVER THE  
YEARS HAVE BEEN INVOLVED  
IN THE DESIGN, CONSTRUCTION,  
MAINTENANCE AND OPERATION  
OF GBR. THEY CAN FEEL  
VERY PROUD OF PROVIDING A  
CONSISTENT HIGH LEVEL OF  
RELIABLE SERVICE AND A JOB  
WELL DONE.**

**THIS IS THE FINAL  
TRANSMISSION AND GBR WILL  
NOW BE SHUT DOWN FOR THE  
LAST TIME.  
GBR GBR QRT**

*(Information: Norman Varnes, G4YXX.)*

## **New QRSS Software**

A new version of the software for transmitting very slow CW by Rick Strobbe, ON7YD is now available for download from <http://www.qsl.net/on7yd/software.htm>

This version (4.01) is compatible with Windows 2000 and XP. Version 3.17 is still available from the same web page for users of earlier Windows editions.



## VLF QRP QRSS CW UK to Alaska

Alaska was worked from the United Kingdom using just 1 watt ERP. This is quite a feat for any band, but the Radio Society of Great Britain reports that Laurie Mayhead, G3AQC, was heard in Alaska on 136 kHz.

In the early hours of February 15th, he transmitted to Laurence Howell, GM4DMA/KL1X located in Anchorage, Alaska. Just before UK dawn at 0615 his call sign was clearly identified using software to read the signal.

G3AQC was using QRSS—very slow CW—with a 60-second-long dit. The 7278-km distance is a transmission record using a power of 1 watt ERP on 136 kHz.

Two years ago, Mayhead and Larry Kayser, VA3LK, made ham radio history when they completed the first two-way transatlantic exchange on 136 kHz, also using very slow speed CW. Last year G3AQC became the first person to span the Atlantic on 73 kHz.

## Whole World QRP Game

The Italian QRP Club, I-QRP Club has devised a game for all CW operators world-wide. The rules of WW I-QRP are as follows:

1. The OM of the whole world can participate in the WW I-QRP Game.

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2. Game objective: to achieve the highest score in a continuously updateable worldwide classification.
3. The score is determined by the QRB of a single QSO and is calculated in the following way: "(QRB x 5) : Pout" for example (5000 Km x 5) : 10 Watt = 2500 points - (5000 Km x 5) : 5 Watt = 5000 points (5000 Km x 5) : 4 Watt = 6250 points.
4. "Pout" is defined as the RF power output from the connector and will be considered in steps of 1 watt rounded to the highest number (e.g. 1.2W=2W - 5.9W=6W).
5. The QRB will be calculated by entering the geographical coordinates of the two qth's in dedicated software. In absence of coordinates the country-country QRB will be calculated.
6. For a homemade TX, or homemade RX, made by the participant, even from a Kit, a bonus of 1000 points will be added.
7. For homemade RX/TX, made by the participant, even from a Kit, a bonus of 2000 points will be added.
8. In case of controversies the decision of the OM Coordinator of the WW I-QRP Game will be final.

To participate, send a photocopy of the QSL confirming the occurred QSO, possibly in colour, and a declaration of the working conditions to: I-QRP CLUB c/o Ari Montebelluna, P.O.Box 11 - 31035, Crocetta del Montello (TV), ITALY.

Each participant may send a maximum of 3 QSLs in a period of 12

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months, for contacts made after 01/01/1999.

The OM Coordinator may request to see the original QSL at any time .

The classification of the participants will be regularly updated and will be published in the Bulletin of the I-QRP Club:

[www.arimontebelluna.it](http://www.arimontebelluna.it) or in specialized magazines at every significant variation.

## Morse Code Tie

A Morse code tie is available at a cost of £11.99 plus postage and packing. It can be ordered as item Number 2233 - Morse Code Tie from Transair Pilot Shop, Shoreham Airport, Shoreham by Sea, West Sussex BN43 5PA, UK. Phone +44 (0) 1273 466000. Orders can be placed on the internet at:

<http://www.transair.co.uk/system/index.html>

*(Information: Wyn Davies)*



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## E-Mails in Morse Code [brasspounder.com](http://brasspounder.com)

In MM84 on page 8, a web page was given for this software. Apologies but this was an error and the web address should have been:

<http://www.seanet.com/~harrypy/MorseMail/>

## Code Weaver Software

Tony Lacy, G4AUD of NU-WARE software (NU-MORSE, NU-TEST has released an interesting program called "CODE WEAVER" which can take audio samples and produce morse code.

For example, the sound of a Marconi Oceanspan transmitter which was recorded can be input to the program, and actual messages with that "accent" can be produced.

I've used the interesting sound of SLIDELL RADIO/ WNU's old 478 kHz transmitter (the transmitter had a bell tone to it.) and now by using the CODE WEAVER I can hear WNU sending the daily news - or whatever I want it to send.

How about Spark transmitters? Arc? GLD again! - the list is interesting! A great program to play with. This version there is available until 1st June 2003. The site is:

<http://www.nu-ware.com/Weaver/wdload.htm>

(David Ring Jr., N1EA)

## RSGB Morse Test Service 17<sup>th</sup> Anniversary Weekend

County Morse test teams will again be on the air during the 17th anniversary weekend of the 10th & 11th May 2003. For ease of identification, all stations will use a special event GBØ prefix, followed by the county code suffix; e.g. the Isle of Wight will use the callsign GBØIOW and London GBØLDN. The Chief Morse Examiner will use GBØCW and the Deputy Chief Morse Examiner GBØMTS.

There will be a minimum of 27 stations active and a Morse Test 17th anniversary certificate will be available to any amateur who makes contact with at least 10 of the GB stations. The cost of the certificate is £2.50 (cheque or postal order made out to RSGB), \$5 or 6 IRC's. Applications should be sent to the Chief Morse Examiner, David Waterworth, G4HNF, 116 Reading Road, Woodley, Reading Berks. RG5 3AD, UK. QSL cards are not required to claim the award, which is also available to listeners.

Activity will be concentrated in the 80 and 40 metre bands and in order to encourage newcomers to apply for the award each team will spend some time calling slowly in the Novice CW section of the 80 metre band, above 3560 kHz. The event is not a contest and examiners will be happy to reply at any preferred calling speed. There are no restrictions on the type of Morse key used, all are welcome to call in and enjoy the friendship.

*(David Waterworth G4HNF, RSGB Chief Morse Examiner)*

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## TASRT Purchase Revised

The Art and Skill of Radio-Telegraphy, Third Revised Edition by William G. Pierpont NØHFF is available from the Radio amateur Educational Society, Canada and their purchase arrangements have been revised. Please use the latest information to buy this book.

In keeping with the Morse code theme used by the Radio Amateur Educational Society (RAES) the cover has a picture of the Titanic with the first and last message sent by MGY these are in the background of the Book Title text. The story of the Titanic as recorded by Lloyd's of London is in the back of the book.

The Compact Print version is available in the following format:  
5.5 x 8.5 inch, two-column  
Coil binding (so the book will lie flat)  
Price is \$16.00 USD USA Delivery  
Price is \$19.50 USD International Delivery  
Price is \$26.00 CDN Canadian Delivery  
Price is £13.40 GBP UK Delivery

While the Compact version is adequate for most people, a GIANT PRINT version is now available:  
7 x 11 inch, two-column  
Coil binding (so the book will lie flat)  
Price is \$25.00 USD USA Delivery  
Price is \$33.00 USD International Delivery  
Price is \$36.00 CDN Canadian Delivery  
Price is £22.00 GBP UK Delivery

There are free versions for download on the internet:  
English download version <http://www.raes.ab.ca/TASRT.pdf> (1.8 MB)

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French download version [http://www.uft.net/titre\\_web.htm](http://www.uft.net/titre_web.htm)  
Japanese version <http://a1-club.hp.infoseek.co.jp/Art&Skill/Art&Skill.htm>

Books are shipped via Canada Post AIR-MAIL, which is included in the purchase price.

Please enclose a cheque, money order or IRC in the correct amount payable to the Radio Amateur Educational Society or (RAES). COD orders will not be accepted.

You may also use PayPal- URL <https://www.paypal.com/> using the following account: [orders@raes.ab.ca](mailto:orders@raes.ab.ca)

Please be sure to include your return mailing address and send your order to Radio Amateur Educational Society, 8607 - 34A Avenue, Edmonton, Alberta, Canada - T6K 0B9.

Phone: + 1 (780) 462-7372; E-Mail: [orders@raes.ab.ca](mailto:orders@raes.ab.ca)

Web page <http://www.raes.ab.ca/book/index.html>

The Radio Amateur Educational Society (RAES) is a Non-Profit Society registered in the province of Alberta, Canada.

## TM5CW Active Again

Dom, F5SJB will again be TM5CW for the CQ WPX CW contest. Also CW DX and QRP activity from May 24 to June 7, 2003. TM5CW is valid for the Lons-le-Saunier city telegraphy award.

Special QSL: DIRECT or via BURO.

(Information: Dominique MEIGE, F5SJB, F-39130 HAUTECOUR, France)

### THE MORSE ENTHUSIASTS GROUP SCOTLAND



MEGS was formed in 1991 to encourage the use of Morse, especially by newcomers. Regular skeds are held using our callsign 'GMORSE' each Monday and Thursday from 7 until 9 p.m. (local time) around 3.530MHz. Among other services, we offer Morse practice tapes free of charge, other than postage. This offer is now also available to *MM* readers. Membership is open worldwide, the 'Scotland' in our title simply shows place of origin. Lifetime membership £1.00.

Details from Secretary: G.M. Allan GM4HYF, 22 Tynwald Avenue, Rutherglen, Glasgow G73 4RN, Scotland.

### Morsum Magnificat Photocopy Service - Nos 1 to 37

The early issues of Morsum Magnificat © were not produced using digital techniques and therefore cannot be economically reprinted. See inside front cover for printed back-issues that are still available. A photocopy service for all earlier issues is now available. These are copies of issues held for reference purposes and therefore will not be of the same quality as printed copies.

Individual photocopies are folded, stapled and the edges cropped and prices include postage (priority/air mail to Europe and World):

**£6.50 – UK**

**£7.00 – Europe**

**£7.50 – World**

Order from the Morsum Magnificat address on the inside front cover. All the usual methods of payment are welcome. Please allow 28 days for delivery.

# Muckleburgh Update

by Tony Smith G4FAI

The activities of the North Norfolk Amateur Radio Group (NNARG) at the Muckleburgh Collection were reported in MM83, p.6. To recap briefly, the Collection is a military museum at Weybourne on England's North Norfolk coast, featuring working tanks and other vehicles, guns, missiles, and much historic militaria.

The NNARG is to be found in the "radio hut" at Muckleburgh, where it maintains and exhibits an interesting collection of vintage army, navy, air force, and other transmitters and receivers dating back to pre-WW2. The group also operates amateur station GB2MC on site using both Morse (QRP/

QRO, plus QRS from time to time) and speech.

Whilst the museum has been closed for the winter, the Group has spent its time reorganising the radio displays ready for the 2003 season. As visitors enter the foyer of the hut they are now greeted by the sound of computer generated Morse, as Jim Farrow W4FOK's program "The Mill" recreates the signals sent from and to the *Titanic* in 1912, at the same time translating them onto the computer screen for the benefit of visitors who are unfamiliar with the code. Also in the foyer is a newly created large "Morse board" giving information



Some of the receivers at Muckleburgh.

about the origins and history of Morse, both serious and entertaining, and displaying a number of older type Morse keys.

### **Voluntary Interceptors**

The radio exhibits in the hut include a range of receivers used for different purposes during WW2 and later. These include the T.1442 set, used by the RAF in forward airstrips to communicate in CW back to a base station up to several hundred miles away. The HRO, as used by "Y" stations in the armed services to monitor enemy transmissions, and also used by the Radio Security Service (RSS), which included the "Voluntary Interceptors",

radio amateur part-time members of RSS, who monitored the enemy in secret in their own homes; and the GEC BRT400 receiver used by the BBC monitoring service in the 1960s.

Other exhibits are organised into sections relative to their purposes. There are Army, Navy, Air force, and Clandestine sections, mostly including British and American equipment. Although essentially a radio exhibition, there is also a small display of non-radio methods of communication, including landline telegraphy, heliograph, and Aldis lamp, all of which can be demonstrated to visitors.

Amateur radio is well represented. On display is the



*A corner of the Radio Hut.*



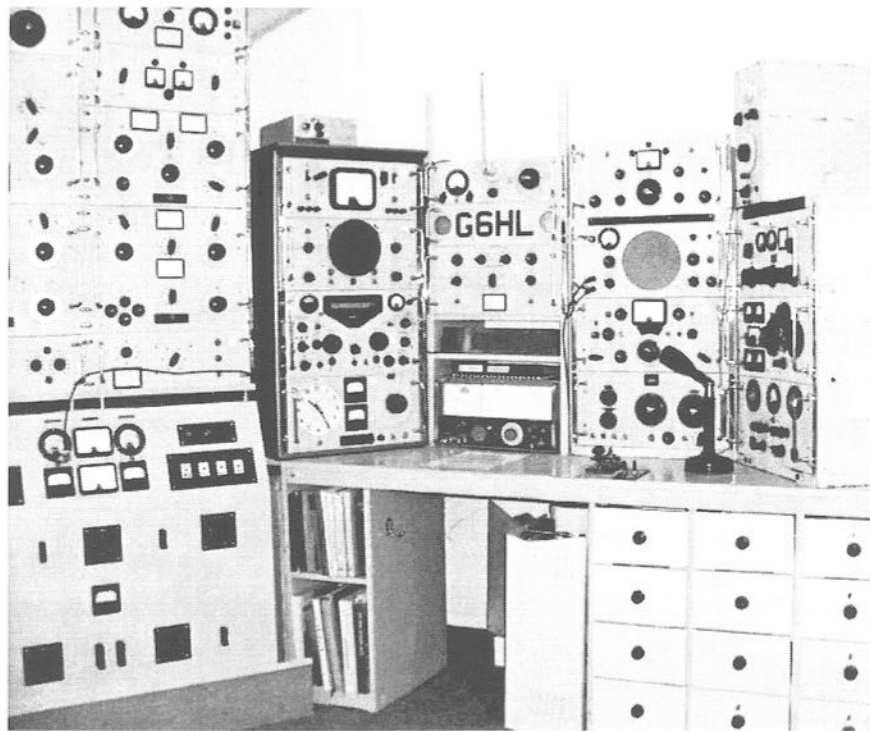
impressive home-built station of the late Wing Commander Ieuan E. Hill, G6HL, who was first licensed in 1927 as 6HL. In the display room there is also a modern QRP CW station, in regular use, while in the adjacent "shack" the main GB2MC QRO station operates with both CW and SSB.

#### Potato Power

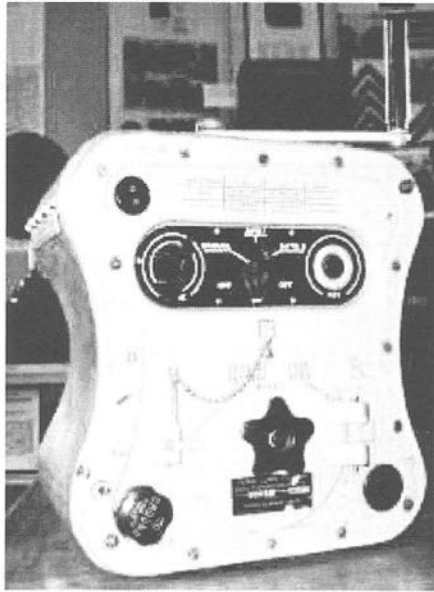
Children are welcomed when they visit the radio hut, and after hearing a crystal set, a potato-powered radio and a 1920's horn-speaker radio in operation they are shown how to send their name in Morse, for which they receive a certificate.

The NNARG is a friendly group of, mainly local, licensed amateurs and other radio buffs who have the time and enthusiasm to attend voluntarily, at least one day a week, to explain something of the wonder of wireless to the general public, and their efforts are well received by visitors to the hut, both adult and child.

Visiting radio amateurs are particularly welcome and should introduce themselves to members of the Group in the hut. Also very welcome are other radio enthusiasts, ex-service radio personnel, collectors, researchers and others with an interest in vintage radio, who may well be able to assist



*Home-built station of G6HL.*



"Gibson Girl", aircraft emergency transmitter.

the Group in its ongoing research into the background, and use made, of the various exhibits in their time.

#### A Good Day Out

The radio collection is continually expanding, and the Group welcomes donations of appropriate early equipment. It is also interested in swapping surplus items, which become available from time to time, with other museums or collectors. It has a good collection of equipment manuals, and may on occasion be able to provide copies of required documents for other collections, etc, by special arrangement.

The Muckleburgh Collection is open daily from Easter to early November, and during this period the radio hut can be visited on Wednesdays and Thursdays, plus some weekends

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1920's horn speaker radio in working order.

during August. A visit to Muckleburgh, makes a good day out. There is a nice restaurant, and for any radio enthusiast a visit to the radio hut is a real bonus. If you are on holiday in North Norfolk, come and see us. If you live not too far away, make a special trip. If you belong to a radio club, organise a club visit. We look forward to seeing you!

Admission charges for 2003 are Adults - £5.50; Senior Citizens - £4.50; Children - £3.00; Family Ticket - £13.50. Further information about the Muckleburgh Collection can be found on the internet at [www.Muckleburgh.co.uk](http://www.Muckleburgh.co.uk)

Further information about the NNARG and its activities can be obtained by initially contacting Tony Smith G4FAI, QTHR, or e-mail, [g4fai@connectfree.co.uk](mailto:g4fai@connectfree.co.uk) **MM**

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**E**LECTRICAL TELEGRAPHY was only seriously developed in the 19<sup>th</sup> Century but there had been interesting earlier experiments. In 1747 Dr. Watson, Bishop of Llandaff stretched a wire across the Thames. One end was connected to the outer coating of a Leyden jar; the inner coating was connected through himself to the earth. On the far side of the river an assistant held the wire, on completion of the circuit both felt a shock. This may have been the first instance of an earth return connection having been used.

One of the most impractical telegraphs ever conceived was that of M. Vorselmann de Heer. Shocks were sent via 10 wires to metal keys on which rested the fingers and thumbs of the person at the receiving end!

A physiological telegraph was suggested in the 'Mechanics Magazine' of 1825:

*"By a series of graduations in the strength and number of shocks, and the interval between each, every variety of signal may be made quite intelligible, without exposure to the public eye as in the usual telegraph<sup>1</sup>, and without any obstruction from darkness, fogs, & etc. a signal would serve as its own alarm to a drowsy officer on the night watch. Let the first shock pass through his elbows, then he will be quite awake to the second. "*

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## Trains, Times & Telegraphs

by E. Geoffrey Walsh  
GM4FH (SK)

The Edinburgh trained surgeon, O'Shaughnessy, who set up the telegraphic system in India, at first intended that the messages should be received by electric shocks to be felt by the operators. At times telegraphists, lacking equipment have, by taking hold of a wire, been able to interpret the signals being passed.

My uncle, Jim Simmons, a signaller in France with the Indian Cavalry near the Somme, wrote in his diary on March 11<sup>th</sup> 1915:

*"4.00am - Leaving Mametz after a night of muddle and excitement, loading up wagons etc. All signal squadron mounted on bicycles and carrying all kit. Feeling out of training for cycling with such a pack. Are we really going to see some of the war at last! We go ...to Lozinghem where we find the corps have laid a cable for us to the chateau grounds. Picking up the end of cable I can feel the corps calling up "V-I-B"*

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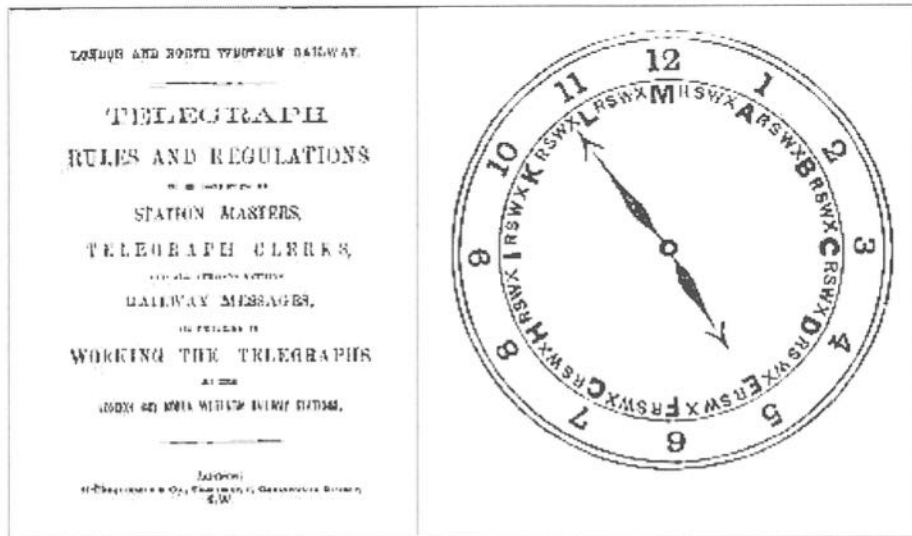


Figure 1. Left - The regulations for the London and North Western Railway. Right - The letters on the dial indicated the hour and the letters

(our call) but we cannot answer for another hour for our transport has broken down and had to be reloaded. All our telegraph instruments were on this wagon...Signal office in a sort of summer house in chateau grounds."

Telegraphy by such systems was bound to be unreliable; the development of galvanometers was an advance. A magnetised needle in a coil of wire can be influenced by the passage of a small current; sounders used later for Morse signals were thirstier.

### Railway Time

Before the advent of the railway and telegraph each town had its own time according to its longitude and the idea that all parts of Britain have the same time is useful fiction. Noon in London is not the same as noon in

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Cornwall. The English railway companies at first had handbills at the stations giving the times of their trains. There must have been problems with the transmission of numerals. The London & North Western Railway used a code of letters; 5.14 would be E.A.X., whilst 2.17 would be B.A.S (Figure 1, Right and in Figure 4, Upper Right) letters are again used to replace numbers. The time when a message was sent was coded in this way. A section headed 'Time Current' reads:

*"The correct time to be sent from Chief Stations daily, at 10.0 a.m.. At two minutes before 10 the needle will be held over to H on double needle, anti to + on single needle and at 10 a.m. moved in the opposite direction to indicate that time is sent. Junction Stations are to transmit the Time Current on to the Branch Lines."*

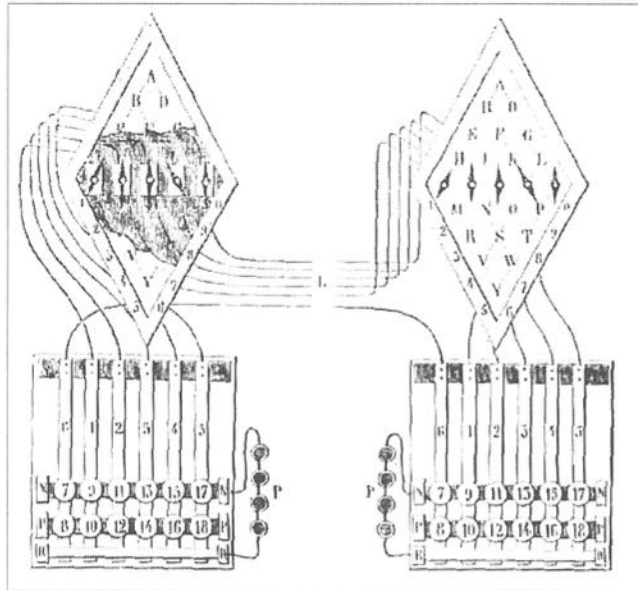


Figure 2. Wheatstone & Cooke's five-needle telegraph.  
The convergence of the needles indicated the letter.

By 1842 Bradshaw's monthly guide was available and covered all classes of trains and by 1854 the Royal Greenwich Observatory was connected by one line of wires with the South-Eastern and Electric Telegraph system, and by another with the system of the submarine and European telegraph. Times had been sent to the Cambridge, Edinburgh, Paris and Brussels observatories and a telegraphic signal could cause the drop of a time-ball at the offices of the Electric Telegraph Company in the Strand. Different companies had their own times until with the establishment of the Railway Clearing House Greenwich Mean Time was adopted. There was dissemination of time signals along the various lines of railway and in 1880 'Railway Time' became the standard for the whole of

Britain. The 'Definition of Time Act' of that year made the use of Greenwich Mean Time a legal requirement in Great Britain.

In The USA there was at first also no cooperation between the different private railway companies, each company had its own time, depending on the location of the head office. In Pittsburgh six clocks displayed the times of different railroad companies.

The country was divided into four time zones in 1889 but legal recognition of these as regional standard times followed only in 1918.

#### Control of Trains by Telegraph

An early instrument used 5 wires to control 5 needles; the needles could point to 20 letters, those omitted were C, J, Q, U, X and Z; five wires were needed or six if an earth return was not used (Figures 2 & 3). The messages could be read by untrained staff. The first public railway, the Liverpool & Manchester, was experiencing difficulties with trains going downhill through a tunnel into the Lime Street Station; they were hauled back by a cable attached to a winding engine but the use of a telegraph was rejected. The first line to use a telegraph was of two

miles length in London, the trains being hauled up by rope from Euston to Camden Town. The system was part of the London & Birmingham railway; Robert Stephenson was the engineer and the men at the winding gear could be informed when the train was ready to move. A telegraph was installed on the Great Western

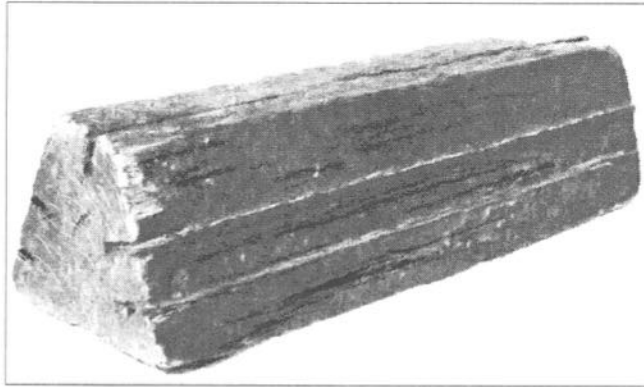


Figure 3. A section of a wood beam with slots for the wires of the five-needle telegraph. The grooves were plugged with wooden strips and the baulk painted with tar. They were laid in a trench alongside the railway line filled with pitch.

Railway between Paddington Station and West Drayton in June 1838; six wires were run in an iron conduit, the cost was £2,817.10s. In a later extension to Slough the wire was insulated by silk and suspended through goose quills attached to posts along the railway. The service was opened to the public in 1843, telegrams being sent on the payment of a fee. Demonstrations of the system were given at Paddington and at Slough, a notice read:

*"The public are respectfully informed that this interesting & most extraordinary Apparatus, by means of which upwards of 50 SIGNALS can be transmitted to a Distance of 280,000 MILES in ONE MINUTE, may be seen in operation daily... ADMISSION 1s."*

On August 6<sup>th</sup> 1844 a telegram from Windsor via the same line was sent to 'The Times' announcing that

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Queen Victoria had given birth to a son, Prince Alfred at 07.50 a.m. By 8.30 a.m. the paper had reported the happy event.

For a long time the case of a letter could not be changed. The apprehension of a murderer brought the importance of the telegraph into prominence. A message was sent from Slough to Paddington on January 1<sup>st</sup> 1845 that read:

*"A MURDER HAS JUST BEEN COMMITTED AT SALT HILL AND THE SUSPECTED MURDERER WAS SEEN TO TAKE A FIRST CLASS TICKET TO LONDON BY THE TRAIN WHICH LEFT SLOUGH AT 7.42 P.M. HE IS IN THE GARB OF A KWAKER."*

The word 'Kwaker' was a puzzle, but it was resolved as meaning 'Quaker' when the operator remembered that the system had no way of sending 'Q' or 'U'. In London

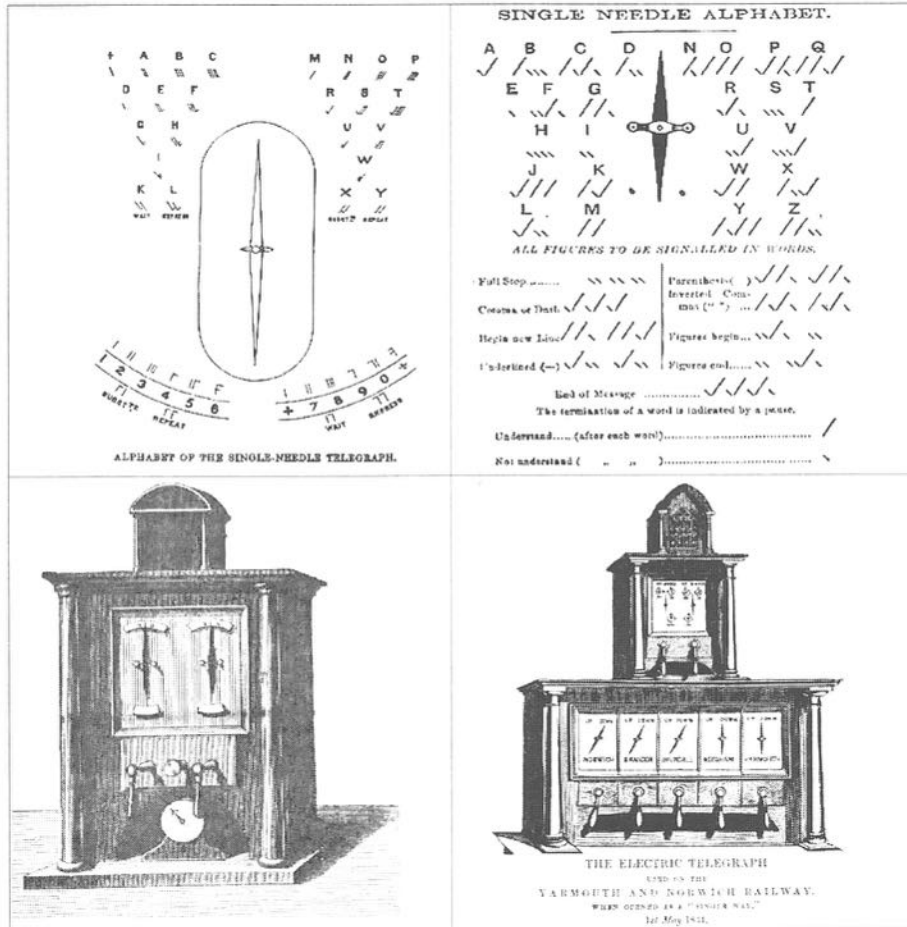


Figure 4. Upper Left - an early single needle instrument.. Upper Right - A single needle system used by the London and North Western Railway. Lower Left - A Cooke & Wheatstone double needle telegraph. Lower Right - Five single needle systems for connecting to different lines, above a two-needle system. On top of both are 'alarms' - apparently bells.

the police were waiting, trailed the suspect, Tawell, who was arrested, convicted and hanged. He had poisoned his mistress; her screams had been heard, and he had been seen running off. As he sat in the train the message was being sent; the public became vividly aware of the importance of the telegraph.

Before long instruments having two or only one needles replaced the five needle instruments (Figures 4 & 5).

Initially trains were dispatched at set intervals, but there were problems engines broke down and slow stopping trains were sent ahead of expresses. A national network was developing each company running



Figure 5. The cabinet shows two single needle instruments, one for the 'up' and the other for the 'down' line of the railway. For this only two wires and an earth connection will have been needed. For a five needle Wheatstone instrument four wires and an earth were required. However eight wires are shown suggesting that originally there were two Wheatstone five needle instruments (Pictorial Times 1845).

independently to their own set times. Cooke however recommended that the track should be divided into 'blocks'; if his section was clear the signalman could signal that he could receive a train (Figure 6).

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The New York and Erie was the first American railroad to control trains by telegraph. Cautiously taken up at first in 1851 it proved a great success. In 1860 there were two wires running the whole length of the road and Prescott wrote of it:

*"Both of the wires are kept almost constantly busy, — most of the time in transmitting messages for the road, although the line is now open to the public, and the revenue derived from paid messages amounts to about \$ 15,000 per year. The expense of operating the line is about \$ 36,000 per annum.*

*The length of each wire (upon the main line) is four hundred and sixty-nine miles. Beside this they have the Piermont and Newburg branches, making altogether over one thousand miles of line.*

*One of their wires is divided into sections to correspond with the division of the road; the business of each division being transacted separately from the others. The other they work in one circuit between New York and Dunkirk, four hundred and sixty-nine miles.*

*They employ about one hundred operators, seven repairers, twelve messenger-boys, and sixty-eight offices, —seventeen of which are kept open constantly, both day and night.*

*They use the Morse apparatus; — in the main circuit the Grove battery, and for locals Daniell's improved zinc and copper.*

*In concluding this description of the use of the telegraph upon one of the*



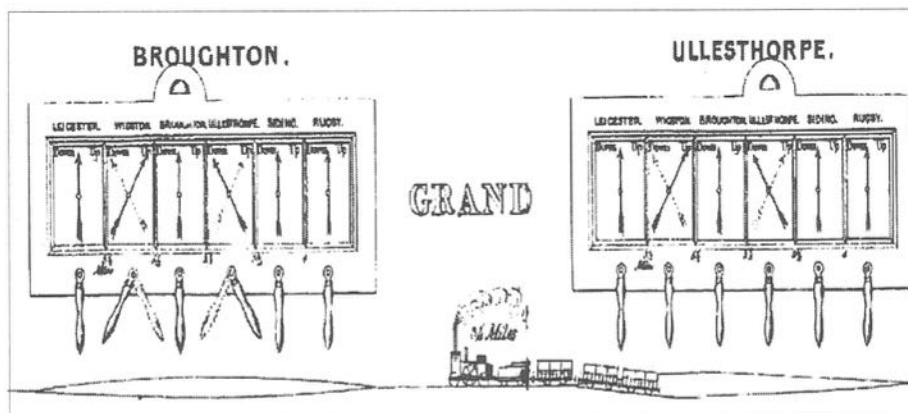


Figure 6. An example of a 'block' in this instance of merely 3¼ miles, the other examples too are of quite short distances. Single needle instruments are shown. This is a small part of a large 'pull out'. The word GRAND refers to the 'Southern Grand Division' (Cooke 1842).

*best-managed roads in this country, we will say, what strict justice requires, that to Charles Minot, Esq. is due the credit of its conception and completion, in the face of great opposition on the part of other officers of the road, the accomplishment of which has been of inestimable benefit to both the railroad and the public generally."*

Thomas Edison, the pioneer of electric lighting and much else in his youth sold daily papers that he himself had published on trains at the time of the American Civil War. When news of important battles came through the papers sold well. In August 1862 the young son of the agent of the Mount Clemens station was playing in the gravel between the rail tracks; a boxcar out of control without a brakeman was coming towards him; Edison noticed the peril and snatched the boy to safety. The grateful father offered to teach Edison train telegraphy; the offer was at once accepted.

20

Edison was an inveterate experimenter and in the compartment of the train allotted to him he hoarded chemicals. One day a stick of phosphorus fell from its jar and started a fire; the guard threw him off, together with his printing press at the next station; he was devastated. He moved his press but not his dangerous chemicals back to the family home.

Edison became a railroad telegraphist; the hours of work for the night operator were from 7 p.m. to 7 a.m., every hour he was required to send the numeral 6 to indicate that he was awake. However he attached to a clock a disc with notches in the rim to enable this to be done automatically, perhaps a precursor of the Omnigraph (Pennes 2002). When the line was quiet the night watchman could send the signal but an order to hold a freight train was missed and another train was travelling in the opposite direction on the same track. Fortunately the engine drivers saw the problem and disaster

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Figure 7. 'Oh, he cried, I have crossed them' (Kerr 1901).

was averted but Edison was dismissed.

The short story accompanying Figure 7 gives another ending, a cyclone lifted the track in the nick of time and again there was no collision.

#### **Telegraphic Communication with Moving Trains**

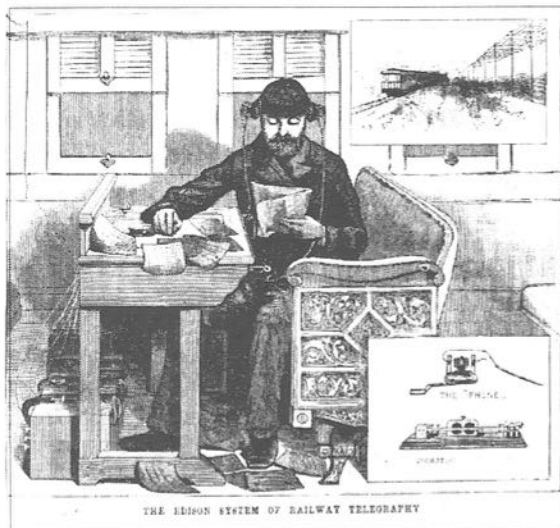
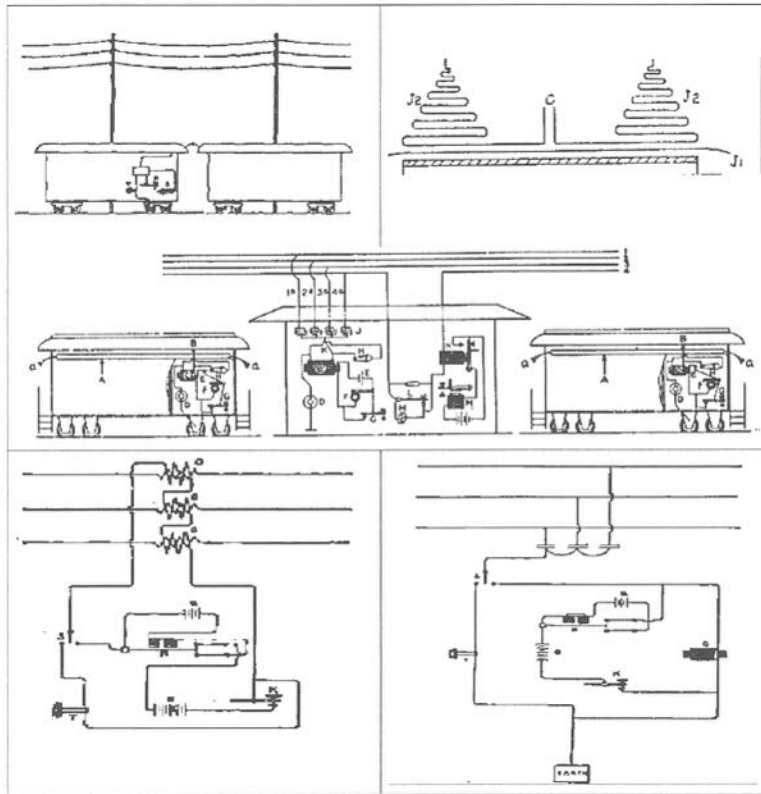
*An American System.* Strips of metal were laid along the top of the coach or coaches. A buzzer was constantly in action at 500 Hz in the coach and in the station. The vibrations, broken into dots and dashes by a Morse key, could be transmitted to the overhead telegraph lines and were picked up at the other end by a high impedance telephone receiver. A return connection was made through the wheels (Figures 8 & 9).

The system was first used on the

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Staten Island Railroad and later for several years on the Lehigh Valley Railroad. In a demonstration trip of 54 miles to Easton, Pennsylvania, many telegrams were sent and received; a message was sent to the 'cable king', John Pender, in London, England, and a reply received from him. There is listed an American patent No 384,830 'Railway signalling-Edison and Gilliland' Nov. 24. 1886. The *Scientific American's* glowing account includes:

*"Of its usefulness in averting accidents, by keeping each train informed of the whereabouts of the one immediately ahead or following it, in intercepting criminals, and in promoting general social and commercial intercourse, it will be unnecessary to speak."*



Above: Figure 8. Top Left – View of coaches picking up signals from overhead wires. Top Right – A pile wound jigger, a step up transformer as used in the Poldu transmitter in Cornwall. C is a capacitor. Middle - The arrangements at the station and in the coaches, the figure shows a jigger in each coach. Lower - Two systems to couple the transmitter at the station to the overhead lines. Left - coupling by inductance. Right - Coupling by capacitors.

Left: Figure 9. The operator is well equipped for travel in the winter in an unheated coach. Several large batteries are on the floor.



Right: Figure 10. The arrangements in the coach devised by Bonelli. A sliding contact seems to be touching a horizontal bar, 'L'-'L', along the track.

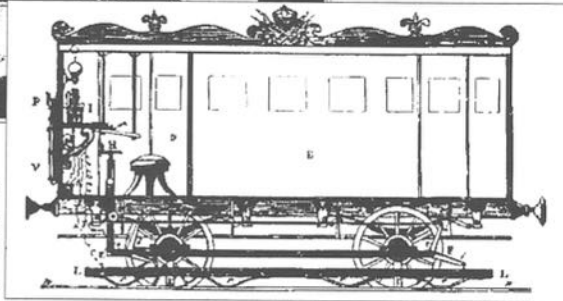


Figure 11. Bonelli's system using a single needle instrument, the gentlemen wearing top hats are directors of the railway company the others are assistants.

**A German System.** In a system devised by G. Bonelli the signals appear to have been picked up by a sliding contact (Figures 10 & 11).

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#### Acknowledgements

The author thanks Mr. Peter McGregor of Eastchester N.Y. and Ing. Kurt Zülke, DG9FEN, of Bad Homburg, Germany and to the Mary Evans Library for information.

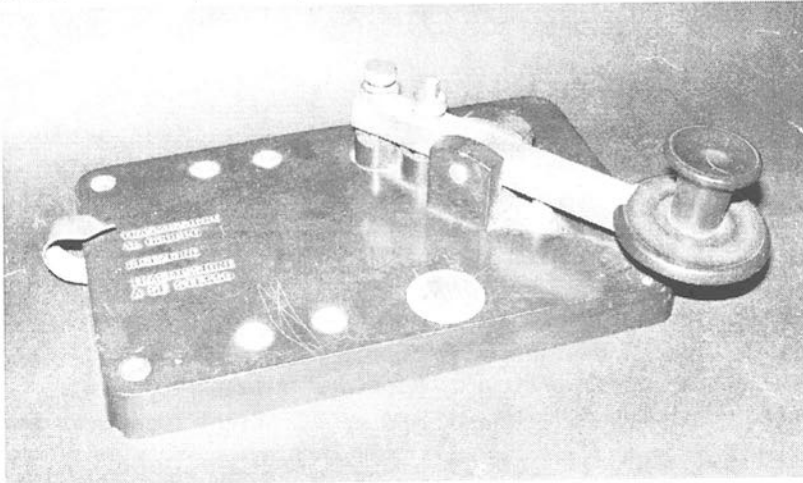
**MM**

<sup>1</sup> The reference is to optical telegraphs with arms projecting from towers to form a chain for relaying the messages.

# Showcase

Readers are invited to contribute any additional information and stories, no matter how minor, to the Editor, *Morsum Magnificat*. There have been thousands of designs of keys & telegraphy instruments. Information will be lost unless it is compiled in one place and shared with other readers.

Photo/Collection: George Eddowes

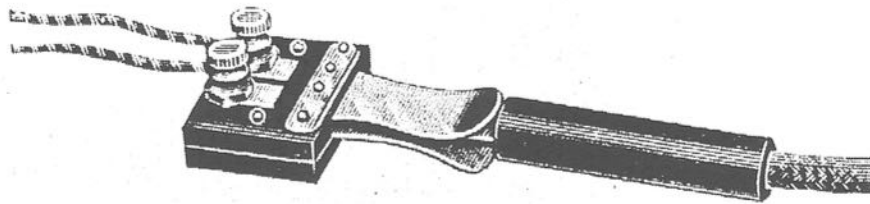


This key was sent to George Eddowes by Minko, LZ1XL. It is an Italian key and has three selector positions, using the pointer on the left. They are marked:

TRANSMISSIONE AL GRUPPO  
RICEZIONE  
TRANSMISSIONE A SE STESSO

There is what appears to be the maker on the underside, "S.T.I.R.E. VIA ORFEO 35 BOLOGNA".

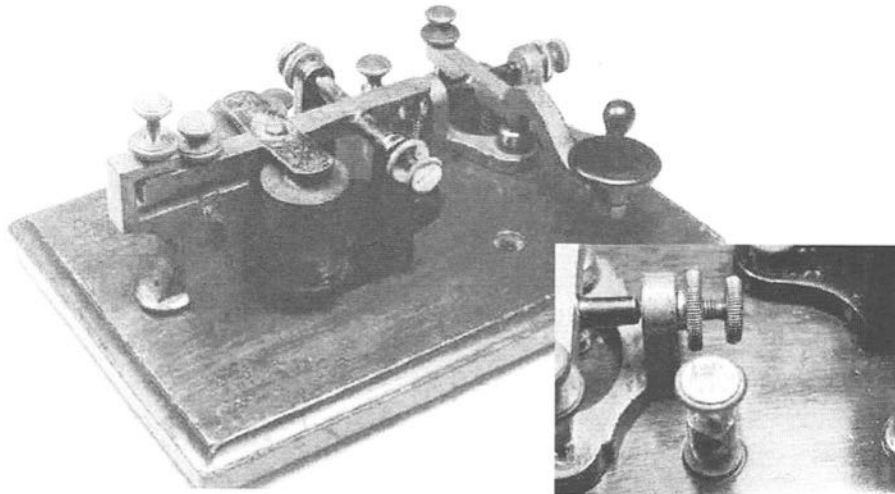
## Safety Jack



Of special interest to Vibroplex enthusiasts. A safety jack which prevents open circuits. It automatically closes the circuit when the connecting wedge is withdrawn. As advertised in a Martin Vibroplex manual, discovered by John Elwood, WW7P.

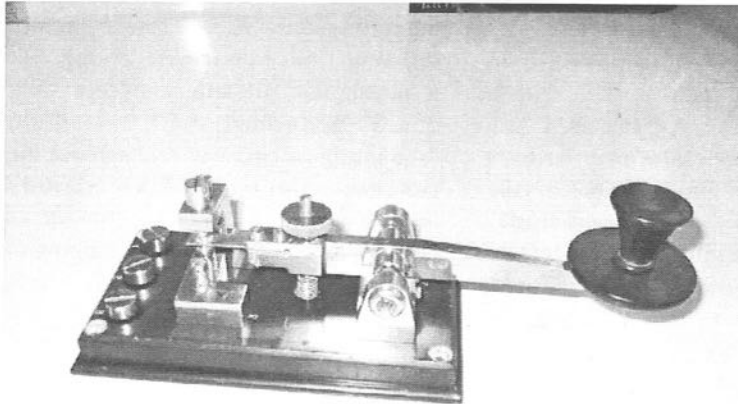


Photo/Collection: Dave Pennes



*This item is a very unusual camelback practice set which is remarkable in the inexpensive construction. The key and sounder are made of gilded cast iron. An interesting feature is that the moving arm of the sounder is actually cast as all one piece. The cross arms that contact the magnets are actually not attached with a screw. The cross arms have been painted black, and even the screw is a fake. The item was undoubtedly a sand casting of an original that did have a cross arm and a screw. The dimensions, design, and knurling are decidedly different from the ubiquitous Camelback practice sets made by J.H. Bunnell, and this item is of unknown manufacture, although the knurling (see close-up photo) suggests Tillotson or Greeley as likely manufacturer.*

Photo/Collection: Wyn Davies



*A nice PS 213A key from Australia. It is very well plated but does not have the sheathing on the arm like the normal version.*

---

**W**

HO INVENTED "Iambic Keying"? This was a query I received recently. By the time I built my first "modern" keyer in 1977, the famous Accukeyer developed by James Garrett, WB4VVF, iambic keying was well established, and all state-of-the-art designs included it.

Aside: All electronic keyers generate continuous strings of either dits or dahs when the corresponding paddle is pressed - conventionally, dits are controlled by the thumb. If both paddles are pressed simultaneously, they usually still generate a continuous stream of dahs. But an iambic keyer generates an alternating sequence of dits and dahs, starting with the element whose paddle was pressed first, and ending with that whose paddle was released last.

This makes it possible to generate letters such as "C" with a single "squeeze". As far as I can discover (somebody else may have an earlier reference?) true iambic keying was preceded by "single dot-insertion" or "squeeze" keying. This seems to have been developed by Ed Brown, W0EPV, sometime in 1965, and was described in QST by Jimmy Moss, W5GRJ in 1967.1.

Moss describes a rather complex keyer circuit requiring 4 dual triodes, 1 npn transistor, a dozen diodes, and assorted passive components. He describes circuit

## Morse Matters

Who Invented "Iambic Keying"

JPS NIR-12 DSP Audio Filter

How Fast is Fast?

by Dr Gary Bold, ZL1AN

operation in great detail, but you wouldn't want to build it today.

It operated thus: If the dit paddle was closed while the dah paddle was also closed, a single dit - but only one - was injected into the dah stream. After this, the keyer reverted to outputting only dahs. This is slightly different from true iambic keying, but it meant that all letters, except "X", could be formed with a single "squeeze" - if care was taken about the squeeze timing. Many letters require the same "squeeze" timing as "true iambic" keying, but some are different. For example, "J" can be formed on a "squeeze" keyer by keeping both paddles depressed after the initial dash had been formed, whereas a "true iambic" keyer requires the dit paddle to be released during the first dash - or another dit will follow instead of the required dah. The "end of transmission" signal 'AR'

requires two squeezes on a "squeeze" keyer, but only one on a "true iambic" keyer. All rather subtle. This was lauded by Moss as a great advance. He wrote "This new keyer is so different that it may change the whole concept of keying code. It has taken an average of about 3 weeks for one to learn the new system, and the majority of users .... acclaim it superior to anything yet developed".

He gave timing charts for forming all characters, and went on to enthuse "I think I have brought about a first in telegraphy. By virtue of the ease with which the keyer can be mastered, I can do the keying with my toes! Excusing an error here and there, each character is flawless, and I can attain a speed of about 23 wpm. As far as I can determine, this feat has never been accomplished before".

Indeed. Maybe he should have said "this feat..." yuk yuk. I must be recovering. This called for a trial. Placing my Brown Brothers' paddle on the floor, I found I could key almost immediately, and iambically at 12 wpm using my two big toes. I'd probably improve with practice. Next I tried my left big toe and the one next to it (maybe I could also fill in the log with my right toes?) but agonising cramp caused was the main result. Note: It is illegal to operate this way on QLF night.

After all that, I still don't know who invented "true iambic" keying, but I'm led to believe that H. G. Gensler, K8OCO, or W1IMQ, described it also in 1967. Can anyone help with the reference?

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### **The JPS NIR-12 DSP Audio Filter**

In MM 81, I discussed the passbands of the JPS NIR-12 DSP audio filter unit. Many modern radios have similar DSP filters built in, but if yours doesn't, and you'd like to check out DSP filtering, and you have a Pentium PC running Win95 or better, with a reasonably modern soundcard, download a program called "Binster", by Lionel G3PPT, from <http://www.lsear.freereserve.co.uk/page2.html>

Lionel released this completely free program in January 2000, and it always surprises me that it hasn't attracted more attention. Switch out any audio filters your receiver already has, connect the audio output (the headphone jack is fine) to your soundcard input and fire it up. The program operating window shown in Figure 1 will appear. Adjust the soundcard recording and playback controls until you see something happening in the horizontal strip at top, and hear sound coming out of the computer speakers.

The horizontal strip is an almost real-time spectrogram, which slowly scrolls up from bottom to top. The frequency display range is from 0 to 2500 Hz. Blackness is proportional to signal strength, so incoming CW signals in the passband will appear as disconnected vertical lines. If you're on the bottom of 20 metres when the band is busy, you'll see several such signals.

Binster will start with the "Passband" filter selected, which means "band-pass". This is the best mode for getting to grips with what it can do. If both the

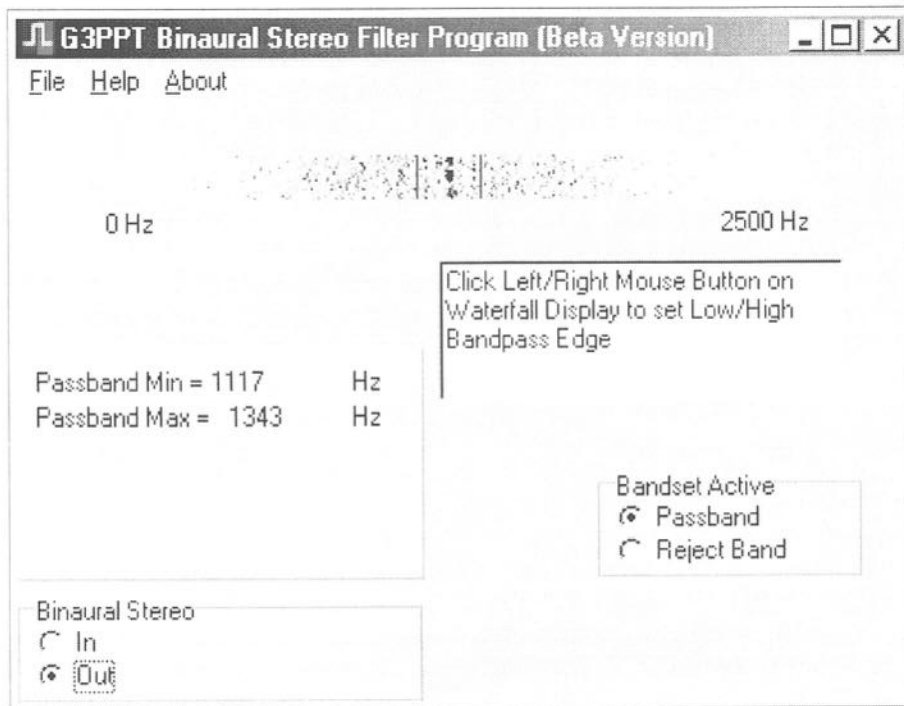


Figure 1. Binster program operating window

receiver and PC outputs are audible, you'll hear that the sound coming from the PC speakers has a delay of about half a second. This is initially disconcerting, and is a result of the unavoidable delay that DSP filtering introduces. I find it best to tune to a desired signal first using the receiver audio, then turn this down or disable it and listen to the PC audio. It's also convenient to keep the soundcard "Volume control" window active so that you can adjust the output audio level to suit your ears.

#### Setting the Filter

You'll see two vertical red lines on the spectrogram display, which mark

the passband edges. Moving the mouse pointer into the spectrogram window allows you to change them - the left/right mouse buttons simply re-set the positions of the low/high limits. The frequencies you've selected are shown at the left. That's it. Nothing more to do.

If you can see several CW (or other) signals in the passband, setting the passband around any one of them causes all of the others to vanish!. This is quite dramatic, because the filter skirts - as in all good DSP filters - are very steep. How steep are they? Figures 2 and 3 show a couple of sample passbands, which I produced from 10 second rf white-noise samples,

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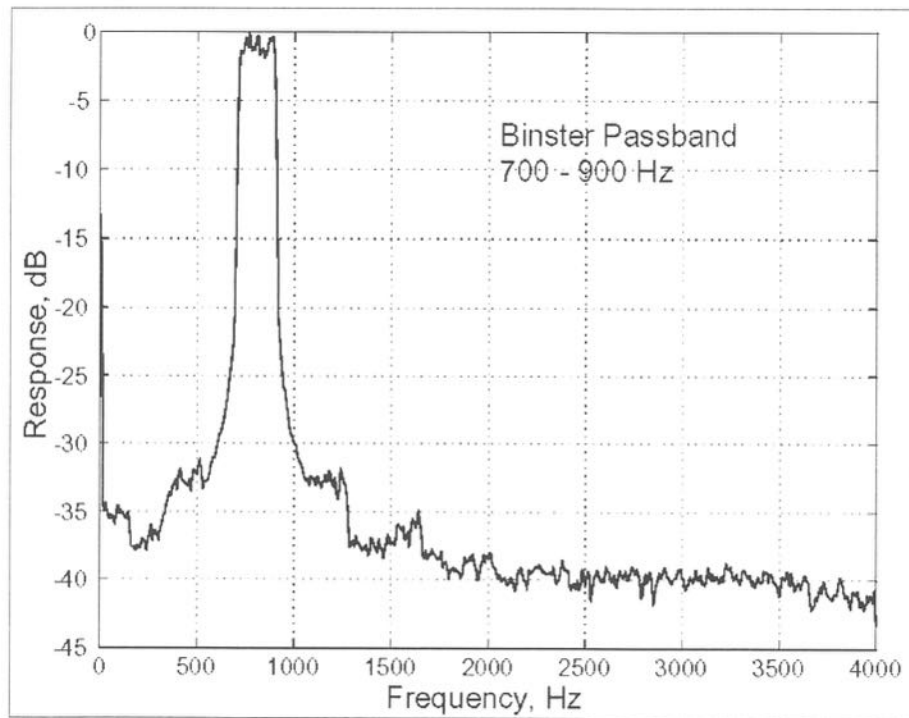


Figure 2.

Goldwave, and a Matlab program. Figure 2 shows a nominal 700 - 900 Hz filter, which has measured 6 dB-down frequencies of 710 and 905 Hz, and 25 dB down frequencies of 670 and 941 Hz. Figure 3 shows a 400 - 1500 Hz filter, which could be useful for listening to SSB signals on a crowded band. You can see that the passband edges are similarly very steep - much steeper than can be obtained by conventional analogue filters.

The wiggles on the traces are artefacts, caused by the limited time sample, and would disappear if an infinite number of samples were averaged. You'll see, however, that the ultimate rejection of the plots shown is *MM85 - March/April 2003*

only 35 dB or so, whereas the NIR-12 filters achieved 5 - 15 dB better. This is mainly a result of the fancy footwork I had to do to make these plots. Two computers are involved - one to run Binster, and the other to sample the output from the first one's PC speaker line. Thus the noise floor shows contributions from two computers, and two soundcards - the signal has been sampled, converted back to an analogue waveform, then sampled again.

#### Technical Details

Skip this bit unless you're a keen DSP buff. But if I don't include it, I'll get emails from all over asking how Lionel achieves such startlingly sharp

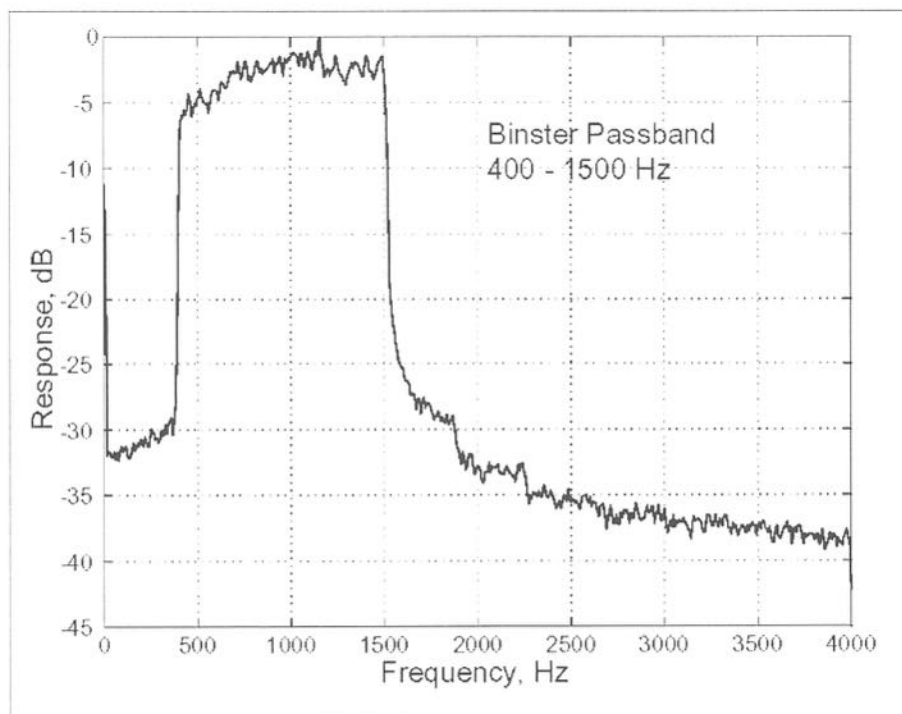


Figure 3.

cut-offs. He's implemented a real-time algorithm which neither he nor I have seen anywhere else.

Hardware DSP filters invariably use FIR "tapped delay-line" filters, but Lionel uses an FFT-based method. His technique is to apply a half-raised cosine window to the first and last quarters of each 2048 point, 8 kHz, 16 bit time sample before the FFT, then to zero the frequency bins in the stop-bands, and transform back into the time domain.

Conventionally, zeroing bins always results in discontinuities (clicks) in the output, but Lionel uses only the middle segment of each filtered sample, and these apparently

concatenate seamlessly and clicklessly - I certainly can't hear any such artefacts. I am amazed that this works as well as it does.

#### **Binster's Binaural Capability**

There's more. Note the "Binaural stereo" radio buttons at bottom left. When this feature is selected, lower frequencies are sent to the left speaker, and higher ones to the right. The idea - which has been around for quite a while - is that this gives a "directionality" to sounds of different frequencies, and the brain can use this additional information to isolate the tone it really wants to hear. Of course, you'll need stereo



headphones to best investigate this.

Well, I didn't find it made any difference to my copying ability, though some have apparently said otherwise. I'd like your feedback on this though. Check it out and tell us what you experienced. Some years back, at least one hardware implementation of a binaural reception filter was produced, but using phase instead of frequency discrimination.

A progressive phase delay with frequency was introduced in one earphone, and a phase advance with frequency in the other. The idea was that the ear's phase-sensitivity would (might?) cause signals of different frequencies to appear from azimuthally different directions, helping discrimination. If you have any experience of this, I'd like to hear about that too. If this works better, maybe a combination of amplitude and frequency discrimination would work better still - and this would not be too difficult to implement with soundcard/DSP techniques.

A help file for Binster is provided, but you only need to read it once. A summary of the very simple operating instructions are shown on-screen. You can also select a "band-stop function", which does exactly what you'd expect, with the same sharp passband edges.

### **How Fast is Fast?**

A reader queried a statement made in a description of telegraph systems, around 1917, which said "The speed of the ordinary Morse instrument

is limited to the rapidity with which the hand of the operator can move the key, and varies from about 25 to 50 words per minute. 50 words per minute is the sending rate of expert operators."

He asked "Can this be right? I'm sure that I read some while back that there is a world record for Hand-key sending, and that it's 35 wpm." This is correct. Although the official world record, as confirmed by my edition of the Guinness Book of Records was set by Harry Turner, W9YZE, in 1942 at a US Army Signal Corps School, you'll come across repeated references to old-time telegraphers sending much faster than this, apparently for hours on end. How can this be?

The reason is that they're talking about American Morse, sent by skilled US landline Telegraph operators. American Morse was estimated by US authority Bill Pierpont to be about 45% faster than International, so this equates to a speed of 35 wpm in the code Harry used, the code we use today.

American Morse, as used in 1917, was very different from the code we know. There were two types of dashes, and some letters had internal spaces. Some time back, Iain, ZL2BJC, sent me photocopies of some pages of the Hawkins Electrical Guide", No.8, published in 1917. This gives the following timing definitions for American Morse:

The dash is equal to two dots.

The long dash is equal to four dots.

The interval in spaced letters is equal to two dots.

The space between letters of a word is equal to two dots.

The space between words is equal to three dots.

We don't have a "long dash" at all, and the "normal" dash length given is only twice that of the dot. This would make the Morse very "square", but there's anecdotal evidence that accomplished American Morse operators did send like that. Some letters had internal spaces, which is the same as the interval between words! This would make reading rather context dependent, as "C", for example, is "ditdit dit" which could be interpreted as "IE". Experienced operators apparently compensated for such possibilities by adjusting the spacing slightly when there was possibility of confusion, and making internal spaces more like "brief hesitations".

However, American Morse seemed so potentially irregular to the tidy European mind that an Austrian, Frederick Gherke, rationalised it into "Continental" Morse around 1850, eliminating the long dash and internally spaced letters, lengthening the normal dash and differentiating the spaces more clearly. This, with some further modifications, became our present "International" code. But there were many operators around the turn of the century who could use either

with equal facility - they seemed just like two dialects of the same language.

Many times I've heard old-timers say that they could send at 25 - 30 wpm on a hand key, but I've never personally heard anyone do it. If you think you can, send me a tape recording or a WAV file, I'd be very interested. Personally, I run out at about 18 wpm - only a moderate hand-key speed. But I changed to bugs and then keyers when very young, and never developed the high-speed wrist flutter necessary to go faster than this. You can estimate your potential upper speed limit with a battery, key and frequency counter. Just find the maximum frequency at which you can pump the key up and down. 10 Hz is equivalent to 24 wpm, so Harry Turner could flutter his wrist at about 15 Hz. Try it. You'll be surprised how fast even 24 wpm is!

Of course, keyers make it a lot easier, and we shouldn't get obsessed by speed anyway. Accuracy is far more important, and there's no need for anyone to go faster than 18 - 20 wpm on a Ham band to have QSOs all over the world. See you on the bottom of the bands.

#### Reference

The W0EPV Squeeze Keyer,  
Jimmy Moss, QST July 1967, pp 22 -  
28, 154. MM

### FISTS CW Club – The International Morse Preservation Society



FISTS exists to promote amateur CW activity. It welcomes members with all levels of Morse proficiency, and especially newcomers to the key.

The club has awards, nets (including a beginners' net), dial-a-sked for beginners, straight key activities, QSL bureau, newsletter, and discounts from traders.

Further information can be obtained from **Geo. Longden G3ZQS, 119 Cemetery Road, Darwen, Lancs BB3 2LZ**. Send an s.a.e. or two IRCs.

# William G. Pierpont, NØHFF

## SK

by Tony Smith, G4FAI

Bill Pierpont, whose work has appeared in MM on many occasions over the years, died on February 20<sup>th</sup> 2003 aged 88 after a long illness.

Bill was a devout Christian and an expert linguist. Through his skilful Biblical research and language expertise, he co-authored publication some years ago of "The New Testament in the Original Greek according to the Byzantine/Majority Textform", the first new version in a century, and continued to assist in further similar work until his health no longer permitted that activity.

Professionally, he had a long career with Beech Aircraft, rising first to Engineer, and then Chief Scientist. During his career, he was recognized by NASA as a leading authority on vibration and flutter analysis.

He was first licensed as a radio amateur in 1930 as W9BLK and retained an interest in radio over the years, enjoying CW for much of his on-air activity. When he gained a new General licence in 1986, he embarked on a project to bring together everything he knew and had collected since his youth on the subject of radiotelegraphy. He gathered new materials and consulted many skilled operators to learn their secrets also.

*MM85 – March/April 2003*

The result is his fabulous book, "The Art & Skill of Radio-Telegraphy" which has been published in English, French, Danish, and Japanese. It can also be found on the Internet in full, on several websites, and is included in the form of text files in Jim Farrior W4FOK's noted Morse program, "The Mill".

Bill's first contribution in MM was in issue No. 3, Spring 1987, with an extract from his then still unpublished book, and he allowed us to publish more extracts over the years, often as he completed them. He also shared with us other aspects of his wide experience and knowledge of telegraphy,



and translated various foreign language papers for MM into the bargain, including the original German report on the Koch system of learning Morse. I exchanged much correspondence with him in those times, and later, and will always remember the kindness, support, and interest he extended to me personally in the formative years of our magazine.

He will be greatly missed by his many friends around the world, some of whom are well-known names in MM, who have collaborated with or assisted him in the various activities of his truly rich and varied life.

*MM*

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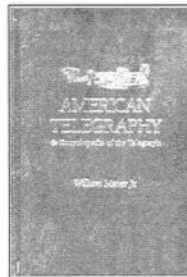
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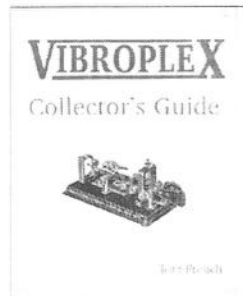
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<b>A History of the GPO Mark 1, 2 and 3 Morse Telegraph Keys</b> by Dennis Goacher (MM65)	£6.00	£6.50	£7.20

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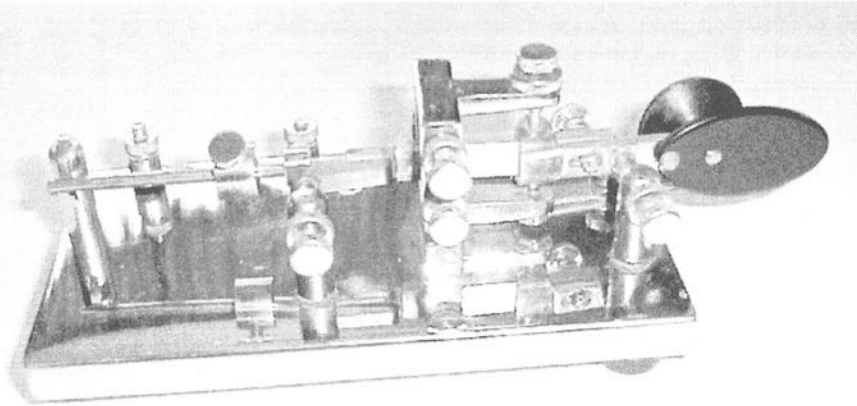
MM85 - March/April 2003

35

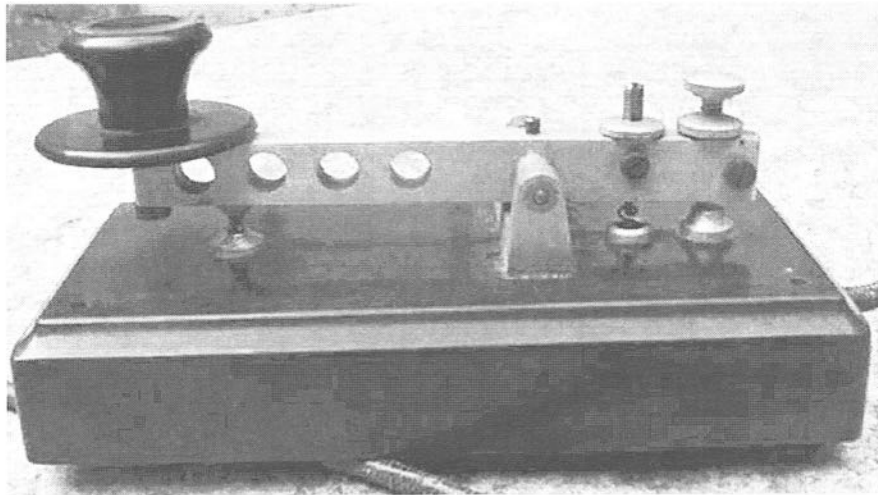
# Info Please!

Readers are invited to contribute any additional information and stories, no matter how minor, to the Editor, *Morsum Magnificat*. There have been thousands of designs of keys & telegraphy instruments. Information will be lost unless it is compiled in one place and shared with other readers.

Photo/Collection: Jonh Francis, G3LWI



A reverse frame bug key, attributed to Les Logan. The machining is the same as Logan keys. Does any reader have more information please



This Italian key is thought to be an aircraft key from the 1930s/40s. Has anyone any info please.



I've seen on an internet site a picture of the British "boatkey" (see MM 5 & 13). The author calls it a "bathtub key" and says that it comes from a Lancaster bomber.

I have also heard, but cannot verify, that the operator could set the key for continuous transmission by flipping the spring clip over the knob base when the aircraft was going down, before trying to escape. Can somebody confirm it? I have such a key, all I can say is that it works!

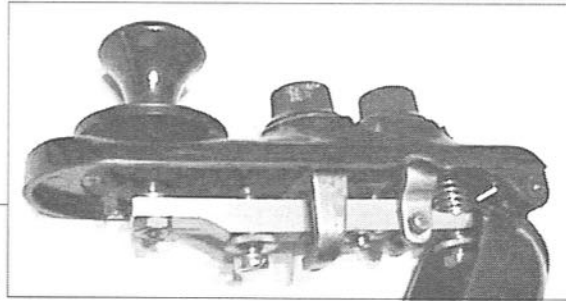
**Henri Jacob, F6GTC  
Hoenheim, France**

(I have used archive photos to illustrate Henri's query. This key was used with the T.1154 transmitter/R.1155 receiver series of equipment, used by RAF and Commonwealth airforces. There were versions of this equipment for heavy aircraft (including Lancasters), motor launches and land-based stations. The manual lists the key as "10A/7741 - Key, Morse, type F".

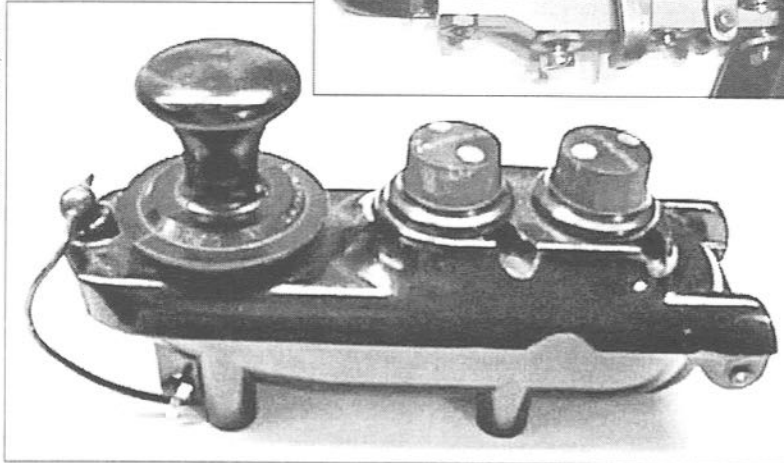
I have heard that the shape of the key was to provide protection between any spark occurring across the key contacts and the fumes of high-octane fuel which might be present in a

damaged aircraft or boat. I have also heard that the spring-clip is to close the key prior to abandoning the aircraft but would welcome confirmation from any reader-Ed)

Photo: Henri Jacob



Photos: Tom Perera, WITP



# Your Letters

## Info Please MM84 'H. White 5427'

In response to the "Info Please" request, Clive Malby's Key shown in MM84, this a "Post Office Key, double current", Mark II or Mark III:

- It has standard terminals.
- It has a cover made entirely of Brass, the Mark I has a glass top to the cover.
- The contact between the "moving" portion of the key and the "bridge" is differently arranged.

Otherwise the Mark II is electrically the same as the Mark I. The Mark III Key differed as follows:

- The Mark III had adjustable upper and lower contacts, and clamping screws are provided instead of a fixed contact block.
- Instead of brass springs let into the underside of the "bridge", steel springs with platinum contacts are fitted at the ends of the brass blocks to make contact on the ends of the spindle.

I do not believe that the knob on Mr. Malby's Key is "original equipment". A skirt was not part of any of the contemporary images of that Key and actual examples that I have seen. A more elongated knob was favoured, made of highly polished deer

antler or something similar.

Mr. Malby appears to have a nice Key in need of a little 'TLC' (tender-loving-care).

*Clive Redfern F5VHS, G4CZR  
Mellionec, France*

With reference to the "Info Please" query in MM84, page 32 from Clive Malby, I was reliably informed by "Mr. Double Current" (G3BEX), who has probably had and/or rebuilt more of these units than any one else, that at the end of WWI, the "Signals Section" of the Royal Engineers, handled the restoration of the German Post & Telegraph Services under the auspices of the original British Army of the Rhine (1919), and White & Co were among the several suppliers. Others were ATM (Automatic Telephone Manufacturing Company), Sullivan, GNT (Great Northern Telegraph Company), Elliot Brothers, Walters Electrical Manufacturing Company and the India Rubber, Gutta Percha and Telegraph Works Company (Silvertown), varying in price from £2-12s-6d to £5-5s-0d

The photo shown in MM84 is a Mk III, and would appear to be mounted on a home brew base, as most were designed to be screwed directly to the operating desk. It is almost

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identical to my own and one owned by Dennis Goacher, G3LLZ and shown in his book "The History of the GPO Mk I, II & III Morse Telegraph Keys"

Apart from cosmetic variations between manufacturers (some with capstan terminals, others with cheese heads, basically the Mk I had glass cover, the Mk II and Mk III an all metal cover but some makers did use glass tops. The Mark III used new contact and switching arrangements, but they must have had a lot of glass tops in stock. Since, however, covers (sometimes used as ash trays) were often lost, some were restored with new lids which were often more or less interchangeable, so there is no hard and fast method of identification except where the maker has inscribed the base.

I have seen one with a metal top with a small glass window inserted, which did look original, but I cannot be sure.

Most intended for European service appear to have a brass lacquered finish but those destined for the 'Colonies' were mostly nickel plated.

*Lee Grant, G3XNG  
Northumberland, UK*

## **Our Wireless Heritage**

I managed to visit GBR, Rugby Radio, before it closed but what happens now? It seems to be the same procedure applied by British Railways following *MM85 - March/April 2003*

the 'Beeching' rationalisation - rip it up and rip it out before anyone attempts any preservation. The same thing was done to Humber Radio.

I just feel so concerned for the lack of interest about our wireless and wireless telegraphy heritage on the part of those able to influence events. Things seem so different elsewhere, for example Grimeton (SAQ) and KPH.

Sites of historical significance should not have been transferred to BT without potentially protective covenants. BT appears to have been given carte blanche to be wreckers of our wireless heritage, rather than having had the use of facilities.

What has happened to the BT (GPO!) museum and what will happen to all the archive material I saw when I visited GBR in 2001? At least I had the opportunity to photograph a fair bit of the interior including the great coil room.

I have a copy of a Parliamentary Report on archaeology, produced at the end of last year, about protecting the artefacts of our heritage for posterity. Perhaps I should draw their attention to the loss of our early wireless heritage - if there is anything left to save now! A typical coast radio station would have been a good start, especially since there were willing volunteers.

I suppose we should have accepted long ago that such organisations and those in a position to take action know the price of everything and the value of nothing.

*Ken Jones, G3RRN  
Lincoln, UK*

## Inappropriate Telephone Jingle

*There were many replies to Alan Birt's letter entitled 'Inappropriate Telephone Jingle' in MM84, page 44. Most of them make the observation that the message is not SOS, but SMS. It is interesting that, for experienced operators, Morse must be deeply embedded as reflexes in the central nervous system and that 'SMS' is close enough to SOS to trigger a response. Below is a summary of the replies received. – Ed.*

With respect, has he not been misreading "SMS" as "SOS" on these mobile telephones? SMS, I believe, is short for 'Short Message System' and indicates that a text message has been received. - *Tony Bull, George Eddowes*

When I hear those phones I read S M S, is he adding an extra dash to make O subconsciously? – *Wyn Davies*

I, too, found it disturbing at first, but I've got used to it now, and it just annoys. It often resounds along the aisles whilst my wife and I are doing the weekly shopping at our local supermarket. – *Geoff Arnold*

As an ex-marine R/O, I had a moment of heightened interest the first time I heard a mobile telephone announce the arrival of a Short Message System (SMS) text message with "SMS" sent in Morse. Even now, when I know what it is, it still catches my attention

when I hear it. - *John McGinty*

Of more use to CW enthusiasts is a facility provided on recent mobile phones which allows the user to record sounds onto an internal micro-chip via a built in microphone and program these as they wish. This is no doubt intended to allow the younger generation to use extracts from the latest hit songs as ring tones. After a ten minute session on the key I am now the owner of a phone that sends "G4SSH" at 22 wpm as a ring tone, "CQ" on switch on, "QTC" if a message has been left, and signs off with "73". (See my article "Morse and Mobile Phones" MM 73). CW Lives ! – *Roy Clayton*

Although more and more telephones can load their own Jingle or owner can compose their own music I never heard

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an SOS on a telephone. I heard some CQ's and I use some self made Jingle in morse to tell me who is calling (friends, family, work...). - *Gerard Fetter*

One could argue its a way of keeping Morse in the public eye or this case ear! I think the real concern is what you could call a mild form of anti social behaviour in public places like trains etc by cellphone users. What will it be like in years to come when the 3G phones fall in price-aah! - *John Davies*

### **MM82 Info Please Jack Barker Key**

Regarding MM82, page 32, I have two identical specimens of the Jack Barker key, both bought at separate times in Lincoln some years ago. They are not steel, but nickel plated brass. The wooden bases are oak and appear to be original to the keys (including Jack Barker's). They seem to be fairly old because the knobs are ebonite.

*Ken Jones, G3RRN  
Lincoln, UK*

### **Marconi Bust**

On 17 May 1991, a bust of Marconi, set up on a magnificent red granite plinth, was unveiled at the La Perouse Maritime Station (VIS) by the Italian Vice Consul.

The ceremony was conducted by Warren Grace, OTC's General Manager, Maritime and was attended by leaders of the Italian community,  
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local dignitaries, members of the Sydney Lions Club, OTC Veterans, AWA Veterans and OTC staff. After refreshments, guests were given guided tours of the Maritime Coast Station.

After so many years in the open air at the Amalgamated Wireless A'Asia, Ashfield Works, the bust was a bit weatherworn. The management of OTC must be congratulated for arranging such a perfect restoration job, and supplying the base and landscaping around the base. It is understood that the whole memorial weighs one and a half tons. Unfortunately, rabbits which appear to be in abundance at the La Perouse Station made a fair job of demolishing the landscaping over the years.

Also, a very large bird, allegedly having fed on mulberries, splashed down on the bust's shoulder, the stain refusing to completely disappear despite hard work by the cleaning staff.

The memorial bust is in a commanding position at La Perous, (SYDNEY COAST RADIO) and we trust that the future does not result in desecration by bird life and so spoil such a remarkable restoration job.

Incidentally, a lane just near the entrance to the Sydney Radio Station gates has been named Marconi Lane by the local council.

With the takeover of the Overseas Telecommunications Commission by Telstra, and that authority's subsequent entering of the public commercial field, the Marconi bust was relocated to its present site at the Old Brisbane Coast Station (VIB)

located north of Brisbane in a suburb close to Fraser Island.

Old OTC artefacts and equipment have been thrown out as Telstra, being profit orientated, had no time for the history of wireless or telecommunications in Australia.

Our organisation, which has very little financial punch, has been endeavouring to obtain suitable storage facilities for Australia's telecommunications archives but to no avail. However one of our endeavours was to safeguard a bust of Marconi, presently standing in the grounds of the old VIB/Brisbane, Queensland coast radio station. I fear that in Telstra hands it is likely to be dumped unless we have success in finding a museum or some such safe storage place for it in the near future. This is our problem but the attached document relates some of the history of this particular ediface.

*Bernie White*  
*Overseas Telegraph Veterans*  
*Association*

## The Coherer

I was interested in the letter in MM84 from Geoffrey Walsh, GM4FH about Coherers and have found some background information which might be of interest.

Cassell published a booklet in their "Work" handbook series entitled - "Wireless Telegraphy and Telephony" - in which there is a chapter about Detectors.

Unfortunately there is no publication date but it would appear to be the early 1920s era. Their explanation is as follows:

### **Branly Coherer**

Probably the earliest practical form of detector was the improved form of Branly coherer, which consisted of an evacuated glass tube containing two silver plugs, separated by a small gap, in which was placed a mixture of nickel and silver filings. Connections to the plugs were made by wires sealed in the glass. The complete coherer was placed in circuit with a cell and some form of relay or a recording instrument. The potential applied to the coherer was adjusted until it was just insufficient to cause the metallic filings to cohere without the additional potential of an incoming signal. An arrangement was provided for tapping the coherer after each signal to restore normal condition ready for the next one which necessitated a rather slow rate of signalling. The action of this detector was greatly interfered with by atmospheric disturbances and no means were then available for eliminating or distinguishing such from regular signals. The operation of a nearby transmitter was very liable to put the coherer out of action.

### **Wheel Coherer**

The next practical development was probably the self restoring coherer used in the Lodge-Muirhead receiving apparatus. In this a small steel disc with a fine knife-edge was arranged so as to rotate at a slow speed over an ebonite tube filled with mercury. The edge of



the disc just touched the surface of the mercury which was covered with a thin film of oil. As with the Branly coherer a voltage had to be just sufficient to break down the film of oil, applied by a battery. The self-restoring property of the coherer was obtained by the rotation of the disc.

*Ted Jones, G3EUE  
West Sussex, UK*

## **MM Photocopy Service**

Congratulations on the photocopy service. I am absolutely delighted with the issues that you have provided to make my collection complete.

*Christopher B. Jones, G3RCU  
Dorset, UK*

## **Bill Pierpont**

I will miss Bill, NØHFF very much. It is sad that he passed away. He gave us all a special gift, his book and in addition to writing "The Art & Skill of Radio Telegraphy" he has given us permission to use his material to promote the learning of the Morse code.

It was a privilege for me to have communicated with him before he passed away. I'll never forget him and the other people that were involved with telegraphy that are now no longer with us.

Fewer and fewer people on earth are using telegraphy and know it as good as Bill NØHFF and the countless other telegraphers who have now become part of the past and are no  
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longer with us.

I personally knew a lady (Joyce Auston) who passed away in 2002, and she had mastered the International Morse code, the Japanese Morse code, and could also understand the German, Italian, and a few others that had used cryptic messaging during WWII. She was one of the de-coders during the WWII.

In 2001, I had the great privilege of having her speak at one of the ham radio clubs that I am a member of. In addition to the Morse code she was very proficient in Pitman shorthand and when I came to know her she was instructing the 200 wpm machine shorthand club at Cypress College - whew what a lady.

As the 21st century continues there will be fewer people around from WWII that have mastered the Morse code.

*Kathy Stanfill, KS6CW  
Huntington Beach, California*

## **MM 84 Info Please Russian & Western Electric Keys**

Regarding the Russian key on page 25, "Zemlya" means "land", so this must be the ground connection. The other one is obviously the battery connection. The Western Electric key stamped "OW" - my knowledge of German is not good but I doubt that "OW" stands for Ost Wehrmacht. My first guess is that W might stand for "wirkung", denoting the type of operation this key was intended for.

*Brice Wightman, VE3EDR  
Ottawa, Canada*

## Vibroplex Original Scratchy Dots

I have a Vibroplex Original De Luxe which, since new, has always had a tendency to scratchy dots despite the most careful adjustment. This problem is not apparent on either a Vibroplex Lightning or a Vibroplex Champion which I also have.

I've always suspected that the problem with the Original was caused by inadequate damping of the pendulum when it returned to the rest position after sending dots and was especially noticeable on the letter "x".

The basic problem, as I see it, is that the moveable damper arm can be moved away from the rest position when the pendulum returns and thus does not completely damp any vibrations of the pendulum.

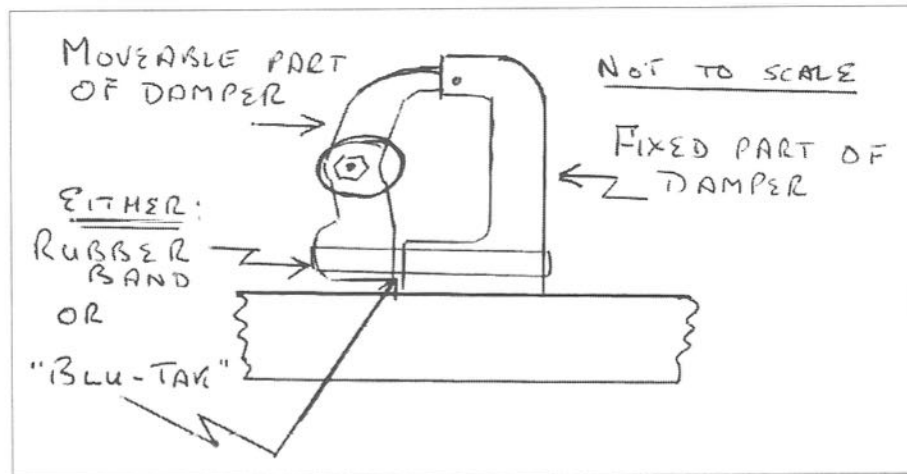
I've discovered that this problem is eliminated by

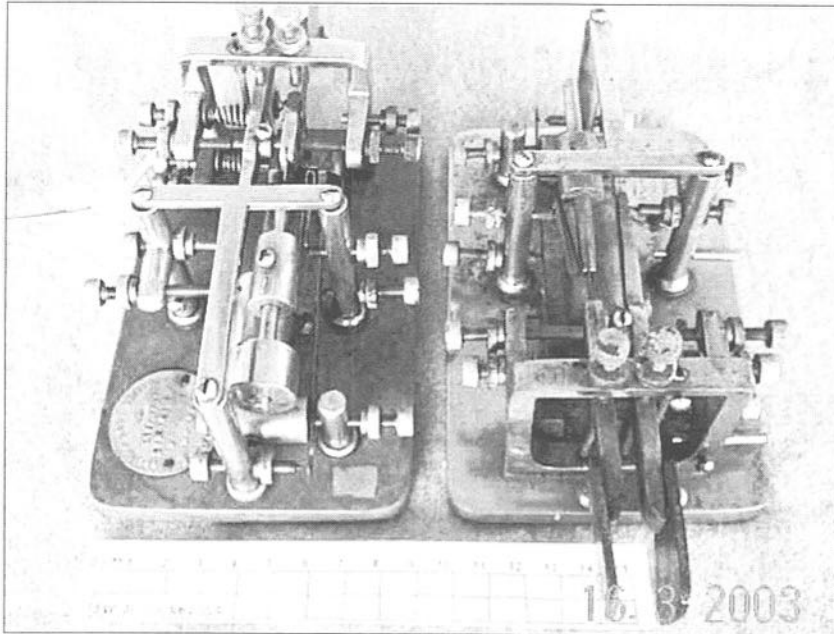
either tethering the moveable damper arm to the fixed part of the damper frame with a short strong elastic band or, better still, fixing it in position with a tiny blob of Blu-Tak™ or similar on the end of the moveable damper arm where it meets the damper frame. By fixing the moveable damper arm firmly to the fixed part, any vibrations are more effectively damped, significantly reducing or eliminating scratchy dots. This simple fix has been a 100% cure and the key is now a real pleasure to use on the air.

I've seen the fix where a small cube of foam is placed behind the dot contact itself. In my experience this is not an effective fix because it is tackling the wrong problem.

Hopefully this information might help another Vibroplex Original user trying to solve this particular problem.

*John McGinty, GM4GZQ  
Renfrewshire, Scotland*





### Auto Morse Keys MM84, P12

With reference to the article by Gary Bold in MM84, page 12 "On the Australian land-lines .....", I have two of these Auto-Morse Keys. One is complete and original and the other has had the fibre finger tabs replaced with clear plastic. It also is missing a pendulum weight.

Fortunately I have the other to copy from. They are complicated keys

and so have not come to the top of the restoration pile. One has a modern white fig8 cable and plug att, so the owner must have been using it. The round impressed metal label reads:

AUTO MORSE

Pat No

7032.14

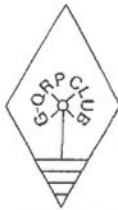
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*John Alcorn, VK2JWA*

*Lismore, NSW*



### G-QRP Club

The G-QRP Club promotes and encourages low-power operating on the amateur bands with activity periods, awards and trophies. Facilities include a quarterly magazine, Morse training tapes, kits, traders' discounts and a QSL bureau. Novices and SWLs welcome.

Enquiries to Rev. George Dobbs G3RJV, St Aidan's Vicarage, 498 Manchester Road, Rochdale, Lancs OL11 3HE. Send a large s.a.e. or two IRCs

## Postcard in MM84

With reference to the postcard shown in MM84 (inside back cover), this must be one of a series. I have one with the same two people in different poses, marked "A Wireless Message from Blackriver N.Y."

*Fons Vanden Berghen  
Halle, Belgium*

## MM84 Info Please ATM Key

With reference to your request for info on page 33 of MM84, I have an identical specimen (A.T.M.Co.) to this key, but without the 'ATLANTIC COLLEGE' inscription. I bought it an antiques fair in Lincoln about 10 years ago.

It has a very unusual spring tensioning device. This is the only other key of this type I have ever seen and the only spring tensioning method in all my investigations of Morse keys.

*Ken Jones, G3RRN  
Lincoln, UK*



## *Binders for Morsum Magnificat*



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### *The Radio Officers Association*

Membership is open primarily to former MN radio officers but is also open to anyone who has had an association with maritime communications or is interested in the subject. Members receive the quarterly newsletter QSO and its associated amateur component QRZ. There is an annual reunion and AGM. 2003 sees the meeting taking place in Newcastle-upon-Tyne. For further details and information please contact the Membership Secretary - John Russell, 21 Landcross Drive, Northampton, NN3 3LR.

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## Readers Ads

*Readers advertisements are free to MM subscribers. The number of insertions should be specified, otherwise it will be assumed that it is required in the next issue only. Non-subscribers are welcome to advertise in the Classified Ads section. Please contact MM for styles available and rates.*

*Ads can include one photo free of charge*

### FOR SALE & WANTED

**FOR SALE:** All issues of *Morsum Magnificat* from Issue 1. Also the special issue of Q & Z Codes in 1988. Most in mint condition. Buyer must collect or arrange carriage. Offers. F. R. Hamilton, G4IAV, 329 North Road, Atherton, M46 0RF. Tel: +44 (0)1 942 870954.

*MM85 - March/April 2003*

**WANTED:** The common tripod for a heliograph as in picture page 11 of MM Issue 79. Also still interested in (somewhat special) telegraphy apparatus. Swap or buy. Thanks! Fons Vanden Berghen, Lenniksesteenweg 462/22, B-15000 HALLE, Belgium. E-mail: [fons.vandenberghen@pandora.be](mailto:fons.vandenberghen@pandora.be)  
[www.faradic.net/~gsraven/fons\\_images/fons\\_museum.html](http://www.faradic.net/~gsraven/fons_images/fons_museum.html)

**I HAVE** much telegraph surplus including NOS 1950's US Navy Flameproofs - CMI & CJB 26003A - \$65 including USA mail; slightly higher elsewhere. Also includes copy of key's 11 page milspec. Dr. Joe Jacobs, 5 Yorktown Place, Northport, NY - 11768, U.S.A. Phone +1-631-261-1576; Fax +1-754-4616. E-mail: [joekey@aol.com](mailto:joekey@aol.com)

**FOR SALE NSW BOOK:** "Radiotelegraph and Radiotelephone Codes, Prowords and Abbreviations" 3rd Edition (236 pages), 610 gm (1.5 lbs), now available. Probably the World's best compilation of this info now available. Q,X,Z Codes, 142 Phonetics, 24 Morse, 8 Needle codes. Myer, Phillips, 10, 11, 12, 13 and other codes. Much other info, abbreviations, procedures and methods. Price AU\$25 + p&p. (in Australia \$7.50) Internet: <http://www.sarc.org.au/sarc1/phonetic.htm> John Alcorn, VK2JWA, QTHR, Phone +61 - 02-66215217 [vk2jwa@sarc.org.au](mailto:vk2jwa@sarc.org.au)

## ReadersAds

**WANTED TO BUY:** Telegraphic Code Books, as used to reduce the costs of telegrams by replacing common phrases with codewords. Would be interested in both originals of photocopies. I am a hobbyist in Cryptography and am fascinated in different ways data is and has been represented for different purposes (e.g. speed, economy, confidentiality etc.) Also interested in related items. Letters to Mark Darling, 132 Knowlands, Highworth, SN6 7NE, United Kingdom or e-mail: darling@patrol.i-way.co.uk

**I AM A KEY COLLECTOR** with over 300 different keys from 20 countries and have 50 keys available for swapping. Write to Henri Heraud, F6AOU 9 Avenue de Bellevue, 91130 RIS ORANGIS, FRANCE.

**EXCHANGE:** I have MM magazines, issues 36-80 inc(45mags)to exchange for a Vibroplex double-paddle. Can collect/deliver in UK. Phone Keith +44 (0)7946-663109.

**WANTED:** Early paddles such as the Nikey, Autronic, Ham-key HK1 & HK2. Ray Bullock, 40 Little Harlescott Lane, Shrewsbury SY1 3PY, England. Tel: +44 (0) 1743 245896.

**WANTED TO BUY:** GPO Type 56 key and Marconi side-lever Morse key with brass hardware on a wooden base.

Letters to: D. Johnson, W5FZ, 15514 Ensenada Drive, Houston, TX 77083-5008, USA. Or Email: w5fz@arrl.net

**TEXTBOOK WANTED:** Handbook of Technical Instruction for Wireless Telegraphists, seventh edition (1942 - 44) edition by Dowsett and Williams (Iliffe). A good price is offered, plus postage costs. David Smith, ZL2BBB, PO Box 255, Hastings, New Zealand. dhs@clear.net.nz

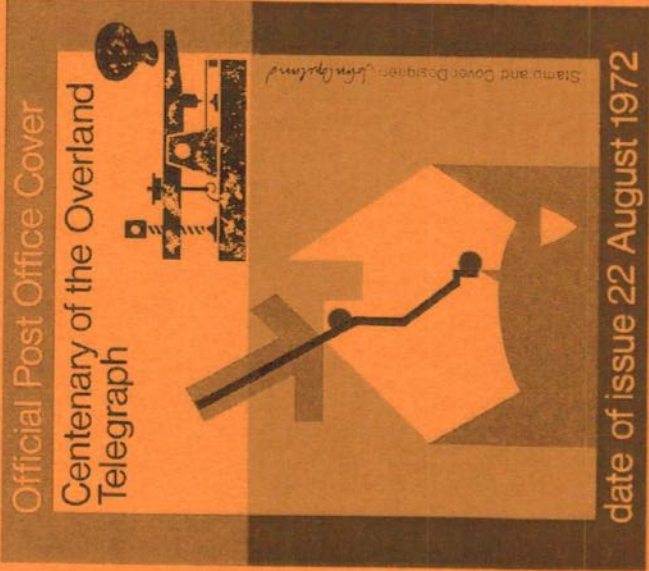
**WANTED:** Back issues of Morsum Magnificat. Volumes 1 thru 23, 25, 27, 28 and 30 are needed. Please contact Dennis P. Skea, KC2CCZ, 25 Argent Drive, Poughkeepsie, New York 12603, USA. +1 (845) 298 - 0951  
E-mail: KC2CCZ@arrl.net

**FOR SALE:** Morsum Magnificat nos 6, 9-11, 13-54, 56, 58, 60-76. 65 copies £125 o.n.o. including postage and packing. Geoff Newland, 32 The Grove, Winscombe, North Somerset BS25 1JH. Telephone (mobile) 07802 786564. E-mail: MM@GeoffNewland.co.uk

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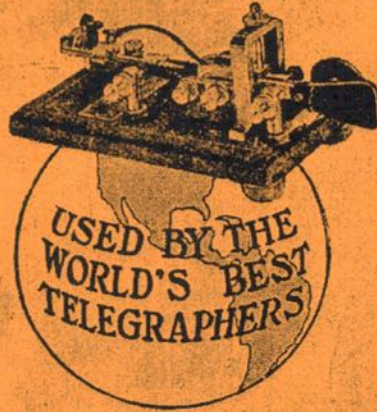
**FOR SALE:** MM issues 41 - 83 complete as new, Offers for the lot. Heathkit Electronic Keyer Model HD 1410 unmarked with manual, offers, plus carriage. E. H. Trowell G2HKU, 'Hamlyn', Saxon Avenue, Minster, Sheerness, Kent, ME12 2RP, UK. Telephone 01795 873100.





First day cover commemorating the centenary of the overland telegraph from Darwin to Adelaide. Apologies to the reader who supplied this but the reference is missing.

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