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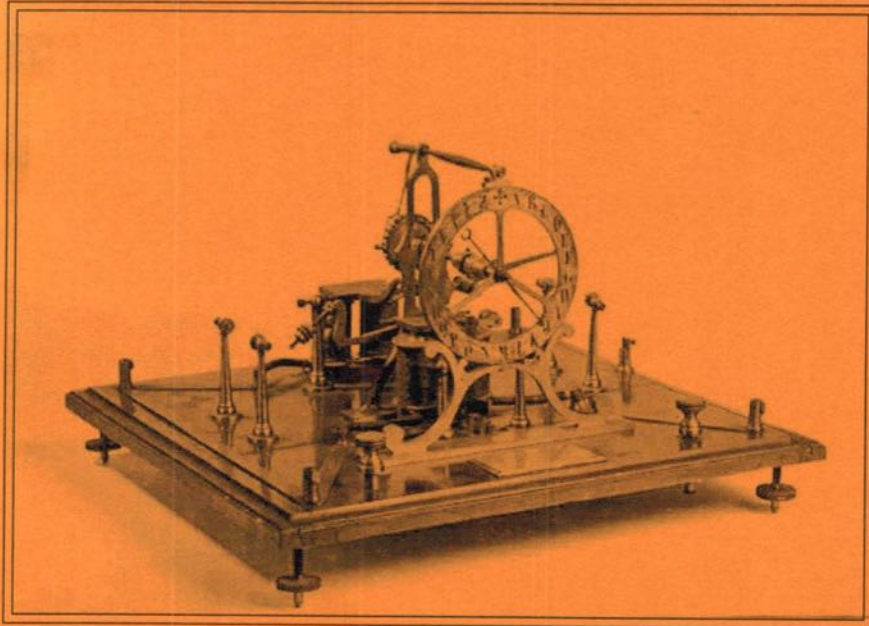
Flying  
the flag  
for  
Morse

# Morsum Magnificat

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The International Journal of Morse Telegraphy

Flying  
the flag  
for  
Morse

# Morsum Magnificat

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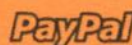
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**FRONT COVER**

Combined ABC (dial) and printing telegraph  
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Photo/Collection: Fons Vanden Berghen, Halle, Belgium.

## Comment

As we go to press, the sad death has been announced of William Pierpont, the author of what must be the definitive work on learning and improving Morse code, "The Art and Skill of Radio Telegraphy". This was a labour of love which he completed over a period of many years. There will be full obituary in the next issue. Bill, a giant in the CW fraternity, will be greatly missed but could there be ever be a better memorial than his magnificent book?

*Zyg Nilski, G3OKD*

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# News

## Survey on CW

At the end of January 2003, eHam.net, a web site for radio amateurs completed a survey on the future of CW. The question was, "This summer at the ITU World Administrative Radio Conference (WARC) to be held in Geneva Switzerland one topic will be the elimination of the CW test as a requirement for HF operation. Do you agree that the CW requirement should be removed?" The results were as follows:

Yes 33% (1593)  
No 62% (3038)  
Don't Care 5% (249)  
Total votes 4880

The web site is <http://www.eham.net/>

## New Fists Award - NANFY

A new FISTS award created by Jack Bock, K7ZZR is available. It is the NANFY award (Nightmare Alpha-Numeric Fists Yearly Award).

Unlike other FISTS Awards, it does not involve collecting numbers or keeping track of scores. All FISTS members are of equal value and no one group is favoured over another. It is a low pressure event, you can work for it any time, any place.

The rules are simple and

straight forward:

- 1 Contacts must be 2-way CW on-air contacts made between January 1st and December 31st each calendar year. Contacts can be made at any time, any place, at any speed and any band.
- 2 Contacts must be with a person or Club with a FISTS number, in any country or location.

The object is to work stations whose call signs fit into the squares on a grid. There are 260 squares to the grid. Now draw a grid on paper. Horizontally the top line reads 1 to 0. Vertically A to Z. Counters are the last numeral and the first letter of the suffix. For Example: K7ZR goes into Column 7 in the Z Row, WZ8C fits in the 8 column in the C Row, V31CW would be in Column 1 in the C Row. ZL2AOH fits in Column 2 in the A row, whilst ZL2TX fits in column 2 in the T row. WB9CIS/M3 fits in column 3 in the C row.

Write the date ( month / date ) i.e. 1/12 (12 January) of the contact in the square with the call sign for reference. To receive your 2003 NANFY certificate, send in your completed grid ( filled in with the call sign and date ) along with your log (containing the usual contact information and FISTS number) to Dennis Franklin, K6DF, 4658, Capitan Drive, Fremont, California 94536 . 5448 ( e-mail: -

FISTSAWARDS@attbi.com) There is NO charge for this award to fully paid up FISTS Members.

(Information: *Fists Down Under Newsletter*. For information on joining FISTS see the advertisement in this magazine.)

## Heliography Web Site Updated

Jim Riddle of Prescott, Arizona has added major updates to his web site on heliography. It includes a number of new "Guest" contributions and news of events.

In July, 2003 heliograph activities including use of hand-held mirrors are planned at Fort Tuthill Hamfest near Flagstaff Arizona, weather permitting. The February event for Fort Huachuca, previously considered for Fort Bowie, Arizona is cancelled due to recent events in the Middle East.

The web site can be found at <http://myweb.cableone.net/kd7aoi/> (Information: Jim Riddle, KD7AOI. E-mail: [kd7aoi@cableone.net](mailto:kd7aoi@cableone.net))

## International Pharmacists Ham Group

In MM83 there was a news item about the International Pharmacists Ham Group. Unfortunately contact information was omitted.

Membership is free and open to all those that are both pharmacists and radio amateurs over the world. At the moment  
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there are 76 Members in 17 Countries.

Anyone interested should contact Andrea Pagliula, IZ7ECB; email: [iz7ecb@tiscali.it](mailto:iz7ecb@tiscali.it) or visit the group's web page at [www.malpensa.it/iphg/index.htm](http://www.malpensa.it/iphg/index.htm)

## W6RO Prospers

The RMS Queen Mary continues to attract great interest at Long Beach, California, including the radio room, which also operates as W6RO. Many tourists try out their fist on the telegraph key including these two youngsters.

(Information and photo: Kathy Stanfill, KS6CW)



## EUCW/FISTS QRS Party

To encourage newcomers to Morse operating, and as a contribution to the activities of the European CW Association, FISTS CW Club invites all licensed radio amateurs, especially members of EUCW clubs, to take part in the annual EUCW/FISTS QRS Party.

This event provides an opportunity for EUCW club members, and non-members, to meet and exchange greetings with each other at a leisurely pace. At the same time it is an opportunity to make contacts qualifying for the prestigious *Worked EUCW* award. Although not a contest in the normal sense of the word, there is a contest element for those who thrive on challenge, with awards for those who score the most points, and a merit award for the "Most Readable Morse Heard" voted for by other contestants.

In this event, taking part is more important than winning, providing fun for all in a non-stressful introduction to a contest-like event for beginners, and an opportunity for more experienced operators to put something back into the hobby by helping and encouraging those less experienced in CW operating.

Feedback can only be obtained from contestants' reports so, whatever your level of experience, and even if you only have time to make a few contacts, please make an effort to send in a log.

**DATES/TIMES:** From 00.01 UTC on the fourth Sunday in April, for one week, to 23.59 UTC on the following Saturday. For 2003, the dates will be

Sunday 27th April to Saturday 3rd May.

**MODE:** CW only.

**FREQUENCIES:** All bands, except WARC bands. Non-QRP stations are requested to avoid calling CQ on the popular QRP frequencies.

**KEYS/SPEEDS:** Any type of key or keyer may be used, but no keyboard sending or pre-programmed messages from computers or keyers allowed. Maximum speed 14 words per minute (70 cpm). **The speed of a QSO should**

**be at the speed of the slower station**  
**CALL:** CQ QRS/EUCW. Stations may be worked or logged once each day in each band used

**EUCW CLUBS:** Listen out for members of the following clubs, taking part in the EUCW/FISTS QRS Party:

AGCW-DL (Germany); Benelux-QRPC; BTC (Belgium); CFT (Belgium); CT-CWC (Portugal); EACW (Spain); EA-QRPC (Spain); EHSC (Extremely High Speed Club); FISTS; FOC (First Class Operators); G-QRP; GTC (Greece); HACWG (Hungary); HCC (Spain); HSC (High Speed Club); HTC (Switzerland); INORC (Italy); I-QRPC (Italy); ITC (Italy); MCWG (Macedonia); OE-CWG (Austria); OHTC (Finland); OK-QRPC (Czech Republic); RTC (former GDR); SCAG (Scandinavia); SHSC (Super High Speed Club); SP-CWC (Poland); UCWC (Russia); UFT (France); U-QRQC (Ukraine); VHSC (Very High Speed Club); YL-CW-GP (Germany); 3A-CW-G (Monaco); 9ACWG (Croatia).

**CLUB MEMBERSHIP:** Entrants who are members of more than one EUCW

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club should take part in the QRS party as a member of only one of those clubs.

**CLASSES:**

A - Members of EUCW clubs using more than 10w input or 5w output power

B - Members of EUCW clubs using QRP (10w input or 5w output, or less)

C - Non-members of EUCW clubs using any power

D - Shortwave listeners

**EXCHANGES:**

Class A & B, RST/QTH/Name/Club/membership number

Class C, RST/QTH/Name/NM (ie, not a member)

Class D, Log information for both stations

**SCORING:**

Class A/B/C - 1 point per QSO with own country, 3 points per QSO with other European countries.

Class D - 3 points for every complete logged QSO.

Multiplier, all classes: 1 multiplier point for each EUCW-club worked/ loggedper day and band.

**LOGS:** To include date, UTC, band, call worked, info sent, info received, and score claimed for each QSO

**SUMMARY:** To include entrant's full name, call, address, EUCW club, Class entered, multiplier claimed, total points claimed, station details, including type of key/keyer used, power used, comments (if any) on the event, up to three votes for "Most Readable Morse Heard" (only one vote per station), and signature of entrant.

E-mailed logs and summaries are acceptable, provided they follow the same format as detailed above.

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**ENTRIES:** Send log and summary to: FISTS/EUCW Contest Manager, R. Kimpton, M5AGL, 15a Buckden Road, Brampton, Huntingdon, Cambs., PE28 4PR. England. e-mail bobm5agl@btopenworld.com .

All logs to be received (by surface mail or e-mail) not later than 31st May 2003.

**AWARDS:**

a) A certificate will be awarded to the three top scorers in each class.

b) A certificate of merit will be awarded to the operator receiving most votes for the "Most Readable Morse Heard", provided the operator nominated has also submitted a log. If the recipient of the most votes has not submitted a log the certificate of merit will be awarded to the qualifying entrant with the next highest number of votes. In the event of a tie multiple certificates will be awarded, endorsed "Shared Award".

No correspondence can be entered into. The Contest Manager's decision shall be final in making all awards.

## High Speed Telegraphy Club

The HSC was founded in 1951 in Germany. It is free non-profit organisation of friends of high speed Morse telegraphy with more than 1500 radio amateur members from all over the world and all continents. Becoming a member provides excellent telegraphy practice. There is no charge for lifelong membership except for a single fee to cover the postage for the

membership certificate. It exists to indulge a passion - high speed telegraphy.

There are several events to foster activities on the bands. The club stations are DKØHSC and DLØHSC, as well as DAØHSC for special events and are active on all bands regularly. Every first Saturday of the month there is a broadcast of the HSC bulletin at 3 pm (UTC) on 7.025 kHz. Every last Sunday in February and every first Sunday in November we have our HSC contest where non-members are also very welcome.

#### **How to join HSC:**

- Tune-in on the HSC frequencies, 25 kHz above the lower band edge and work HSC members.
- You should be capable of sending and receiving CW at 25 wpm fluently.
- Use common CW terms and show excellent operating practice. Use full-bk (QSK) if possible.
- Be kind and fair and observe the unwritten laws of the spirit of ham radio.
- Ask HSC members for sponsor QSOs.
- These QSOs must last at least 30 minutes under the conditions shown above.

Once you have 5 sponsor QSLs in your possession (they must contain begin and end time of QSOs and QSO speed) send them together with an application to the HSC secretary. The application must contain a written statement, that you did not use any kind of keyboards or decoders.

Sponsor QSL cards don't expire. Applicants of Germany must

state that they're member of DARC or VFDB. To cover expenses, please enclose 5 EUR or 5 US\$ or 4 IRC. There are no more costs for lifelong HSC membership.

Contact the HSC secretary: Jens Sperling, DL7AKC, HSC Secretary, John-Locke-Strasse 18, 12305 Berlin, Germany.

E-Mail: [JensDL7AKC@aol.com](mailto:JensDL7AKC@aol.com)

Web pages: <http://www.hsc.de.cx>

## **The Future of CW**

The CW Group of Argentina (GACW) with 530 members has circulated an open letter on the future of CW to all amateurs and authorities in Argentina. Some of the important points included are:

Happily the amateur service is made up of all kinds of people, socially and professionally, such as engineers, students, traders, teachers, scientists, etc. All share an enthusiasm for an activity which has many aspects.

Internet looks, wrongly, like a potential threat to amateur radio and is presented, along with CW tests, as a reason for radio activity decreasing, less people at hamfests and clubs, and one of the main reasons for decreasing numbers on new amateurs. On the contrary, its existence has expanded information exchange, with new technologies investigations, use of databases, propagation predictions, new tools for calculation and planning, etc. A great contribution for a better understanding of all kind of problems worldwide.

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Radio amateur telegraphists from Argentina have established more world wide and continental records on most major international contests. Most major DX expeditions show more activity in CW than in any other mode. As an example: one of major expedition of all times, that was recently operating, D68C from Comoros Islands, from a total of 168,722 QSOs; 50,1 % were in CW mode, 44,7 % in SSB, 2,5 % in RTTY, 0,7 % in PSK and 2% in FM.

Amateurs world wide prefer and choose CW as the main mode of working. One more example is the DX expedition to Campbell Island, ZL9CI, from a total of 96,004 QSOs, 52,270 were in CW mode and 41,123 in SSB mode.

With the present multiple choice examinations, the CW test is the only serious difficulty to be passed, needing time, preparation, and practice.

The applications of Morse code for experimental activities are growing, like spectrographic systems used on medium wave QSOs, the ARI robot beacon for remote experimentation of antennas and receptors performances and computer programs used in rehabilitation and educational programs used in medicine for those who have suffered strokes, in universities, such as The University of Wisconsin Eau-Claire.

Morse code is a rational mode for short waves, due to its performance on output power over radio electrical spectrum. Morse code and its abbreviations are a transmission mode that allows and guarantees international communications without

any language barrier.

Radiotelegraphy is, no doubt about it, one more transmission mode and like that it must be part of any examination program to get a callsign just like any other mode that should be taught and tested for.

Proficiency in radiotelegraphy is accomplished by any of the following abilities :

- Higher speeds operations.
- Clever discrimination of the memorized frequency tone, acting like a human filter.
- Clever coordination for simultaneous memory and mechanical actions.
- Simultaneous use of reasoning and memory capabilities.

(Information: Grupo Argentino de Radiotelegrafia - GACW)

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## E-mails in Morse Code

Here is an interesting way to send e-mails by Morse code. Harry Pyle, AB7TB has been practicing the Morse code art for close to 40 years now. It has given him so much pleasure he is hoping to find a way to foster its use in this new "digital age" so the art can be preserved through future generations. This is the "mission" of his web site [www.brasspounder.com](http://www.brasspounder.com).

One program available from his site is MorseMail, a simple text format that encodes mark and space times to make it possible to send Morse coded messages via email. It is a free little Windows program, which can be used to record and play keying and send and receive it via text for email or use as a "transceiver" for QSOs.

The Latest MorseMail version adds playback Pause/Skip feature. MorseMail can capture, via the mouse or a joystick port, your keying mark and space times and convert them to the MorseMail text format. The text can be copied to the clipboard and pasted into an email or web posting. An iambic keyer is provided or you can use a straight key or bug.

Currently the MorseMail program captures keying through the

mouse buttons or through the "trigger" buttons of the joystick port (15-pin connector on the sound card). While it is possible to key using the mouse buttons, it is better to use a "real" key or paddle to the button switches. Some people have put a small headphone jack on the side of their main mouse for the connection.

If you simply want some receiving practice from a text source, you can load "plain" text from the clipboard (text without any "<" characters) or from the large edit box in the Memory section and it will be converted to Morse code at the current keyer speed. If the keyer speed is below 15 WPM, the Farnsworth method (15 WPM characters but longer spacing) will be utilized.

To receive e-mails in Morse, the MorseMail program can also load the MorseMail formatted text from the clipboard so you can receive a MorseMail-coded email message and play it back. During playback, you can adjust playback speed, tone frequency, and background noise to suit your preferences.

The MorseMail program is simple and stand-alone and no complicated installation is required. It can be downloaded from <http://www.brasspounder.com>

### 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.

---

**A**S I WRITE THIS, I'm confined to the home QTH while recovering from a hip replacement operation necessitated by the car-smash which nearly wiped me out a year ago. Thus, I have plenty of time for reflection, and have been pondering the fact that this is the 150th Morseman column. The first one appeared in June 1987. The tone was set by a strikingly handsome photograph of me with jet-black hair and beard and calm, noble, intelligent gaze. Nothing like the bespectacled old wrinkly you will meet today.

In those days I ran a Heathkit HW-101 transceiver which I'd built in the USA in 1977 from a kit. I sent CW using either an original James Garrett TTL 'Accukeyer' or home-brew software running on a Commodore-64, at that time the state-of-the-art home computer. Everything else, filters, transmatches, antennas, was home-brew.

I offered to write a Morse column in response to a plea from the then editor, Craig ZL3TLB. I figured that I had enough background material to last about a year, after which I'd probably run out of steam. But material came in faster than I could publish it, and now, nearly 16 years later, I find that I've written a third of a million words of copy, drawn over three hundred figures, plots, diagrams and schematics, written over two thousand letters and emails in reply to correspondents, and sent out several

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## Reminiscences

### Getting up to Speed

*by Dr. Gary Bold*  
**ZL1AN**

hundred disks of software.

Going back through the issues, I see that I've written lovingly about every rig I've owned, and its CW performance. The HW101 was followed by a TS-520s, then an IC-701 - all of which I considered to be fine rigs, in their day, for ZL conditions. Prophetically, the Yaesu 767-GX, which I now operate, is advertised inside the front cover of that issue containing my first column. It seems that I kept about 15 years behind the state of the transceiver art until 5 years ago, when I bought a near-new TS50s from a mate in the USA, the rig I now use for portable operation to replace an FT7B, stolen from my car. Before that, I used an ATLAS 210-X, which I still have.

As the years went by and computers plummeted in price and leaped stratospherically in performance, I found myself writing more about software and hardware, reflecting a growing interest from CW people in what computers could do to enhance the enjoyment of our

ancient mode. Interactive Morse teaching software showed that it could teach the code better than a human. Keyboard software enabled those with arthritis-stricken fingers to again send Morse that others could copy, and code-reading software helped those whose skills had grown rusty to hone them again - a surprising number of correspondents tell me that they have returned to CW in their later years.

Many reasons are given for this. Some now find QSOs on the crowded SSB DX bands too difficult to decipher in the QRM as their hearing deteriorates. Others have been forced into QRP operation after moving into townhouses or retirement villages, and find that CW with 5 watts still enables them to work the world.

Most recently I've written the software to produce both the ZL Ham theory and Morse examinations, which involved extensive background research into what was happening in other administrations, and how exams had evolved over the years. The differences are striking. Let me take you back 70 years.

#### **Ham Exams in the Old Days**

In this era, everybody had to build their own gear, and the Exam papers reflected this. All questions required long, written answers, often with diagrams, no multiple choice - and detailed understanding was expected. Here are some typical questions from the 1933 October theory exam:

"Draw the schematic circuit diagram (including the power supply) and describe the operation of the transmitting set you propose to use."

10

"Explain the method you would adopt to effectively neutralise the R.F. amplifier in a M.O.P.A transmitter. What indication would you have that the neutralisation was effective?"

Very few of us now can understand the transmitter circuits we use, let alone draw them! Nor do we routinely neutralise our output stages, and Hams qualifying in the last decade probably won't even know what "neutralisation" means.

Neither were examining procedures as user-friendly as they have now become. In fact, those sitting Ham exams 50 years ago sometimes felt that they were in a Frankenstein or maybe Marx Brothers Movie. Sylvia, ZL2LS, described in the June 1987 *Break-In* how she and three other candidates sat their first Ham exam, in Pahiatua, in 1954.

*"In those days we sat everything in one day - Morse in the morning, theory and regs in the afternoon. The Postmaster came in to take us for the Morse test. He was brilliant, sending and receiving at over 30 wpm. He did have a problem though; he could neither send nor receive at 12 wpm. He told us that we would have to send to each other!*

*I refused because I didn't think my sending was good enough. So Bill and Jim took turns but they didn't make much progress because the Postmaster sat there with a stop-watch. After every 3 or 4 words he would say 'stop', 'too fast', 'too slow', or 'start again'. Lunchtime came and we still hadn't finished. We were told that we'd have to do the theory and regulations in the afternoon and then have another go at the Morse.*

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*"But things didn't go too well. My little table had one leg shorter than the others, and if I pushed it against the wall it banged and rattled. If I pulled it out everything fell off the back. I got jittery, and didn't finish the paper. We all failed, and had to sit again next year, in Palmerston North."*

I think you'll agree that we've come a long way since then.

#### **Portable with Switched-mode Power**

In early December, I spent a few days in the old cottage 50 metres from the sea where Rosemary and I have retreated for the last few years to recuperate from the year. As usual, I took the TS50s, ended random wire, the MFJ-949B transmatch, groundplane, and K9 keyer. I've written about my random wire before. Of course, tuned antennas are always better, but I use it because it only takes 3 minutes to sling into the trees, I can always load it on all HF bands from 80 to 10, and it's good enough to bring CW contacts all over the world. The heaviest, bulkiest unit I've always had to lug along is the conventional transformer/bridge rectifier power supply that originally energised the FT7B. It weighs more than everything else combined. Thus, I've been keeping a weather eye on the alternative, switched-mode supplies which started to appear a few years back, and which are now universally used in computers.

The first generation of these for HF use were not a success, or at least the ones I tried weren't. They worked fine on transmit, and were efficient and light. But on receive, they sprayed both random noise and rich harmonics all over the spectrum. However, in the January

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2000 issue of QST, Joe AA1GW reviewed 6 recent units from different manufacturers, and said this:

*"Each of the supplies was substituted for the existing conventional dc supplies in three typical HF station configurations. Five of the six generated no perceptible interference in the station receivers..." (The exception was an ICOM unit, which produced spurs on 10 metres. I'm told that this has since been re-designed.)*

*The cheapest and lightest unit reviewed was the SAMLEX SEC 1223. This weighed only 630 gm, measured 18 x 21 x 6 cm, and purportedly supplied 13.8V dc at 23 Amp continuous. It also received other glowing reviews on the web. This seemed promising. I obtained one. It's been a great success. It effortlessly drives the TS50 to 100W, and in an extended CW over merely gets moderately warm to the touch - running much cooler than the rather small heatsink at the back of the TS50s. Of course much of this power probably heats the Pohutakawa trees my random wire inhabits, but nevertheless, it goes somewhere."*

As promised, I can't hear any power supply interference on any HF band - even with the very low background noise level at the beach. There was a slight buzz on top of Kim Hill, on the AM National Program, and I fancied I could hear other artefacts in the same spectral region - but who would send CW while Kim was talking? In fairness, the National Program has very low signal strength down there, and I can't hear this buzz in the home QTH. Switched mode supplies have a big future. Is anyone else using

this unit?

### **A Fully Automatic Bug?**

A reader asks: "I know that a standard bug produces automatic dots. It seems an obvious step to add another pendulum movement to produce automatic dashes as well. Why didn't anybody do this?"

In fact, they did. Melvin E. Hansen of California produced such a device sometime in 1939, concatenating syllables of his name to call it the Melehan Valiant. Only about 400 were made, and production stopped around 1950.

Figures 1 and 2 show two views - rather poor, but these are the only shots I have.

The Valiant has two completely independent vibrating arms on one base with two pivots on one support assembly. I saw one of these in 1985 in the Henry Ford Museum in Detroit, and it was an awesome machine. Setting one up right

for any one speed was said to be a tedious business, because there are 17 adjustments on the mechanism! This is because the mark/space ratio formed by the dash pendulum has to be 3:1, not the simple 1:1 of the dot pendulum, and this is trickier to arrange.

The Valiant is the best-known double-pendulum key, but there were others, including the Auto-Morse key invented by K.P. Thomas, manufactured in Adelaide. In *Morsum Magnificat*, number 11, p.22, John Houlder commented on the Auto-Morse as follows:

*"On the Australian land-lines bug-keys were known as 'jiggers'. The Auto Morse was regarded by most operators as the Rolls Royce of all jiggers and formed automatic dashes as well as dots. It was used quite extensively in Adelaide and Perth, and was reasonably common in Sydney. It was*

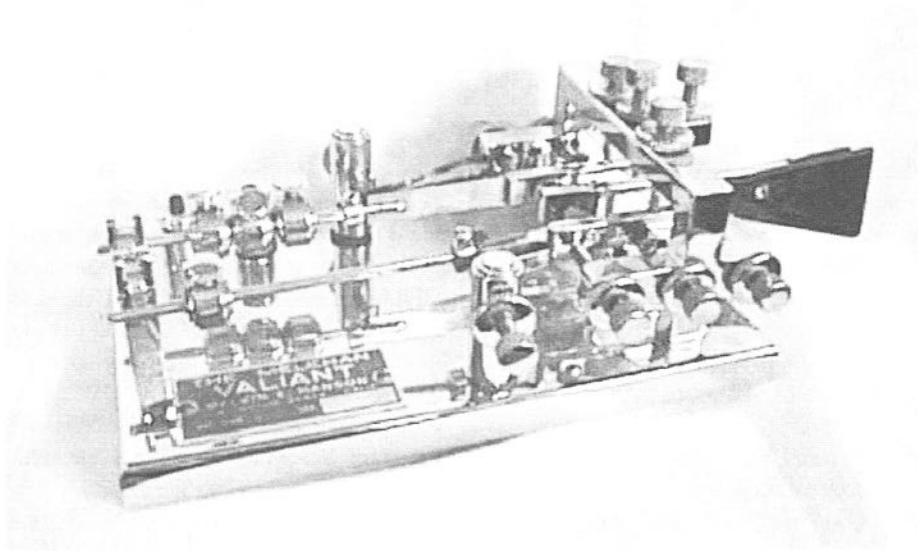


Figure 1. The Melehan Valiant

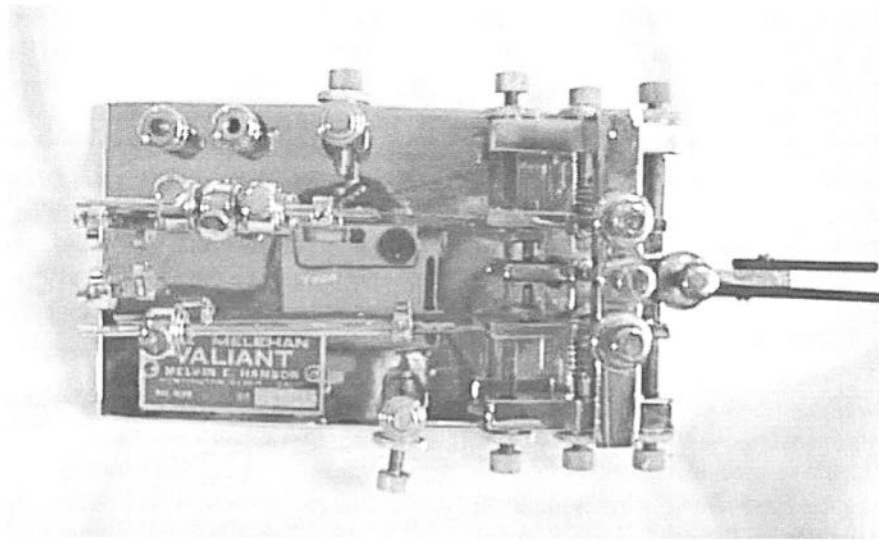


Figure 2. The Melehan Valiant - Top View

*often used by those who had developed Telegraphist's cramp, and had an enviable reputation for the quality of Morse it produced."*

These complex mechanical keys became dinosaurs, dwelling now only in museums, because they lost out in the evolutionary race to electronic keyers, which started to appear at the same time, and which were cheaper to build and much simpler to adjust. Is there one in ZL? I'd love to hear about it.

#### **Sending Speeds**

I have never personally heard anyone do it but recently commented that old-timer telegraphers could send at 25 - 30 wpm on a hand key. I have been reminded by several readers that the passing-out test at the old NZPO Morse telegraphy school required sending and receiving at 25 wpm for 10 minutes.

I know this well, but the point of my comment was that nobody seems to  
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send that fast on the air today, and I'd love to hear a tape or WAV file from someone who still can. Even more surprising claims are made. The great Morse historian, Louise Ramsay Moreau, W3WRE, now a silent key, states in her book *The Story of the Key*:

*"Records were made as early as 1885. When Prof Morse asked for evidence of the efficiency of his system, young Jimmy Leonard copied 55 wpm (with pen and ink) sent by James Fisher using a camelback key having the fixed spring tension of that period. Jimmy was a professional telegrapher, 15 years old, and Lightning Slinger' Fisher was 18".*

Even given the speed advantage of American Morse, this seems an astonishing feat. Has anybody any further information about this incident?

#### **Fingering the Paddle**

I have written before about

different techniques I've observed for fingering the paddle, and asked for your comments. John, ZL1AH, says:

*"My action is very similar, if not quite identical to yours. I bought my McElroy bug in 1938 and, apart from wartime, I used it for forty years. In 1969 I had the top joint of my dash finger amputated after an argument with a centrifugal switch and had to adapt to keying with my thumb and second finger.*

*In 1978 I changed to using a keyer with a generic paddle and decided that I was too old to change to iambic keying, so I kept on with my bug action, except that the dash lever now sent them automatically. I upgraded to a Bencher paddle and later to my present one, a W8JBL type V22.*

*A further problem of old age is that I have arthritis in my hands and if I go more than a day or so without a QSO, my error rate gets even worse than usual. This has also caused me to become much more heavy-handed and when I first got my Bencher, I often knocked it to pieces during a contact! I have largely overcome this problem by mounting my key on a 170 x 170 x 50 mm concrete doorstep tile in order to raise the paddle to a comfortable height and stop it moving about. The V22 also permits vertical adjustment of the individual levers, which helps me.*

*My senile memory may be letting me down (again) but I have a feeling that Ted McElroy did a sending demo (not a test) in the late 1930's - early 1940's and came up with a speed in the high fifties (wpm). I seem to think it was reported in QST at the time."*

I'd be interested to read the

report John mentions in the last paragraph, as I have no record of it. Has anybody got a copy? It isn't mentioned in Tom French's definitive book<sup>1</sup>, which has an excellent chapter, with photographs of the different models of bug and straight keys that Ted McElroy produced during his colourful and eccentric business career. (Ted also set the world copying record of 75.2 wpm in 1939. This has never been bettered, at least officially).

### **Reading Morse Subconsciously**

From time to time I get comments like this one, from a recent email:

"It is quite interesting now that I find I am reading a CW conversation while doing something else without even being aware of it. I leave the set running on CW most of the time, and I read snippets of conversations and call signs while in the sitting room watching the news. I will say to the XYL - 'that is a Yank calling a Japanese' - 'he lives in xxxxx and their names are xxxx' and so on. But often it doesn't work like that when I am working CW myself! The same thing applies to weak signals - I can read some of them better if I don't strain to listen."

Two points here; firstly, as you become proficient, you find that the "Morse starts to decode itself inside your head" when you're not consciously listening to it.

An illustration: My great-uncle Bill was a professional telegraphist for 40 years. He retired in Hastings, in the 1940's. He told me once that until the end of his life, whenever he walked past the Post Office and heard the familiar click of the sounder, the telegrams they carried



formed, unbidden, in his head, even when he was talking to other people or thinking of something else.

I thought at the time that this was pretty weird, but now that also happens to me. Once a bird almost managed to send my name.

The second point: When you do concentrate, it often does “seem harder to read”. This was recognized by Walter Candler, possibly the most influential of the early American code teachers. Walter learned American Morse as a young man, and worked for two years as a telegrapher on small-time systems. In 1904 he moved up to the prestigious Western Union Company in Atlanta. He was shocked to find that their operators sent code much faster than he was used to, and mortified to be fired, after one day, for “lack of skill”.

He went back to a humbler job on a slower-paced country railroad line. Traffic was light, and he often dozed off. To his surprise, he discovered that when half asleep, and completely relaxed, he could read the code sent by the few high-speed operators perfectly. But when fully awake, he could only catch occasional words!

He surmised that his problem was completely mental. He put it this way: His “subconscious” mind, which could already read fast Morse, decoded effortlessly when he was half asleep. But somehow, his “conscious” mind blocked this process when he was fully alert. (In those days, “conscious” and “unconscious” minds were popular concepts). So he trained himself to relax, and “let his mind do the work”. His improvement was so marked that

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in 1911 he started a correspondence course in Chicago, entitled Scientific Course of Code Instruction. This was immensely successful, and was still running when he died in 1940. For a time it was continued by his wife, who had been his first student. It was last advertised in 1959.

I have his 1931 course notes. The importance of “mental attitude” dominated all his teaching, and he believed that attaining it was the significant “magic factor” needed for success. “Relax, and read subconsciously” was what he advised his students. His other three key emphases were:

Firstly: Characters should only be learned by sound.

Secondly: Characters should be sent quickly, to encourage hearing them as “single, holistic symbols”. (We now call this “Farnsworth Morse”, though Russ Farnsworth only popularised it).

Thirdly: Use only “plain-language” practice texts. “Random groups” instil different reflexes.

Notice the word “reflexes” there. Learning to copy Morse is building up reflexes. It’s quite different from an intellectual task like learning to solve differential equations. It’s analogous to the instinctive, automatic reflex that a pianist learns, causing the right fingers to go to the right notes in response to the eyes scanning the little black dots, without conscious thought. Or a tennis player’s instinctive response to a fast ball when standing at the net. Instilling such reflexes takes practice, much practice. A good tennis coach, or a

good Morse teaching system, helps enormously.

### 5 wpm Morse Teaching Software

I've produced Morse teaching software geared to the 5 wpm test. This uses the techniques recommended by Candler, Keller, Koch and other distinguished teachers, and validated by scientific research.

You can download this software from the NZART website via the "Exams" page. This is a true Windows program (for PCs only) and unlike my earlier DOS software (which is still available if you want it) plays audio Morse through the soundcard.

A sample operating window is shown in Figure 3. The histogram at the bottom, seen in its initial state, modifies itself during the first "audio character recognition reflex-building" mode, when characters are introduced progressively, by sound only, at a rate geared to your rate of progress. The

program judges this using feedback you give it with keyboard responses. It's very encouraging to see your ability increase as the histogram modifies.

The algorithm used was first described in 1977 by Howard WA9VRU<sup>3</sup>. A full description comes in the help file (activated with the button at top right). Howard's excellent article, ahead of its time, is still worth reading. It's basically the same algorithm as in my DOS software, and it teaches Morse character recognition better than I can.

Your audio recognition reflexes will take some hours to build up, and will initially be quite slow - taking maybe a couple of seconds. To increase reading speed, all you have to do is to decrease this reaction time, and become familiar with characters forming words, embedded in text. To help you, 950 practice texts are supplied. The first 900 were compiled by Clyde, ZLICMR some years ago, and are mainly sporting reports with a good selection of letters and numbers.

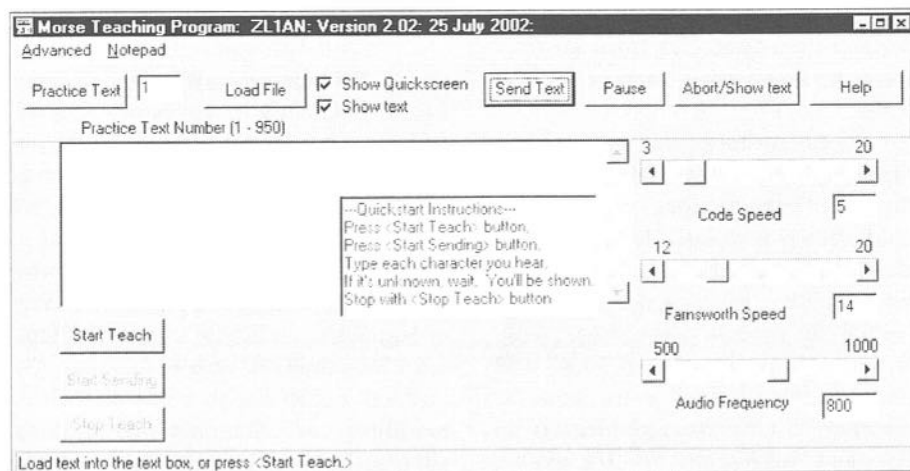


Figure 3. Sample operating window

The last 50 are “sample QSOs” (generated with a random QSO generator program I wrote once) to give you an idea of what you’ll hear on the air.

You can also load and send any text file on your system as Morse, cut and paste other text into the sending box, or type directly into it. So finding practice material is not a problem, and you can learn by yourself.

Farnsworth (fast characters, long spacing) Morse is used. You can select any Farnsworth speed between 12 and 20 wpm, any overall code speed between 3 and 20 wpm, and any audio frequency between 500 and 1000 Hz, using sliders at right.

When you can copy at about 8 wpm for 3 minutes pretty well error-free, you’re ready for the receiving test. If your local NZART testing officers use the official NZART software to deliver it, the Morse you hear will be exactly the same as that produced by this teaching program at 5 wpm, as I wrote the testing program as well.

This new version of the

teaching software doesn’t have the “audio monitor” capability of the DOS version. This feature enabled you to connect a Morse key to the com-port and key the built-in speaker to practise sending. the latest versions of Windows won’t, however, allow you to access com-ports directly. I’m still thinking about a work-around for this.

Thus, no provision is currently made for sending practice, and I’d emphatically advise learners to find an experienced operator and watch carefully how to operate the key. It’s very easy to form bad habits which will tire you rapidly and limit your speed. For sending practice, you’ll need a simple audio oscillator. See below.

### Audio Oscillators

Figure 4(a) shows the simplest code-practice oscillator I know. I’ve built it several times from junk-box transistors and components, using speakers from dead transistor radios. It runs from a single 1.5V cell, usually even from a fairly dubious one taken from a dim torch. Since this is a blocking

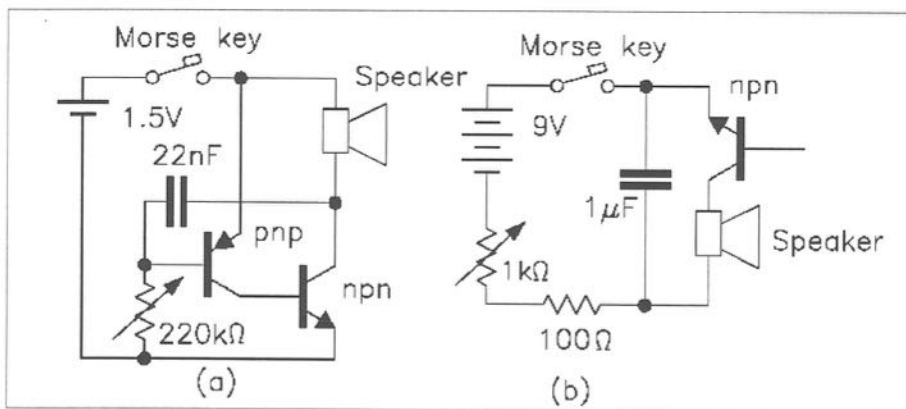


Figure 4. (a) Simple complementary-symmetry oscillator. (b) Blocking oscillator.

oscillator, the tone is very non-sinusoidal, a sort of squeaky whine, with fundamental frequency varied by the 220k potentiometer. But it is simple, and fast to build! Figure 4 (b) shows an even simpler, and very odd circuit, first drawn to my attention by Derek, ZL1UF. It works, again, with a junk-box npn transistor. No, the base is not connected to anything. Yes, the battery is connected in the wrong polarity for any "standard" npn transistor circuit.

This again is a type of blocking oscillator, relying on the low base-emitter breakdown voltage to trigger a relaxation process inside the transistor. If you're interested, a detailed explanation of its operation was given by Merv, ZL1AWX, in my September 1989 column (yes, 1989!) It usually needs a 9V battery to run, since this voltage has to be larger than the base-emitter breakdown voltage. Again, the audio is very non-sinusoidal, since the transistor current consists of square pulses.

Many more sophisticated circuits which output better sinewaves are widely available. Alternatively, if you have an HF rig that allows you to key the side-tone without activating the RF output, you can even use that for practice. This has an additional advantage. If you have the excellent Morse reading program "Cwget" from Sergei, UA9SOV, you can run the side-tone audio from the earphone socket on the rig into the soundcard, and see whether his software can read it. If it can, you're sure to pass the sending test. You'll also see whether you're running characters or words together.

Download Cwget from Sergei's website<sup>4</sup>.

Both of the above produce harsh, harmonic-rich waveforms, which some people don't like. Neither are they suitable for feeding to a VHF/UHF FM transmitter for on-air MCW practice sessions.

Figure 5 shows one of many possible circuits which can produce a nearly sinusoidal waveform. This one was adapted by Steven, KØ6KS, from the 1992 edition of the ARRL publication Hints and Kinks. The centre-tapped transformer is a push-pull output to low impedance speaker type found in elderly dead transistor radios, usually with about a 1 k- to 8- impedance transformation ratio. The audio frequency is set by resonance between the transformer inductance and the capacitor across its primary. The 100 µF shown generally results in a frequency between 500 Hz and 1000 Hz, and should be altered as necessary.

The transistor, shown here as a common 2N2222, is not critical. The 50k variable resistor in series with the base adjusts the feedback fraction, and should be set for the best sinusoidal waveform shape at the transistor collector as determined by oscilloscope, or adjusted to whatever your ear finds pleasant.

This circuit runs readily from a single 1.5V torch cell, usually drawing about 5 mA key-down. It's keyed in the power supply line, with envelope shaping set by the time constant of the 10Ω - 22 µF RC combination at bottom left. Change the value of this capacitor to make keying "softer" or "harder".

If you just want a code practice

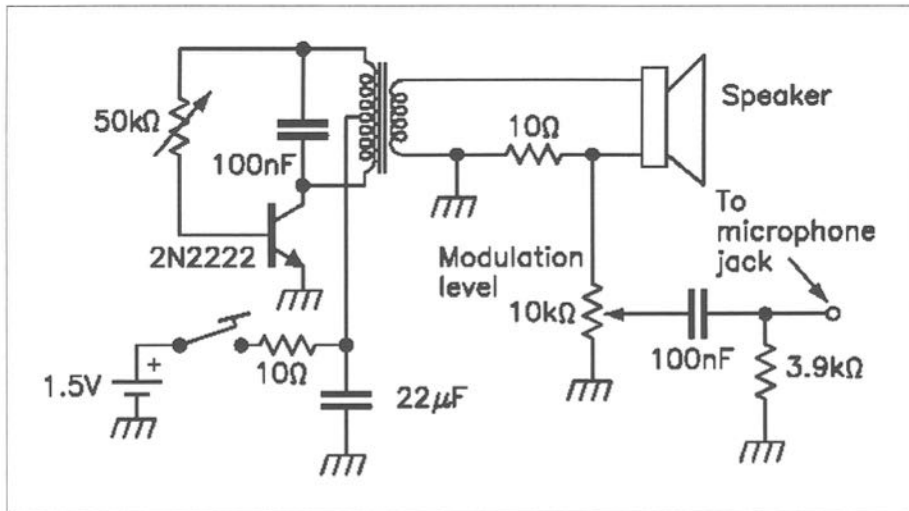


Figure 5. Circuit for nearly-sinusoidal waveform.

audio oscillator, connect the speaker shown on the right straight across the transformer secondary, omitting the  $10\Omega$  series resistor and other components. These are included only to facilitate feeding the waveform, suitably attenuated, into the mike socket of an FM transmitter. The  $10\text{ k}\Omega$  potentiometer adjusts the modulation level, and should be set empirically.

#### The Art & Skill of Radio Telegraphy

This is the title of an extraordinary 234 page book, written by Bill, NØHFF, which can be freely downloaded from his website<sup>5</sup> in a variety of formats or purchased as a book from the Radio Amateur Education Society<sup>6</sup>. If you have web access, and are at all interested in the history, technical details, teaching techniques and the great characters of both American and Continental (International) Morse, this

is something you must have. It's very professionally produced, and free. If you don't print it out, at least have it on your disk.

Bill has been fascinated by Morse all his life, and this book is the result of his wide reading and research into all its aspects. I guarantee that you'll learn many things that will surprise you - such as who really devised Samuel Morse's first code, who invented the Morse key, and why messages in American Morse could be sent around 45% faster than in International Morse. If you've never heard American Morse, Bill will point you to a computer program that sends it.

He extensively reviews all of the teaching and speed-increasing systems I know, with comments regarding their efficiency, or lack of it. This alone is absorbing reading for those who wish to operate faster. His writings on the ability of

those few gifted individuals who can read code at speeds of 80 - 140 wpm are particularly interesting. He has gone to the trouble of finding and interrogating such people, and lets them describe their background, techniques and experiences in their own words.

See you on the bottom of the bands.

#### References

1. Tom French W1MQ, "McElroy: World's Champion Telegrapher" Artifax Books, 1993.
2. Anne ZL1TAF, NZART Examinations Officer, email address

anneanderson@paradise.net.nz

3. A fully automatic Morse code teaching machine, Howard Cunningham, WA9VRU, QST May 1977, pages 35 - 37.
4. Cwget, by Sergei, UA9SOV, from <http://www.dxsoft.com/index.html>
5. The Art and Skill of Radio Telegraphy by Bill, N0HFF, from <http://www.qsl.net/n9bor/n0hff.htm>
6. See the advertisement in MM on page 1.

(Adapted and edited for MM from Gary Bold's *The Morseman* column in *Break In*, the journal of NZART) **MM**

### 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.

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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.

### 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.

**M**ORSUM MAGNIFICAT has endeavoured to thrill its readers, issue after issue, with mouth-watering pictures of rare, little known or exotic telegraph keys and equipment.

These pictures represent somehow or other a small triumph for the owners, who, either managed to obtain a bargain or a rare piece (or both at the same time!) and proudly show what they have. In most cases, the items shown are complete units, although in varying degrees of preservation. But what about the other side of the coin?

I live in Montevideo, Uruguay, but if you live in Europe or the USA, it is fairly easy to have access to a variety of equipment for sale, your pocket having the last word. I am not complaining, simply stating the fact that (eBay notwithstanding) it is very difficult these days to obtain telegraph equipment locally in South America, not to mention in such a small country as Uruguay.

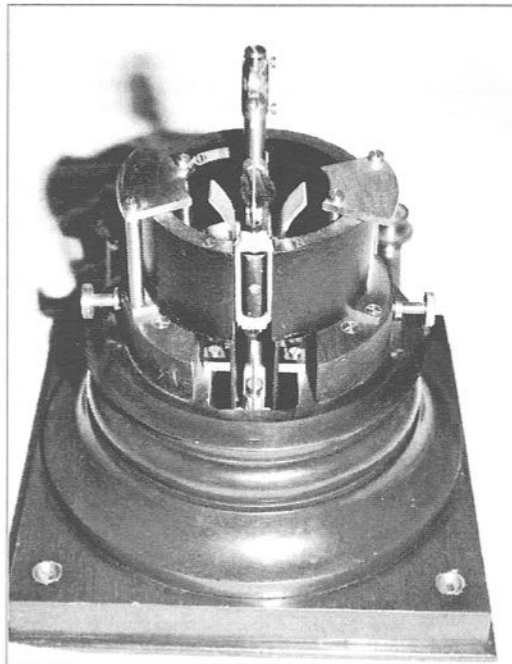
As a collector my rule is to try to buy whatever appears in the local market, with the idea that such equipment forms part of the telecommunications history of my country and should be preserved. This explains the keys and other equipment of

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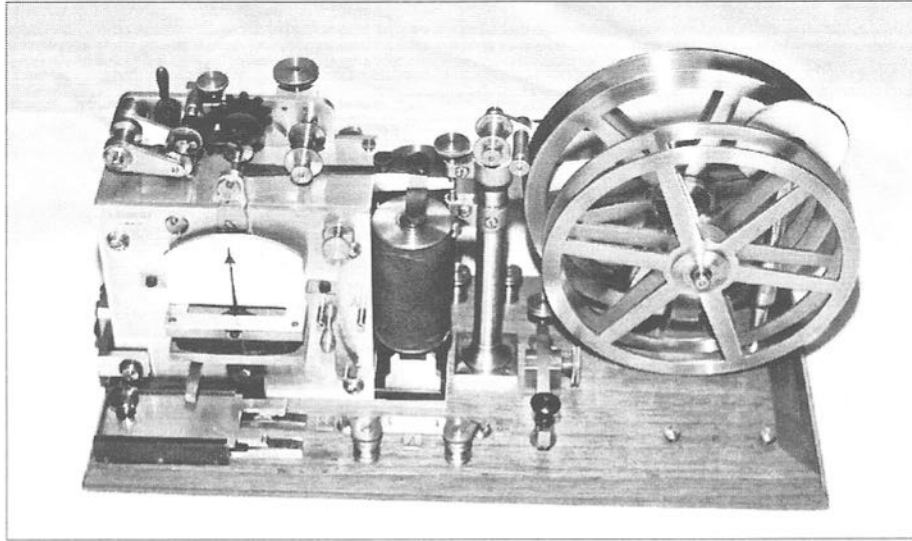
## The “Oh, What a Pity” Showcase

*by Gustavo A. Coll*

many nationalities in my collection. These days, though, I am more focused in my purchases, particularly when



*Picture 1: Sullivan Mirror  
Galvanometer minus brass lid,*



Picture 3: Incomplete military set by E. Ducretet

buying abroad. Anyhow, as I said above, I cannot resist buying whatever appears here (well, within limits), and that leads to the title of this article.

I have equipment that was dismantled to sell its brass parts, stored with disregard to its integrity, cannibalised, broken, either on purpose or accidentally, etc. As a departure from the usual "Success" showcase I propose then showing pictures of telegraph gear which elicit a deep sigh and the "Oh, what a Pity" thought.

Picture 1, for example, shows a beautiful Sullivan Mirror Galvanometer minus its brass lid, now lost forever. By the way this piece was assembled from what I found at two different flea markets, one year apart!

Picture 2 shows the remnants of a siphon recorder for submarine telegraphy with a lot of missing parts and the brass screws painted brown (Why?). The

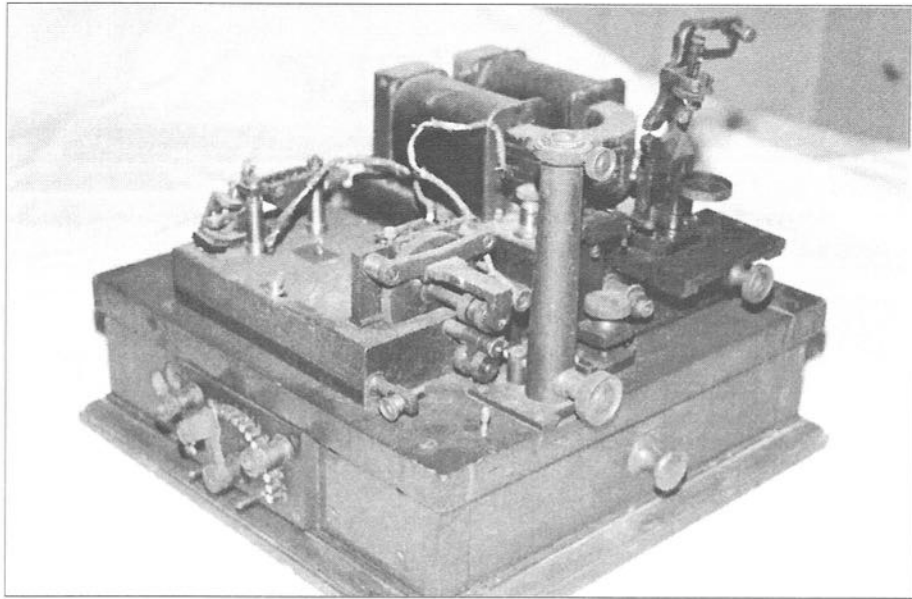
interesting bit is that inside the paper drawer I found a roll of tape showing (in cable code) messages exchanged in English, between an unknown cable ship and a shore station, also unidentified.

Picture 3 shows what is left of presumably a military set by E. Ducretet dating from about WWI. Although incomplete I cleaned it thoroughly as it is still a beautiful piece of equipment.

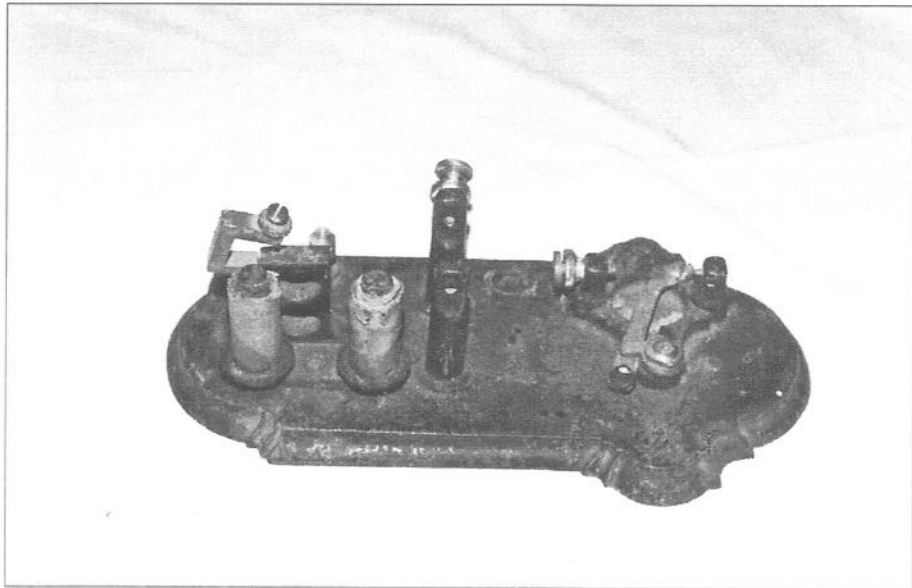
Picture 4 is of what is left of a KOB (Key On Base) - very probably of American origin. Note the position of the sounder coils.

Other incomplete items in my possession include resistance boxes without plugs, small galvanometers without their glass shades, keys without knobs, etc. But if you are a collector you cannot resist buying what other people think of as junk. Under these circumstances; would you have ignored these pieces? *MM*





*Picture 2: Sumarine telegraphy siphon recorder.*

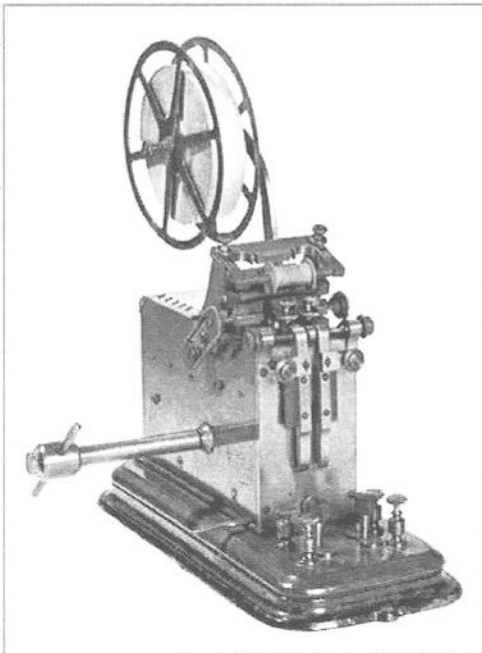


*Picture 4: Remains of a Key (& Sounder) On Base.*

# 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.

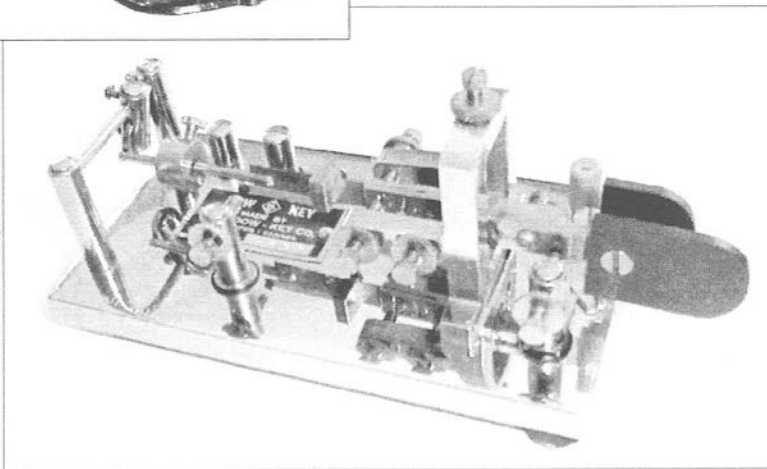
Photo/Collection: Fons Vanden Berghen - Halle, Belgium



Left: Two-channel register by J. H. Bunnell, New York.

Below: The Canadian "Dow Key", a bug key made by the Dow-Key Company of Winnipeg

Photo/Collection: John Francis, G3LWI

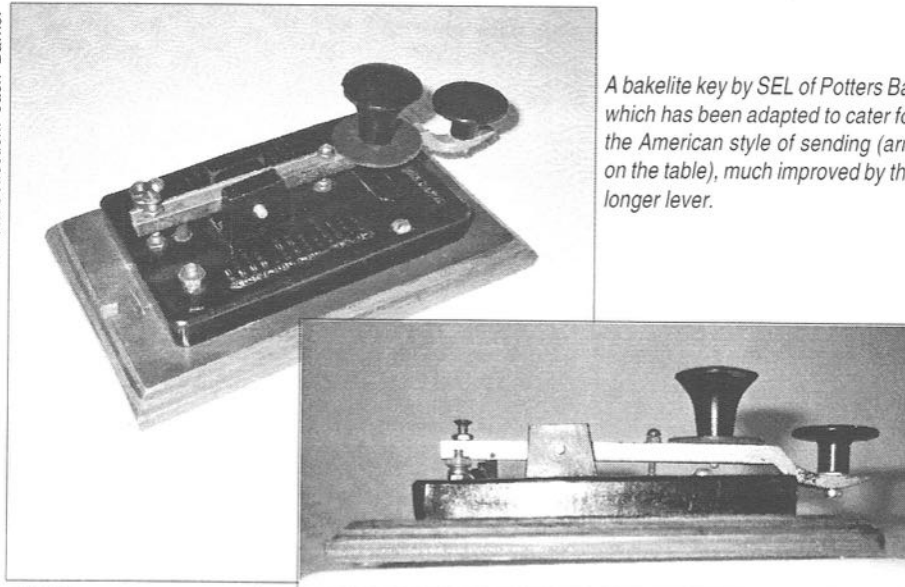




*This item is a 4 ohm KOB with a camelback style key made by National Electrical Manufacturing Company of Milford, Connecticut about 1890. National Electrical Manufacturing Company was the successor of New Haven Clock Company's telegraph manufacturing operations, and items made by National bear*

*a resemblance to the earlier New Haven Clock Company instruments.*

*The inexpensive construction with cast iron rather than brass parts, suggests that this may be a student (learners) set rather than an instrument made for commercial duty. Similar sets were made by other manufacturers of the era and were generally 4 ohm instruments. Although such sets were relatively inexpensive, they were sufficiently durable that they saw wide use in commercial service by the railroads.*



*A bakelite key by SEL of Potters Bar which has been adapted to cater for the American style of sending (arm on the table), much improved by the longer lever.*

## Heliograph Construction Project

by John Alcorn, VK2JWA

**T**HE HELIOGRAPH is a signalling instrument which uses reflected sunlight (or other light) to send Morse code messages. There are two basic methods used to transmit/interrupt the light beam. The British type, where the mirror is tilted to place the beam on or off the target station and the American type where the beam is constant and interrupted by a louvered shutter device in line with it.

The standard British Army field heliographs (Mk V) are 5" in diameter and the American service type is 4½" square. Larger sizes up to 12" were used on fixed links (see Figure 1). They

are used in two modes: *Simplex* where the station mirror directly reflects the sunlight to the target station and *Duplex* where a second mirror is utilised to redirect the sunlight onto the station mirror. Mirrors are normally mounted on tripod stands.

I have an Australian 1942 Mk V model (British pattern) but not a US



Figure 1. Left: British army pattern Mk V heliograph with tilting mirror. Right: Home made heliograph constructed to the American pattern with louvered shutter.

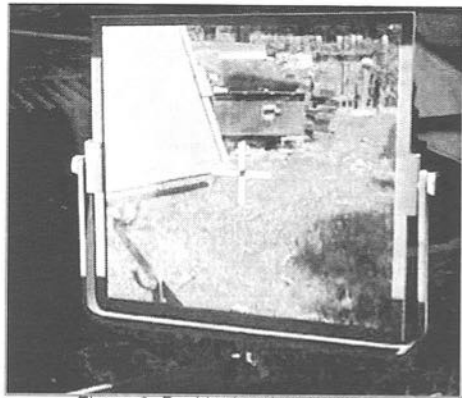
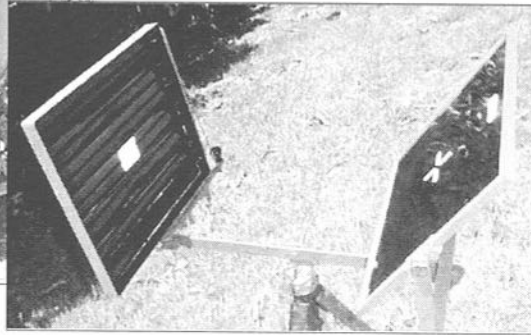
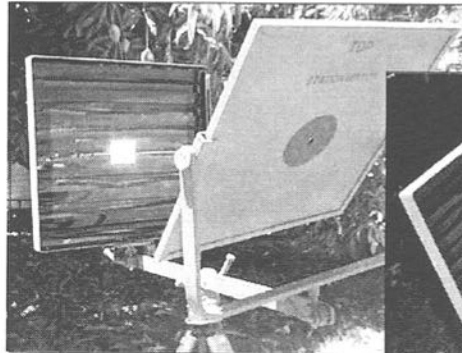


Figure 2. Positioning the shadow.

especially the Shutter.

I had a spare tripod stand and so I built the mirror fittings to suit this. The construction of mirror mechanism is fairly basic and does not include the fine screw adjustments used on a service heliograph for tracking the target station. Manual tracking is not difficult, it just takes more care.

The cupboard mirrors had finger grooves ground into them to slide them. At first I thought these to be a defect but have been able to make use of them. I painted the Sun Mirror groove black and the Station Mirror



Figures 3 & 4. A simplex setup

type, and so I decided to build a one. The first decision to make was the mirror size. The design of such projects is much governed by the materials on hand. I had obtained two rectangular mirrors from an old bathroom cabinet, originally sliding doors, 11" x 12" (280 x 305mm). This determined the scaling of everything else,

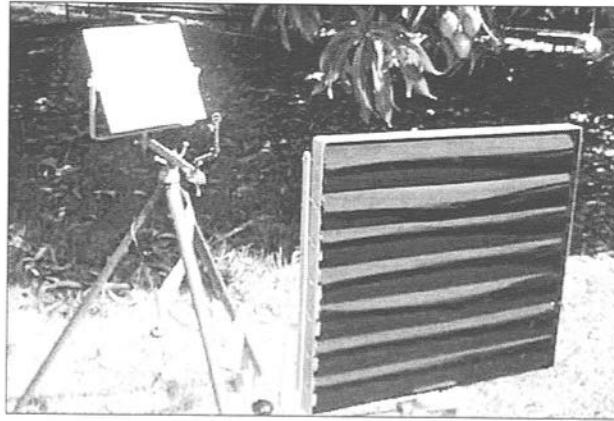


Figure 5. Preferred simplex arrangement

Figures 6 & 7. Configuration for duplex operation. Note the light on the tree trunk below, with the shutter open.



groove white. Positioning the shadow of one on the other provides for quick alignment (Figure 2). Precise alignment is then made using the hole shadow and white cross.

The sighting holes in the centre of the mirrors are about 5mm in diameter. The standard smaller 2mm hole in the British army Mk V model is very difficult to use. Having cut through the backing paint, the silver was difficult to remove but I found 'Brasso' metal polish removed it perfectly with no scratches.

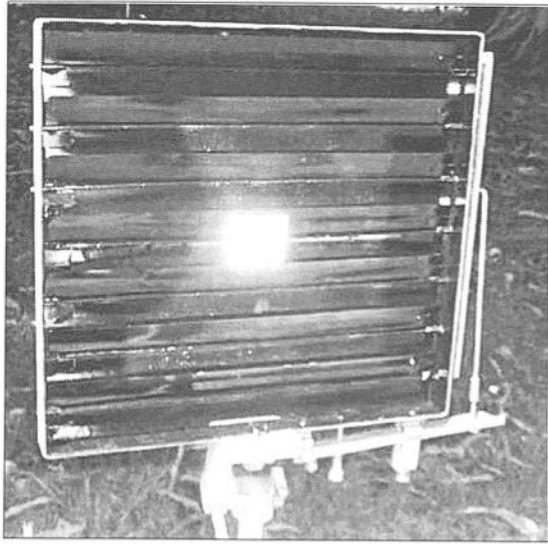
The one mirror (Simplex) setup is

used when the sun is in front of the sender. The arrangement in Figures 3 and 4 can be used but is not recommended. Vibrations from Shutter operation are transferred to the beam alignment. The arrangement in Figure 5 is recommended with a Mk V sight is fitted.

The two-mirror (Duplex) setup is used when the sun is behind the sender. Figures 6, and 7 illustrate this. Note the light on the tree trunk with the open shutter Figure 7.

A close-up of the Shutter mechanism is shown in Figure 8. The

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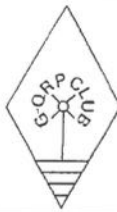
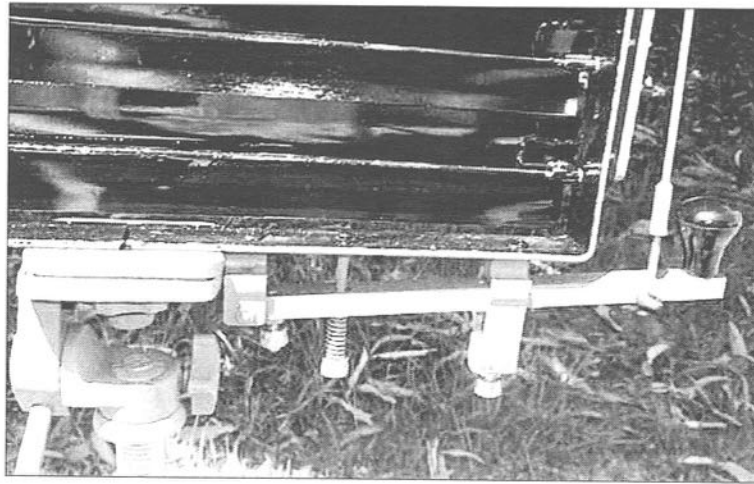


Operating Key in Figure 9 is an electric key and when closed a circuit is made between the brass terminals. An oscillator could be included in the circuit to assist the Sender at the time the code is sent.

So far this is a backyard demonstration arrangement and the next step is to conduct a field exercise. *MM*

Figure 8: Close up of louvered shutter.

Figure 9: Close up of key mechanism.



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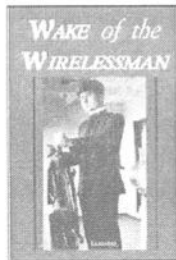
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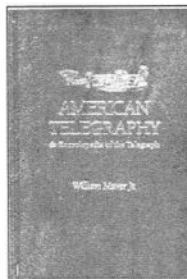
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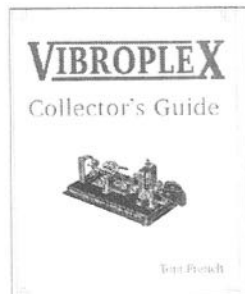
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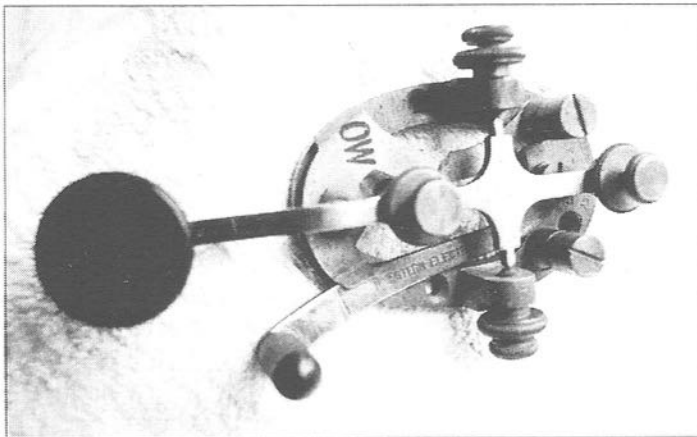
Readers are invited to contribute any additional information and stories, no matter how minor, to the Editor, *Morsum Magnificat*. There have been thousands of designs of keys & telegraphy instruments. Information will be lost unless it is compiled in one place and shared with other readers.

Photo/Collection: Clive Mabry



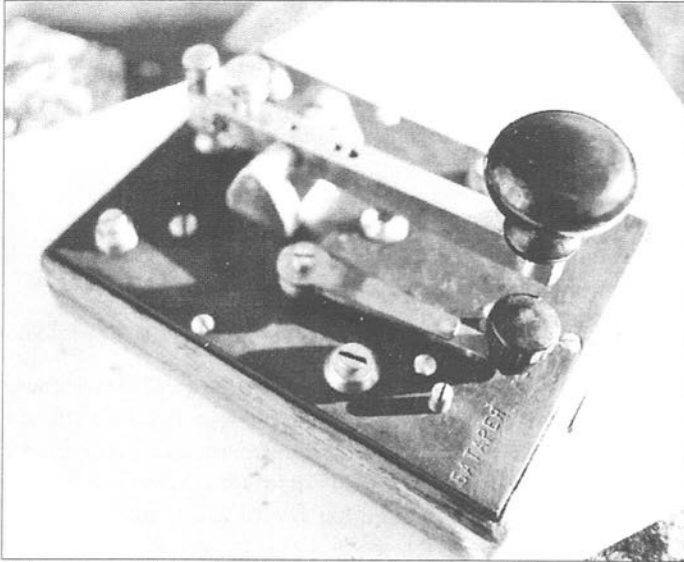
Does any reader have information on this key. It is stamped "H White -1918" and below "5427 III".

Photo/Collection: Henri Heraud



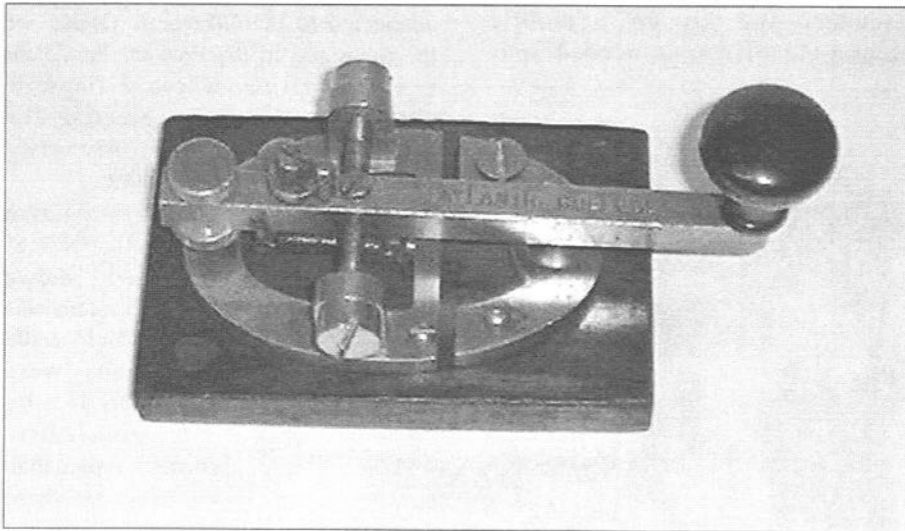
This is a Western Electric key with the letters "OW" stamped on it. It was found in Germany – does this mean it it came from the Deutsche Democratic Republic and stands for "Ost Whermacht"?

Photo/Collection: Henri Heraud



*This key is possibly Russian with the following inscription on the base: "ЗЕМЛЯ" - "ZEMLIA" - "BATAREIA" and "БАТАРЕЯ" on the plate. It was found in Germany. Has any reader any info please?*

Photo/Collection: Zyg Niski, G3OKD



*This brass key on an integral wooden base, which is stamped "ATM Co. Ltd" (Automatic Telephone Manufacturing Company of Liverpool) also has the words "ATLANTIC COLLEGE" stamped along the top of the lever. Does any reader have any information on the 'Atlantic College' and/or the date of manufacture of this key?*

*MM84 - January/February 2003*

## Cable Wagons

by E. Geoffrey Walsh\*  
GM4FH

**W**HEN TROOPS MOVED only on foot or on horse back, as in the American Civil War (1862-1865), telegraphic cables could be laid to maintain a communications link close behind, gaps could be closed by a runner. Often speed was essential. Men or mules carried reels free to rotate so that the wire could be continuously paid out. At the rearward a cable wagon served as a telegraphic office and could connect to other wires in the system, and to headquarters (Figure 1). In 1869 there was a mock battle in Dover, one group of volunteers pretended to assault the town and castle from the sea, Another group playing the roles of defenders and set up a mobile telegraphic office; it needed four

horses instead of the usual two because of the rough ploughed terrain (Figure 2). Two wire wagons each carried three miles of insulated wire on drums containing half a mile; they also had telescopic poles to take the wire across roads, otherwise it was merely laid on the ground (Figure 3).

The Central Office of the exercise, at the 'Lone Tree', was connected to the 'Magnetic Office' of the town and to the East of the Castle

where a flagstaff was erected for communicating with ships.

That the name 'Magnetic Office' was used shows that the system was one in which needle deflections were engendered by magneto-electric currents rather than by batteries; there was at one time a 'Magnetic Telegraph Company'.



Figure 1. Men 'running out the wire.' (Harper's Weekly January 24<sup>th</sup> 1863).

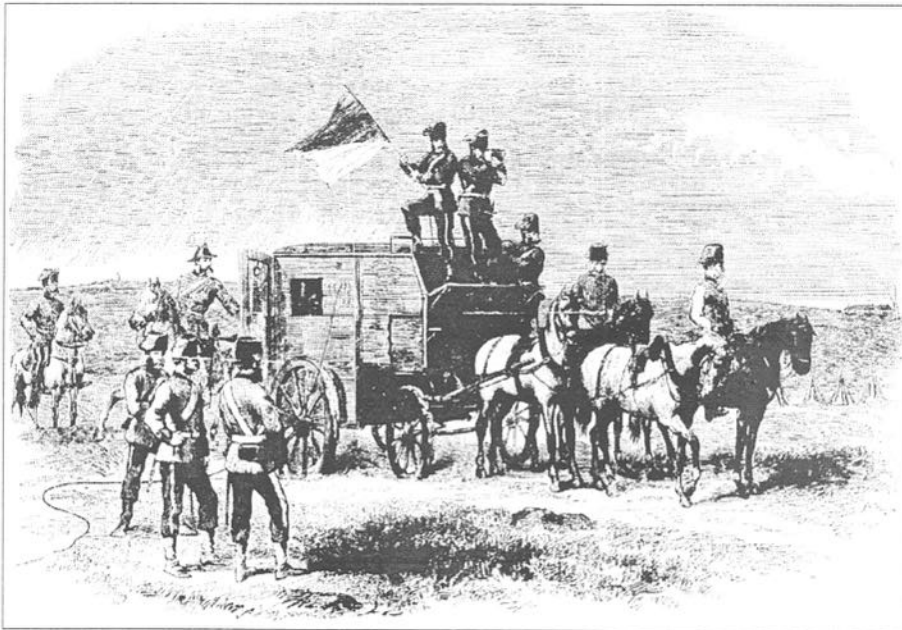


Figure 2. The field telegraph headquarters, a wire is seen coming out of the side of the caravan and trailing on the ground; signaling was also by flags and lamps. (*The Illustrated London News*, supplement April 10<sup>th</sup> 1869).

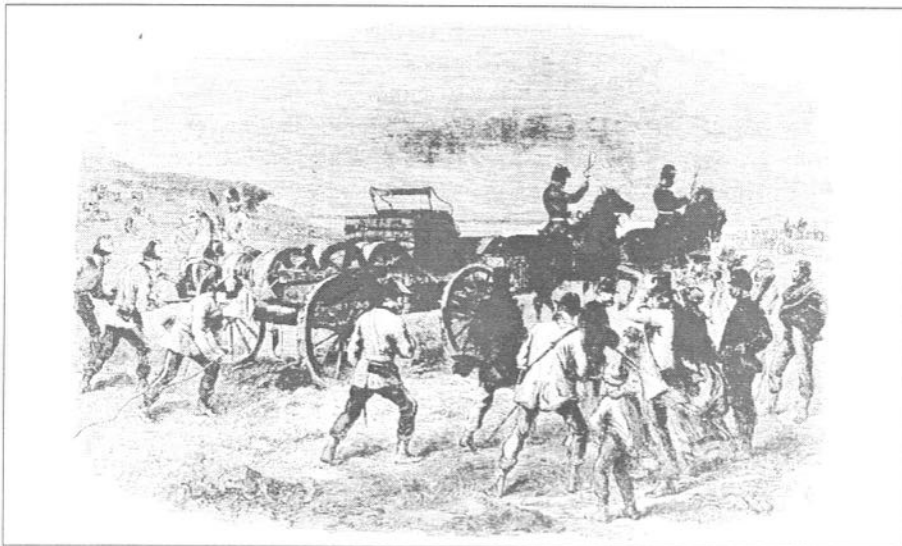


Figure 3. Paying out wire from the horse drawn wire-wagon (*The Illustrated London News*' Supplement, April 10<sup>th</sup> 1869).



Figure 4. An operator of a Beardslee Magneto Telegraph 1863

The operator moved a handle clockwise or anticlockwise and a coil of wire thus cut the field of a permanent magnet and caused the needle at the remote station to turn one way or the other (Figure 4).

By the early 20<sup>th</sup> Century the arrangements had become more organized (Figure 5 & 6). An earth return through the wheels was usually

sufficient unless conditions were unusually dry so whilst on the move communication was possible with the subaltern at the base office; he expected to receive a signal from the wagon every two minutes, a single key press being adequate to confirm contact.

A cable detachment consisted of-  
 'An N.C.O., mounted, as commander.  
 3 office telegraphists, dismounted, Nos. 1, 2, and 9.  
 3 sappers, dismounted. Nos. 3, 4, and 5.  
 3 linemen, mounted, Nos. 6, 7, and 8.'

The cable wagon had a 6-horse team with 3 drivers, and was accompanied by a light spring wagon with pair and 1 driver. It carried spares, camp equipment and rations, 2 miles of cable and a 'third class office' (a tent).

'No. 3 pays out the cable by pulling it off the drum with his hand and lets the cable run through his hand as it pays out, taking care that the slack does not catch on any projection of the wagon. He commences running out from one of the rear drums and next pays out from the front drum on the same side of the wagon. He will pay out very freely when the cable is being laid on the



Figure 5. Posed picture of a cable wagon. (Museum of the Royal Corps of Signals.)

outside of a curve in the road.'

'No. 4 sits facing the rear and will watch the cable being laid; should the cable get caught up, he will stop the wagon by blowing his whistle. He applies the brakes as required.'

'No. 5 has no duties unless No. 6 and the commander have both remained behind. In this case the wagon will move at the "walk" and No. 5 will take a crook-stick and lay the cable.'

'No. 6 rides about ten yards in rear of the wagon, laying the cable with his crook-stick in the position in which it is to remain. He should ride along the line in which the cable is to be laid, irrespective of where the wagon goes and should shout to No. 3 if the latter pays out so much slack that the cable sags between drum and crook-stick enough to catch

on obstacles. No. 6 should take his crook-stick in the hand on the side on which the cable is being laid, and over rough and bushy ground should hold it near the butt end, with the crook near the ground, guiding the cable to the exact spot where it will lie best. When working round the outside of a curve in a road where a strain would pull the cable out in the road, he can save a great deal of tying back by looping the cable over bushes or stubs, or stones which will hold it in. He should loop it over something every 10 or 20 yards, choosing a definite bush or stub for the purpose and glancing behind him to make sure that the cable has been caught by it neatly. This requires considerable skill and practice to do well at a trot. On the command "Joint" he dismounts, takes



Figure 6. Cable wagon drawn by a tractor. Museum of the Royal Corps of Signals

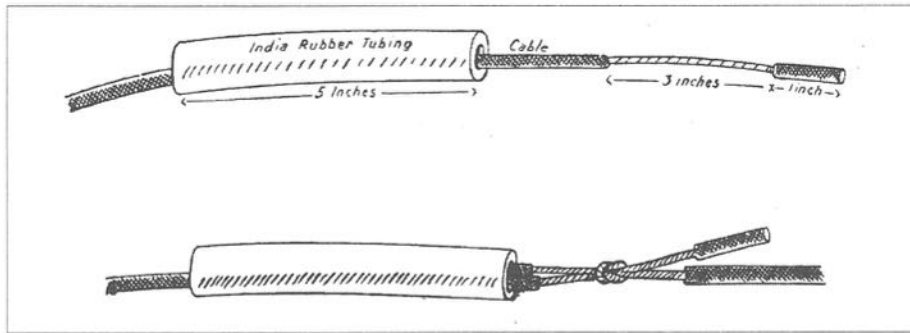


Figure 7. For a permanent joint the insulation was removed from about 3 inches but the last inch was left intact of each wire, a reef knot was tied, the join was soldered, washed, dried and then covered with India rubber tape and solution.

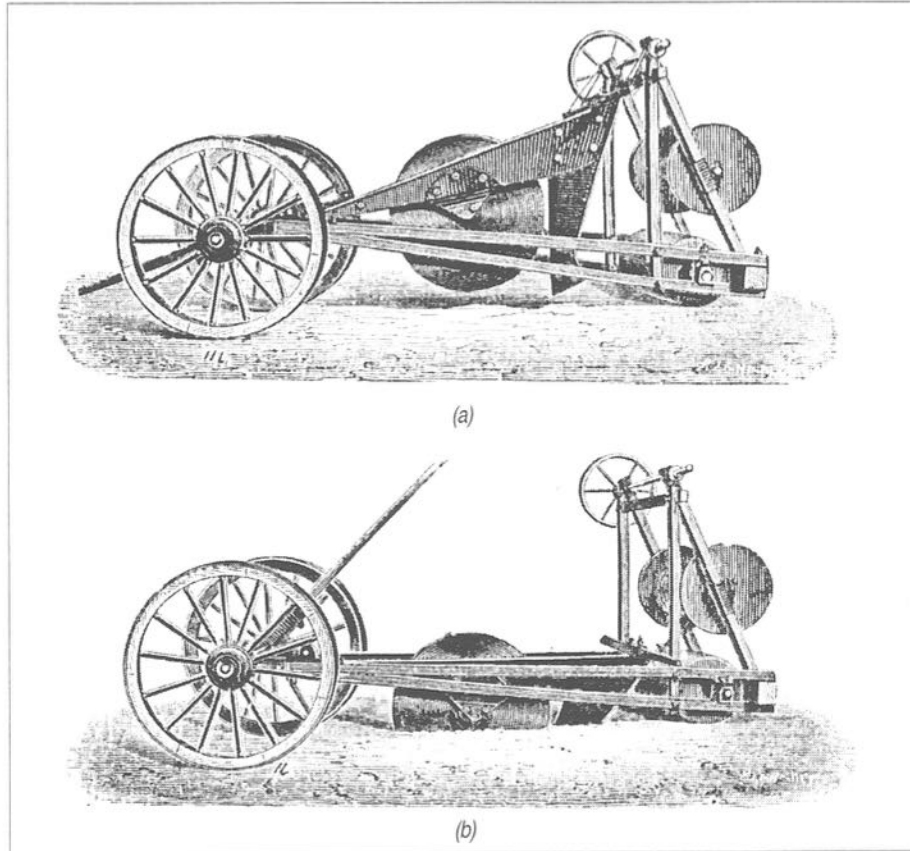


Figure 8. (a) Cable Laying Plough at Rest and (b) Cable Laying Plough in Action



the ends of the two cables, and stands on the new one with a turn round his foot to take any strain which may come from the wagon. He then makes the joint. On the command "Tie Back" he at once dismounts, and ties back the cable to a natural holdfast, or to a peg driven by him. There are also detailed instructions 'for reeling up'.

Joints had to be made when one drum was finished and before the wire on another could start to be laid, or following accidental damage (Figure 7).

For more permanent installations cable was laid underground and was much less liable to accidental or deliberate damage. Bourdin's Plough used a

circular metal disc to cut a slit in the ground and sever the roots of plants. The ploughshare behind opened the trench; the cable was led through a hollow tube (Figure 8).

In the Edwardian period my uncle Jim Simmons (b. 1880) worked as a telegraphist at the Dover Post Office. Being in the reserves he went across to France in August 1914. He was attached to the Indian cavalry as a signaller; the idea of the commanders was that when the infantry had breached the enemy lines the cavalry would charge through. This never happened; the cavalry were usually some miles behind the front and Jim



Figure 9. An outrider guides the wire with a crook stick so that it is laid to the side of the road.

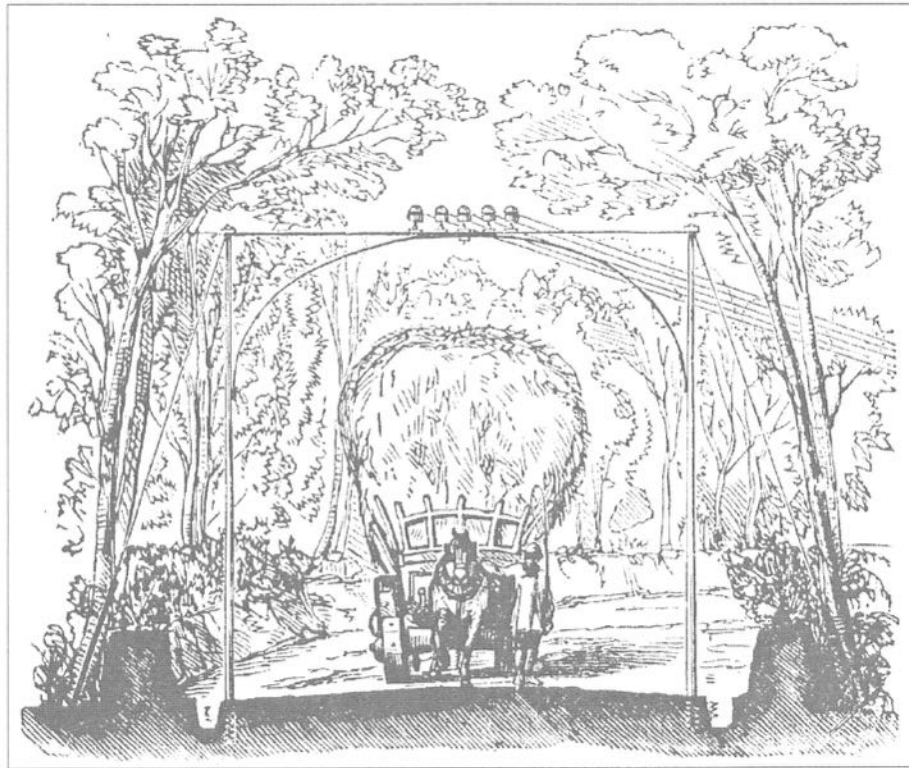


Figure 10. Avoiding trees: 'Two poles are erected, one on each side of the road, and stayed or strutted as may be required; between these is fixed a bar of iron supported by the arch, as shown, and into it the insulators are fixed. In this way the middle of the road, which is the part least liable to be affected by branches is obtained.' ('Telegraphy' by Preece W. H. & Sivewright J. 1876 Longmans)

Simmons came through to the end of the war without a scratch.

When he died in 1970 a newspaper cutting about a cable wagon was found from the *'Daily Chronicle'* for Monday September 8<sup>th</sup>, 1913 (Figure 9). Jim Simmons was in the force of the British soldiers referred to by the Kaiser as *'the old contemptibles'*; if this equipment is typical of what they took with them across the channel, there may have been an element of truth in his sarcasm but the

appellation later became prestigious.

#### Sources

- Coe L. (1993) *The Telegraph* Jefferson, N.C.:McFarland. Pp55/56  
 Harfield A.(1989) *'Pigeon to Packhorse'*. Chippenham:Picton.  
 War Office (1909) *'Instruction in Army Telegraphy and Telephony'* Vol. 2. Lines. H.M.S.O.  
 \*Geoffrey.Walsh@ed.ac.uk  
<http://www.ed.ac.uk/~gwalsh/> MM

**I**n an old copy of the *British Post Office Electrical Engineers Journal*, Volume 6, April 1914 I came across an article entitled "Some Notes on American Telegraphs" by a British visitor to the USA, comparing the telegraph systems of the two countries. At that time bug-keys were virtually unknown in Britain and it is interesting that the author says that they were also known as "wig-wags", a term that I have not come across before.

Equally, it would seem that reception by typewriter rather than handwriting was again an American innovation. Operators went to great lengths to render their personal typewriters useless to other users. On these topics the article reads:

"An increasing number of operators make use of auto-dot keys, or, as they are more generally termed, "wig-wags" or "bug-senders;" There is no doubt that by using these semi-automatic sending devices many men afflicted with cramp who would otherwise have been compelled to retire from the telegraph service have been able to continue as expert operators. (Figure 5 shows in diagrammatic form one type of "wig-wag" key. The key lever has affixed to it a flat spring upon which a sliding weight may be fixed at any position. In this manner the natural frequency of vibration of the flat spring can be altered to correspond to the

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## Wig-Wags Bug-Senders and Typewriters

Some Notes on American  
Telegraphs

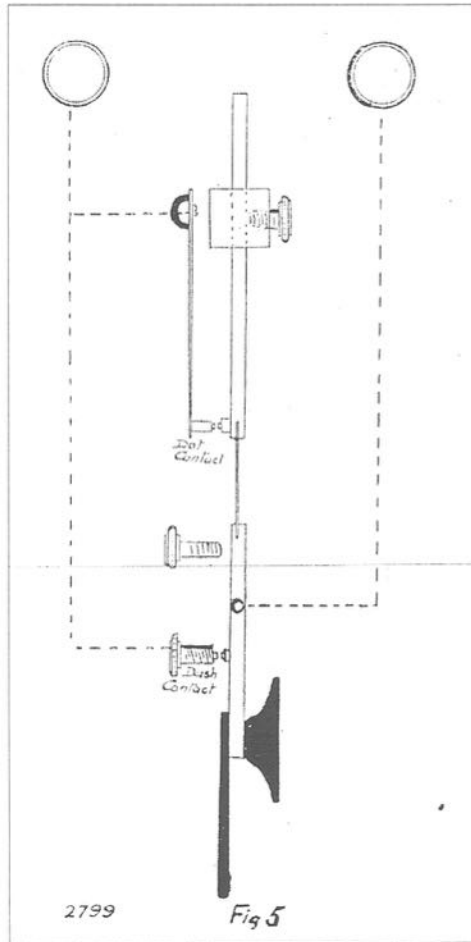
by *John Packer*

*Hon Curator, Porthcurno  
Telegraph Museum*

speed at which the dots are to be made. Normally the lever occupies a central position, and the circuit through it is broken. Pressure on the key at one side causes a permanent contact to be made, and a dash signal of any desired length is thus made.

Pressure from the other side causes the spring to vibrate and to close a contact at each vibration, the number of dots thus made being determined by the operator.

Another machine which has helped to ease the lot of the American telegraphist is the typewriter. Even with the aid of an auto-dot key adjusted for rapid working a sending operator is unable to "run down" a receiving operator who makes use of a typewriter. The ease with which the typing is performed is in striking contrast to the concentration of attention which must be given by an operator transcribing in longhand with pen or pencil at high speed.



keyboard considerably altered from the universal keyboard setting, whilst another went still further and had the position of the type characters altered, the key board remaining unchanged. Needless to say such freak machines were left undisturbed by unauthorised persons.

Some time ago the Western Union Company decided to furnish type-writing machines specially adapted for telegraph work, and thus relieve the operators of the cost of providing them. An order for ten thousand machines was placed with the Underwood Company, and most of these are now in service." MM

It was customary in the past for operators to supply their own typewriters, and many devices were resorted to, to render a machine unusable by anyone but the owner. One operator learnt to type on a machine with blank keys, another had the position of the letters on the

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**Wanted - articles and tips on making and restoring keys - contact MM**

# Your Letters

## Raymart Speed Key – MM82

“Show Case” in MM82 has a picture of a Raymart Speed Key which has been my favourite “on air” key for many years. This may sound picky but the arm of the key is steel with a form of plating which gives the arm the appearance of being brass and not a brass arm as stated in the caption. The various screws etc are all brass. One of my keys has a wide skirt, which looks original. The key would have been manufactured long after spark transmission had ceased to be used on the air so I have no idea why the wide skirt was fitted. Maybe a reader has the answer?

*Richard Putnam, GØILN.  
Bexhill-on-Sea, UK*



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## How Does a Coherer Work?

I have never seen an explanation of how a Coherer works but nature abhors a vacuum so here goes. Sparks can be very long, as in lightening flashes. They can also be very short. The first demonstration of radio transmission was by Hertz and a few feet away from the source he had a hoop of wire with a small gap. In the dark, and with a magnifying glass, tiny sparking could be seen.

The factors that set a lower limit to the size of a spark are unlikely to correspond with the sensitivity of the human eye. So when ‘RF’ passes through a coherer there may be minute sparking and this welds the some of the filings together lowering the electrical resistance. The filings used were of iron, nickel or silver.

When the RF no longer passes the welds do not spontaneously disrupt, this is why for usefulness as a detector the coherer had to be tapped after a signal was received.

There is probably an authoritative account somewhere. Can any MM reader help?

*Geoffrey Walsh, GM4FH  
Edinburgh, UK*

## Inappropriate Telephone Jingle

Am I the only person to be extremely irritated by the use of "SOS" in Morse as a ringing tone on mobile telephones. I was on a train to London when I first heard it and I found it quite surprising what effect it had on me. Dozing at the time, I suddenly became very alert, was tense and adrenaline flowed! When I realised what it actually was, I felt quite annoyed.

It seems an arrogance beyond measure that anyone should imply that messages for him are so important that he should use the international distress code to announce to him, and everyone else within earshot, that there is a call awaiting. Indeed, is this practice legal?

I have since heard this misuse of "SOS" about a dozen times: it no longer alerts me except for the feeling of anger. What do others think of this?

*Sqn. Ldr. Alan Birt  
Bury St Edmunds, UK*

## Stockticker MM83 p.44

I refer to the MM83 and in particular to page 44 with a picture of a Stockticker marked "THE EXCHANGE TELEGRAPH CO LTD." There is a brief description of this company in page 80 of "History of the Telegraph" by Ken Beauchamp.

I know they were active well into the 70s because one of the first electronic teleprinters to appear in the market was manufactured by an American company called "EXTEL".

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They couldn't sell these machines in Great Britain (at least under that name) because The Exchange Telegraph Co. had the "EXTEL" trademark registered under its name.

Permit me to add that in my opinion they were not manufacturers and that they simply bought equipment from other companies and put their name on it.

*Gustavo Coll  
Montevideo, Uruguay*

## Info Please MM83 p.44

With reference to "Info Please" in MM83 the key at the bottom of page 44 owned by Chris Bisailion, VE3CBK, believe this key is the same as Admiralty Pattern – W691 shown on the front cover of MM65 except for the top cover and less the toggleswitch.

I have one of these keys which came with a Royal Navy WWII 5G clandestine transmitter in my collection. For information on the 5G transmitter see MM65 page 13 and MM70 page 17.

The key with my 5G transmitter has a one-piece light metal light-blue cover. To remove the cover, unscrew the key knob and a retaining screw.

*Bill MacDonald, G8PUJ  
London, UK*

## African Telegraphs

I was reading the book "West with the night" by Beryl Markham (which, incidentally deserves equal acclaim to the better known "Out of Africa") and

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found the following passage:-  
*Kenya, by the Uganda Railway at  
Makindu circa 1936*

“ The station, the biggest building there, contains a table and a Hindu wearing his fore-finger out on a telegraph key. One day there will be a small but select company of Hindus wandering about Africa - each possessing the distinctive attribute of a thwarted forefinger. They will be descendants of the original stationmasters on the original Uganda Railway.

I have arrived by plane, foot or horse during all hours of the day or night at one or another of the thirty-odd stations in Kenya and have never yet found the telegraph key without its Babu leaning over it, pounding like mad, as if the whole of East Africa were rapidly sliding into the Indian ocean and he alone had observed the phenomenon.”

*David Dunn, VK3DBD  
Victoria, Australia*

## Women Operators

Tony Smiths article “Women and the Early Telegraph” (MM81), mentioning the rule whereby male clerks were forbidden to speak to female trainees under pain of instant dismissal, reminded me of a long forgotten incident at my ‘Y’ service intercept station.

When the first few newly-trained WAAF (Womens Auxilliary Air Force) operators entered the Watch Room, the elderly (to us) senior NCO in charge ordered all the RAF operators to abandon their various modes of

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copying Morse and have eyes only for the dials of their HROs/Hallicrafters receivers, or face a charge of disobeying an order.

This proved difficult, especially with an attractive WAAF or two breathing down one’s neck and jogging one’s writing arm to see what was going on.

Many were the smirks and loud chuckles when the said NCO began to be seen strolling along the lanes around the station, clasping the hand of a large WAAF cookhouse seargent.

We assumed that he fed rather better than we did!

*Jack Barker  
Surbiton, UK*

## Learning to Use the Internet

For those without personal website access, it may be frustrating that they cannot themselves immediately look up a reference. However, we are now into the 21st century and it would be a serious omission if MM did not quote appropriate website addresses. There are two recourses for those without their own website access:

1. Get set up for the Internet: My elder son “dragged me by the scruff of my neck” (a reversal of roles since 25 years ago!) into the 21st century and made me join the scheme. Now that I have overcome the initial mental barrier of tackling the unknown, I realise I should have become involved much earlier.
2. Go along to the local library: Apply

for the short one-to-one tuition course of about twenty minutes, and use one of the library computers. Throughout the country now, nearly all libraries have this facility, either free or for a small fee. The 'one-horse' town in sleepy Suffolk where I live, has a library with twelve such computers available for public use, with a further eight expected soon. Disabled access is usually provided for, too.

There really can be no excuse whatsoever for not being able to use the Internet facilities. For research or general interest information-seeking, it is the best tool ever invented; yes, even surpassing the book.

*Sqn. Ldr. Alan Birt  
Bury St Edmunds, UK*

## Messages, Music and Morse

I found E.Geoffrey Walsh's articles in MM 82 & 83 extremely fascinating. I had a particular interest in his description and comments on the Baudot system. My wife's grandfather, H. W. Pendry, was the author of what seems to have been the definitive textbook on this system. The book, "Baudot Printing Telegraph System", was first published by Pitman in 1913 and our copy is the second edition of 1919. The book runs to 184 pages and it is clear from the numerous pictures and diagrams that the Baudot equipment was of great mechanical complexity and constructed with remarkable precision.

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H. W. Pendry, in addition to a career in the UK Post Office, spent some time supervising Baudot installations in Ceylon (now Sri Lanka). Evidently in spite of the operating difficulties the system was widely used for many years in various countries throughout the world.

*Robert Charlton, G3CPC  
Twickenham, UK*

## Old Telegraph Office

A couple of months ago I was in a small village called Buckden in Upper Wharfedale, North Yorkshire. There is the usual village shop painted white selling most things and what was probably once a full blown Post Office. I noticed to my delight, on the front of the building a very old enamelled sign pointing the way to the Telegraph Office around the corner of the building!

I had been to Buckden many times and never noticed it.

*Jack Burgess, G3KKP  
Leeds, UK*



*MM84 - January/February 2003*



## The Art & Skill of Radio Telegraphy

by William G. Pierpont, NØHF

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**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.



*A postcard dated 1910 inscribed in gold, "A Wireless Message from Maple, Wis." (Wisconsin). It is addressed to Miss Erma Imen, Halley, Ohio.*

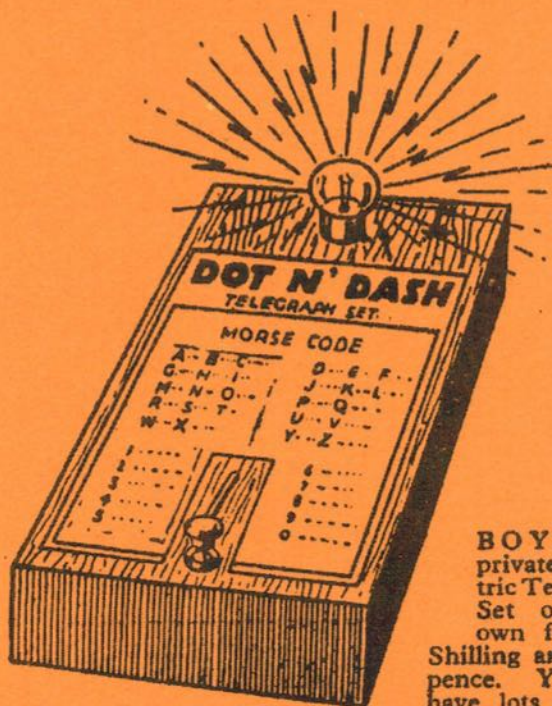
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