

Number 88 – February 2004

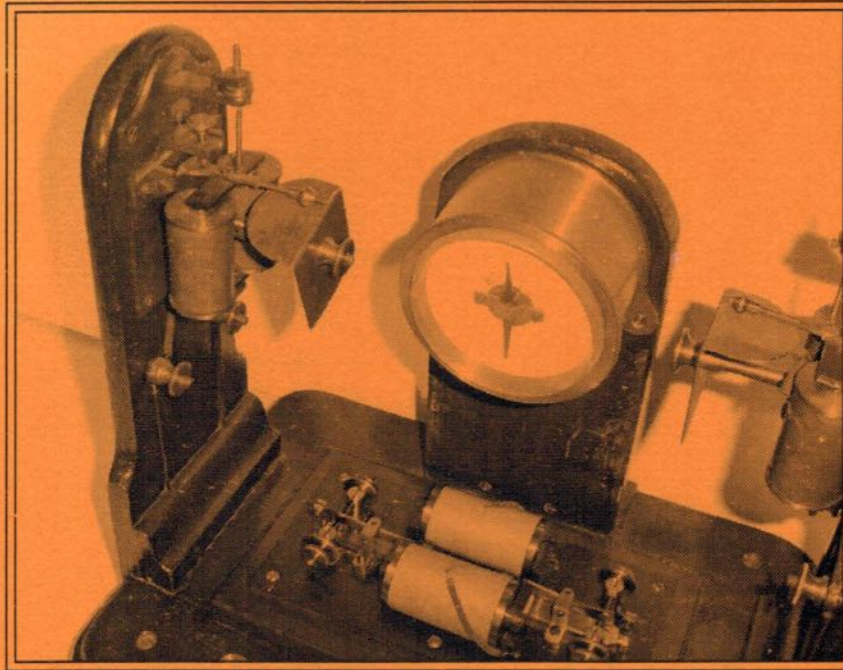
Flying  
the flag  
for  
Morse

# Morsum Magnificat

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*The Morse Magazine*



*Bright's Bells*



The International Journal of Morse Telegraphy

Flying  
the flag  
for  
Morse

# Morsum Magnificat

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**EDITOR:** Zyg Nilski, G3OKD

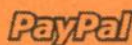
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£3.25 (US \$5) Rest of the World by airmail. Deduct 20% if ordering 3 or more.

**FRONT COVER**

Bright Bell's patented in 1853 and used extensively on British-built railways. This is the forerunner of the Double Plate Sounder.

Photo/Collection: Fons Vanden Berghen, Halle, Belgium.



## Comment

I am sorry to say that there is nothing definite on the future of MM. There have been a number of enquiries but no decisions made yet. I am now at the advanced stage of arranging refunds and so a new publisher would be starting with new subscriptions from all readers.

If the continuation of MM comes to nothing, back issues, binders and the remainder of the book stock will continue to be for sale for as long as stocks last; but credit card facilities will no longer be available after closure. This will especially affect overseas readers because of the high cost of international bank drafts.

There is time yet and we live in hope!

*Zyg Nilski, G3OKD*

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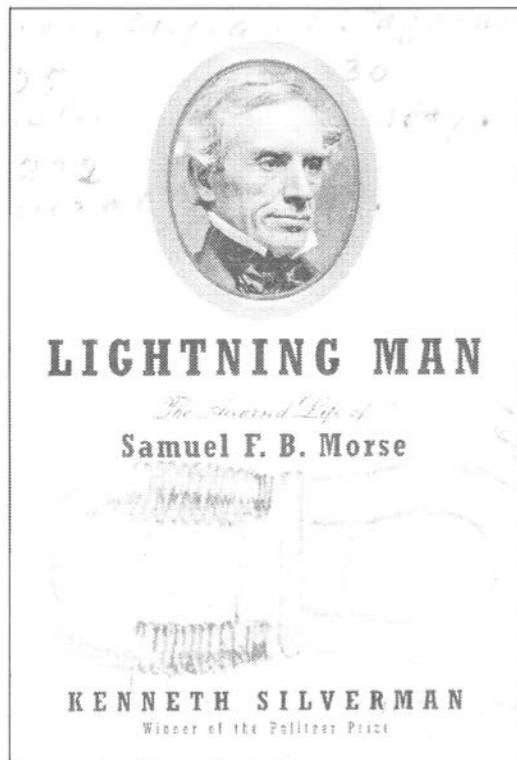
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# News

## New Biography of Samuel Morse

A new biography of Samuel F. B. Morse, the first in 60 years, has recently been published. It is entitled "Lightning Man: The Accursed Life of Samuel F. B. Morse" and written by Pulitzer Prize winner, Kenneth Silverman.



As the blurb explains, "...In these pages we witness the evolution of the great invention (the telegraph) from its inception as an idea to its introduction to the world – an event that astonished Morse's contemporaries ..... We see how it transformed commerce, journalism, transportation, military affairs, diplomacy and the very shape of daily life..."

"But we discover as well that Morse viewed his existence as accursed rather than illustrious, his every achievement seeming to end in loss and defeat....and the commercial success of the telegraph engulfed him in lawsuits challenging the originality and ownership of his invention..."

Lightning Man – The Accursed Life of Samuel F. B. Morse, 503 pages, 49 photos and illustrations is published by Alfred A. Knopf, New York, hardcover price \$35.00. ISBN 0-375-40128-8

I am not sure of the countries in which Random House, the international distributors, have decided to make it available. I cannot find it listed on 'Whitaker', the database of in-print books available in the UK, and used by book shops, but my copy was



purchased from Amazon.co.uk with only a UK delivery charge, and on offer with a 10% discount at £17.19. So try your 'local' Amazon web site.

A most enjoyable and interesting book that provides new insights on S. F. B. Morse and his achievements.

*(Zyg Nilski, editor, with thanks to David Pennes for drawing attention to the book)*

## New Radio Room Clock

John Davies had this pocket watch for Christmas. It has a maritime radio dial with the CW and phone silence periods just like the ships' radio room clocks.

It is made by Authentic Models and will be treasured along with his other R/O clocks.

*(Information: John Davies, G4ETQ)*



*MM88 - February 2004*

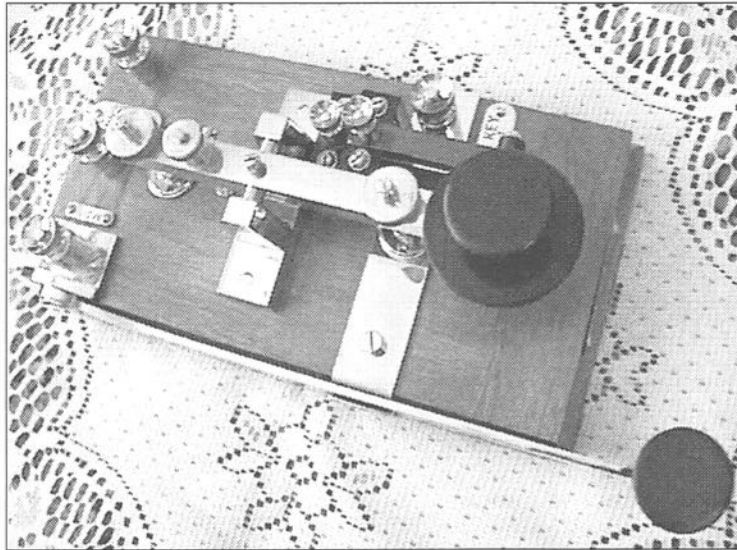
## Marconi Keys Revisited

When retirement approached, Phil Boyle pondered how he should occupy himself during this period of enforced inactivity. Although he had trained as a fitter and turner some 45 years earlier, he had spent his working life maintaining various electronic and control systems, first in the Royal Navy and then in the nuclear industry. He decided to return to his tools, albeit both a little rusty by now, and set up a small workshop in the garage.

After a couple of years relearning skills on various tool and steam engine projects, he decided to combine the interests of radio and metalworking by making a few 'old' telegraph keys. His first source of information was Louise Ramsey Moreau's book 'The Story of the Key' and he made a 'C Plumb Key' and a small 'Signal Electric' key from this source.

Although the results looked good and the relative dimensions were reasonably accurate he had no information to absolute dimensions but then found Tom Perera's web site. One Marconi key was shown with the base dimensions so he had a go. This key with its combination of polished wood and brass was a beautiful object, perfectly functional; but no utilitarian key this.

The attention to detail, the four part base with the shoulders to cover the end grain, the detail on the top of the lever, the elegant terminal nuts - he was hooked and decided to specialise



maritime key (without the side lever) and Marconi's second key' the one listed as No. 50 in the Marconi archive. He can be contacted at 99, Heath Road, Penketh, Warrington, Cheshire, WA5 2BY.

in this type of key. After a visit to the Marconi Archive in Chelmsford, now sadly closed to the public, he made his latest offering, the side lever or 'guillotine' key.

In 2002, whilst recovering from a hip operation and banned from the workshop, he found the e-bay auction web site and decided to try his luck with a key and was amazed at the response. There are now these replica keys residing all over the world. Even better were the friendships made with the key collecting fraternity and the access to their knowledge and advice.

His next project is to be the 'Grasshopper' using information from Dennis Goacher via Mr. Wyn Davies.

He makes a plea to all those fortunate owners of Marconi keys who might be willing to share information on the keys, he is especially looking for information on the Marconi

UK: telephone: +44 (0)1925 723618  
or e-mail: phil\_boyle75@hotmail.com

## Morse Code for @

Morse code is not dead. At 2003 World Radiocommunication Conference (WRC-03) the ITU Radiocommunication Sector Study Group 8 agreed on the wording of a draft new recommendation which includes a new Morse character to cover the "@" symbol.

The IARU had proposed adding the new character for sending e-mail addresses in Morse code.

The draft recommendation proposes using the letters AC run together

-----

to represent the @ symbol.

(Information: John Davies, G4ETQ)

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# Morse Matters

by Dr Gary Bold ZL1AN

The Best CW Audio Frequency?  
Morse Paddles Keyed with Fingers?  
A Morse "@" Symbol?  
Another Sounder  
Morse Fonts

## The Best CW Audio Frequency?

Ron, ZL1TW, writes:

"A discussion has been raging on the Elecraft Reflector lately about the best audio frequency for copying CW. The general opinion seems to be 'whatever works for you', but there are blokes who like a low tone (around 450hz). They say that the CW is then easier to pick up out of the background. Others have stated that 1 kHz used to be the 'normal' frequency used in the WWII and swear by it.

"I use 700 Hz, but then my hearing is pretty poor, with all the high and low tones filtered out by Tinnitus - that's another reason I like using the cans if there is some background QRM, either in the radio, or locally.

"However, I have to say that I often do find myself listening to Morse lower in frequency than 700 Hz, and only pick that up when enabling the K2's 'spot' tone feature. I have to wonder if I should experiment myself. What are your ideas on the best all-round frequency?"

The "best audio frequency for  
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copying" has been debated for years. New operators usually prefer the frequency to which they've listened during the learning process, but this preference becomes less pronounced as experience grows. I've set the default frequency in my teaching software to 800 Hz, the "traditional" frequency used when I was young, a compromise between "high" and "low", which most find acceptable. But remember that this can be changed both for learning and taking the test.

Earlier, it was indeed common to use 1000 Hz. That was the audio frequency which Ted McElroy heard at Asheville, in 1939, when he set a world record of 75.2 wpm copying plain newspaper text on a typewriter. At this speed, the dit contains just 16 cycles of a 1 kHz toneburst! A few years back I delivered a Morse test to a candidate trained in the services who requested 1000 Hz because that's what he was used to.

Individual operators usually give "preferred frequencies" in the 450 - 800 Hz range - but some have no strong preference, and many are very inaccurate in their frequency estimation. Older people often prefer lower frequencies. Some DX ops, especially those active on 160 metres - a very noisy band - sometimes even advocate 200 - 300 Hz.

Psychological literature confirms that tones are best picked out of background noise at frequencies around 500 Hz. Also, it's easier to discriminate aurally between audio signals that are closely spaced at lower frequencies. It's interesting that this is



not in the range in which the ear is most sensitive.

Figure 1 shows the famous Fletcher-Munson curves. The individual traces give lines of constant perceived loudness as a function of frequency, labelled with loudness level in Phones. The lowest curve represents the lower limit of hearing for a normal person, and we see that the ear is most sensitive between 4 and 5 kHz. Low and high frequency sounds are hard to hear at low levels, but the difference decreases as sound intensity increases. Zero dB represents a power level of 10<sub>-12</sub> Watt/m<sup>2</sup>, at which level the ear-drum is responding to an air displacement of about a hundredth of the diameter of a hydrogen molecule. Astonishing.

What frequency do I prefer? I would have said 700 - 800 Hz, but I decided to investigate experimentally.

The results surprised me. For this experiment I used CWGet Version 1.36.

### CWGet Version 1.36

I have reviewed an early version of this software by Sergei, UA9OSV. You can download and run the latest, fully featured, time unlimited version, and read my original review from the same website<sup>1</sup>. I rated this an excellent program, very easy to set up and use if you have a 166 MHz or better Pentium grade computer with soundcard. If your sound-card is duplex, version 1.36 adds audio output of the incoming Morse, from the soundcard speakers. You can filter this audio with either FIR or IIR digital filters having selectable bandwidths ranging from 10 Hz to 3 kHz.

If your rig doesn't have a CW filter, this new feature allows you to see the difference one makes. Like all

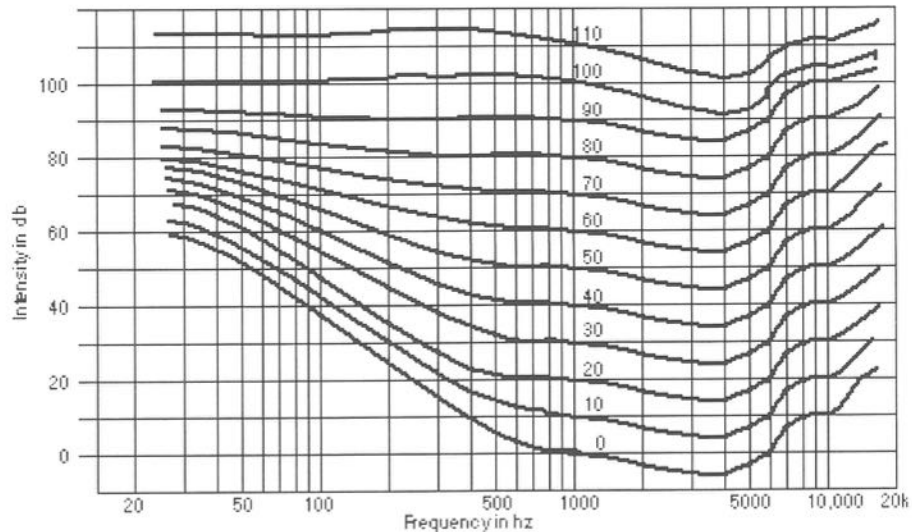


Figure 1

DSP filters, there's a delay, in this case about half a second, between the raw audio going in and the filtered audio coming out of the soundcard. You can't save any defaults that you set unless you register, for \$35 (US), but you don't need to do this to try it out.

### The Experiment

I fired up CWGet and went to 20 metres. Figure 2 shows a screen capture of the CWGet operating window. Chas, ZLIBAV, is sending to Pete, W6ZH. I'd set CWGet to jump to the frequency of the largest signal in

the passband. (A nice feature. You don't have to continually adjust the tuning). The signal's envelope is shown in the oscilloscope-type display at bottom, the spectrogram of the audio passband at top, and the decoded Morse in the middle window. CWGet estimates Chas's speed at 16.6 wpm, and shows that I'd selected an audio frequency of 1087 Hz.

This rather high frequency surprised me, so I tuned in several other signals, and again found that I dialled them up at or above 1000 Hz. But I did this when listening through the speaker.

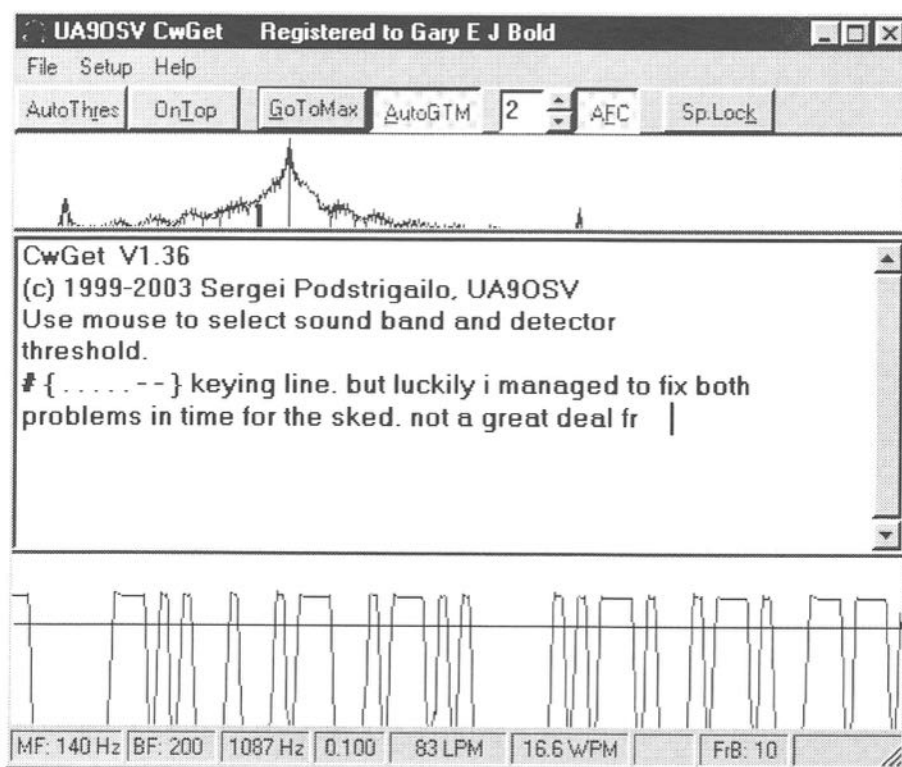


Figure 2

When I repeated the test using earphones, I found that I automatically tuned signals in lower, between 700 - 800 Hz. The reason for the difference appears to be the frequency response of the rather small speaker in my Yaesu 767GX. This responds better around 1000 Hz, and also stands out over the ambient noise in my shack better (two older computers, with several hard drives).

The 'phones, encapsulating my large and handsome ears completely, have a much better low frequency response, the ambient noise is blocked, and I tune lower. Interesting.

I've long known that on signals with a reasonable SNR, my brain doesn't particularly care what audio frequency I set, and I can read two signals appearing in the passband alternately if one is maybe at 600 Hz, the other at maybe 1.5 kHz. At closer frequency spacing, it becomes more difficult. My ears, at least, have some band-pass filtering built in. I tend to listen at higher frequencies for higher speeds. Around 35 - 40 wpm I find I set audio frequencies between 800 - 1000 Hz, since I then perceive the code as "crisper".

Some, like Fred W5YI, have turned a hearing handicap into an advantage. He once wrote to me as follows:  
"All young American men had to serve in the Armed Forces, or be drafted, back in the early 1950's during the Korean 'conflict', as it was called. Both my brother and I have a genetic hearing problem in that our hearing drops off

drastically with higher frequencies.

We both became radio operators, however, when a military aptitude test revealed we were good at distinguishing wanted from unwanted tones (copying through interference.)

Actually, we never heard the unwanted higher frequencies - we had natural filters! "I operated CW in Korea - but couldn't read what I copied. Everything was encrypted groups. I usually did better than the other operators copying the same circuit, and my copy became what the crypto guys wanted. I simply would set the BFO tone low and used my 'natural filter' to get rid of the garbage. They thought I was gifted rather than handicapped. (I still wear a hearing aid.)

### **Morse Paddles Keyed with Fingers?**

Several people have alerted me to the fact that it's possible to configure the microphone on an ICOM 706 so that the "up/down" buttons act as keyer paddles.

Several overseas Hams apparently use this keying method while operating mobile, as it saves taking a separate paddle.

You use two fingers instead of finger and thumb. I infer that the microphone cable has to be modified, but I don't have any hard technical information.

A few articles have appeared over the years describing how to convert a dead computer two-button mouse into a keyer paddle, which is



operated with two fingers in the same way, but I've never got around to trying it. It sounds inviting, since dead mice are easy to obtain, but keyer paddles are expensive. However, I don't think that I could send very fast by fingering a mouse.

I have built a number of conventional "sideways operated" keyer paddles with micro-switches, but never found them particularly user-friendly. Even a carefully adjusted micro-switch paddle has too much movement for my taste. The same goes for cheap straight keys mounted back-to-back.

Does anyone out there use either of these "finger" methods?

### A Morse "@" Symbol?

Greg, V85GD, writes

"I found a site on the internet where all of the Morse symbols are defined<sup>2</sup>. However, it occurred to me that with the advent of e-mail, we sometimes need to send the 'at' or '@' symbol. No Morse symbol currently seems to be defined for this. Is it sufficient to send 'at'? What do others do?"

Coincidentally, I had a couple of other enquiries about this almost immediately. I have never had to send my e-mail address in CW; I always say "it's in the QRZ database".

However, I asked Fred, ZL2AMJ who knows lots of things, and he referred me to a letter in QST from David, G4DMP/KK7GL, who had written "In February 2003 I attempted to find the Morse sequence for "@",

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but at the time I was told that it was undefined. However, I have since learned that the French use "di-dah-dah-di-dah", the symbol for *â*. I have since used this on two occasions, and it was understood perfectly."

Well, I've learned something. What do others do?

### Another Sounder

Arthur, ZL1HV, sent this recollection:

"When I was with 203 Squadron in Basrah in 1935 the main means of communication was an earth-return telegraph line to Shaibah terminating in sounder stations at both ends. All W/T traffic was passed over this line, which was about 15 miles long. Nothing could be simpler. A Morse key, a sounder and a galvanometer.

"The only sounder training RAF wireless operators received during their 15 month course at the Electrical and Wireless School at Cranwell was a demonstration. So being at the end of a sounder line for several hours a day was a bit of a shock. However, after a week as second operator we could cruise along at about 20 W.P.M.

"When Stan Waite, ZL1AB, became a silent key I found a key, a sounder marked GPO 3315 and a galvanometer mounted on a base. A complete sounder installation! Two of the terminals are marked "L" and "E" and two are marked "Z" and "C". There have been a number of suggestions as to what these letters stand for.

E and L mean "earth" and

"line". Z and C mean "zinc" and "copper" - the battery connections. Some suggest that C stood for "carbon", which would be correct for a standard dry cell, but this is contradicted by the earliest references. It's clear that initially, it meant "copper".

Where did "copper" come from? It's not, as you might expect, a reference to a connection to the telegraph line, but to the positive terminal of a copper/zinc cell. One of the earliest, if not the earliest electrochemical cell was Cruickshank's "trough" battery, invented about 1800. This used alternate plates of zinc and copper, immersed in sulphuric acid or even ammonium chlo-

ride. It had polarization problems, and in 1836 J.F. Daniell modified it into the "Daniell cell", which still used copper, zinc and sulphuric acid, but had a different construction, which effectively solved the polarization problem. In the 1850's, Varley and Fuller independently modified this again into the "gravity cell", which was used in telegraphy for many years.

But there were an astonishing variety of other batteries. In the USA, the "Grove cell", a zinc/platinum cell was used in Morse's first telegraph in 1844, and continued in use until after the Civil war when the "gravity" battery replaced it. The New Zealand

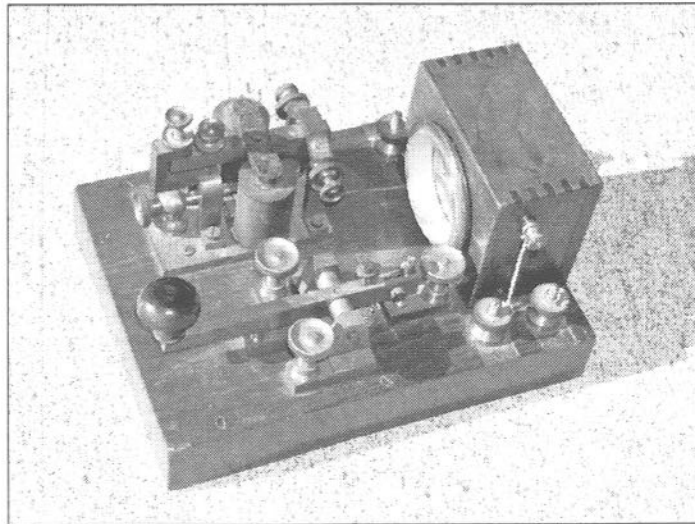


Figure 3

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

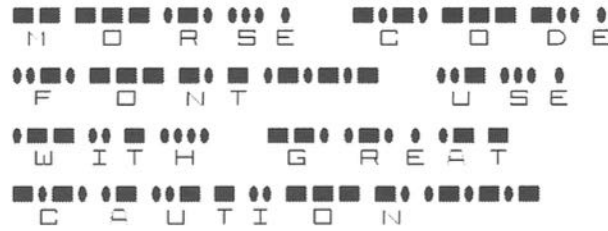


FISTS exists to promote amateur CW activity. It welcomes members with all levels of Morse proficiency, and especially newcomers to the key.

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.

Figure 4



telegraphy system used different batteries still!

The set is enshrined in a glass case in the Stan Waite, ZLIAB, Memorial Station at 400 East Coast Road.”

A photograph, courtesy of Henry, ZLIAAN, showing this complete key, sounder and galvanometer set is shown in Figure 3. After 65 years, Arthur cannot now recall why or how the galvanometer was used in a simplex line, but somebody out there must surely know.

There’s a 52 page PDF document<sup>3</sup> on the web outlining the extensive and fascinating history of telegraphy, written by a Physicist who gets the technical details right. Well worth downloading and printing!

### Morse Fonts

A reader told me that two “Morse code fonts” were available for download and installation from a web site<sup>4</sup>. Samples are shown. If you want them, font installation on a PC is not hard.

Search under “fonts, adding” to see the procedure. When you’ve done it, they’ll then appear for selection

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in Word, Powerpoint etc. Figure 4 shows a sample printed in the font “Radios in Motion”, where code symbols for the characters appear above the text. But now, pay attention.

The reason I mention these is to counsel caution. Those of you who have learned Morse from my (or other correctly structured) software will know that you should never look at visual, symbolic representations of the symbols before learning, or you’ll be disadvantaged. Morse is a sound language, and for optimal progress, must be learned audibly! Never show a learner a printed code table!

Thus, if you use this font for writing letters, send them only to other Morse- capable people whose minds will not be corrupted. **MM**

### References

- 1 Download CWGet from <http://www.dxsoft.com>
- 2 Download the table of Morse symbols from <http://www.qsl.net/we6w/text/morse.txt>
- 3 Download the document “The Electromagnetic Telegraph” from <http://www.du.edu/~jcalvert/tel/morse/morse.htm>
- 4 Download the Morse fonts from [http://www.jetler.com/stationery\\_by\\_jo/font\\_index.html#k](http://www.jetler.com/stationery_by_jo/font_index.html#k)

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

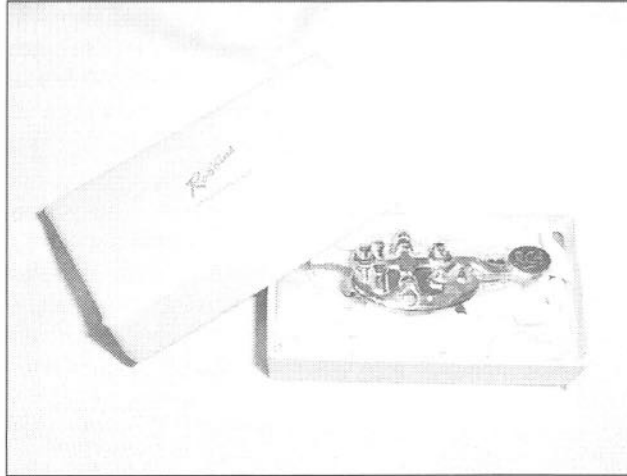


## RCA Morse Key

### Tie Clip

by Chris Bisailion,  
VE3CBK

I RECENTLY OBTAINED A TIE CLIP featuring a Morse Key with the RCA logo. It came complete with the original cardboard box bearing the makers name "Robbins" and the location Attleboro, Massachusetts. This was my only clue as to the maker, since the name did not appear on the tie clip.

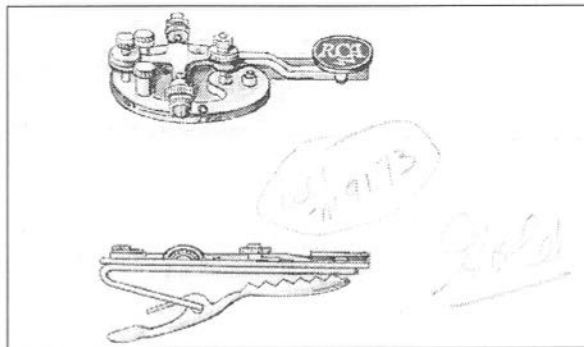


Above: The finished product. Below: Factory drawing.

Pinkos was able to provide a lot of information on the tie clip. It was produced twice. On April 21st 1959 they produced 2,500 tie clips for Tom Pennett at Radio Corporation of America in Harrison, N.J. These tie clips were made out of #10 gauge Rich Low Brass. On Nov 21st, 1968 they produced 1,000 tie clips and they

After a short web search I found out that The Robbins Company still exists today. It was founded in 1892 and continues in the "recognition" industry. See [www.therobbinsco.com](http://www.therobbinsco.com) for more information.

I sent an email to them and received a great reply from Mr. Kip Pinkos. Mr.



William M. Higgins. THE ROBBINS COMPANY				22 - 2588 (5/8P)		No. M-9173			
Date April 21, 1959.				BY WHOM		TIME		AMOUNT	
OPERATION	BY WHOM	TIME	AMOUNT						
Model				Telegrapher Key RCA emblem - (Omit tie bar)					
Reducing Hub				Make per photostat enclosed TO BE HIGHLY MODELLED.					
Colling. Hub									
" " " "									
" " " "									
" " " "									
Machine "				For red <sup>BASE</sup> lacquer in background of RCA Emblem. (Make new lacq. Stencil (LS-1021)					
Lettering "				(New cutter DD-5112) (New piercer if needed) DD-572					
Die & Pliers	15	15							
" " " "									
" " " "									
Feeder				R.L.B. - #10 Ga. - Gr. vgt 66 lbs M					
Waxing Die				(Rush)					
Waxing Hub				PLEASE RETURN THIS ENVELOPE WITH THE DIE					
Drilling Hub				2500					
Die Stand									
" " " "									
" " " "									
" " " "									

Robbins factory job card.

Any further information on this very interesting item would be most welcome.

I thank Mr. Kip Pinkos for providing the information on such a nice product from the past.

were sent to the same location. These tie clips were made out of #14 Rich Low Brass. Mr. Pinkos also supplied copies of the original die cards, cut outs and original art work.

It has been suggested that this tie clip was a give away from the sales reps to the retailers that handled RCA products. For instance, Harvey Radio advertised in QST August 1959 saying, "One is available to you FREE with any purchase of RCA Power Tubes for \$10.00 or more such as 2-6146, Etc."

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## HARVEY RADIO has an RCA gift for you



**Eye-appealing Radiotelegraph Key Tie Clip** that telegraphs your hobby to every fellow amateur. Attractively styled, it serves as a point of distinction. It's a natural addition to any Ham's fashion accessories. You will really be keyed in with this RCA Tie Clip.



**Unique "Block-of-Time"** that makes your Ham station complete. A 10-minute timer to help you heed the FCC regulation requiring station identity at least once every ten minutes during any single transmission. The RCA "Block-of-Time" is a compelling reminder of the FCC regulation.

One is Available to You FREE With any purchase of RCA Power Tubes for \$10.00 or more, such as 2-6146, Etc.

Courtesy of August 1959 QST.

---

**T**WO OF THE MOST sought after Australian semi automatic and automatic keys are the Pendograph and Automorse. Both were used by the PMG (Postmaster-General's) Department Morse operators, but not as widely as the better known Simplex Auto. The Pendograph is often, but wrongly referred to as the PMG Pendograph. It was at times issued, along with various other brands of jiggers, to operators to combat "Telegraphist's Cramp" now known as Repetitive Strain Injury (RSI). Each State PMG Head Office was responsible for its own policy and some stamped their issues with PMG and some even stamped their own serial number on them.

#### **The Pendograph**

The Pendograph was designed by an Adelaide Telegraphist, Albert MacDonald who applied for a patent for "an improved telegraphic transmitter" on 28th April 1908. Patent No. 11389/08 was subsequently granted. His invention related "more particularly to mechanical transmitters in which vibrating devices are used for automatically producing the 'dots' of the telegraphic code, as for example, the 'Morse Code'". Up to that time semi automatic keys consisted of a horizontal weighted vibrator, whereas MacDonald proposed a vertical pendant or upright vibrator for

## **Australian Gems**

### **The Pendograph & the Automorse**

*by Ron McMullen*

automatically providing dots controlled by a horizontal lever, the electrical contact being direct on to the vibrator spring thereby dispensing with the secondary spring previously in use.

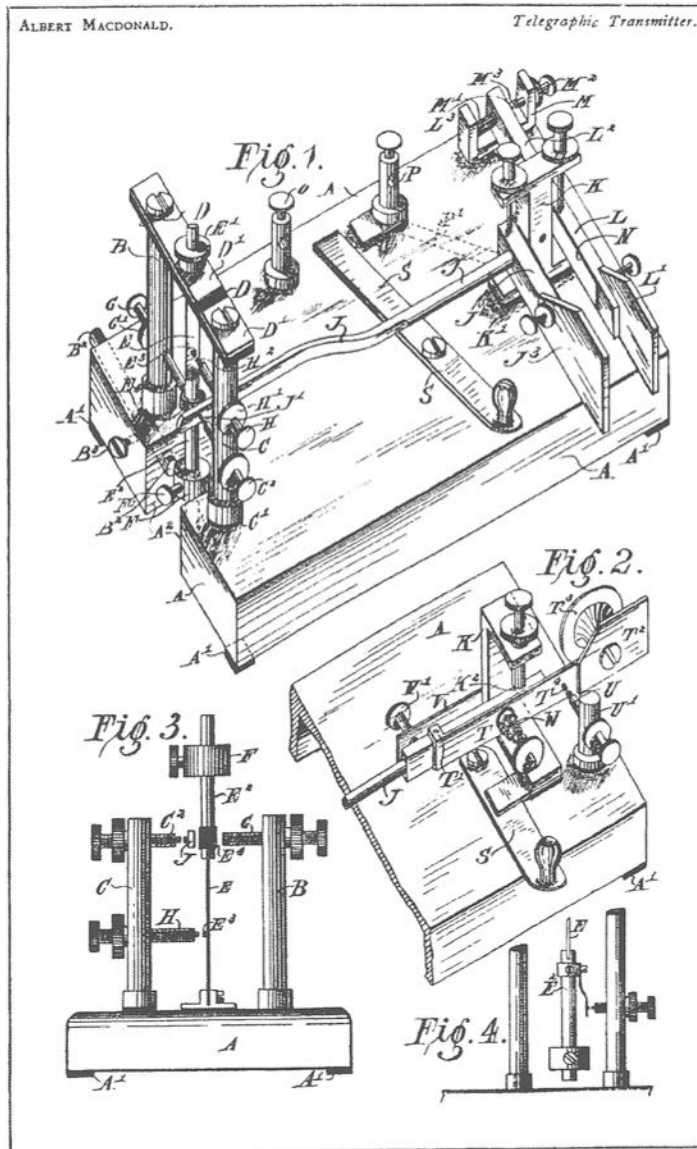
Three models of Pendograph were produced and MacDonald's patent application provided for all three. The first was a 'right angle' model with separate levers for dot and dash control. The vibrator was on the left hand side of the base and suspended from a cross piece attached to two pillars with a weight at the bottom. There was a recess in the left hand end of the base to accommodate the vibrator. Through the base to the recess was an adjustable rod to act as a stop for the pendulum rod. The dash contact was located at the back of the base.

The next model was somewhat similar, but with the vibrator anchored to the base and the weight at the top. Initially there was no secondary spring, but this was added later. The dash contact was relocated to a post at the front of the base. I have one of these



ALBERT MACDONALD.

Telegraphic Transmitter.



C. 18633.

One litho. sheet.

The Pendograph

- Figure 1. Isometric view of complete instrument showing vertical pendant vibrator.
- Figure 2. Isometric view of modification which the thumb piece for producing dashes is mounted upon the same lever as that for producing dots, the operation being in opposite directions.
- Figure 3. End view showing modified form of upright vibrator in which the weight is arranged at the top.
- Figure 4. Shows a modified form of pendulum with secondary spring.

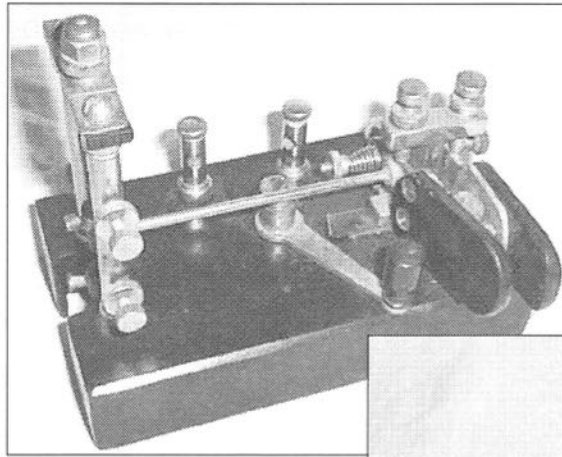


Figure 5. Front view of the first model of the Pendograph.

models which interestingly has the 'Mecograph' type stripe. I have not seen any others with this finish.

The third model was the most commonly known 'in

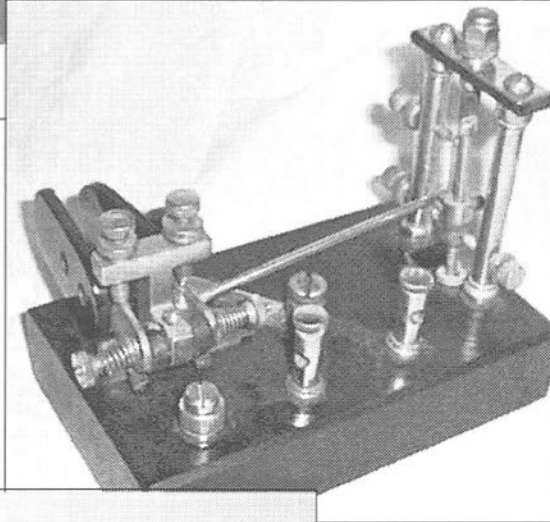


Figure 6. Rear view of the first model of the Pendograph

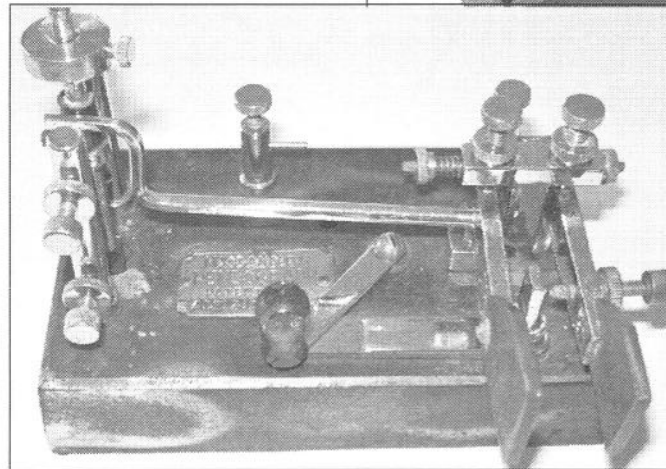


Figure 7. Second model - right-angled Pendograph.

line' style with no circuit closer. Again there were the two individual levers for dots and dashes and the secondary spring. The vibrator was anchored to the base with the weight at the top with an arched flat strip attached to the posts.

Both right angled models and early 'in line' models carried a rectangular shaped label whilst later 'in line' models had a round label. Pendographs did not carry serial numbers. Whilst the patent application

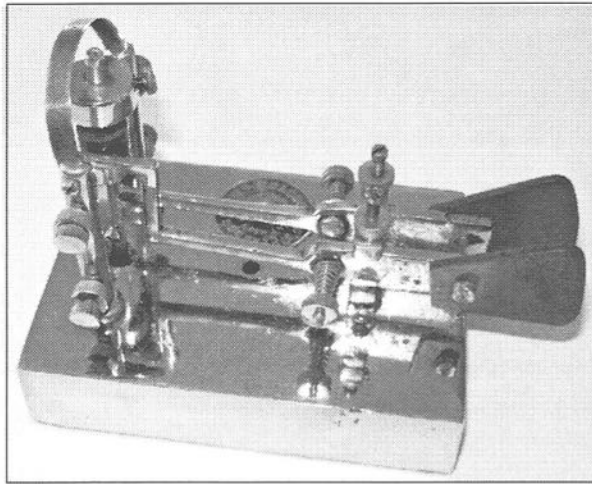


Figure 8. Third model - in-line Pendograph.

### The Automorse

The Automorse was a fully automatic key designed by another Adelaide Telegraphist, Norman Percy Thomas, who applied for a patent for "An automatic dot and dash making telegraph transmitting instrument", on 11th April 1918. The patent number subsequently granted was 7023/18. The Automorse was manufactured by Hitchcock Bros. Flinders Street, Adelaide.

provided for a single lever 'in line' model with a circuit closer, none is known to exist and was possibly never manufactured.

In his patent application Thomas stated "a succession of dashes may be made automatically with a single movement of the hand, also a succession of dots with a single

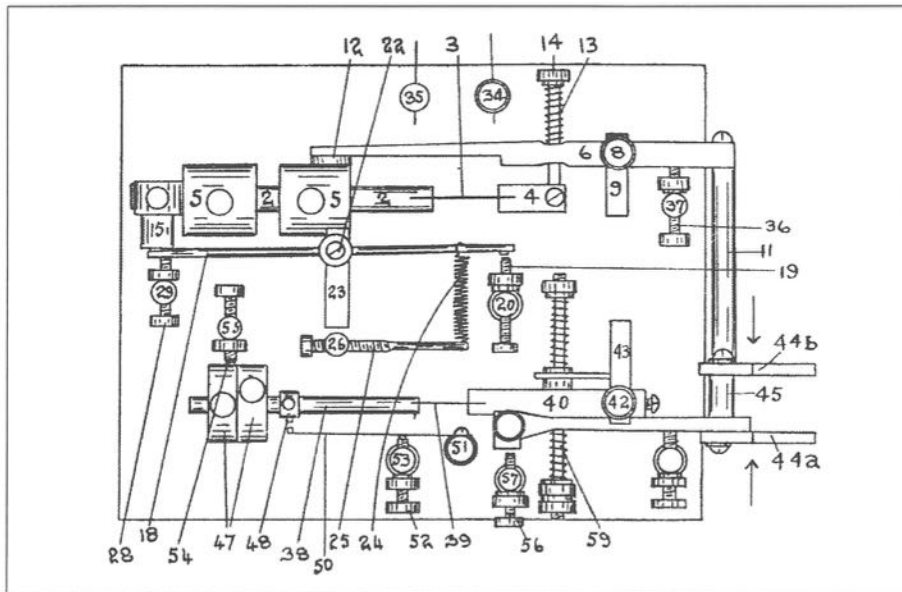


Figure 9. Plan view of complete Automorse instrument

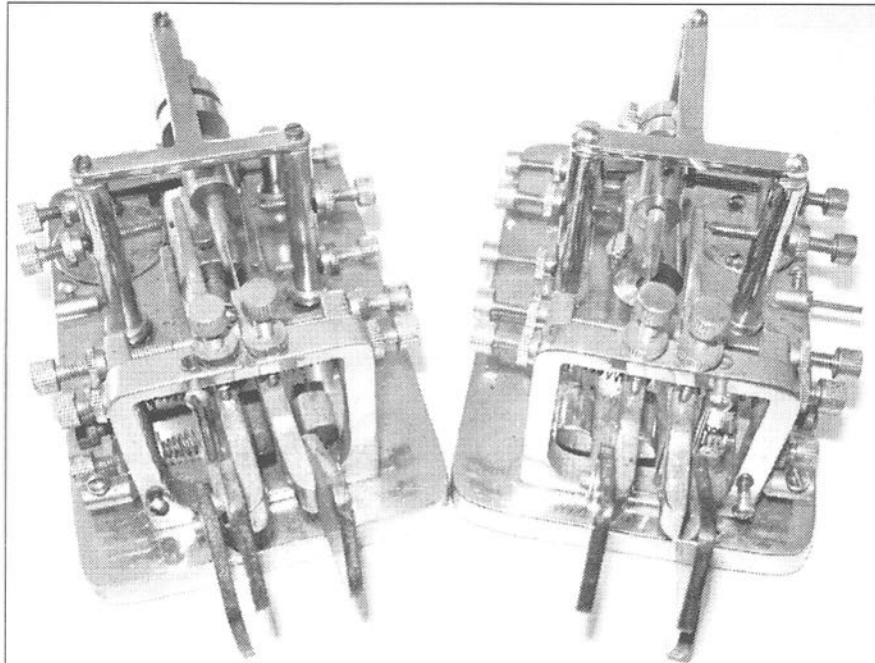


Figure 10. Left and right-hand models of the Automorse.

movement of the hand. This will not only conduce to the clearness of the transmitted signals but by reducing the number of movements and the tension upon the operator's hand and nerve, will prove of very great benefit to the operator in the prevention of what is known as Telegraphist's cramp".

The Automorse is basically comprised of three weighted vibrating rods, one for dots, one for manual dashes and one for automatic dashes, mounted on the base, moving in a horizontal plane. A distinguishing feature is the "T" frame fixed to the

base and extending above the levers which, whilst providing a degree of protection for the parts, made carrying the instrument much easier. It was made in both right and left hand models, but I am only aware of one left hand model which I own. The round label is attached to the base near the front right hand corner. The Automorse did not carry serial numbers.

The Automorse was not an easy instrument to adjust and to use. Along with the fully automatic Simplex Auto De Luxe model they were the only two fully automatic Australian made jiggers and neither were very widely used. *MM*

**Back Issues and Binders will continue to be available**

## The Australian Simplex Auto

*by Ron McMullen*

**T**HE SIMPLEX AUTO was invented about 1920 by Leo G. Cohen, an Australian Telegraphist. He was the sole manufacturer. In 1923 it was adopted by the Postmaster General's Department as a standard sending aid for the Commonwealth of Australia and was also extensively used in Railway Telegraphic Services. Unlike such famous names as Vibroplex, there appears to be no recorded history of the inventor or the machine itself.

### **The Inventor**

Leopold Gilbert Cohen was born at Kalgoorlie Western Australia on 11th August 1900. He joined the Australian Post Office at Healesville, Victoria as a Telegraph Messenger on 18 January 1915 on an annual salary of £39 and became a Telegraphist in the Melbourne Chief Telegraph Office. In 1934 he moved to the 'Postal side' of the PMG Department as a Senior Postal Clerk (Assistant Postmaster) at Hawthorn, Vic and thence to Canterbury Vic, again as Senior Postal Clerk, in 1937 before enlisting in the 2nd A.I.F. (Australian Imperial Force) at South Melbourne on 13th November 1939 with the rank of Lieutenant (on probation), just two months after the outbreak of the Second World War. He was assigned to a Postal Unit with the 6th Division departing for overseas on 9 January 1940 and saw service in the

Middle East until 28 February 1943. He was promoted to Captain on 28 October 1941. He served in Northern Australia, being promoted to Major on 19 November 1943 and then served in New Guinea from 27 February 1945 to 13 September 1945. He was in charge of Army Postal Services in the Northern Australia region until his discharge from the Army on 30 January 1946. He returned to the Post Office after the war being Postmaster at Warracknabeal, Burwood and Armadale. He died at Camberwell, Victoria in 1954 aged 53.

### **Variations**

The first Simplex Auto model is easily distinguished by the number of 'posts' located on the front of the base of the machine. Not more than about 400 had 4 posts; all later models had only 3. Very early models had a small label attached to the base near the post holding the long thin 'dot' contact spring before the larger label appeared on the top of the bridge.





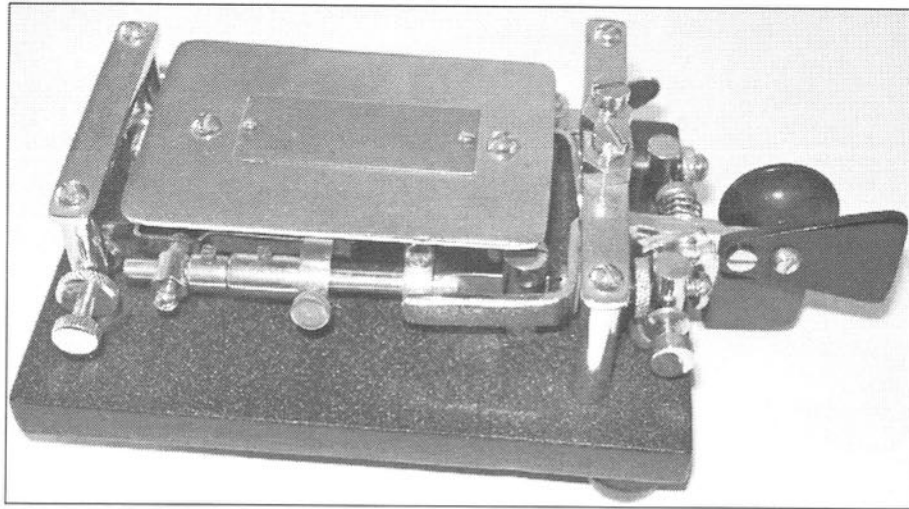
*Simplex Auto 281 - the first model.*

Both the first and second models had black painted bases and apart from the number of posts, are identical and have semi circular 'cut outs' at the right hand end of the bridge to provide access to the dash tension spring. They had round pendulums with one flat side which remained through to the fifth model. Terminal screws were located on a square dash post and the rear of the base, which arrangement continued through to the fourth model. Both labels show the name 'Simplex Auto' sloping upwards from left to right and Leo G. Cohen Telegraphist C.E.T.O. (Chief Electric Telegraph Office) Melbourne. The damper post was at the rear centre of the base.

The third model saw the dash adjustment spring relocated to the position formerly occupied by the

fourth post although not on the base. This resulted in a straight line of the bridge with no need for the 'cut out'. There was also a change in the label with 'Simplex Auto' in large lettering at each end, curving inwards top and bottom to smaller letters at the centre. C.T.O. replaced C.E.T.O. reflecting the fact that the word 'electric' was dropped from the Telegraph Office title. The actual size of the label was slightly larger than previously to accommodate the extra wording 'manufactured by' above Cohen's name and 'Vic' after Melbourne.

The fourth model had changed wording on the label. The words 'Telegraphist C.T.O.' were dropped, perhaps indicating that Cohen had left the C.T.O. and moved to the Post Office side of the PMG Department.



*Simplex Auto 3499 - the fully automatic model.*

The fifth model was called the 'De Luxe' being fully automatic; automatic dots and automatic dashes.

These are easily distinguished by the 'in line' appearance, large top plate and the three paddles. Comparatively few were made, possibly because they had to compete with the 'Automorse' which had by that time become established and the fact that they required a further 'learning curve' and any advantage over using a semi automatic was not great. They are rarer than the Automorse. From this time, the semi automatic Simplex became known as the Standard model. The 'De Luxe' was the only Simplex to carry a circuit closer.

The sixth model had a fully round pendulum with the damper post relocated to the left hand rear end of the base.

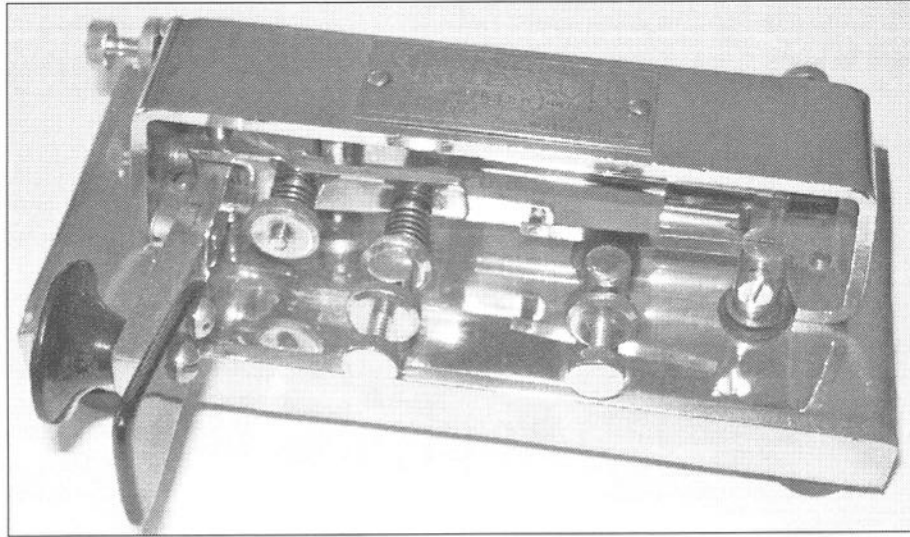
The seventh model saw the replacement of the square dash post

with a round post and the deletion of the two terminal screws carrying the connecting cord and plug. One screw was provided beneath the base for one cord terminal with the other connected underneath the dash post.

The eighth model indicates two changes. The under base screw for one cord terminal provided only on the seventh model was deleted and that cord terminal placed on the bridge screw. The pivot adjusting screw previously located on the right hand end of the bridge was relocated beneath the base. This arrangement continued for all future models. Some left hand models of this type were made and perhaps of other models also.

Generally models up to this period, with the exception of the two 'cut out' models had nickel-plated bases.

The ninth model saw a permanent change to a black painted base and a significant alteration to the



*Simplex Auto 5329 - left hand model.*

wording of the label. Cohen's name was dropped, with the wording being simply 'Melbourne Victoria'. The bridge changed from right-angled corners to a slightly larger angle giving a splayed effect. However there is, as always, an exception. A few of this model in the early 6xxx series bore the nameplate 'The Simplex Auto (Regd) made by Stuart Perrin'. Perrin was a Supervisor in the Melbourne C.T.O. and is believed to have been related by marriage to Cohen. This possibly indicates the exit of Cohen from the business. Who manufactured later models is not known.

One remaining model bears no label at all and no holes in the bridge for fixing points. These were made for the Australian defence forces during World War II and the components appear to be of a poorer quality than previously. Some of these reverted to the PMG Department and possibly

other government users such as Civil Aviation for issue to operators. Mine is stamped 'C of A 45' which was typical Commonwealth of Australian identification.

In about 1938 a nickel plated semi automatic 'Special Model' Simplex priced at £2/5- was advertised along with the 'Standard Model' priced at £3/7/6. A later advertisement priced the 'Special' at £2/10/- being 'obtainable from J. W. Layther, S.P.C. Carnegie St 9, Victoria, Australian Representative for Leo G. Cohen.

None of these models are known to have survived and it seems likely that none or very few were actually manufactured and sold. The 'Special' bore a resemblance to the 'De Luxe', being an 'in line' model and having a large rectangular top plate supported on four posts. The 'De Luxe' model was advertised as 'again available at £5/5/-

### More Information Needed

It is a pity that little is known of the history of the Simplex Auto or its inventor. I have endeavoured to piece together some sort of it by reference to the Australian Archives for Cohen's war service record and from machines in my own collection as well as serial numbers and details provided by many others, to whom I am grateful. There have been some minor changes to various parts of the machine, even one of mine has a base 1/4" longer than the normal 6" x 3", but the overall design has remained largely unaltered.

A search at the Patents Office has not revealed any Patent application or approval. No Simplex bears a patent number.

I have used the term 'model' purely to indicate the various changes which have occurred from beginning to end. To every Australian Morse operator any Simplex was simply and affectionately known as a 'jigger'.

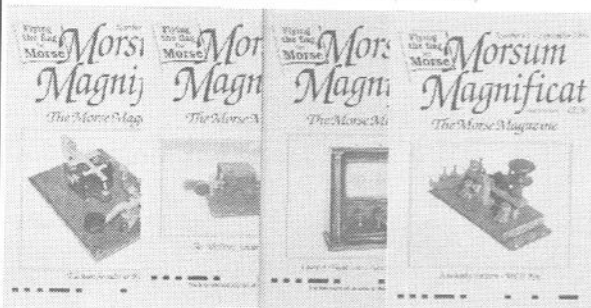
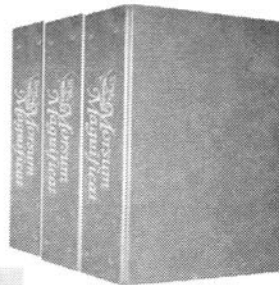
Their standard of manufacture and operation was equal to the best in the world. New information is gradually coming to hand and any help from readers would be appreciated. *MM*

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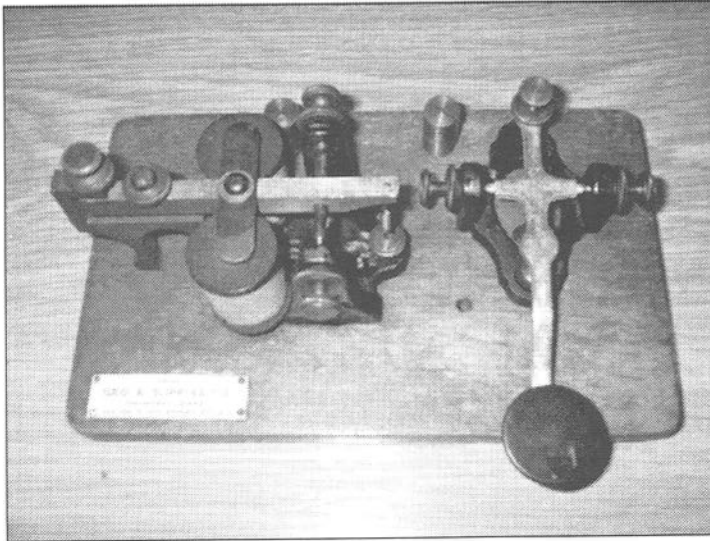
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# Showcase

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: Malcolm Brass. G4YMB



A Bunnell KOB with the suppliers name and address: 'GEO. A. SUPPLEE CO...1933 MARKET STREET....PHILA'.

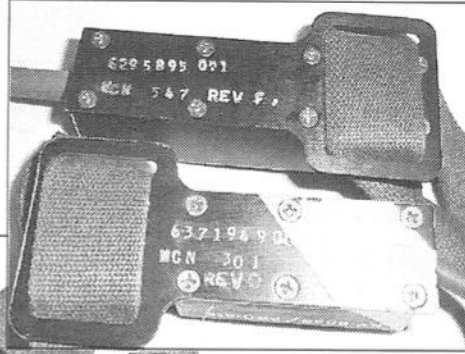
Photo/Collection: Wyn Davies



Signalling lamp Hether made by Francis to fit on top of a pair of binoculars for short range signalling.



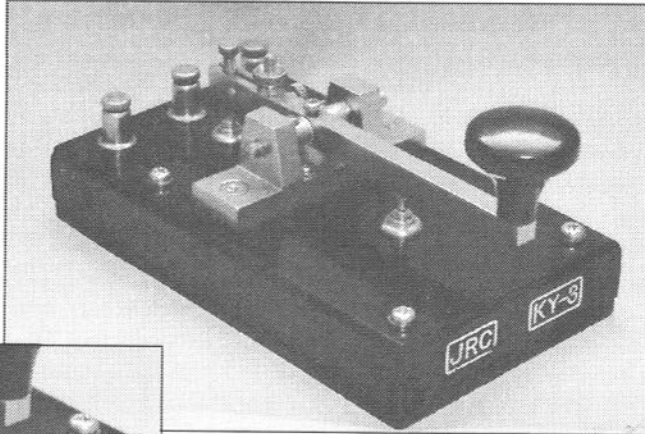
Here is a photo of what is believed to be the last Morse key produced for the Canadian Armed Forces. This is the 629-5895-001 key that was used with an HF man-pack called the AN/PRC-515, made by Rockwell Collins in Toronto. It was a transistorised SSB transceiver for special purpose tactical use. There appears to be two variants of the key.



Photo/Collection: Chris Bisailion, VE3CBK



Photo/Collection: HeisukeKimura, JA1DVV



J.R.C. Pump Key Models KY-3 and KY-3 A. The KY-3 is manufactured using international standard (ISO) screw threads and the KY-3A uses Japanese Industrial Standard (JIS) threads. Both weigh 900g and are made with a black bakelite base with Rubber feet on the bottom. It was used for maritime, ship and other professional applications.

**O**N 24 DECEMBER 1973 Ernst Teodorovich Krenkel would have been 70 years of age. But an untimely death cut short his life at 68 years. The memory of him and his deeds remain with us, his contemporaries and friends, for ever. One of the first polar expeditions of Ernst Teodorovich was a wintering on Franz Josef Land. Now, the polar geophysical observatory of this archipelago on Heys Island is named after the legendary radio operator. Great work was accomplished by E.T. Krenkel during a two year wintering on Severnaya Zemlya (North Land). In memory of his stay in this bleak and cold territory, a bay, situated to the north of the archipelago, was named "Krenkel Bay".

For many years Krenkel-Explorer returned to the hydro meteorological service. A new scientific weather research vessel - the *Ernst Krenkel* - recently left on a voyage. This was in recognition of his major contribution to the development of radio communications and amateur radio at the Central Radio Club USSR in Moscow.

The last voyage of E.T. Krenkel, a voyage to the Antarctic Circle, took place in 1968. He headed a voyage of the scientific-research vessel *Professor Zubov*, which was bound for the shores of Antarctica to relieve its staff of winterers found there, and also for

## RAEM/mm Is My Callsign

(The last voyage of E.T. Krenkel)

(From "RADIO" magazine Nr.12 1973,  
translated by Mike Hewitt G4AYO)

oceanographic research.

Below we publish extracts from the diary of E.T. Krenkel, which he kept during the voyage on the *Zubov*. He was a gifted narrator, graphic, with apt language in which were no trite sentences or clumsy wording. Ernst Teodorovich appears before us as a very ordinary man who with boyish ardour is concerned with his daily "watch" on the air for radio amateurs.

**14 November.** Embarkation on *Zubov* was set at 8 a.m. The day was grey and dark. It was frosty. In Nev almost solid pancake ice. In my cabin there was a crush. Treshnikov, Korotkevich, Chukhnovsky, Somov, Osterkin and still more familiar and unfamiliar people arrived. A mass-meeting was conducted. Treshnikov (Director of the Arctic and Antarctic Scientific Research Institute) and I paced. Those seeing us off were asked to leave the vessel. On the gangway there was no passing: embraces, kisses, moist eyes... A tug slowly began to pull us. There were collective cries, waving of hands and a dwindling crowd of those seeing

us off on the pier.

**17 November.** In the evening we passed by Cape Skagen. We established radio-telephone communications with the diesel-electric *Ob*, thanks to which was made our original radio-acquaintance with the future "governor" of Antarctica, Dmitri Dmitrievich Maksutov. Audibility was excellent. We worked on a transmitter with a power of one kilowatt.

**22 November.** On the horizon Spain is visible in the haze. The warm weather is wonderful. Towards evening the choppiness intensified to wind force 7-8. Stabilising sails were let out and on a rather stormy sea we tore along almost like Chest pond...

**24 November.** Warm rain lashes down, all around was a grey hazy mist, through which are visible the mountains of Grand Canary island, on the eastern side of which is located the port of Las Palmas. The island is beautiful, but sombre. A vast high steep stony shore stretches to the sea. In valleys and ravines there are small settlements with tiny white houses. There are no anchorages - the depth is too great. Among our sailors an argument arose, which most resembled Grand Canary: the landscape of Murmansk or the coast of the Crimea?

**26 November.** Our vessel slowly, without the help of the tug, went into the rather small port of Las Palmas. It astonished the Spaniards with its ability to move sideways - we worked with a special reactive rudder. First trouble after putting into port - restocking of diesel fuel. It is unlike being in a queue at a Moscow petrol pump, but is in

essence the same.

**28 November.** We took on supplies, fully loaded the refrigerators with vegetables and fruits for our "polyarniks", polar explorers in the Antarctic. After a four day stop we left Las Palmas. Then our route is without a stop to Mirny, where we met up with the *Ob*.

In the morning I received the good news that I had been authorised to work on the air from the *Zubov* with my amateur radio callsign RAEM/mm. This is great! In the evening at 2100 hours (midnight Moscow time) I went to the radio cabin to "listen around". I tuned the transmitter power up to one kilowatt in the middle of the twenty-metre band. My first CQ went unanswered. After a minute on this frequency I heard a call from a Swiss - HB9AMF. I called him, he answered. Geneva was hearing us at RST 599! Then contacts were made one after another: with Italians, four Americans, a Spaniard, a Frenchman, with radio amateurs from the islands of Guadeloupe and Curacao. Most of them wished me happy sailing. One American demanded whether or not I am president of our amateur radio society.

**29 November.** Every evening I would work right in the middle of the band. Amateurs knew what frequency I was always on.

A.A. Losev - radio manager of the *Zubov* tunes up the transmitter. Karassev (watch radio operator) is on one side of me with a parallel link and safeguards me, since there is such a din on the air from radio amateurs, that one

can sometimes miss call signs. I got to know Karassev in his absence. He was a keen radio ham and sent me long lists of his QSOs from Franz Josef Land while I filled in QSL-cards\* for him in Moscow.

The airwaves rang out, it was necessary to turn down the receiver. The first contact was with a German from the FRG, then five Americans. One of them, K9CLO, said that he had already worked me several years ago. A YL called me - WA3HUP\*\*. I said that she was my first contact with a YL from the *Zubov*. The last contact was with an Italian from the island of Sicily.

**3 December.** At eleven o'clock a ceremony was announced, that Neptune, the ruler of all the seas, had come on board. Having been installed on the throne, Neptune asked of Captain Petr Ivanovich Tairov in a loud voice, with an amplifying megaphone: "Who is there, where are you going?" The captain according to form reported and held out a large scroll with the surnames of everyone on the ship. And although he was the only man not subject to "baptism", our dear Petr Ivanovich, himself jumped into the salt font in order to inspire good spirits.

A "baptism" conveyor-belt quickly started up. "Devils" picked up the "next in turn" and they were thrown into the pool. The faint-hearted tried to hide in their cabins, but the ubiquitous "devils" dragged them out. The orchestra served its full repertoire on the mass.

And so, our ship crossed the equator. Neptune admitted us into the Southern hemisphere.

**6 December.** About three o'clock in the morning I went to the radio cabin. I made a successful "catch" of our amateurs. At first I only answered Americans but then came calls from Krasnovodsk, Novosibirsk, Perm, Chardzhou, Sverdovsk (here worked my old friend Portnyagin - UA9CC), Zaporozh, Rostov, Kharkov, Erevan and Crimea. All had good audibility. A pile of amateurs called me, two - three people simultaneously. It is a pity that there was insufficient time to contact them all.

**8 December.** At three o'clock at night, as a rule, radio amateurs come on the air on my "watch". Today conditions are such that nothing is heard of our hams. Though, all the same, towards the very end I picked up two home DX stations from Blagoveshensk and Magadan. Those are perhaps the most distant contacts for the present.

**10 December.** I missed some of my "watch", but all the same the catch was quite good. A regular DX-contact with Petropavlovsk-on-Kamchatka, and what is more a meeting with A.F. Kamalyagin from Kuibyshev. N.N. Stromilov replied as arranged, but he was heard so weak that nothing was understood.

**13 December.** Yesterday at 1600 we passed Cape of Good Hope. On the horizon, barely glimpsed and discerned, was a large flat mountain in cloud.

In the morning I was on short-wave. One American paid me a splendid compliment, with which I could by rights be proud of: "For us Americans, RAEM signifies Russia!"

**23 December.** In the morning I worked

on short-wave. As always it was brim-full of Americans. Then Uruguayan CX4CO called me at great strength. He also heard me at maximum strength. We talked very nicely for half an hour. He reported, that he had my QSL card, we had worked each other in 1947! I well remember this contact since it was big DX for me. This radio amateur sometimes worked with the callsign CXICX.

**26 December.** From morning we began to enter already very solid ice. In two hours they announced on the "speaker" - *Ob* was on the horizon, but she only approached us by eight in the evening. *Ob* forced a channel, and we slowly crept through it. On the horizon was an entire barrier of icebergs. We counted 20 pieces, but there were most likely more of them. Here there was no "tired sun". It was not up. This was mighty white grandeur - unforgettable.

**1 January 1969.** So then, Antarctica appeared before us as a white dome. Below, a barely visible black spot, *Mirny* was revealed. Both ships cut into the fast shore ice. Two Landrovers hastily "came running". Penguins also hastily approached to make everything out. A ladder was lowered. On the ice the first messages are transmitted - greetings from the Big Land.

**6 January.** Karassev arrived and said that band conditions for our radio amateurs were tremendous and that ten men were already lined up in turn. The air really teemed. I made communications with *Rekach* and *Stromilov*.

**12 January.** *Ob* set about unloading. For four days the flagship punched a

channel in the huge field of fast shore ice up to the safe ice, where we could work the tractors. *Zubov* stands aside, waiting its turn to enter the four-kilometre channel. Seventy men are already on the shore. On shoulders, on buck-rakes, very delicate instruments are dragged four kilometres, since even light Landrovers are hindered in snow saturated with water. Further from the *Ob* it is a difficult journey: twenty kilometres more with zigzags, with evasion, eight bridges.

Relief arrives on the *Zubov* for the old winterers. There are sunburnt faces with white circles from dark goggles around the eyes. The weather allowed two aircraft trips to take out seven polyarniks from the very arduous "Vostok" station.

The eighth was a ceremonial day - the lowering of the flag of the thirteenth and the raising of the flag of the fourteenth Soviet Antarctic Expedition. The two heads, *Shamontev* and *Maksutov*, conducted a solemn ceremony in the presence of personnel from both expeditions. The roof of the radio centre served as a rostrum adorned with flags of the States with polar stations in Antarctica.

Radio centre, diesel, and some office buildings are well positioned and not covered with snow. Others have less luck: hopelessly concealed by a snow covering four-five metres thick. In the centre of the large settlement is the famous post with indicators - how many kilometres to the base capitals of the world. Yes, they are a long way off! A second post confirms that *Mirny* is right on the Antarctic circle.



Forcedly puffing, clambering along an ice ravine created by human hand, is the next tractor. Flocks of penguins rushed to its noise, seals just lazily raised their heads. The *Zubov* took on board nearly all the old relief polyarniks.

**Notes by G4AYO**

\* I have one of these QSLs written out by Krenkel in response to a SWL report. Victor Karassev was UA1KED from 1964 -1966. From 26th December 1999 until 11th April 2001 Victor was QRV from RIAND and his February 2000 QSL (manager Dominik DL5EBE) reads: "Being 59 years old Victor "Vic" Karassev joined the 45th RAE wintering team as chief radio operator of the Novolazarevskaya Station which is located about 50 miles inland from the ice edge of Princess Astrid Coast on rocky ice-free ground of the so-called "Schirmacher Oasis". Besides his profession commitments he was able

to operate from the local club station RIAND (ex. 4K1D) on the amateur frequencies." Victor's others calls are listed as:

- UPOL-22 (1980-1981)
- 4K0A (1982-1983)
- 4K0B (1983-1984)
- 4K0D (1986-1987)
- (1988-1989)
- 4K1A/RIANT (1995-1996)
- RIANF (1997-1998)

\*\* *Mary Ann Crider, WA3HUP, writes on 22 October 2002.*

"Your letter was a real surprise. The QSO with RAEM/mm was so many years ago [29 November 1968 2215 on 14.050 599]. I was licensed a little over one year and I do remember the QSO. I wondered why there was no number in the call. The QSO was on cw. He gave his name as Ernst s/s Professor Zubov - Lat. 18.00 North Long. 18.00 West. En route to the Antarctic. He was also my first maritime station." **MM**

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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

**I**N 1852 RELATIONS between Britain and France were amicable, and when a submarine cable linked Dover to France; the first messages sent between London and Paris dealt with stock market prices. Earlier it had been otherwise, tension at the time of Napoleon Bonaparte made rapid communication from the Admiralty in London to the navy on the South Coast vital.

The first system adopted was an optical telegraph devised by Lord George Murray, a son of the Duke of Atholl and later the Bishop of St David's and Archdeacon of Man (see Figure 1). On a roof was mounted a frame of six shutters that could be flipped horizontally or vertically, but the boards were difficult to see at a distance, they were easily damaged by gales, and messages often could not be passed; relays of horses were then employed.

A better system devised later by Sir Home Riggs Popham used a mast on which were attached moveable arms and an experimental line to Sheerness from London was set up in 1815; this owed much in its conception to a French system invented by Claude Chappe but, like all optical telegraphs, it was useless in foggy or misty weather. A Parliamentary Report, dated 2nd May 1843 stated the chain could not be used in 323 days during a period of 3 years. From October 1st to February 28th it might be operational for 5 hours daily

*MM88 – February 2004*

## The Imaginative Approach of Sir Francis Ronalds to Electrical Telegraphy

by *E. Geoffrey Walsh*  
*GM4FH (SK)*

and for the rest of the year for 7 hours.

### Static Electricity (Figure 2)

Amber, jet, sealing wax, sulphur, diamond, garnet and glass when rubbed, acquire the power of attracting small objects such as chaff and dust. The word electricity is derived from the Greek word for amber. Interest was heightened by Benjamin Franklin's heroic observations on the electrical nature of lightening; he flew a kite into a thunder-cloud and perilously connected himself into the arrangements. Three technical advances had led by the end of the 18th Century to an improved knowledge of electricity:

1. Instruments were devised to rapidly rotate glass cylinders or discs against leather pads and thereby produce electricity more reliably than by rubbing by hand,

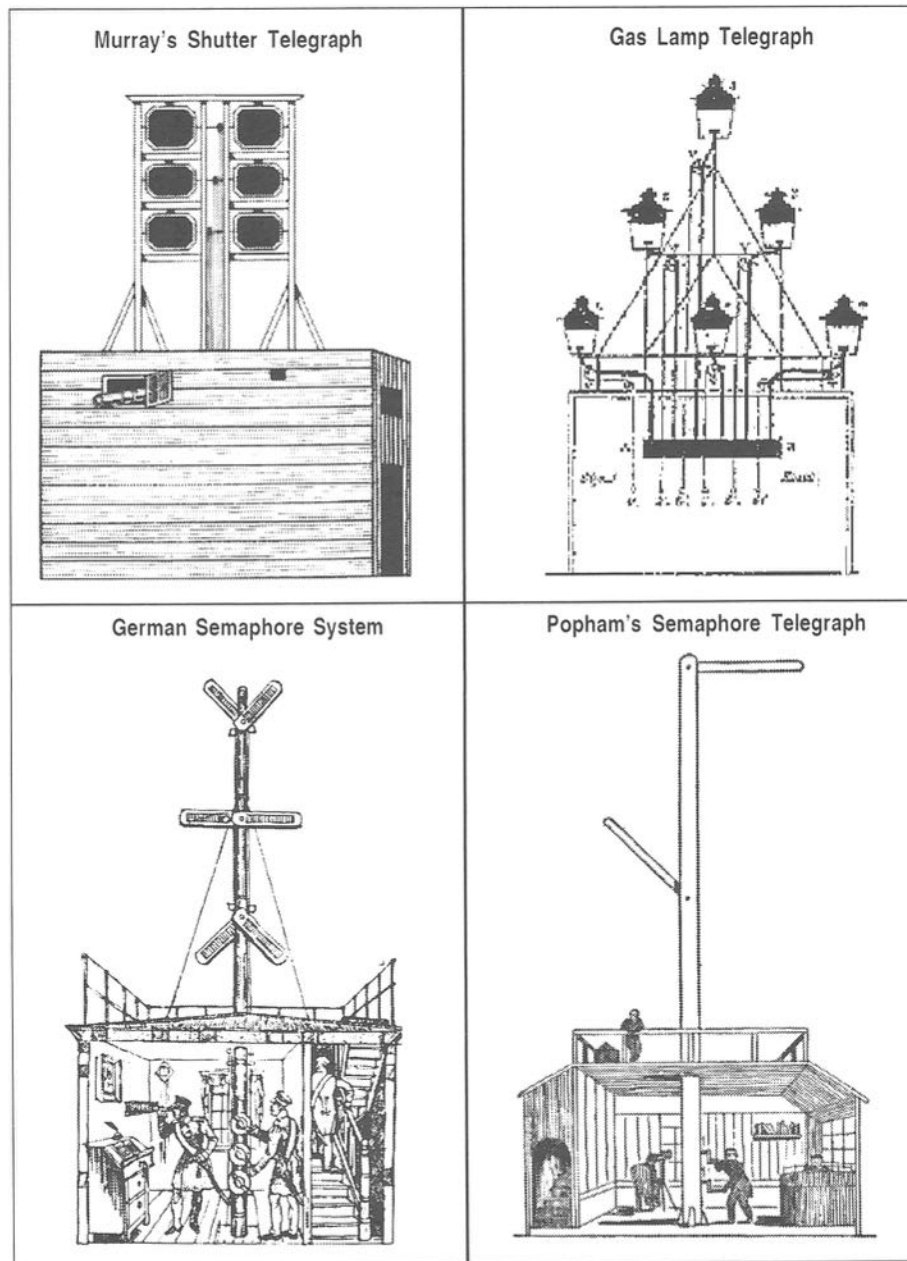


Figure 1. Optical Telegraphs. The semaphore arrangements were the more satisfactory; the ingenious gas lamp telegraph, devised for signalling at night, appears never to have been constructed. It was described in the *Mechanics Magazine*, January 7th 1826.

2. Musschenbroek's chance discovery of the 'Leyden Jar' that allowed electricity to be stored. The jar contained water or lead shot whilst the outside was coated with metallic foil. The jar was the first type of capacitor to be developed.
3. The development of the electroscope, dependent on the repulsion exerted between equal charges, enabled the presence of electricity to be verified.

### The Ideas of Sir Francis Ronalds

A single line wire of 26 miles length was constructed between Madrid and Aranjuez by Salva in 1798; sparks from Leyden jars generated the signals but the most serious attempt to use static electricity for telegraphy was that of Francis Rolands (1788-1873). He was educated privately and developed a keen interest in electricity. He knew of the delays and unreliability of optical telegraphs and saw that electrical telegraphy might be practical

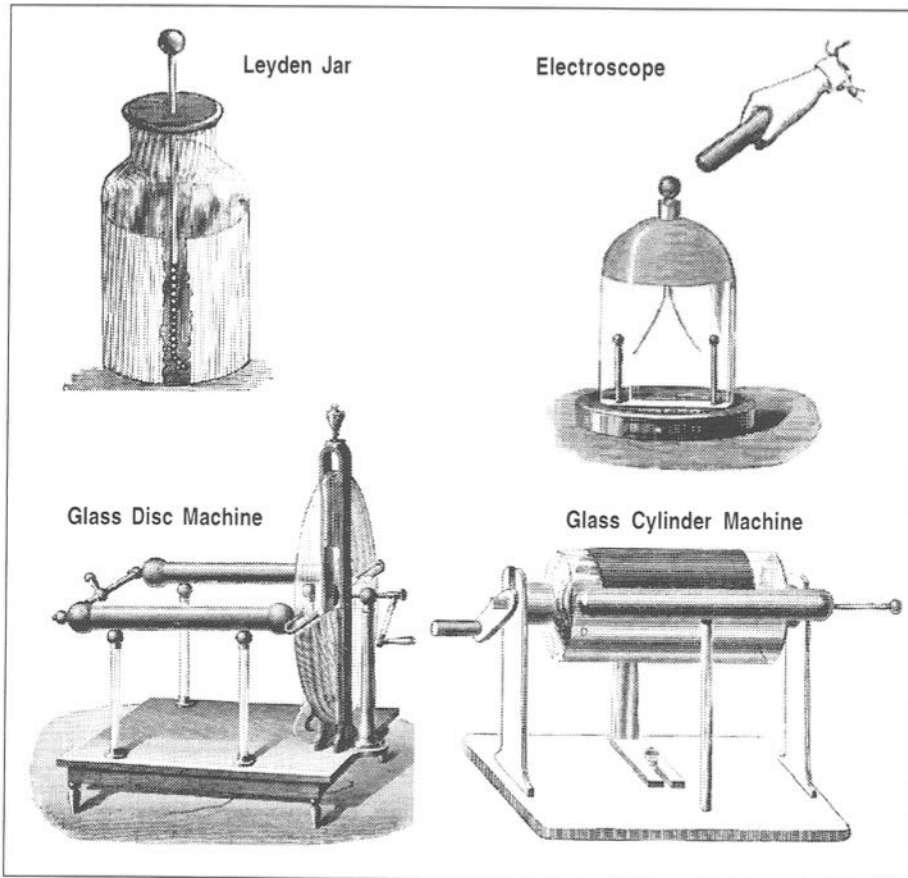


Figure 2. Apparatus available in the 18th Century for the study of static electricity.

and could speedily, or perhaps instantaneously, transmit messages.

He foresaw that perhaps soon it could be said that-

*Hark! The warning needles click,  
Hither, thither, clear and quick;  
Swinging lightly to and fro,  
Tidings from afar they show,  
While the patient watcher reads  
As the rapid movement leads,  
He who guides their speaking play  
Stands a thousand miles away.  
Sing who will of Orphean lyre,  
Ours the wonder-working wire!*

### Initial Experiments (Figure 3)

In 1816 Ronalds arranged two wooden frames, 20 yards apart, that

carried eight miles of iron wire suspended by silk from hooks. When a charged Leyden jar was connected to one of the other end electrometers at both ends diverged suddenly at the same moment.

When the wire was touched and the electricity discharged both electrometers appeared to collapse as suddenly. If a shock passed through the two insulated inflammable air pistols one connected with each extremity of the wire the explosions seemed to occur simultaneously. Shocks were felt simultaneously by an observer if he touched the two ends. "Thus, then, three of the senses, viz. sight, feeling, and hearing, seemed to receive absolute conviction of the

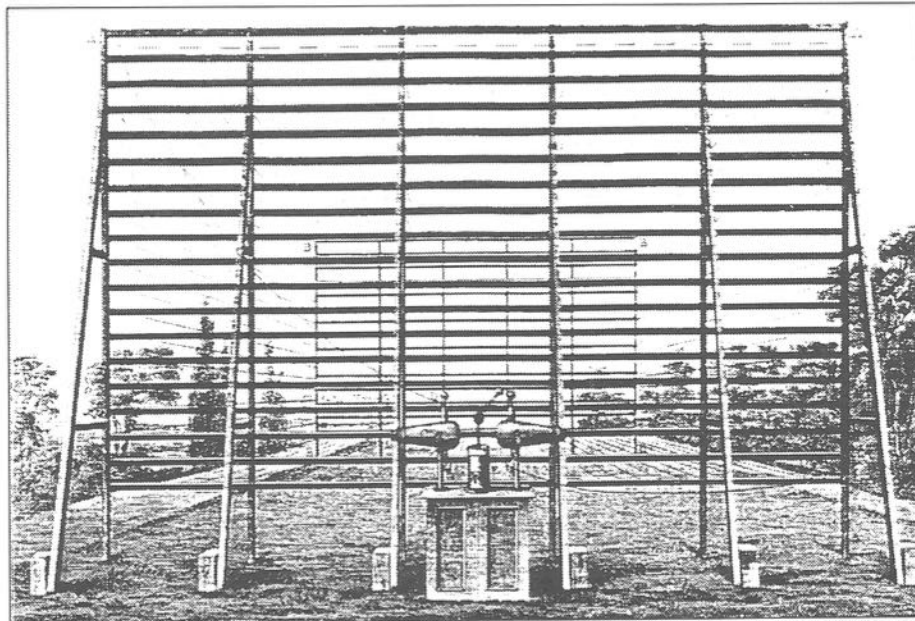


Figure 3. Wooden frames carrying insulated wire. The two pear-shaped objects in the centre foreground are gas pistols (Ronalds 1871).



instantaneous transmission of electric signs through my pistols, my eight miles of wire, and my own proper person.

### The Prototype Telegraph (Figures 4 & 5)

Ronalds buried 585 feet of wire in glass tubing three feet underground. At each end were clockwork-driven rotating dials synchronized with each other. They were engraved with preparatory signals, letters and numbers. In front of each was another dial that restricted the view to one set of the alternatives. A pitch ball electrometer signalled when a signal was sent. The prototype was elaborate and carefully constructed.

In suggesting that this system should replace the optical telegraphs used by the Admiralty, Ronalds

commented on the possibility of wilful damage:

'Should they succeed in breaking the communication, hang them if you catch them, damn them if you cannot, and mend it immediately in both cases.' However Ronalds received a dusty reply to his suggestion, tension with France had abated.

On August 5th 1816 it was minuted that-

'Telegraphs of any sort are now wholly unnecessary and no other than the one now in use will be adopted.'

Would a line dependent on static electricity have worked reliably over a long distance? Lower voltage electricity is much more tractable, insulation and leakage problems are tiny compared with those when using static. In an address at Princeton by Dr

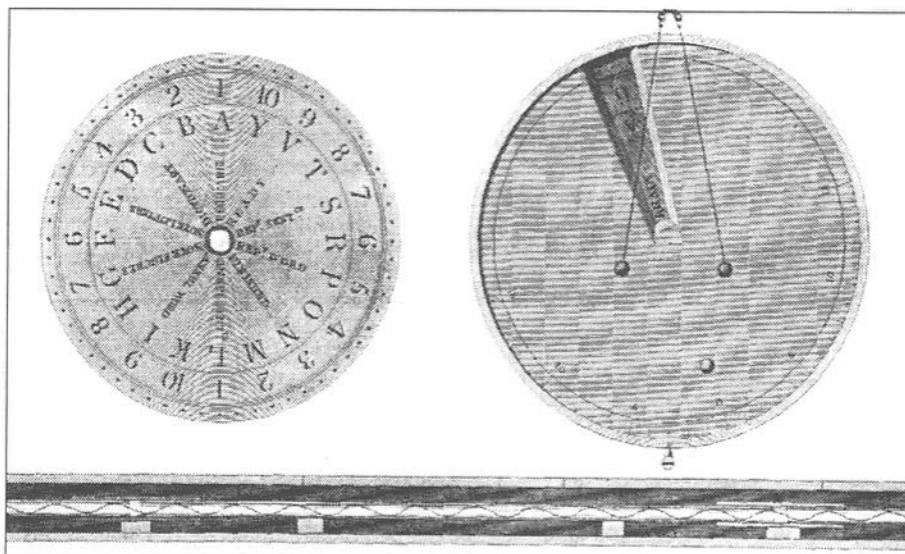


Figure 4. Upper left - the engraved dial rotated by clockwork. Upper right - the stationary dial through which the signal was read when the electrometer moved. Lower - Section of the underground wire, insulated and protected by glass tubing and a wooden channel.

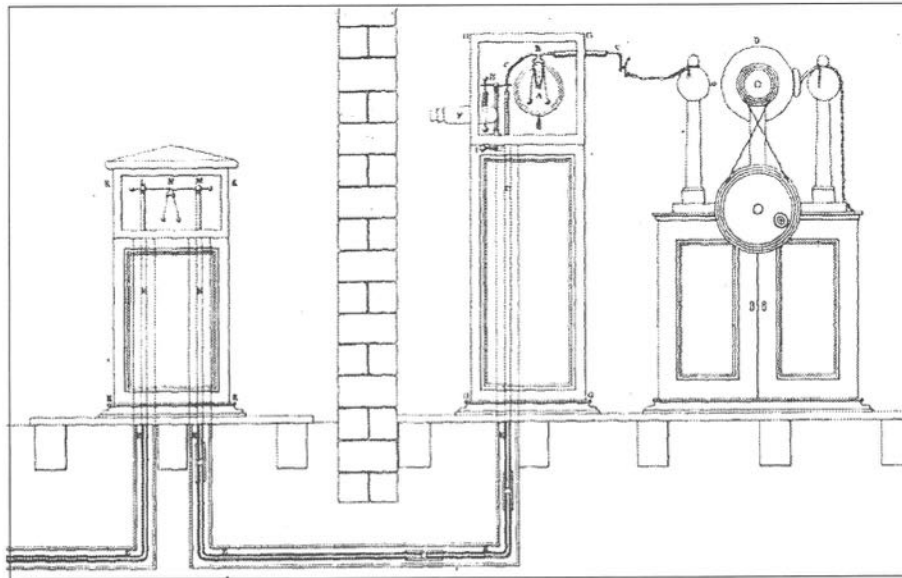


Figure 5. Upper right – the frictional instrument for producing electricity. On its left is an electrometer and a gas pistol. To the right an intermediate arrangement carries another electrometer, allowing the state of the circuit to be checked.

Dickerson about 200 years ago noted the advantages of using electricity from batteries. In that form this subtle agent is far more manageable than in the form of static electricity; and that by the use of galvanic batteries a current of low tension, but of enormously greater power, can be maintained with little difficulty; whereas static electricity is like lightning, and readily leaps and escapes on the surfaces on which it is confined.”

After the death of Ronalds, William Morris lived for a while in the house, because of this association the address now is Kelmscott House, Upper Mall, Hammersmith, London. The line constructed by Ronalds was dug up, after 100 years, in the garden.

Ronalds was appointed superintendent of the Meteorological Observatory at Kew in 1843 and knighted in 1871, a belated recognition for a highly enterprising scientist. *MM*

#### Sources

- Clark R. W. (1983) 'Benjamin Franklin.' London: Weidenfeld & Nicolson.  
 Mottelay P.F. (1922) 'Bibliographical History of Electricity and Magnetism', London:Griffin.  
 Prestcott G. B. (1860) 'History, Theory, and Practice of the Electric Telegraph', Boston: Ticknor & Fields.  
 Ronalds Sir Francis (1871) 'Description of an Electrical Telegraph'. 2nd Edition. London: Williams & Norgate.  
 Wilson G. (1976) 'The Old Telegraph's.' London: Phillimore.

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**I**N 1855 DURING THE CRIMEAN war Royal Engineers laid 21 miles of cable and established 8 telegraph offices.

In 1879 the British army in Africa, because of material shortage, used bare wire laid on the dry soil for the telegraph. Telephone receivers were used to read the signals because current leakage to the ground was high.

In 1881 Lieutenant P. Cardew of the Royal Engineers reported on the success of using buzzer type electric telegraphs, the signals being received using telephones along 15 miles of bare wire laid near a railway in Kent.

#### **Mobile Cable Laying**

Special equipment was gradually evolved for handling field cable and overhead lines. An 1881 lithograph of a telegraph wire wagon (Mark II) appears to be little different from the cable wagon of the 1869 field train except that it is fitted with connections for using the wheel tyres as earths.

Mobile electrical communication had arrived and this continued to be available during the life of the final cable wagon of 1900 to 1937. This was a horse drawn limbered wagon similar to two carts coupled at a towing hook to give great flexibility over rough ground. It was similar to the Wagon, Telephone, Mark I. (Figure 1.). The electrical circuit was quite ingenious: -

*MM88 – February 2004*

## **Some Telegraph Developments in the 19<sup>th</sup> Century British Army**

*by John Goldfinch*

“The line terminal of the Vibrator (buzzer) Telegraph on the wagon is wired to the metal plates of the cable drum bearings. These are insulated from the wagon frame. The circuit then passes through the bearings, the spindle and the metal case of the drum on one side of which is a terminal to which the cable is connected. The earth terminal of the Telegraph is wired to the axles, and the hubs of the wheels are wired via the spokes to the iron tyres, thus picking up earth from the ground on which the wagon stands when stationary or is in motion. With the foregoing arrangement communication is maintained while the cable is being laid.”

Manuals also gave guidance on earthing: -

“In very dry weather it may be necessary to draw the wagon onto grass and apply water to the ground under the wheels.

An earth pipe is provided on the wagon to supplement the tyre contact

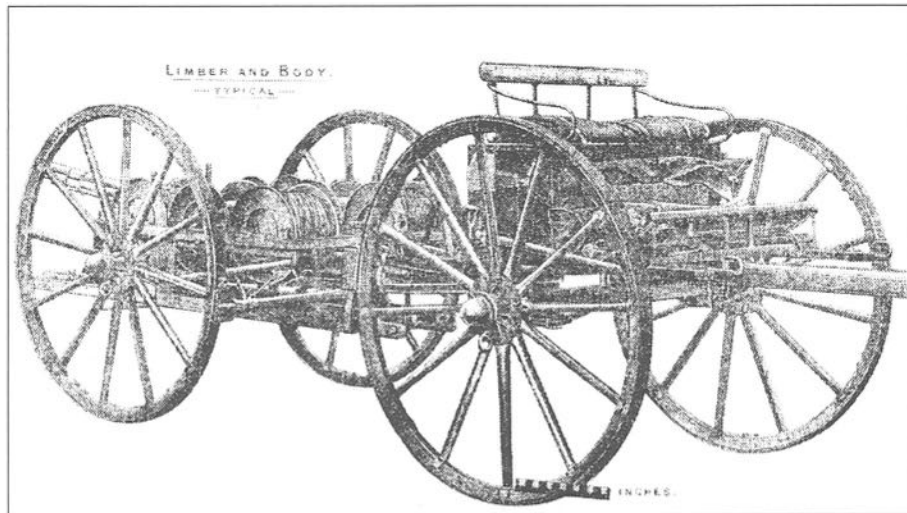


Figure 1. Wagon, Telephone, Mark 1 from the Handbook of the 60-PR. B.L. Gun.

and when the wagon is halted to send or receive messages this additional earth may be used.

A good earth for a vibrator or telephone circuit can be obtained by driving a nail or the point of a knife into any living tree or bush, and fastening the earth wire to it."

The cable wagons used Cardew's vibrator / buzzer type telegraphs and then telephones with buzzer call until 1937 and with regard to the pace of laying the manual says:

"In open country the pace at which cable is laid is only limited by the pace at which the wagon can move.

In close country, such as England, where provision must be made for the security of the cable at road-crossings, gates, and in villages, the normal cable detachment should work at an average rate of 3 miles per hour. If two detachments are available to lay one line, the pace may be increased to

5 miles per hour. At night, when mounted men cannot work on their horses, progress is necessarily slower, and it will seldom be possible to lay cable faster than about 1½ miles per hour."

These rates of laying were quite adequate to keep up with, or in front of, an army on the move when only officers and gentlemen were on horseback and soldiers and ordinary folk walked. In addition camp had to be struck and made each day so that fifteen miles was quite a good day's march for a body of troops.

#### **Pack Horse Cable Laying**

As well as cable wagons, various hand devices common to civilian installers were used in the form of specialised pack horse equipment (Figure 2.) which also had the mobile facility: -

" To keep communication with

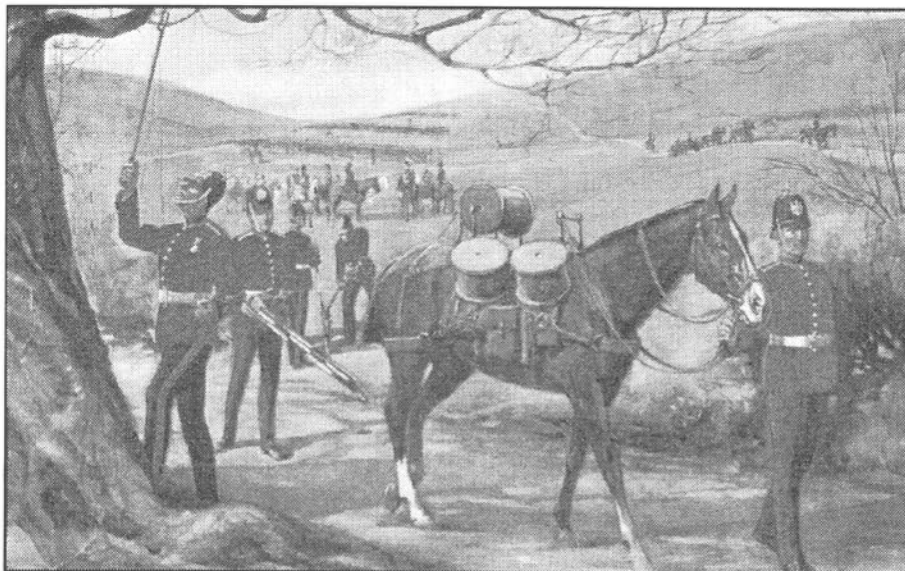


Figure 2. "Laying Pack Cable" - from 'Through to 1970' by kind permission of the Royal Signals Museum.

the base office, while actually laying cable, a heel plate is provided for use as follows. The driver, who leads the pack animal, should be provided with a telephone, the receiver of which should be strapped to his ear. He should wear the heel plate, which should be connected by a length of lead to one terminal of the telephone. The other terminal should be connected by a length a wire to the terminal on the standard of the packsaddle, and thence to the inner end of the cable on the drum. Every time the driver puts his foot to the ground, he completes the circuit, and can hear if he is being called up.

If a heel plate is not available, it will be found that nearly the same effect can be obtained by connecting one terminal of the telephone to the earth pin, and giving it to the driver to hold in his hand."

*MM88 – February 2004*

Hence we had military mobile communications before Marconi, with even the moving human body being used as a conductor!

#### Acknowledgements

Information was from many sources including the following: -

The Telephone As A Receiving Instrument In Military Telegraphy by Captain P.Cardew R.E.: Read to the Society of Telegraph Engineers May 1886.

Instructions In Army Telegraphy And Telephony Vol. 2. 1909.

Handbook of the 60-PR. B.L. Gun. 1915.

Training Manual- Signalling (Prov.). 1915.

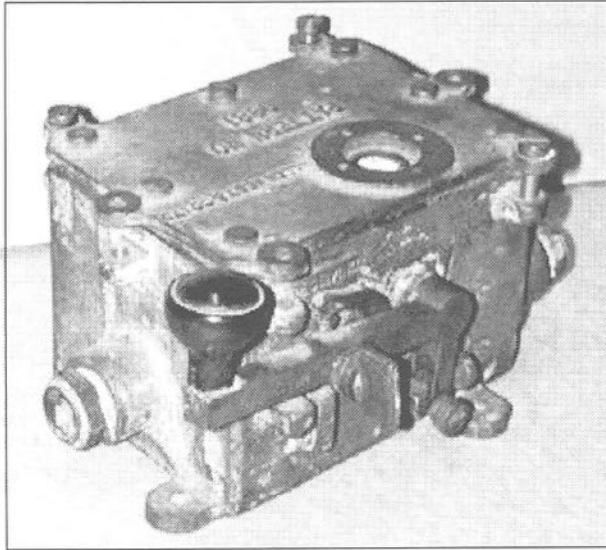
Through to 1970 published by the Royal Signals Institution. 1970.

The Royal Signals Library, Blandford, which supplied the information concerning the electrical circuit of the telegraph cable wagon during a visit on 4 July 1983

*MM*

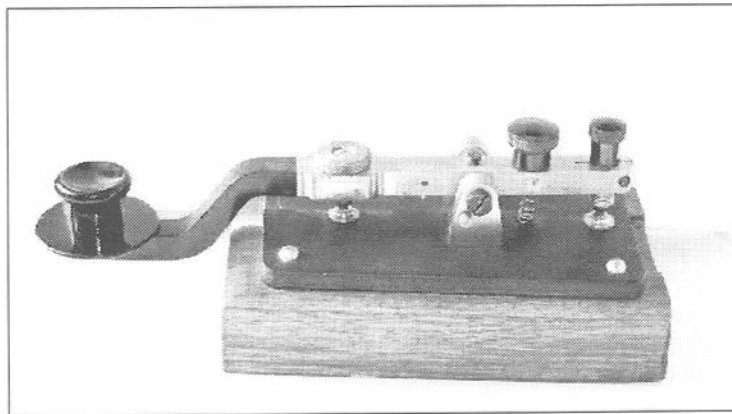
# Info Please!

Photo/Collection: Henri Jacob



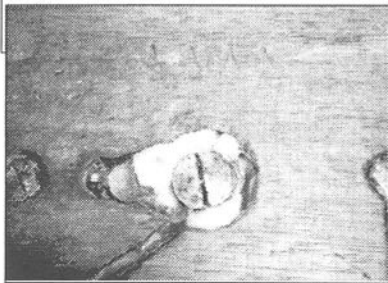
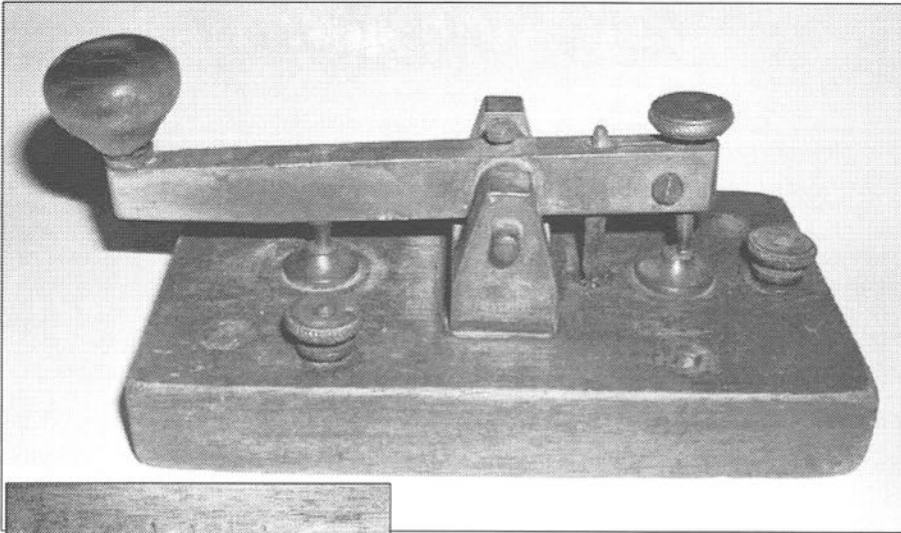
A very solid naval brass key marked 'Allen West & Co Ltd, Pattern No. 9881'. It was probably used with a signalling lamp on board ship. Maybe the hole on the upper side contained a monitoring lamp. The arm is marked "operate", and a "safe" and "receiving" marks are on the side. The arm is locked in receiving position. Any information please.

Photo/Collection: Wynn Davies



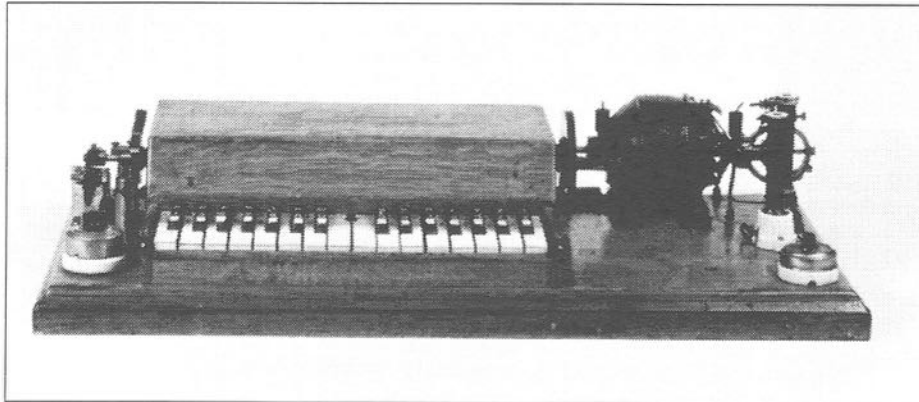
An Italian Marine key WWII, maker unknown, the arm is 9 inches long and is well balanced.





*This early Turkish land-line telegraph key was found in an antique store in Istanbul in 2003. The letters stamped into the bottom of the base suggest that it was used during the Ottoman Empire.*

Photo/Collection: Fons Vanden Berghen, Halle, Belgium



*Can any reader provide more information about this Ticker Keyboard Transmitter 3-A .*

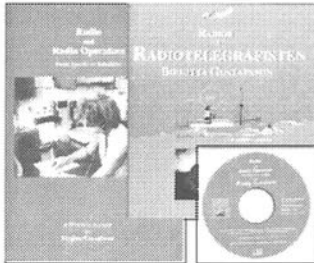
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**Book & Book Translation: £25.00 UK & Europe - £32.00 - World**



**Wake of the Wirelessman** by B.J. Clemons

This is the true story of Dale Clemons, born in 1895, in Iowa, who graduated as a marine wireless operator in 1914. For two years he sailed in everything from lumber schooners to passenger liners. Although there have been books relating to the experiences of seagoing operators from the 1930's onwards, "Wake of the Wirelessman" describes the practices, equipment and happenings of an earlier time, revealing many fascinating and little-known facts.

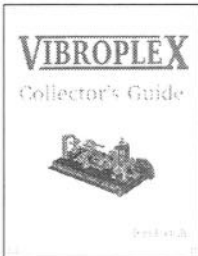
**£14.20 UK - £14.70 Europe - £17.00 Rest of World**



**American Telegraphy & Encyclopedia of the Telegraph** by William Maver Jr.

Facsimile by Lindsay Publications of the 700 page illustrated 1912 encyclopedia (5th Edition) but carries copyrights that go back to 1892. This is a classic encyclopedia of telegraphy with 544 illustrations of equipment, circuits, procedures and installation methods. A must have for collectors & historians. 6 x 9in (15.5 x 23.5 cm). Gold-blocked hardcover.

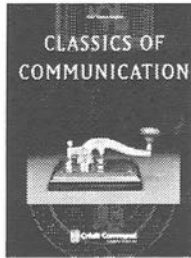
**£39.00 UK - £40.00 EU - £43.50 World**



**Vibroplex Collector's Guide** by Tom French

This classic work on Vibroplex bug keys and their history is back in print. It covers all the models from the 1902 "Autoplex" to the present day and includes original design information and drawings, copies of patents, nameplates, serial numbers and decals. The book is rich in drawings and photographs. Softcover. 126 pages. 8½ x 10¾ ins (21.5 x 27.5 cm).

**£15.00 UK - £15.80 EU - £17.60 World**



**Classics of Communication** (English Edition) by Fons Vanden Berghen

A book of exceptional quality produced originally to accompany a Brussels Exhibition sponsored by a Brussels bank. Illustrated with 240 high quality photographs. 140 in colour, including many rare telegraph instruments. The text includes the history and technology of electricity through to wireless and early television, but a large section of the book is devoted to telegraphy. Without sponsorship, a book of this size and quality could not have been economically possible for such a limited readership - 107 pages, 24.5cms x 29.5cms (9.7in x 11.6in).

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**My Road to Bletchley Park** by Doreen Spencer

This is a personal account of Doreen Spencer who was a WAAF Wireless Operator at Bletchley Park during WWII. Her duties included reading 'Morse Slip': paper tape with marks to represent dots and dashes which moved across a special typewriter and from which the Morse was typed into text. Soft cover. 45 pages with 12 drawings and photographs - 128 pages, 15 cms x 21 cms (5.75 in x 8 in).

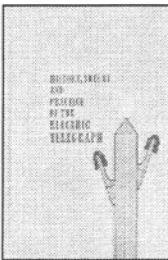
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**The Story of the Key** by Louise Ramsey Moreau

This is The Best of MM Vol. 1. It is a reprint of a series of articles which appeared in *MM6* - *MM11*. It covers the history of the telegraph key from 1837 - 1941 and includes a list of American telegraph instrument makers, 1837-1900. Softcover 77 photos/illustrations. 60 pages, 5 3/4 x 8 3/4 inches (14.5 x 21 cm).

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**History, Theory & Practice of the Electric Telegraph** by George B. Prescott

This is a facsimile reprint of 1866 edition. Reproduced in 1973, there are minor storage discolourations on the hardback cover. 516 pages, 119 illustrations, 5 1/4 x 7 3/4 in.

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**AWA Review Vol. 8, 1993** by The Antique Wireless Association.

Includes the 45 page article by Louis Meulstee on "Unusual Military Morse Keys", mainly British and European, including 107 photos. Rich in other radio articles, in total 154 pages. 6 x 9 in.

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# Your Letters

## Russian Key MM87 P36

According to Louis Meultee PAØPCR in his excellent article in the Antique Wireless Association Review No.8 of 1993, this key was one of three keys in use with the Russian made R104M pack/vehicle station. This set operated from 1.5 to 4.25 mc/s delivering 3.5 watts on CW or 1 watt on AM on low power and 20 watts/10 watts on high power. It was developed in the early 1950's and was extensively used in the USSR and its satellite countries.

In operation the Morse key is clipped on top of the lid of the power supply/battery case.

The GDR used this set and this key was probably manufactured in 1986.

*Wyn Davies  
Brymbo, Wales*

## AP 7681 Key

Recently got hold of a 1939 model of this key in brown. Wonder if it is the earliest model of this key? I used to have a 1942 model that was also brown and made by Marconi. I think they are the makers of this one as it has a 'P' serial number.

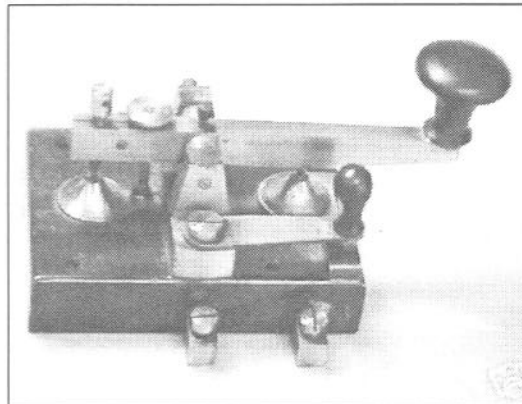
*Wyn Davies  
Brymbo, Wales*

## Australian Post Office Key

I read on the last issue No. 87 about the Australian Clipsal key which is not a real Post Office key. That's in fact true.

I own a real Australian Post Office key and I enclose a photo of it should you wish to use my photo for your next MM issue. The key should be dated around 1910 has a wooden base and has the shorting lever as well as the typical "Aussie" brass anvils.

*Alex Meregalli, HB9DTA  
Ponte Capriasca, Switzerland*



*Australian Post Office Key*

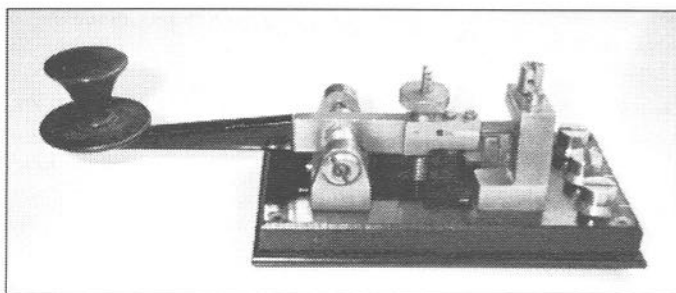
## PS 213A Key

Reference Brian Payne's letter, my PS 213A plated key in MM 85 page 25 was purchased from Australia but not made there!

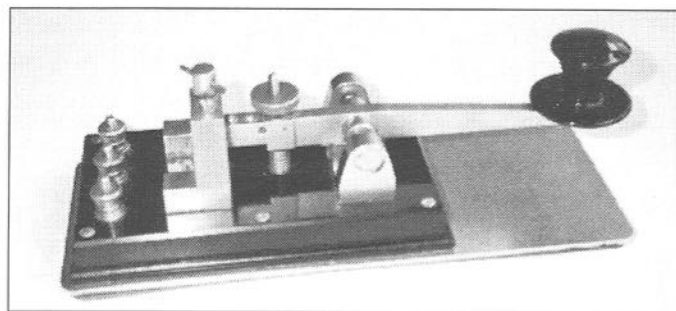
The PS 213A keys were made by the Marconi Co. in the UK (PS being one of their drawing numbers) see photo 1 of a 213A with sleeve on the arm.

The key made by the GPO's own engineers at Rugby was a different key and slightly larger. This was the key used at British coast stations - see photo 2. My sleeved version came off a GPO cable ship, they were also used by some of the services. Both keys are great to use.

*Wyn Davies  
Brymbo, Wales*



*Marconi PS 213A*



*GPO, Rugby PS213A*

## Key Type PS 213A

With reference to Brian Payne's letter on page 43 of MM87, may I draw attention to a number of Morsum Magnificat references on this subject, but particularly to my letter in MM62 (February 1999) and to Wyn Davies's photograph in that issue, in which I attempted to describe the origins of this key. I concluded that the keys had been manufactured probably at the Post Office factories in London or Birmingham. However, it is quite possible that later versions were made in the Post Office factory at Rugby.

I feel confident now that these keys, marked P.S.213A, wherever they are found, and particularly in connection with maritime coast radio

stations or other land-based stations with British Post Office connections, are of British Post Office design and manufacture. However, it was introduced originally long before 1970. The key in the photograph from the collection of Wyn Davies dates from the 1940s and can be seen with its cover in a photograph of the recently re-equipped Burnham (Portishead) MM88 - February

45

Receiving Station in 1948 (One Hundred Years Of Maritime Radio by W.D. Goodwin). The photographs of my key show it with its original phenolic cover as at the Burnham station.

Unlike the specimen from the collection of Wyn Davies and from my collection, the later versions were fitted with metal baseplates. A good view of one of these is shown on page 28 of MM62 (February 1994), in use at Portishead Radio in 1988.

However, they were standard issue at our coast radio stations at that time and subsequently, hence presumably its appearance at the hand of G3RID at Lands End Radio.

Every ex-professional radio officer I have spoken to speaks highly of the handling characteristics of the key. It is not surprising therefore that, when Morse came to an end, they tried to retain a P.S.213A and I know some ex-ROs who treasure them to this day.

*Ken Jones, G3RRN  
Lincoln, UK*

Further to the picture of this key in MM85 and the letter from Brian Payne in MM87, I gather from enquiries that the key was manufactured by Marconi (presumably in Britain). I believe the keys made in workshops in Rugby were

replacements for the PS213A keys at coast stations.

*Robert Charlton, G3CPC  
Twickenham, UK*

### **Bathtub Key MM85 P37**

I have used this key in several different aircraft and in combination with the T1154/R1155 and the older R1082/T1083 transmitters and receivers. Reference was made to the bakelite case enclosing sparks that might occur across the key gap to keep them away from the fumes of leaking fuel. Not just fumes! How about when the aircraft is awash with 8 hours fuel swilling around inside. But that is another story!

*Flt. Lt. Vic Reynolds, G3COY  
Stoke-on-Trent, UK*

### **Italian Key MM85 P24**

I have a letter from Alberto Avanzini, I2AV, dated May 1994 listing some keys he had for swapping. One item reads, "STIRE, 1937, EXERCISE KEY WITH SWITCH ON SIDE, BAKELITE LARGE BASE, BRASS HARDWARE."

Could this be same key as the one in MM85?

*John N. Elwood, WW7P  
Phoenix, Arizona*

### ***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 Art & Skill of Radio Telegraphy

by William G. Pierpont, *NOHFF*

A comprehensive manual for learning, using, mastering, improving and enjoying International Morse Code. Pub. Radio Amateur Educational Society (RAES) of Canada, 236 pp, 5.5 x 8.5 inches (14 x 21.5 cm) with coil binding.

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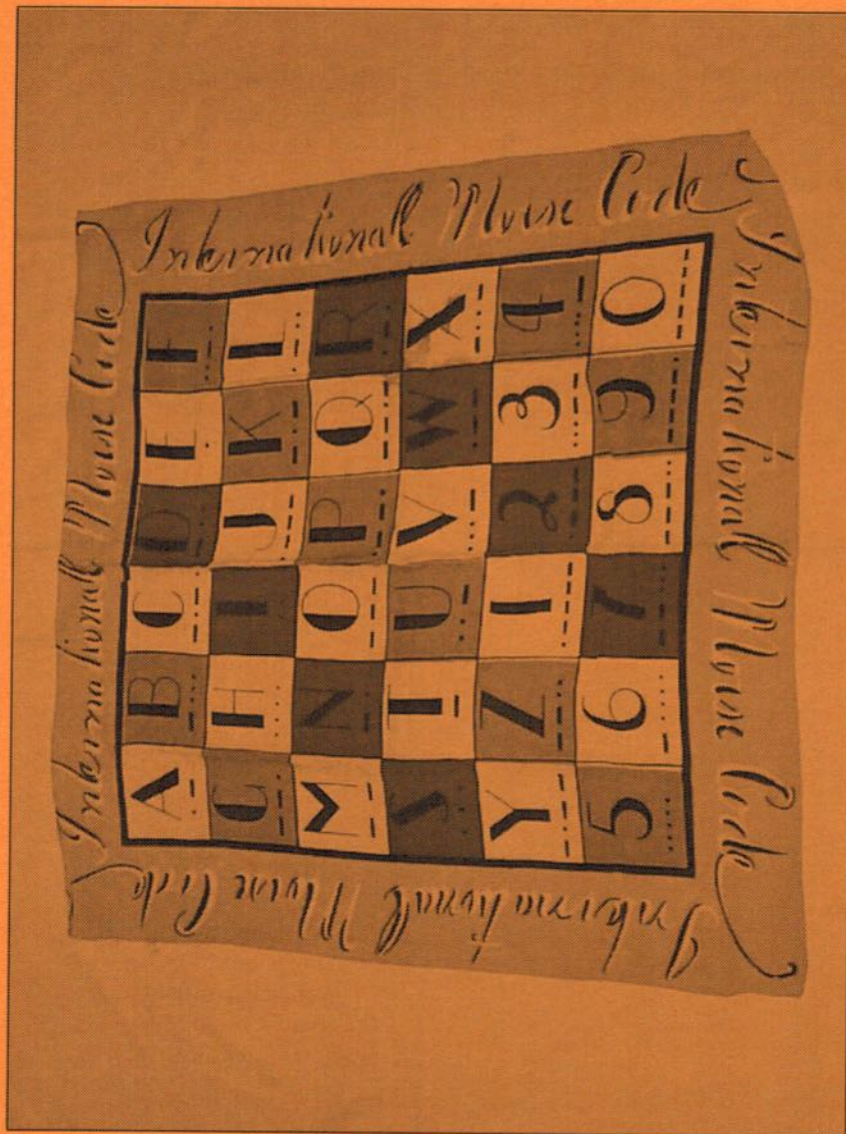
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Chris Bisailion purchased this Morse head-scarf for his wife. It is made by Glentex in the USA, probably in the 1950's and measures 27 inches by 27 inches.



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