

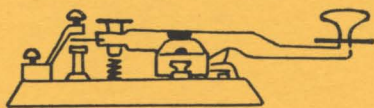
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nr 12

Morsum Magnificat



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MORSUM MAGNIFICAT was first published in Holland, in 1983, by Rinus Hellemons, PAØBFN. Now published from London, it aims to provide international coverage of all aspects of Morse telegraphy, past present and future.

MORSUM MAGNIFICAT is for all Morse enthusiasts, amateur or professional, active or retired. It brings together material which would otherwise be lost to posterity, providing an invaluable source of interest, reference and record relating to the traditions and practice of Morse.

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Cover photo: Harry Turner, W9VZE, World Hand Key Speed Champion. See "Meet the Champion", p.24.

The HELIOGRAPH



by LOUIS MEULSTEE, PAØPCR.

Heliography, or signalling with the sun's light by means of mirrors has been well known for centuries. Herodotes tells of a signal flashed from Athens to Marathon by means of a burnished shield at the time (480 B.C.) when the Greeks were about to come to grips with Darius' army. Xenophon mentions similar signals sent by Lysander before the battle of Aegospotamos.

The Moors in Algeria were using sun flashing as far back as the 11th century A.D. An extensive system of signalling by means of mirrors placed on high towers provided communication, under favourable conditions, between major cities in Algeria.

The forerunner of the heliograph is the HELIOTROPE, a device by which a flash may be sent in any desired direction regardless of the sun's motion. This was invented by Willem Jacob van 's Gravesande (1688-1742), a Dutch physicist. A similar instrument was devised by Gauss, the German mathematician, in 1821, and used operationally during surveying in Germany.

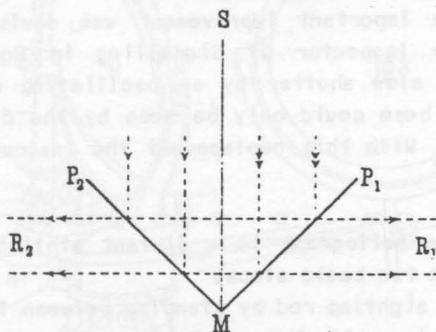
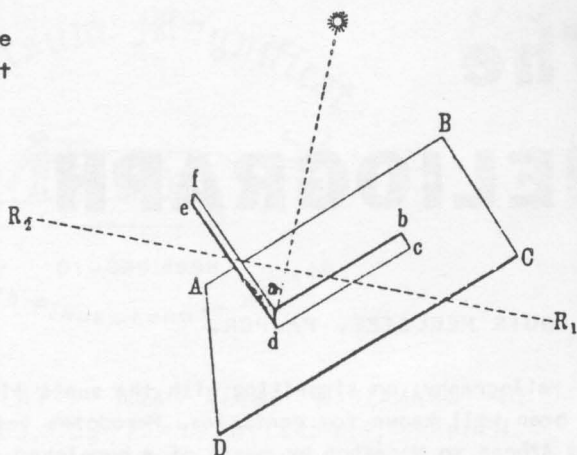


Fig. 1a. Principle of the heliotrope. P1 and P2 = glass plates fixed at right angles at M. The beam of the sun S is reflected to the observer at R1 and the distant station at R2.

Fig. 1b. The heliotrope
as a practical instrument



Pre-coded messages were signalled by interruption of the beam of sunlight. The invention of the Morse code opened up a new field. In 1860 the heliotrope was modified by insertion of a shutter between the mirror and the distant station. This increased the speed of Morse signalling considerably.

The Heliostat

The heliotrope however was fragile and inaccurate. These disadvantages were overcome by the HELIOSTAT, prototype of the heliograph, invented in 1869 by Mance (later Sir Henry) and introduced into the British Army in 1875.

This instrument consisted of a mirror with unsilvered spot and a sighting arm or duplex mirror. Signalling was still by means of a shutter. In 1877 an important improvement was devised by Lieutenant G.R.R. Savage, then Inspector of Signalling in Roorkee, India. He replaced the rather slow shutter by an oscillating mirror. Correctly adjusted, the light beam could only be seen by the distant station if the key was pressed. With this replacement the instrument evolved into the HELIOGRAPH.

Using the heliograph

Alignment of the heliograph to a distant station is quite simple and is carried out in two basic steps.

- 1) Adjustment of the sighting rod by standing between the sun and mirror and moving the head until the distant station is hidden by the unsilvered spot in the centre of the mirror. Keeping the head still and moving the sighting rod until the cross wires exactly coincide with the reflection of the distant station and the unsilvered spot.
- 2) Adjustment of the reflected sunlight to the distant station by moving the mirror until a dark spot (unsilvered spot) coincides with the sighting mark on the rod.

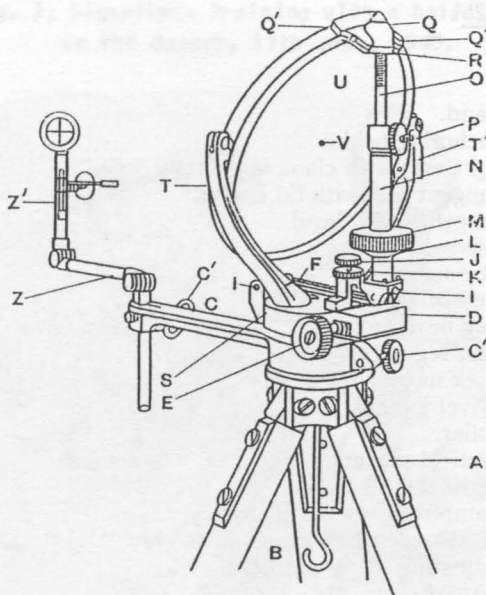


Fig. 2a. Hellograph without duplex mirror. F = Morse key. When this is pressed the mirror turns upward in the direction of the distant station.

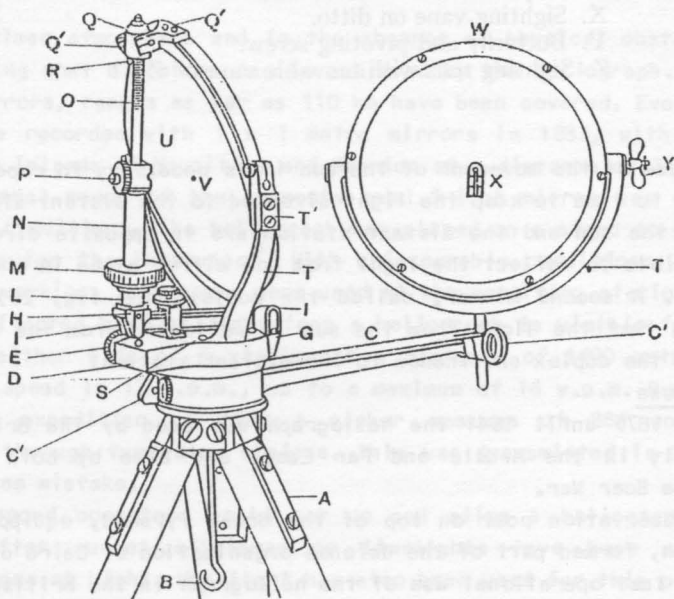


Fig. 2b. Hellograph with duplex mirror.

Key to figs 2a and 2b.

- A. Stand.
- B. Anchoring hook.
- C. Sight arm with clamping screws "C¹."
- D. Tangent box with lid below.
- E. Tangent screw head.
- F. Key.
- G. Key spring.
- H. Key bridge.
- I. Key bearings.
- J. Beat regulating screw.
- K. Lock nut for ditto.
- L. Swivel joint.
- M. Collar.
- N. Vertical socket.
- O. Vertical steel rod.
- P. Clamping screw for ditto.
- Q. Nickel silver ball attached to claw "Q¹."
- R. Adjusting screw for ditto.
- S. Brass plate.
- T. U-arms, with detachable portion "T¹" and screws adjusting.
- U. Signalling mirror in frame.
- V. Unsilvered spot at centre of signalling mirror.
- W. Duplex mirror with frame in U-arms "T."
- X. Sighting vane on ditto.
- Y. Butterfly and pivoting screw.
- Z. Sighting rods with movable vanes "Z¹."

Because of the movement of the sun it is necessary to repeat step 2 from time to time to keep the light directed to the distant station.

When the sun and the distant station are in opposite directions it is impossible to reflect the light from one mirror alone in the required direction. A second mirror, called the duplex (see fig, 2b), must be placed so that the light from the sun is reflected from the signalling mirror to the duplex and thence to the distant station.

Military use

From 1875 until 1941 the heliograph was used by the British Army extensively in the Middle and Far East, and also by both opponents during the Boer War.

An observation post on top of the Great Pyramid, equipped with a heliograph, formed part of the defence organisation of Cairo during WW1.

The last operational use of the heliograph in the British Army was in 1941 at the siege of Sollum Hayata during the desert campaign of the 8th Army.

Fig. 3. Signallers training with a heliograph
in the desert, 17th June, 1940.



Performance

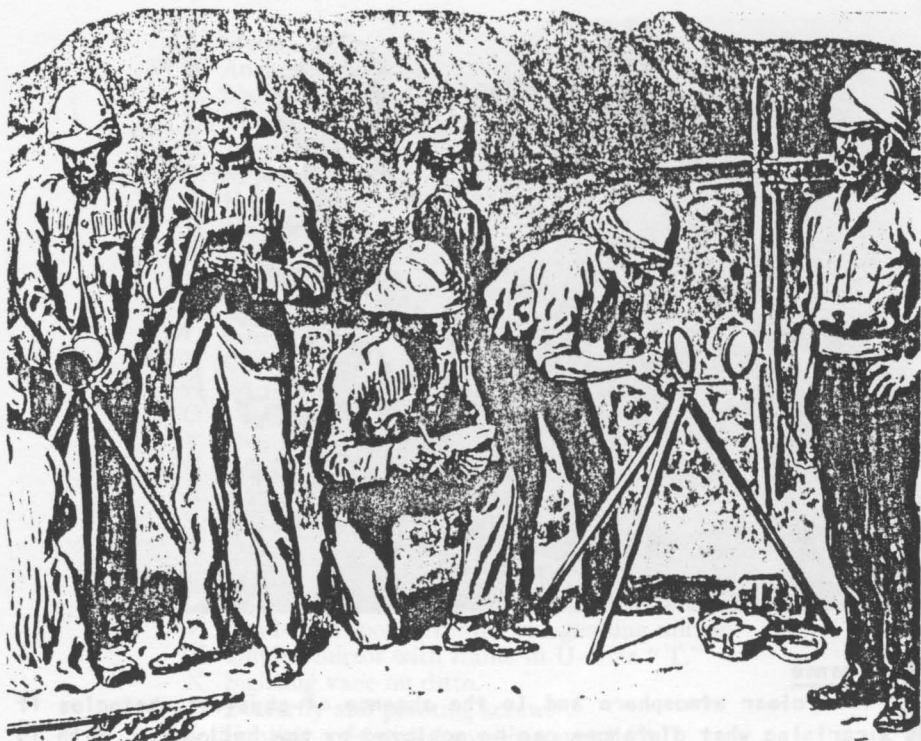
In a clear atmosphere and in the absence of physical obstacles it is surprising what distances can be achieved by the heliograph. With 15 x 20 cm mirrors, ranges as far as 110 km have been covered. Even larger ranges were recorded with 1 x 1 metre mirrors in 1883, with signals between the Islands of Mauritius and Reunion at a distance of 240 km.

The normal range of the commonly used 5-inch mirror was 40-80 km under good conditions. The heliograph was placed on a stand to obtain a stable base for the instrument. With unfavourable conditions, or with long range working, telescopes were used at the receiving stations.

The reflected beam of light from a heliograph is visible for eight metres on either side of a station at a distance of 1600 metres. The signalling speed is 12 w.p.m., up to a maximum of 16 w.p.m. During the Zakka Khal expedition of 1908 a cipher message of 884 words was despatched through two relay stations. This was transmitted in 2½ hours with only one mistake.

Experienced operators could set up and align a heliograph in 60 seconds. After sunset oil-lamps or limelights have been used for communications at night. Moonlight has also been used for this purpose.

Fig. 3. The heliograph in use with the Tochi Field Force, North West India. (From "The Graphic", 9th October, 1897)



From A CODE OF MORALS by Rudyard Kipling.

Now Jones had left his new-wed bride to keep his house in order
And hied away to the Hurram Hills above the Afghan border,
To sit on a rock with a heliograph; but ere he left he taught
His wife the working of the Code that sets the miles at naught.

At dawn, across the Hurram Hills, he flashed her counsel wise—
At e'en, the dying sunset bore her husband's homilies.

But he kept his gravest warning for (hereby the ditty hangs)
That snowy-haired Lothario, Lieutenant-General Bangs.
T'was General Bangs, with Aide and Staff, who tittupped on the way.
When they beheld a heliograph tempestuously at play.
They thought of border risings and of stations sacked and burnt—
So stopped to take the message down — and this is what they learnt:—
'Dash dot dot, dot, dot dash, dot dash dot' twice. The General swore,

'Was ever General Officer addressed as "dear" before?'
The artless Aide-de-Camp was mute, the gilded Staff were still,
As, dumb with pent-up mirth, they booked that message from the hill;
For clear as summer's lightning flare, the husband's warning ran:-
'Don't dance or ride with General Bangs - a most immoral man!'

With damnatory dot and dash he heliographed his wife.
Some interesting details of the General's private life.
The artless Aide-de-Camp was mute, the shining Staff were still,
And red and ever redder grew the General's shaven gill.
And this is what he said at last (his feelings matter not):-
'I think we've tapped a private line. Hi! Threes about there! Trot!'
All honour unto Bangs, for ne'er did Jones thereafter know
By word or act official who read off that helio.
But the tale is on the Frontier, and from Michni to Mooltan
They know the worthy General as 'that most immoral man.'

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Acknowledgements, with many thanks to Major Alan Harfield, BEM, Deputy Director of the Royal Signals Museum, for permission to use parts of his book "Early Signalling Equipment - The Heliograph". This book (revised edition 1986) is available from The Royal Signals Museum Shop, Blandford Camp, Dorset DT11 8RH, England.

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References used in the preparation of this article

- 1) Early Signalling Equipment Pamphlet No. 1. "The Heliograph". Major A.G. Harfield, Royal Signals. Pub: Royal Signals Museum Library and Archives, 1981.
- 2) Geschichte der Telegraphie, Th. Karrass. F. Vieweg und Sohn, 1909.
- 3) The Royal Corps of Signals (1800-1955), Maj-Gen R.F.H. Nalder. Royal Signals Institution, London, 1958.
- 4) Through to 1970. Col. R.M. Adams. Royal Signals Institution, 1970.
- 5) Signal Training, Vol III, Pamphlet No. 2, Heliograph 5 Inch, Mk V. HMSO, London, 1922.

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WRONG DIRECTION!

Does anyone remember the Mad Mullah perched up on his little tower at Abadan, in 1944-45, with a heliograph that was always pointed in some other direction than that of the ship calling him? Reading a heliograph off the side is not to be recommended for good copy!

Gus Taylor, G8PG.



Rinus

Hellemons PAOBFJ

With great sadness I have to report the death of Rinus Hellemons on 1st April 1989. As many readers know, he founded MM, initially in the Dutch language, in 1983, and additionally produced the first six issues of the new Anglo-Dutch English language edition from autumn 1986 until winter 1987. At that time, owing to ill-health, he was compelled to cease publication of the Dutch edition and production of the English edition was transferred to me in London.

DMM, as he called the Dutch edition was already well established, with an enthusiastic following, when the English version (EMM) was launched by Rinus, Dick PA3ALM, and myself. It was an exciting time, with regular two-way contact between us by letter, telephone, and CW skeds as the first issue neared publication. Rinus was full of ideas for MM. He and Dick produced the MM Q/Z codebook, and he had plans for a German language edition of the magazine. There was an annual MM Morse day in Dick's home town of Maassluis with plans to invite English readers to join the Dutch enthusiasts at the 1988 event, and Rinus was keen for a similar event to be held in the UK.

He lived for MM. He thought about it and made plans for it continuously. It must have been a terrible blow for him to have to give it all up when his doctors told him he had cancer and only a short time to live.

He and Dick then produced three final "special" editions of DMM, titled "73", "88", and "30" using all of the material they had in hand for the magazine. They then shipped everything over to me to use in EMM in due course. The readers of the Dutch edition were deeply disappointed when their magazine ceased publication. They now treasure their copies of DMM and some of them have transferred over to maintain their link with MM and their

memory of Rinus through the English edition.

Rinus was always to be found in the afternoons on the MM frequency of 3553 kHz and there evolved a regular band of DMM enthusiasts using this frequency, identifying themselves with Rinus's signal, the dididahdit di dit dah which is on the front cover of every issue of MM.

In the afternoon of the day of his funeral I keyed that signal on the MM frequency and I worked several of his friends. They told me they had been to his funeral, together with many others, and how much they missed him, and what a contribution he had made to the world of CW. I could hear other stations around the frequency, some in the Dutch language, and it was clear there was only one subject of conversation that day. The sad loss of our good friend Rinus.

He is survived by his wife Antje and by his children and grandchildren. I always thought it was rather nice that his call sign was made up from the initial letters of his children, Barbara, Frans, and Nel.

The funeral notice sent out by his family contained the following poem:

Some tune as you're listening and tuning around,
Do not be startled, if you hear a strange sound,
Like a quavering, ghostly, seventy three,
From the departed friend, who joined Silent Key.

There is something comforting about the telegraphers' farewell. When a good friend departs this world, "good-bye" is too final. "Seventy three" is so much better. It says the same thing but more besides. It says something too about Rinus's creation - the worldwide fraternity of Morsum Magnificat.

73 Rinus OB, 30, Tony.

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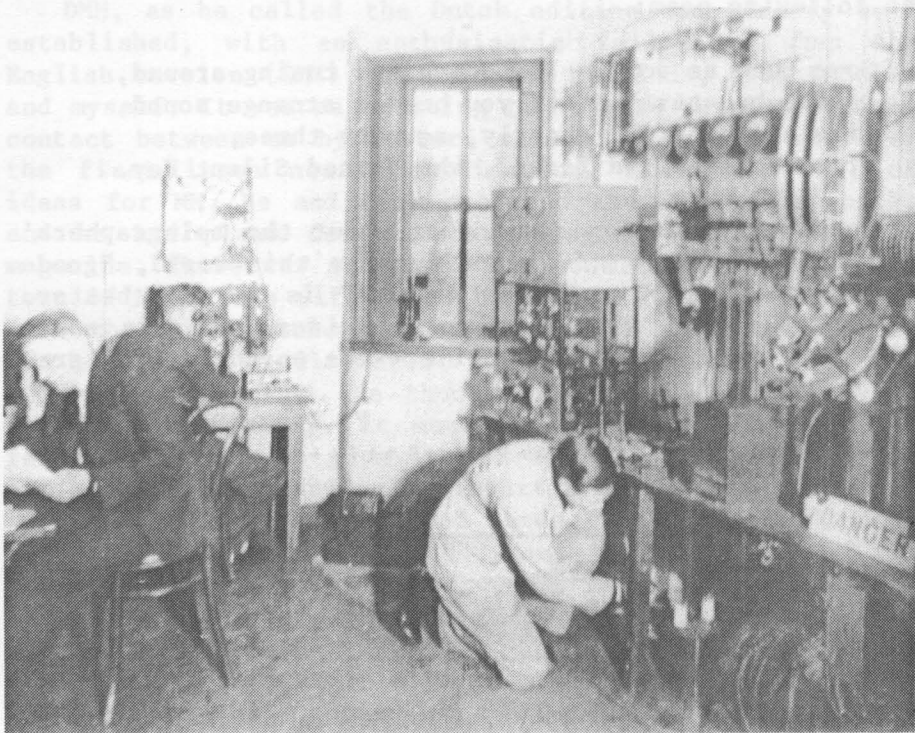
ANOTHER ERA!

by Ron Dow, G4LHK.

The photo shows the Liverpool Wireless School in 1937. It was run under the Principal Mr Wells, with the help of a Morse/PMG Regulations Instructor, whose name I forget, and who was killed in an air raid in WW2.

The Old Hands will recognize the gear. A Quench Gap transmitter being the main transmitter. One of the first valve transmitters is in the corner, and the receiver is the old MR4.

I sailed out of Soton on the Bibby Line troopship HMT Somersetshire on my first trip, in 1938. She was fitted with an R.C.C. Rotary Spark Transmitter as the main MW transmitter with a 352A receiver.



We also had one of the first, I suppose, SW valve transmitters for we kept sked with GKT, GYW, Malta, and other Navy stations. I have forgotten their callsigns.

I well remember, as a green 3rd R/O, having to read SUQ in French in the Suez Canal. Then there was the nightly horror, as a junior, of taking press with FYL on top of the signal.

Those were the days!

If there are any O.T.'s who remember the Liverpool Wireless School of that era, and the Bibby Line troopships, I would be happy to hear from them.

(Ron Dow, 78 Thorley Drive, Cheadle, Stoke-on-Trent, Staffs ST10 1SA, England)

CW in SOUTH AFRICA

I have had my call for 4 years. I only work CW but really need to work at pushing up my reading speed. It's easy to become lazy and only work the slower stations. Like many people, I suspect, I panic when working a fast station yet can read them working someone else.

There aren't a lot of local CW stations here, although we have our share of fast ops. Certainly there isn't the choice of locals to work that there is in Europe; 3.5 MHz is virtually unused, and when you hear the static you can understand why!

Keep up the good work with MM, and I hope to work you one evening on the DX bands. I regularly use the so-called "new" bands and think 18 MHz would do well to Europe if only others would also use it.

Peter Smith, ZS6FS.

(Thank you Peter. MM would be pleased to hear from other readers about the CW scene in their countries. Anything from a few notes to a full article will be welcome.)

RAILWAY MORSE

The reference to the double plate sounder by Dave Keen in MM11 takes me back a bit. 73 years ago I used to operate this instrument on a circuit between Chester and Llanfairfechan.

H. Russell Jones.

HIGH SPEED Telegraphy Championship

The 2nd IARU Region 1 HST Championships will be held at the DARC Interradio Exhibition at Hannover from 10th to 12th November 1989. Invitations have been sent to all Region 1 national societies to send teams to take part in this event. For the first time, as reported in MM9, there is also an Open Class competition for "all-comers".

Each national team may comprise three to six members, with no more than two "senior" males (over 18 years); two "senior" YL's (female over 18); one "junior" male (up to 18 yrs); and one "junior" YL (up to 18 years). Each team will have a teamleader, who may or may not be a competitor, a trainer and an interpreter, and the team may also be accompanied by an HST International Class Referee serving as a member of the International Jury.

The Open class competition has four categories.

a) "Youngsters", up to 15 years of age. b) "Juniors", up to 18 years. c) "Seniors", older than 18 years, and d) "Veterans", 46 years of age or more.

The tests

The Championships consist of two competitions.

The HIGH SPEED competition comprising four tests each of one minute duration:

- a) Reception of letter messages.
- b) Reception of figure messages.
- c) Transmission of letter messages.
- d) Transmission of figure messages.

Each reception message is sent at a progressively increased speed with competitors withdrawing as the speed becomes too high for them. Any form of writing or symbols may be used to record the messages but the formal entries must be re-copied onto an official form in capital letters.

The transmission messages are given to competitors a day in advance. Two letter messages and two figure messages are provided and a contestant may attempt each test twice by using the different messages, declaring the better attempt to be his/her entry for the test.

The OPEN CLASS competition comprises three tests:

- a) Reception, with copying, of mixed text messages (letters, figures, and punctuation marks) during a period of three minutes and reception, with copying, of open English text during a period of two minutes.
- b) Reception, with memory copying, of three open English text messages, each containing about one hundred characters.
- c) Transmission of mixed text messages (letters, figures and punctuation marks) during three minutes, and transmission of open English text during two minutes.

Competitors in the Open Class competition having more than five errors in a received message are required to resign. The use of a typewriter is allowed.

In the memory copying test competitors are allowed three minutes after each transmission to write down the text received.

In the Open Class only one transmission attempt is allowed, and the number of corrections is limited to 5.

Keys allowed

Straight keys or electronic keys (single or double paddle) are allowed. Electronic keys shall produce dots and dashes in the proportion 1:3. Electronic keys with additional adjustments or with memory systems, capable of transmitting messages automatically or semiautomatically, or keyboards, may not be used. Electronic keys used shall be powered from 220 volts AC and their output must be capable of activating a polarised electromagnetic relay.

Entering the Championships

There is a very short time-scale to allow national societies to select their teams, unless they have begun to make their arrangements in advance.

Anyone interested in taking part either in the team events or in the Open Class should contact their national society immediately.

The IARU Region 1 HST Working Group recommends that participating societies shall bear the travel expenses of their teams (but not contestants in the Open Class) to and from the Championships and the cost of accommodation and board during the Championships. To avoid any misunderstanding prospective team contestants should confirm this arrangement when making enquiries about the Championships.

Good luck!

The results of the 1st IARU Region 1 HST Championships, held in Moscow in 1983, are inside the back cover of MM9 so that prospective competitors can see the level of performance they need to achieve.

If any reader of Morsum Magnificat attends or takes part in the Championships please send a report to me as quickly as possible afterwards so that details of the results can be included in an early issue of MM.

Please note

The above information is a very brief summary of the recommended Rules for the HST Championships and of necessity many details have had to be condensed and others omitted. This summary should not be treated as an official description of the Championships. Anyone requiring the full rules for competitors, which may vary from those recommended, should apply for a copy from their national society. Prospective UK competitors should write to Colin Turner G3VTT, Hurley, Weaving Street, Maidstone, Kent, ME14 5JJ.

Tony Smith.

FILLERS WANTED

MM needs fillers, items of one or two lines, up to half a page, which are needed when a larger article does not fill its last page completely. Please send me anything you think will help, including your own reactions to particular articles or comments on today's Morse scene. Also cuttings, news items, humorous items, etc, from publications old and new.

Tony Smith.

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NOW YOU KNOW!

The end-of-message signal AR, is nothing but the American Morse letters FN, meaning "finish", and the sign-off SK is simply the landline 30, which meant half-past the hour, and thus the end of the operator's shift.

QST, July, 1917.

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COHERENT CW

If anyone is interested in, or has had experience of, coherent CW please contact B.J. Arnold G3RHI, 2 Sands Lane, Bratton, Westbury, Wilts BA13 4TL, England.

Antique Field Day



The Norwegian Radio Historical Association's Antique Field Day this year will be on Saturday 3rd June, 1989. Unfortunately this information was not received in time for inclusion in the last issue of MM.

The main station, as previously, will be the B2 set, produced in the UK during WW2 and dropped to the Norwegian resistance forces.

Arnfinn Manders, LA2ID, says "We would be very pleased to contact British stations during the field day to relive the atmosphere and excitement of the old days."

Schedule: 0700-0900 UTC: 3.513 MHz.

1000-1200 UTC 14.055 MHz.

"The frequencies are our nominal crystal frequencies. We are using actual vintage equipment so we will be relying on our crystals for frequency reference."

If anyone is interested in helping form a weekly antique net between Britain and Norway on 14.055 MHz please write direct to LA2ID at the following address:
Arnfinn M. Manders LA2ID, Magnus Bergsgt 2, 0266 Oslo 2, Norway.

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READERS' ADS

WANTED

Sounder, in working condition. John Davies G4ETQ, 12 St. John's Close, Worcester, WR3 7PT, England. Tel: 0905 58141.

Copy of any Candler system course. Also wanted, Mac Bug Key. George H. Robbins G3LNG, 35 Sunlight St., Anfield, Liverpool L6 4AG, England. Tel: 051 709 5431.

½-inch paper tape, for Morse inker which I am restoring. Any help or suggestions appreciated. Bob Bagwell G4HZV, 18, Culls Road, Normandy, Guildford GU3 2EP, England. Tel: 0483 811597.

(Deadline for readers' free ads in next issue, 14th July 1989, subject to space being available.)

EDDYSTONE

Bug

Key



EDDYSTONE "BUG" KEY No. 689.
Streamlined diecast housing, ripple black with
chrome relief. Speed fully adjustable. Short-
circuiting switch fitted in base, rubber feet
and mounting holes. No. 689 £3 17 6

Webb's Radio advert, 1948.

I have in my possession a bug key made by Eddystone. I have never seen one described in any magazine. Was it the only bug ever manufactured in Britain?

A friend, Ian Brown, bought this bug from a firm in England by mail order about 1947. Ian was stationed in Tripoli working the HF/DF station with IAL (International Aeradio Ltd). He then went to Salisbury, Rhodesia, where he worked for BOAC and eventually to South Africa.

He has kept the bug in its original cardboard box and used it to good effect on the Morse circuits of AFTN (Aeronautical Fixed Telecom Network).

Both base and cover are castings typical of the Eddystone receivers of the time, and the key is finished in black crackle paint. The damper consists of a rubber grommet fixed in an adjustable bracket. The key originally came with a spare dot spring and contact. It has three rubber feet, two in front and one at the back, with a small shorting switch along the side.

"EDDYSTONE" is printed around the knurled bolt which holds the top cover in place. Underneath is "Model 689" and "RD. No. 8539657". The paddle is nicely shaped but it has rather a sloppy feel, being heavy. Does anyone know if other British bugs were ever made? I think the authorities frowned on the use of bugs in the RN and the RAF, so how this one slipped through would be interesting.

I am still active on the Ham bands with my Speedex, after 35 years, so MM is of great interest to me.

73, Barrie E. Brokensha, ZS6AJY.

(There will be a detailed look at the Eddystone Bug Key by Colin Waters, G3TSS, in the next issue of MM. Ed.)

Just Rambling



Subscription renewals. For most subscribers (those with a "12" on their address label) it is time to renew your subscription for another year. A reminder is enclosed for those concerned. As most readers realise, MM is not a "commercial" publication. It made a small loss this year so regretfully I have to increase the subscription rate slightly. If possible, please renew well before the next issue to help me decide how many copies of MM13 to print.

The First EUCW Straight Key Day will be held on Saturday 24th June. EUCW is an association of independent European CW clubs dedicated to promoting encouraging and defending amateur radio CW activity. Full details are on page 20, and this event is well worth supporting.

Sadly, the Rev. Ray Hunting, G30C, died on 17th November, 1988. Ray had been a regular contributor to the English edition of Morsum Magnificat almost since it started and his stories of Morse operation over the years have been very well received.

One of my favourites was his story (in MM8) of his exhibit at the Manchester Radio Exhibition in 1938 - how many different and entertaining aspects of Morse interest can you get in one short article?

His wife, Lillian, has written to me, "Ray was never short of a good story to tell and we never tired of hearing them. His memory was so good and his oration so vivid, that we lived many of the events in our minds.

"His radio was a very important part of his life. I recall a cruise we took in 1968, out to Israel. The ship was sailing between Cyprus and Haifa and I was sitting on the deck within earshot of the radio room.

"Suddenly I said to friends Ray and I had made during the voyage, 'That is Ray on the Morse key'. 'Don't be silly, how can you possibly know that?' was the reply.

"Bets were placed, and we all strolled along to the radio room. There sat Ray with a grin from ear to ear, relaying ships' messages to Haifa. I wonder if any XYL can beat that for a holiday?"

There are still some of Ray's stories awaiting publication and they will appear in MM in due course. Tony.

DRILLS to build skill in "copying" behind



(from Candler et al)

by Wm. G. Pierpont, NØHFF.

A number of readers have expressed interest in Candler's advice, "Practice with the 100 commonest words until you can send and receive them without having to think how they are spelled," quoted by Bill Pierpont in his article "Walter Candler and the Candler System" (MM10). In this article, Bill sets out the 100 word list and explains how to use it.

1. Arrange the 100 commonest words in two columns, beginning with two-letter words, and progressing to the longest, always putting words with the same number of letters on each line. Then:-

a) with pencil or typewriter write down the first word in the first column, while simultaneously spelling out loud the parallel word in the second column.

Then reverse, writing down the 2nd col. word while spelling out the 1st col. word. You may wish to do this several times. When it is easy with the two-letter words go on to the longer ones.

b) repeat this exercise, but send the words instead of writing them down, simultaneously spelling out loud the other words. Keep at it until it is easy.

2. Have someone "read" easy printed matter to you by spelling out each word at a regular, even, rate and with a level tone of voice. Don't begin writing the first word until he starts the third, and keep two words behind. As this becomes easy, keep three, then up to four or five words behind.

3. Then, instead of spelling, listen to short easy sentences sent in code, and keep a uniform two words behind, gradually aiming to get 4-5 words behind. You may even wish to keep a whole clause behind.

Always begin these exercises slowly so you do not feel rushed or have any fear of losing out; then gradually increase your speed.

4. Practice with random groups of letters and/or numbers in the same way, beginning with groups of two, then three and on to groups of five.

Don't work very long at a time with any of these drills: five to ten minutes at first is plenty until it becomes easy.

The 100 most common English words of two or more letters..

| | | | | | |
|----|----|-----|-----|------|------|
| go | he | and | how | been | into |
| am | if | man | any | some | very |
| me | an | him | its | then | what |
| on | us | out | may | like | than |
| by | or | not | are | well | more |
| to | in | but | now | made | will |
| up | is | can | two | when | they |
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| no | we | say | her | your | from |
| of | do | was | had | work | must |
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| | | all | his | time | this |
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|-------|-------|-------|-------|
| great | about | first | their |
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before should little people.

This list is not quite identical with Candler's, nor is it "the" 100 most common words in any absolute sense. The type of English (here, normal written), the area of use (here, American) - non-scientific or otherwise specialised - or other factors would each produce a somewhat different list.

But the vital aspect is not exactly what words are on the list. Its purpose is to make us begin to think, using

the medium of the code, as we think in ordinary life. Fluency in code requires us to think as we normally do, in concepts and relationship words, free of conscious concern about spelling, whether in letters or the component dits and dahs.

When chatting with a dear OT friend (just turned 87 Christmas Day) - a man who earned his first ham ticket in 1917, and who has lived and breathed radio, commercial and ham, all his life - I tried to get an insight into his obvious skill with CW. Today as he listens and QSOs he says he is hardly conscious of the actual words used, but only the ideas expressed.

Not many seem to have achieved that stage, but that is the direction all of us should be headed to enjoy our code fully. It is the purpose of the word list to start us in that direction.

European CW Association

STRAIGHT KEY DAY - 24th June 1989

The Scandinavian CW Activity Group (SCAG) have re-designated their midsummer straight key day as "EUCW straight key day". This event will be held on Saturday 24th June, 1989 and will provide CW operators across Europe, including the UK, with an enjoyable activity day.

It is not a contest. The idea is to put aside your electronic keyer for the day and use a hand-key for relaxed QSOs! Just call CQ SKD between 3540 and 3570 kHz; 7020 and 7040 kHz; 14050 and 14070 kHz, or anywhere in the 10 MHz band. Participants making at least 5 QSOs with other straight key stations may give a vote for the best hand-style or "fist" worked, one for each of the three considered best. A "Straight Key Award" will be sent free of charge to every operator who receives at least two votes.

Although it is expected there will be good support from EUCW member clubs, ie, AGCW-DL; Benelux QRP; BTC; FISTS; G-QRP; HCC; HSC; INORC; SCAG; SHSC ; TOPS; UFT; and VHSC, all amateur CW operators are invited to join in to help make this "new" EUCW event a resounding success.

Please send logs and votes to the SKD Manager, Daniel Klintman SM7RXD, Adjunktsgatan 3D, S-214 56 Malmoe, Sweden, before July 18th, 1989.

It helps to know Morse ...

by Ken Rushall, G4HVB.



Where's the coast?

During the late '60s whilst a member of a small inland sailing club, based on a reservoir of only 17 acres, I accompanied five other members to charter the catamaran 'Iriquois' which was based at Teignmouth. We planned to spend a week holiday cruising in the English Channel, calling at Torquay, Dartmouth, and Salcombe.

The sum of our sailing experience consisted entirely in one member of our party having attended a short theoretical course on navigation. One day the sea mist came down and we experienced for the first time the horror of not being able to see the coast to establish our position.

However, we did have a seafix direction-finder on board and attempted to obtain bearings from radio beacons. As the identification of these beacons is transmitted in slow Morse it is possible to count the dots and dashes to recognise which beacon is being received. Eventually the mist cleared and we came to no harm. But I vowed to myself that I would not go cruising again until I could read the Morse code.

Learn with the amateurs!

After our holiday I learned Morse visually by making a card for each character which I could carry in my pocket. Then one day someone at work mentioned he was a radio amateur and suggested that if I really wanted to learn Morse I should join the local amateur radio club.

This I did and soon found myself being instructed by G3GG, a retired P.O. Radio Station Engineer, who had difficulty in reading newsprint but who could read Morse at 30 wpm. He soon had me up to 12 wpm for the radio amateurs' test.

Weekend to Cherbourg

The next part of my story took place in 1982, when a friend bought a Carter 30 yacht and invited five members of the local sailing club to join him for a weekend cruise from Itchenor to Cherbourg and back.

This time we had one experienced sea sailor and one navigation student in the crew. We sailed through the night and the navigator reported that from the log readings and course steered we should be within sight of land, but no land could be seen. The experienced sailor told me to use the DF to obtain a fix as I could now read Morse, and I soon had a bearing on Cherbourg which showed we were 40° off course.

My Morse reading skill then became even more useful because the battery of the direction finder was fading and the signal was readable for only about one minute; and each time it was used the readable period decreased. Eventually we reached Cherbourg safely, and after two hours rest we set off on the return voyage.

As we approached the English coast, my services were again called for and I again discovered that we were off course - heading for Brighton instead of the Nab. On a 13 hour crossing at constant speed the tidal drift would tend to cancel out, but as our speed varied we had a further 6 hours of drift to correct for.

I felt quite pleased that the resolve I had made some twelve years earlier had really been worthwhile and the rest of the crew were extremely grateful.

Postscript

I have since studied for the Royal Yachting Association/Department of Transport Yachtmasters Offshore Certificate which, under 'subjects to be tested', includes 'Ability to read Morse at very slow speeds'.

Specifically, the course syllabus requires:

1. The ability to recognise the Morse symbols for letters and numerals by light and sound, and to transmit Morse signals by light.
2. Knowledge of the use of urgent and important meanings of the single letter code.

The yachtsman's bible is Read's Nautical Almanac, and this states, 'All certificated ship's officers and candidates for the Yachtmasters Certificate must have passed an examination in signalling by flashing, using the Morse code'. It is therefore necessary to learn and practice sending and receiving by this method (using a signalling lamp) to be able to talk to other vessels up to several miles away by day and night.

Practice on your own

Some 40 people attended evening classes during the

winter for the two-year course covering the written examination, but we were left to our own devices to obtain the necessary level of practical proficiency.

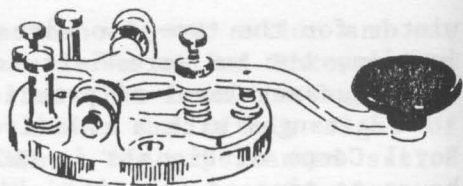
I arranged with a relative of mine, who served in the Royal Corps of Signals in WW2, to send messages from his house to mine on opposite sides of a valley. We made contact at the first attempt although his home-devised lamp lit up his neighbour's garden until he fitted a collinator, which then meant he had to line-up his signal to me.



Transition easy

I was fortunate to find an ex-army lamp 'signalling, daylight, shortrange, lightweight', in our local surplus store, which has proved to be excellent. My signaller made sure that I read all the characters he sent by using several languages during his transmissions. I found the transition to reading light, after being used to reading sound, quite easy as the light seems to be automatically transformed into sound in my mind. I hope that this will be of some interest to the readers of *Morsum Magnificat*. The use of Morse code is very definitely not on the way out in this area of activity!

MEET THE CHAMPION



In 1942 Harry Turner became the world champion hand key operator. His record of 35 w.p.m. using International Morse has never been beaten and his feat has been noted in every issue of the Guinness Book of Records since 1981.

Harry, now living in Alton, Illinois, was born in the small town of Lowder, in the same State. His two brothers worked on the railroad, and by the time he was ten years old he had learned American Morse.

He went to work on the railroad himself at the age of 14, working "extra" (relief telegrapher) up and down the line until 1934 when he resigned. "I never stayed in one job very long as I didn't want a steady position, being young. I gained a lot of experience on the various jobs and liked it better that way."

In the Pacific

In 1936 Harry joined the U.S. Navy and was discharged in 1940. The following year he joined the army and saw service as a M/Sergeant with his radio section in the Pacific war zone, including Guadalcanal, the Solomon Islands and the Phillipines.

An article in 73 Magazine, Jan. 1976, by Harrison Church, WOKXP, describes one of Harry's exploits in the Solomons. On one particular island the Americans were at one end and the Japanese the other, while "in the vicinity lived an assortment of headhunters and a missionary."

The Americans wanted to call in their bombers to "soften up" the enemy but had trouble getting through on the radio because of jamming. Harry went on the air with a Millen "Variarm", a variable frequency oscillator with its variable function controlled by a movable rod extending from the unit. Attaching an antenna directly to the

oscillator he keyed at high speed, gradually pulling the Variarm down to change the frequency of his output.

The Japanese were following and jamming this seemingly unstable transmission and when Harry reached the limit of the oscillator's range the operator next to him called for help on the original frequency....

Recalling this incident for MM, Harry says "When I fooled the Japs I was using American Morse as I didn't think they knew that code - and it turned out that they didn't!"

World record

Harry attended the Signal Corps School, Camp Crowder, Missouri, in October/November 1942. "Having known both codes and worked with them, I graduated in one month, however, the army did not teach me any of it."

November 9th, 1942, was the big day. Harry describes what happened. "The day I set this record General Ben Lear, Sixth Army Commander, toured the School and was present while I was sending the code at 35 words per minute. One was also required to copy back what one sent.... the machine used for sending and recording on tape was an army machine and would only record at 35 words per minute. It could have been that I sent faster than what was recorded.... also the tape was inked and run back through a receiving machine, and one copied the code back from that machine.... the machines were accurate. I sent for the full five minutes and then copied it all back, no mistakes. I have a certificate from the U.S. War Department regarding this record.

"I really did not try for a record. I was just putting on a demonstration for the General. It made him feel good to think the School was turning out such fast operators, but the top speed of the operators that the School really did turn out was not over 20 words per minute sending and receiving.... they were taught to print. I copied my test in longhand. That was what we had to do on the railroad, everything copied on a typewriter or in longhand."

Still active

Harry obtained his ham call, W9YZE in 1936 and at 82 is still active on the amateur bands with CW. At one time he was Editor/Secretary/Treasurer of the QRP Amateur Radio Club International. Today he is Secretary/Treasurer of the Alton Ill, Chapter of the Morse Telegraph Club. He still uses International code on the amateur bands but he

has not forgotten American Morse.

He participates in the annual MTC celebration of Samuel F.B. Morse's birthday which for one day a year recreates the original wire telegraph system across the U.S. and Canada. He is controller, on 7144 kHz, of an American Morse net, mainly for novices learning the code, on Mondays, Wednesdays, and Fridays. Like many other MTC members who still use the "mother tongue" he uses a sounder for reception, activated by a home-built converter.

As reported in the last issue of MM, the BBC "Record Breakers" programme has issued a challenge for someone to try to break Harry's International Morse record. The widespread use of electronic keyers and semi-automatic bugs for fast work has long destroyed the old competitive spirit in this field, and it seems unlikely that there are any high speed hand key operators about nowadays who could attempt it.

Harry would like someone to try but as he says, "they would have to have a lot of practice." Who knows, there might be someone out there - somewhere! T.S.



Harry Turner taking part in the MTC international wire hook-up, April 29th, 1978.

PHOTO: courtesy Dots and Dashes, journal of the Morse Telegraph Club.

THE



DOUBLE SPEED KEY

A cure for three forms of "operator's paralysis"

Fairly early in the history of Morse telegraphy, the operator's scourge - "telegrapher's palsy" or "glass arm", became recognised as an occupational disease. Obviously the result of overwork, it was most likely to occur where there was great pressure to move large amounts of matter in short periods of time.

It is often described as having two components or symptoms; an intolerable pain in the forearm and an inability to perform the rapid co-ordinated movements of sending Morse code. In particular, the sufferer will make in excess of the number of dots required and/or will be unable to produce properly formed dots and dashes in appropriate sequence, often termed "loss of grip".

One development in response to this work hazard was the introduction of sending machines, or "keys", which utilised horizontal rather than vertical manipulation of the transmitting lever by the operator. The "Double Speed Key" shown in MM2, Winter 1986, as Key Nr 13, was introduced by a major manufacturer, the J.H. Bunnell Company, in 1888, representing one of several types of this general kind of key.

Their advertisements claimed that "speed and style" would soon be recovered when using their key, and operator's paralysis cured. It may come as a surprise to radio operators who tend to recognise the Double Speed Key as a "sideswiper" or even a "Cootie key", to learn this aspect of the key's vintage and history.

Second form of paralysis

For the radio amateur of the early 20th century, whose enthusiasm often outreached the resources of his pocketbook, a second form of paralysis - or inability to transmit - was a common occupational hazard; he couldn't afford a "store-bought" instrument.

The answer to the problem was again the prototypical Double Speed Key. It was an easy machine to emulate, to fabricate in the basement or kitchen workshop - an old hacksaw blade, some friction tape - easy to operate, and away went the victim of paralysis in the business of making Morse code once more.

On the high seas

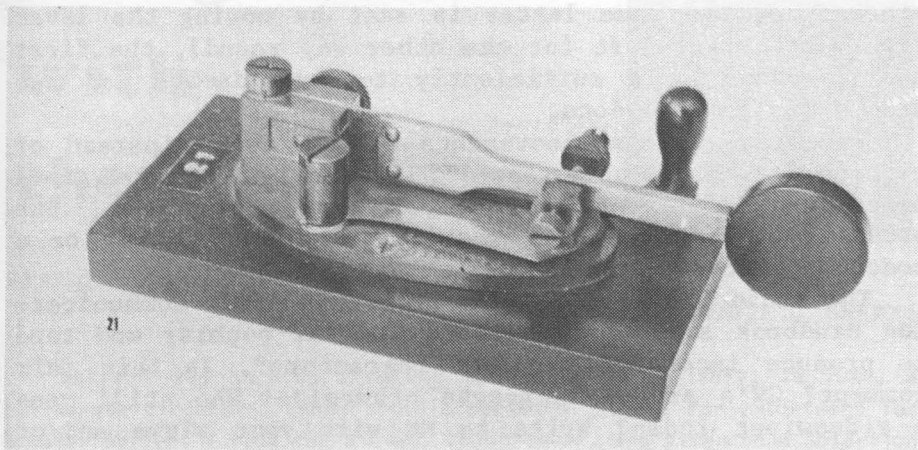
The "sideswiper" does not seem to have had much acceptance among landwire Morse men - as the ads were to state, it was "condemned by every operator". But it was more widely used among the sea-going telegraphers, the "sparks" on the high seas. Anyone with an ear for Morse can tune the 80 and 40 metre bands, or other segments of the radio spectrum, and hear this type of key being used today with quite commendable (and truly incredible) skill by Russian radiomen, and others on ocean-going vessels.

If we consider why this key had such appeal for the maritime operators it can be conjectured that a good many of these early folk were ex-landwire Morse telegraphers, who would have been using a Vibroplex. Now the Vibroplex, following the horizontal motion concept, plus other remarkable innovations, originated to assist the sufferer of telegrapher's cramp, notably the inventor himself, Horace G. Martin. By the time of the appearance of the sea-going "sparks", however, most first class landwire operators were using the Vibroplex "bug" routinely. But the Vibroplex has a defect which limits its suitability for sea duty - it doesn't have "sea legs".

Third form of paralysis

The vibrating pendulum will "take off" by its own free will. It may even stall completely, "paralysed", regardless of sparks' frantic slapping of its paddle and knob, depending instead for control of its motion upon the ship's pitch and roll in rough seas. No-one without salt in their socks can appreciate this fully. If you have ever used a "mill" in heavy seas you will know that there are times when two-handed touch typing won't get the job done. But typing with one finger will - because you are using the other hand to move the carriage, the typewriter's spring return not being adequate to the task of working against the force of the sea on the vessel. Hence, another form of "operator's paralysis" was overcome by use of the Double Speed Key, which has good sea legs.

Bunnell Double Speed Key (Collection of John Elwood, W7GAQ). Reproduced from MM2. Photo: Ray Nelligan.



New production run

Some years ago, the Bunnell firm sold out and left New York City, where it had been located since at least 1879. Before that event, some ambitious gentlemen of the area persuaded company officials to have another production run of the Double Speed Key, over 50 years since their manufacture had ceased.

The firm still had the original moulds, jigs and necessary facilities to produce the key in practically its original form. The original model looked just like the photograph in this journal, except the earlier model's base was a hollow oval with the centre left out.

As a result, you could, as I did, buy a double speed key in 1977 for \$55 - and cure your paralysis.

"GW"

ooo00ooo

MM footnote

Veteran operators will know about the sideswiper, but many of today's operators may be unfamiliar with the ingenious action of this supremely simple device. It is not, as some believe, a single paddle for activating an electronic keyer but a Morse hand key in its own right.

The horizontal arm has contacts on both sides and operation involves the use of each side alternately with dots and dashes being sent from either side.

Think of sending the letter Z with a conventional hand key. This requires four up-and-down movements of the key, a total of eight movements of the key lever. With a sideswiper, the same letter is sent by moving the lever right-left-right-left (or the other way round), the first two pressures held sufficiently to make dashes and the second two to make dots.

This is just four movements of the lever instead of eight - hence "double speed". Obviously it takes some practice to get used to the keying arrangement, but probably no more than is required to master a bug or a modern electronic keyer.

The Radio Society of Great Britain's Radio Communication Handbook says, "sideswipers are not popular and tend to produce incorrectly spaced characters". Is this fair comment? GW's article suggests otherwise! Who still uses a sideswiper today? Write to MM with your views and/or experiences of this interesting and historic type of key.

WORLD QRP DAY

June 17th each year is designated by the International Amateur Radio Union as World QRP Day. It is not a contest. The idea is simply that amateur stations should try using low power, no matter what power levels they normally use.

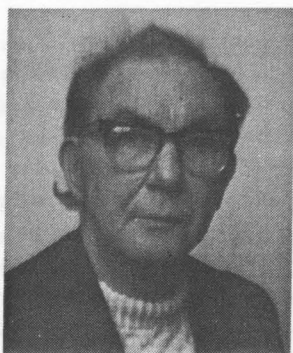
The majority of QRP enthusiasts use CW and some remarkable results have been achieved. If you have never used QRP, try reducing power on 17th June to the minimum necessary to maintain reasonable communication. You may be pleasantly surprised - and you may be converted to a whole new way of amateur radio life!

LATENT APTITUDE?

I may not quite have reached the tenacity of G4XSY ("Perseverance", MM10, p.29), but I passed a 'Morse Aptitude' test in the R.A.F. in 1950, and passed the Amateur Morse test in 1980!

Bill Young, G4KUU.

In Yugoslavia with the B2



PART 1

by LEN KEY, M.B.E., GØFQX.

While I was serving with the RAF in Taranto, Italy, in 1944, a notice was circulated among signals personnel asking for volunteers for Special Duties. I took the plunge, volunteered, and attended a Selection Board. The officers on the Board fired a number of questions at me, "why have you volunteered?", etc. Eventually I was dismissed, and thought that was the end of the matter.

However, I had obviously given the right answers because I soon found myself aboard RAF transport bound for Brindisi. Arriving there I met other volunteers and speculation was rife as to what was meant by "Special Duties". As a precaution we were told not to mention to anyone why we were there.

Next day we moved a short way up the coast to a secluded training camp just outside Bari. There we were taught various skills, including the most important one of all as far as the radio operators were concerned - how to operate the B2. It came as quite a shock when we first set eyes on this equipment.

Ingenious

Having been used to the R1082, T1083, and R1084, all rather large, the compactness of the B2 set was ingenious, with transmitter, receiver, power pack and spares box all fitting into one medium size suitcase.

We were instructed on using the equipment with both mains and battery, the emphasis being on battery operation. Lectures were also given on accumulators and charging, how to use and maintain the petrol-driven generator, the siting of antennas, and so on.

The handbook was a gold mine of information. Not only did it explain how to operate and maintain the equipment, but a whole chapter was devoted to different types of antenna which could be used, both indoors and out. Circuit diagrams of the transmitter, receiver and power pack were also included, together with layouts showing the location of all components.

No plain language

Training continued with encoding and decoding, changing plain language into code and vice-versa, using a one-time pad for each function.

It was a laborious task, especially when sending weather reports, when wind speeds had to be repeated in case of corruptions. In receiving, the number of aircraft, ETA's and any other important information also had to be repeated. We were told that plain language was never to be used except in an extreme emergency.

Finally, it was explained how contact would be made with Base. A plan, using duplex working, was shown to us. Opposite each frequency was a short indicator group, and frequency changing was accomplished by sending QSY followed by the appropriate indicator. If special QRX's were requested these would be encoded at the end of the message, otherwise set times would be used in accordance with the plan. It is difficult for me to remember all the details after such a long time, but that was the basic arrangement.

When training was completed, we went back to Brindisi to await further instructions. There had been an atmosphere of haste in the training camp so it came as no surprise when we were told we would be leaving shortly.

Destination Yugoslavia

We were going to Yugoslavia, the whole unit being known as B.A.T.S. (Balkan Air Terminal Service). Originally, nine parties were formed, but only five became operational. Some parties had already gone, in May and June, and now, in July, two more were to go, including ourselves.

Ours was known as No. 7 B.A.T.S. party, and consisted of one officer, a sergeant, two wireless operators and a medic. The officer, Sqdn. Ldr. Quenet (Hostilities Only) was unassuming but very efficient and came from Lima, Peru. His family, I believe, owned a very large cattle ranch in that country.

The sergeant, quiet spoken but also very efficient was, in peacetime, a professional pianist and organist at Durham cathedral. My fellow operator was a Scot, but I can't remember where the medic came from. The latter, however, did a great job in looking after me when I had a very severe dose of flu, and he also looked after the local people where we were. I was the only regular among them, an ex-boy entrant from Cranwell (1939/40).

After our briefing we were each issued with a 9mm pistol, holster, spare ammunition, compass, a silk map of Yugoslavia, commando knife, and a tin of emergency rations. No signature was required; all the items, we were told, were "written off".

Final check

The final briefing came from the C.O., who told us to check

everything before departure. The B2 was "fired up" on all bands, fundamental and harmonic crystals tested and the spares box checked. Meanwhile, the C.O. and sergeant supervised the packing and crating of a long list of equipment by stores personnel. Time went very quickly and within 48 hours we were on our way.

We sat huddled among the stores in the belly of a DC3 Dakota to keep warm; there were no seats. Engines started up, and after a few minutes stopped. The trip had been cancelled owing to bad weather ahead. The following night we flew for an hour and a half before the recall came. The next night, third time lucky, we were on our way. It was 14th July, two days after my 22nd birthday. It was freezing cold.

Our destination was a small field outside the village of Vocin, about 20 miles from the Hungarian border and some 75 miles from Zagreb. The flight was uneventful and it was a relief to see the lights laid out on the landing strip. There was quite a reception committee waiting for us, and the stores and equipment were quickly unloaded by partisans. My co-operator and I held on tightly to the B2, the plan and the codes.

Derelict farm

The landing lights were quickly extinguished and we followed the partisans in single file through some woods across a small river to what looked like a derelict farm about half a mile from the landing strip. It was very dark and we couldn't see much but a meal of thick soup and dark bread had been laid on.

Afterwards we were led to a barn-like structure and given palliases of rough sackings and straw which were to be our beds for the night. Someone was sleeping in the corner so I flopped down alongside, half-undressed, and was instantly asleep after a long and tiring day. Imagine my surprise when I awoke next morning to find a smiling female face beside me. She was already dressed and crept out leaving us alone.

When we were settled in, a carpenter made crude but well-constructed two-tiered bunks for all of us. Tables and chairs were either made or obtained and we set up a B2 operating and coding position.

After a frugal breakfast we had a look at our surroundings. To the north were the woods we had walked through the night before, beyond that fields and some hills. To the south a large orchard on rising ground; faintly in the distance, another farm. Behind that, a line of hills, not too high so as to cause communication problems, extending for a few miles in an east-westerly direction. South east was the Papuk range of mountains, rising to 950 metres in places.

Commissar

The farm consisted of the barn we had slept in, which was to be our "home" for the next few months, and a few out-buildings. One of these was occupied by the political commissar (partisan liaison officer and

guard commander). There was a hut for stores and fuel, a cookhouse-cum-kitchen-cum-dining room and one or two smaller buildings.

Two things attracted our attention, firstly, a number of civilians and partisans were walking about in bare feet and, secondly, there were no animals in the fields. Later it was explained that enemy aircraft machine-gunned anyone or anything caught out in the open.

Meanwhile, a British army officer (a Captain I think) had arrived. He was the British Liaison Officer who had his own communication network in the woods three miles away. We never met his operator but he was probably using the same equipment as us. Our C.O. was in consultation with the political commissar, with the British Liaison Officer acting as interpreter.

Later, we received a pep-talk from our C.O.. We were not to wander away from the farmhouse at night because, although we were in a relatively safe area, the outskirts of the farm were guarded by partisans. The guards were trigger happy and always had one round up the spout with the safety catch off. They only shouted their equivalent of "Halt, who goes there?" once! We learned the local equivalent of "friend" very quickly!

No fraternising

"No fraternisation with either local females or the partisan girls", said the C.O. looking directly at the youngest members of the party. The sergeant and the medic were both happily married men. Sexual relations among the partisans were banned and when anyone broke that ban one of them would be posted to a different unit. Persistent offenders were shot.

The C.O.'s pep-talk was taken very seriously. He added that for the duration of our stay we could dispense with the "Sir" and with saluting except when the British Liaison Officer paid us a visit. The party were to live and work very closely together for a long time so it made good sense.

The petrol driven generator, batteries and associated equipment were unpacked. There was no electricity on site and transport, if available, was by horse and cart. The batteries were filled with acid of the correct specific gravity and left to "soak". The next task was to put up an antenna.

Nothing fancy

A tall tree, some distance from the barn, seemed ideal. Using a compass, we estimated that the antenna would be approximately broad-side on to our base in Italy if it ran from the tree to the top of the barn. Putting up masts and a fancy antenna was out of the question, being too easily recognisable from the air. We used about ten feet of wire soldered to a pipe stuck in the ground for an earth. It wasn't very satisfactory but was the best we could do in the circumstances.

The generator was filled-up and tested, the batteries were topped-up after about 8 hours "soak" and two were put on charge, with the S.G. being checked periodically until they were fully charged.

Next day we called Base (334 Wing Brindisi) at a set time, asking them to make a long call. For anyone unfamiliar with the B2, the receiver has a wave band switch for three bands, plus a BFO for CW. The receiver dial is calibrated 0 to 180 and to set the dial to the correct frequency the operator refers to a chart or graph at the back of the handbook which relates the required frequency to a particular dial setting. Hence the reason for the long initial call.

Wet string

We made contact and received QSA 4 QRK 4, which was quite good considering that we were putting out about 18 watts into "a piece of wet string" over 400 miles. A signal, already encoded, was then transmitted giving information on our living conditions and the topographical features of the area. We then closed down until the next set time on the plan.

On 20th July, the air-strip was attacked by enemy forces, who were beaten off. We were not involved. Our job was to send regular weather reports. We reported if the air-strip was serviceable or not, and we operated and maintained the strip. We also received signals stating how many aircraft were landing or dropping; ETA's; recognition signals, etc. Political, and state-of-play from a military viewpoint, including orders for arms, medical supplies, etc, were sent on the other net.

Our C.O. and sergeant organised batches of partisans to look after the flare-path so that it could be extinguished immediately if necessary. Others were trained to off-load an aircraft quickly and efficiently; and to load wounded, evacuees, and sometimes children.

Hostile intruders

That same night, 20th July, hostile aircraft were heard circling the strip so a signal was sent to HQ Balkan Air Force (BARI) and 334 Wing Brindisi, informing them of enemy activity in the area, and that we would warn our own aircraft of the presence of intruders.

The following night - disaster. We were expecting a few aircraft; one had landed and taken off and another was approaching at about 1500 feet. A further aircraft was heard and as the C.O. fired a red Verey light there was a short burst of machine-gun fire and the DC3 approaching burst into flames and crashed. The only survivor was the American co-pilot, Lt. Largent Jnr, from Burbank Calif., who suffered a sprained ankle and was later treated by our medic. He was very confused and had no idea how he escaped from the burning aircraft. The farmhouse was in sombre mood that night.

(Part 2 of Len Key's story will be in the next issue of MM)



ETM8C KEYER

I had the opportunity to "treat myself" to a keyer so I decided to get a good one. I received lots of advice, with most people thoroughly recommending the one they already had! Totally confused, I eventually chose the Samson ETM8C.

This self-contained keyer, with well made built-in paddles, has eight memories, each capable of holding about 50 Morse characters, including a repeat/tune function. It has self-completing dots and dashes and there is a switchable dot and dash memory.

Idling current is typically 1 uA. Keying with relay output uses 20 mA while transistor output (internally switchable) uses only 3 mA. Memory operation consumes another 6 mA. Power is from 4 x AA batteries located in an internal battery holder. Headphone sidetone is provided from two pins of the DIN plug/socket used to connect the keyer to the transmitter, although I would have preferred a separate socket for the sidetone.

The keyer is well-constructed, both mechanically and electronically. All components, controls and paddles, are mounted on a single double-sided pcb, and all ICs are plugged into high quality sockets "for easy servicing".

There is a keying range of 8 - 50 wpm. The speed control is rather coarse but changing the value of a single resistor will reduce the top speed, making the control easier to use for those not yet into high-speed!

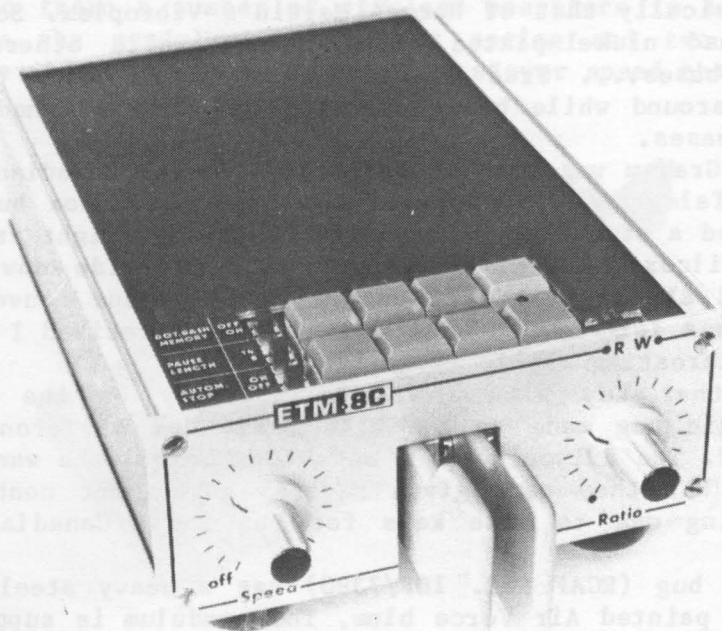
There is no indication of speed setting on the front control panel although many operators could benefit from having an indication of what their keyer's set speed actually is. One has only to listen to some in use on the air to realise that they have been set too fast by the operators using them!

There is a front panel weight control which according to the instructions "allows a modification of the dash-dot-pause ratio". To my ears, there is little if any change in the sound of the code when this control is altered, but perhaps this will become more significant at the high speeds I have not yet attained!

I was particularly interested to see if this keyer is affected by r.f. as the several home-brew keyers I have made have all suffered from this problem in my shack. On only one band did I experience any trouble, when the keying transistor became permanently switched "on" at quite low power. Changing to relay output completely overcame the problem. I later found a fault in my antenna system and the keyer now works perfectly on all bands.

In operation the keyer is pleasant to use and the memories are very useful for putting out CQ's on a quiet band while doing something else in the shack! It is so substantial and well made that I feel it will serve me well for years, and become increasingly valued as I become more expert in using it.

It is, however, rather expensive (£139.00 plus p&p, 1988 price) and it is worth pointing out that the Samson range includes less costly models albeit with fewer features. The ETM-1C, for instance (£34.00 plus p&p, in 1988) has a switchable dot-dash memory and separate output transistors for either positive or negative polarity keying - although it does require a separate external paddle. For more information write to Frank Watts G5BM, Woodland View, Birches Lane, Newent, Glos GL18 1DN. T.S.



Upside down....



MURRAY D. WILLER, VE3FRX.

In MM3, Don deNeuf mentions an old Vibroplex with long legs that can be operated upside down. Well, there was an old telegraph operator, Fred A. Wilcox, who was with the Canadian National Telegraph for many years. Fred had a machine shop at home and made a number of bugs which he sold to his telegraph friends during the 1920's.

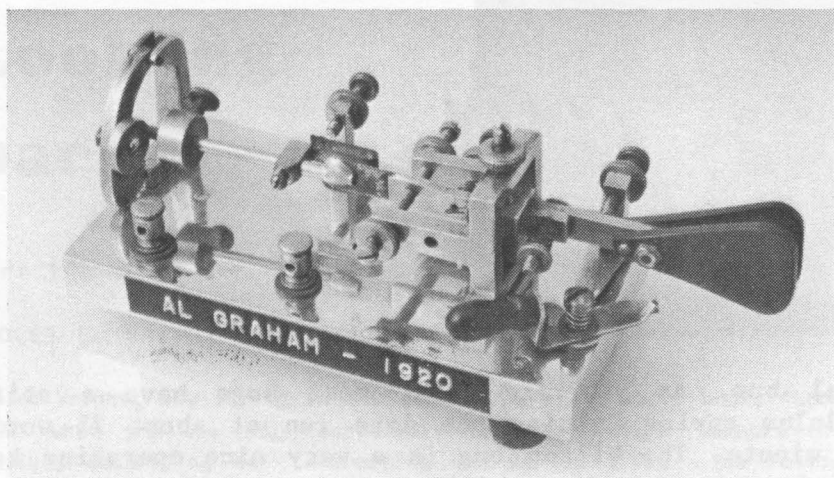
Fred did not have a full set of fixtures and as a result his bugs did differ in detail, although the design was basically that of Horace Martin's Vibroplex. Some of them had nickel-plated brass bases, while others had steel bases.... Fred wanted to make sure they didn't slide around while being operated, so they all had very heavy bases.

Al Graham was also an operator with the Canadian National Telegraph Company, and was using a Wilcox bug. He suffered a stroke and was unable to use his right arm. So Fred Wilcox took Al's bug, turned it upside down and mounted all the hardware on the bottom, thus converting it into a left-handed bug. When Al Graham retired I added his interesting key to my collection.

Another key with the same facility is the semi-automatic bug made by the Wilson Mfg Co. of Toronto in 1940-42. The Wilson company made toys before the war, but during WW2 they were given several government contracts including one to make keys for the Royal Canadian Air Force.

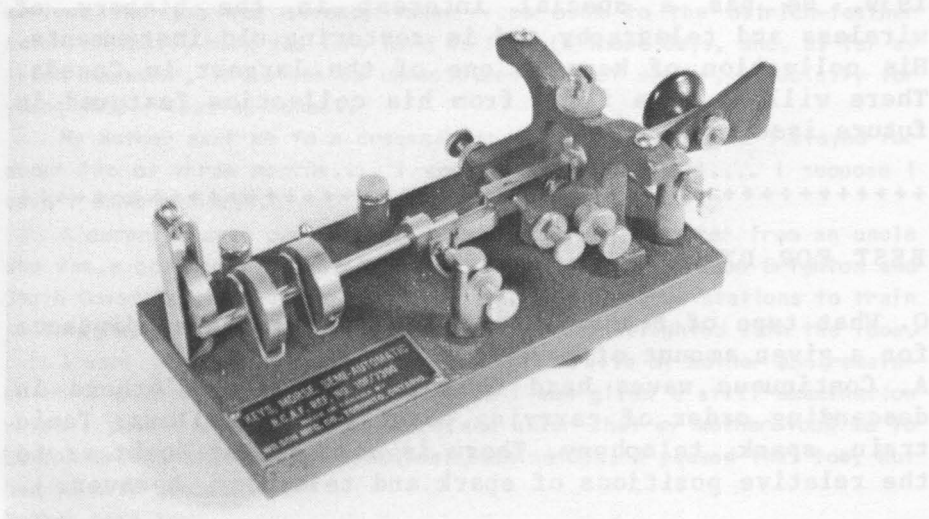
The bug (RCAF Ref. 10F/7390) has a heavy steel base and is painted Air Force blue. The pendulum is supported by a large T-bar which has large wings, and at the top of

Al Graham's left-handed "Fred Wilcox" bug (1920's)



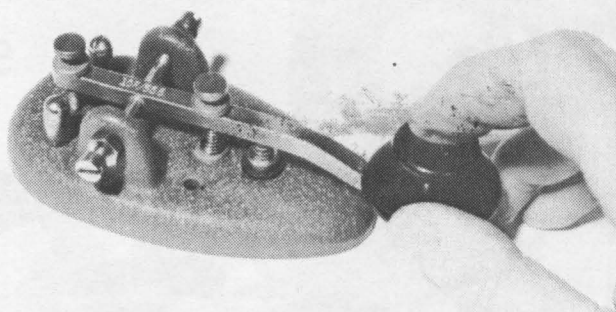
each wing is a bolt. The damper support also has a bolt at the top. These three bolts allow the key to be mounted upside down, converting it into a left-handed bug. The key can also be turned on its side and used as a standard hand key.

The RCAF must have realised that they were going to have to train a number of wireless operators in a hurry because the pendulum has a soft spring and two heavy weights which permit it to run at a slower speed than the



Wilson Mfg Co's RCAF reversible bug (1940-42).

Wilson Mfg Co's RCAF hand key (1940-42)



usual bug. As you may know, most bugs have a stiff pendulum spring, making the dots run at about 25 words per minute. The Wilson bug is a very nice operating key with its slow speed capability.

As well as the bug, the Wilson Co. also made a hand key during 1940-42. These have a tear-drop shaped heavy steel base, again painted Air Force blue. They have a nice feeling when being operated. I guess by 1940 the services must have had some experience in drawing up specifications for keys.

ooo00ooo

(Murray Willer has been a licensed radio amateur since 1939. He has a special interest in the history of wireless and telegraphy and in restoring old instruments. His collection of keys is one of the largest in Canada. There will be more items from his collection featured in future issues of MM.)

+++++

BEST FOR DX

Q. What type of transmission covers the greatest distance for a given amount of power?

A. Continuous waves head the list, while the others in descending order of carrying power are as follows: Tonic train, spark, telephony. There is some slight doubt as to the relative positions of spark and telephony, however.

("500 Wireless Questions Answered", 1924.)

Looking back



Part 1

VIOLET E. WRIGHT (nee Clifford).

Violet Wright, now living in New Zealand, wrote a short book, 'Looking Back' when she was 83, "especially for the younger members of my family", describing her interesting and varied life. The following extracts from her book relate to her career as a Morse telegrapher, beginning as the 16 year old Violet seeks her first job after leaving school.

++++
Few Jobs available

"At this time the First World War was raging and I had to try and find a job.... I used to look at the newspaper advertisements but all I could find was: 'WANTED. Ostrich feather curlers'! I did go after one job where a girl was wanted in a book shop, so round I went with a new pair of white cotton gloves, costing sixpence three-farthings! When I arrived the job was already taken - so back to the ostrich-feather advertisements. Work was very hard to find in those days, and, as far as I can remember, there was no unemployment relief either, especially for young people leaving school.

My mother sent me to a dressmaking establishment where I stayed for about two or three months.... I wasn't very successful.... I suppose I wasn't expert enough.

A surprise came one morning when I received a letter from an uncle who was a booking clerk at Brighton Station on the London Brighton and South Coast Railway. Young ladies were needed at large stations to train as telegraphists. He told me to apply and I was delighted with the idea.

I went for interview to Victoria Station with my mother who remained on a seat while I was interviewed. I was given a stiff examination which I passed with flying colours and after that my mother took me to London Bridge Station for a medical examination. I passed that too, but had to have glasses.

Mother came too

On the morning I had to present myself at the Post & Telegraph

Office on Victoria Station to begin my training, my mother came to Victoria with me and sat on a seat waiting for me to reappear. The office was upstairs and was full of men sending and receiving telegraph messages. My mother, who was very particular with me, gave me instructions to come out immediately if I didn't like it! I peeped out of the window once and I can see her now waiting patiently in case I did come out - which of course I didn't!



The first thing I had to learn was the Morse code. I was given six months intensive training, after which I emerged as a fully-trained expert telegraphist. I loved it and, for the record, I was the first woman telegraphist to be appointed on the London Brighton & South Coast Railway.

An Inspector came along once a week to test us - there were two of us at first but others came along as time went by. It's strange, but on that first day when I saw those men sending and receiving Morse on the 'sunder', I thought I should never be able to do that. Then I found I could send but not read. Suddenly, it all came to me and I have never forgotten the excellent grounding I received. I also learnt to send and receive Morse on the "single needle" which I thought was much simpler. Every station on the railway had an instrument and each one was contacted every morning. There was much excitement and running about to

the signal boxes when a 'D.M.' (Danger Message) was received. All lines had to be cleared on all the telegraph instruments.

Split duty

I was nearly 17 when I was appointed and I had to undertake 'split' duty; that is, morning work, home for a few hours in the afternoon and back in the evening. Of course in 1917 it was wartime and while I was on duty at Victoria Station there was a very bad air raid.... a bomb dropped just outside the station on the railway bridge, just missing the gas works, destroying the bridge and stopping all trains in and out of Victoria Station.

Well, I admit I was terrified! I had no idea how I was to get home so I went to the Booking Office to ask if anyone was going my way - five miles to Wandsworth Common. One man offered to let me walk with him. There were several bridges over the Thames that we could take: Battersea, Chelsea and Albert. We were halfway across Battersea Bridge and who do you think we met? My father, who had heard the raid and was coming to find me. A coincidence - or the answer to my prayers?

After this adventure, my father wrote to the Superintendent of the railway and said that if I could not be put on permanent single daytime duties he would have to insist that I resign. I was immediately put on midday duty for the rest of the war....

Can't be spared!

With the war finished and the 'Armistice' declared on November 11, 1918, I was now 18 and wanted to stretch my wings. I wrote to the Central Telegraph Office for an interview and was asked to go to the 'Schoolroom' at the C.T.O.... I was tested and told that I had passed the test and when could I start?

I gave a date and was told I could begin as soon as my references were received. To my surprise, I heard from the Central Telegraph authorities to say that they had received a reply from the Railway saying, 'The Railway could not spare my services!' This was indeed a setback!

Meanwhile, a young man who was also a telegraphist with the Exchange Company (now known as Extel), told me to resign first and then apply to the Exchange Telegraph Company. On looking back, this seems a bit mean as the Railway had given me such an excellent training but at the time I never thought of it like that.

I went up to the City for an interview and test. Fortunately, I passed and so became a member of the firm for whom I worked for so many years.....

(In the next issue Violet Wright describes her work for Extel; where she turned her back on the Prince of Wales, became the first woman to cross the floor of the London Stock Exchange, and heard the first UK/New Zealand two-way amateur radio contact between Z-4AA and G2SZ in 1924.)

From Rattle to Radio

by John Bunker, pub. K.A.F. Brewin Books, 1988, £9.95.

This book describes the communications systems used by London's Metropolitan Police over the years. It goes back to the days when a policeman on the beat carried a rattle to attract the attention of colleagues when he needed assistance. It covers the earliest police use of the electric telegraph, and goes on to the first use of wireless in patrol cars, using Morse code, right up to the communications systems of the present day.

It is not a Morse history as such because it covers all aspects of police communications, but Morse has an important place in the story and is well covered. There are accounts of early cases where the police used the public telegraph system to assist with their enquiries, and details of the Metropolitan Police's own internal telegraph system introduced in 1867 - not the Morse system but Wheatstone's ABC.

The role of wireless telegraphy in the capture of the murderer Crippen in 1910 demonstrated the importance of communications in police work. It was not until the early 1920's, however, that an experimental transmitter was installed at New Scotland Yard for communication with a radio van, and this used telephony. Much repetition of names and figures was found to be necessary, resulting in slow transmission and reception, and later experiments confirmed that Morse telegraphy was faster and more reliable for this work.

In May 1924 a wireless telegraphy (Morse) sending and receiving station at the Yard was formally licensed, together with a mobile sending and receiving station on a tender or lorry for use in the Metropolitan area.

Scotland Yard's experimental 6SY call became GSY and the mobile station GCN. This installation was for crowd, traffic and race-course control etc., and in 1932 an autogyro was fitted with W/T equipment to assist with traffic control at the Derby.

In 1923 the Flying Squad employed three constables on wireless duties, increasing to five in 1925 when the CID began to use telegraphy. By 1932 the Flying Squad had 19

vehicles fitted with wireless equipment. Three vans and a Bentley saloon had transmitting and receiving capability while the remaining 15 cars had receiving sets only.

In 1933 tests with mobile telephony were carried out in the streets of North London with the assistance of R.A.F. personnel, but limited range and considerable electrical interference led to the conclusion that radio telephony was not a practical proposition at that time. As a result of these tests the Police Commissioner, Lord Trenchard, instructed that wireless telegraphy continue as the means of communication with police vehicles.

Evaluation and improvement continued during the next few years including attempts to improve mobile aerials, which had to be concealed to avoid drawing attention to vehicles. Another problem was the need to dispense with the wearing of headphones, to avoid the need for blinds to be drawn to conceal their use, thereby making the car less conspicuous as a police vehicle.

In 1934 the Metropolitan Police's Wireless School was established providing a 2-3 months' course for police wireless operators, who were required to receive Morse at 20 wpm with 95% accuracy and transmit at 18 wpm without error.

In this short review it is impossible to do justice to the wealth of detail in this book. It is a definitive work which deserves a place on the bookshelves of all who are interested in police work; in the history of telegraphy; or the history of radio.

There are over 100 excellent photographs of early police communications equipment of every type, many previously unpublished from Scotland Yard's archives. It has a comprehensive index and a number of interesting or useful appendices, including abbreviations to help the non-police reader; places of value to the researcher; a bibliography; further reading suggestions; relevant articles in periodicals, newspapers etc; early police call-signs, and much more.

This well researched account, six years in preparation, focusses sharply on a specialised communications field in a readable, informative and authoritative way.

T.S.

(There will be an article in a future issue of MM based on the log kept by a police wireless operator in the days when patrol cars could receive but not transmit W/T.)

There's nowt so queer as folk

PART 1 - A Steamy Tale

by LEONARD MOSS, G4VXJ.



All of us at some time or another must have encountered one of those weird individuals, harmless or otherwise, who seem destined to be the world's misfits. No doubt the psycho-analysts can give many reasons for their odd behaviour, but to most of us they can be very trying, especially as workmates. It was one such "odd fellow" that I found myself working alongside in 1947.

Not long out of the Service, I was employed by the Civil Aviation Department as a radio operator at Lympe, a small airport in Kent. The work consisted mainly of air/ground communications and direction finding. In those days these activities were carried out by means of telegraphy on 333 kHz and other adjacent frequencies. 333 kHz was then the general distress and en route frequency for civil aircraft, while telephony was used only by light private machines, and by commercial aircraft in the close vicinity of an airfield.

The station was a wooden hut sited between four 80 foot steel masts which formed the open topped loops of the Adcock D/F system. In the hut were two large old-fashioned 9-valve M/F receivers, each in a separate bay and complete with goniometer and Morse key. The keys remotely operated the transmitters situated in a similar hut some two miles away across the aerodrome - of which more anon.

Arthur

It took only a couple of days for me to realise that Arthur - as we shall call him - was distinctly odd. He was decidedly unsociable, and seemed to spend hours just gazing into space. He seldom spoke, and any attempt to draw him into conversation was met with an awkward silence. Arthur appeared to be nursing some secret resentment

against life in general.

At first I thought it was just me who found him difficult. But I soon learned that other members of the staff found him equally trying. He was also a bit of a secret drinker, and several times we caught him taking a nip from the bottle when he thought we were not looking. He never wore his headphones in the normal way with an earpiece on each ear, but always had one earpiece cocked up on the side of his head. We reckoned that this was done so that he would know if we were talking about him. He was that kind of chap.

One day, having been out of the room for a few minutes, I returned to find Arthur twirling the knob of his goniometer with an expression of fierce determination on his face. It was obvious he was trying to get a bearing on something, and that something was presenting him with difficulties.

"What's up?" I enquired, as I thought, helpfully.

He ignored me completely, and went on twirling the knob furiously. I tried again but with the same result. He was now concentrating so hard that beads of sweat were beginning to appear on his forehead.

"What the hell is it?" I said, annoyed by his surly manner.

This time he snapped, "Can't you be quiet. There's some aircraft holding his key down. He must be in trouble. I'm getting a sharp bearing, but can't get sense on him at all - just keep quiet will you".

There he is again!

I must have stood there for some moments wondering where the mysterious signals were coming from.

"What's his call sign?", I asked as civilly as possible.

"He never sent one, just holding his key down", he snapped, "He's been making a long dash for a couple of minutes now."

The room was dead quiet except for the kettle singing gently on the stove in the corner. Odd, most odd. I was about to speak again when the light dawned. Damn Arthur and his one earpiece. Trying hard to hide a grin, I lifted the kettle off the stove. "Is he still there?", I asked.

"No", he yelled, "He's stopped now".

I placed the kettle back on the stove.

"There he is again", he shrieked, "Good bearing of 098/278 but I can't get sense".

Quietly I lifted the kettle off the stove and poured the contents into the teapot. Again the "signals" stopped, this time for good. I don't know what was going on in Arthur's mind, but he was now busily phoning another station asking if they had also heard the signals. I have no idea what they told him as he said nothing to me and he soon lapsed into his customary moody silence.



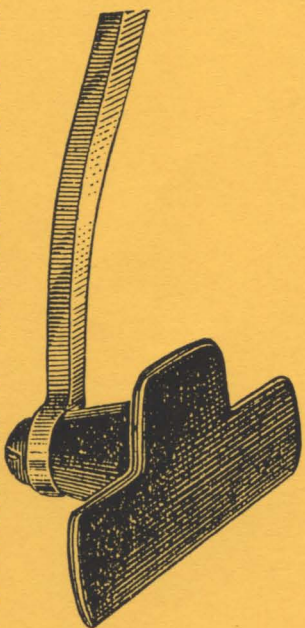
I never enlightened him. You couldn't do that with Arthur. All the same he remains the only operator I know who managed to take a class one bearing on a singing kettle, albeit without any indication of sense.

MUSEUM PIECE!

I recently managed an hour or so visiting the Royal Signals Museum at Blandford Forum, Dorset, which is well worth a visit. It was a bit sobering though - all the sets that I had dealings with are now artifacts. Made me feel like a museum piece myself!

Gus Taylor, G8PG.

PATENTED



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