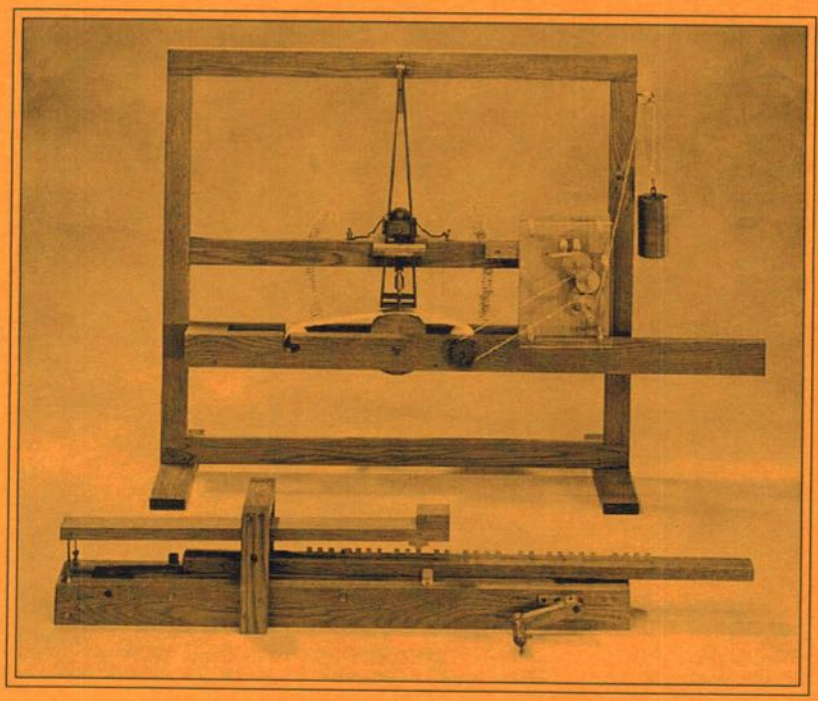
Flying the flag for Morse

Number 57 – April 1998

Morsum Magnificat

£2.50

The Morse Magazine



Replica of Morse's 'Correspondent'

Flying the flag for Morse

Morsum Magnificat

ISSN 0953-6426

EDITORIAL AND SUBSCRIPTION OFfiCES:
Morsum Magnificat, 9 Wetherby Close,
Broadstone, Dorset BH18 8JB, England.
Phone/FAX: Broadstone (01202) 658474;
International +44 1202 658474

MORSUM MAGNIFICAT was first published as a quarterly magazine in Holland, in 1983, by the late Rinus Hellemons PA0BFN. Now published six times a year in Britain, 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.

EDITOR Geoff Arnold G3GSR

CONSULTANT EDITOR Tony Smith G4FAI
(13 Morley Road, Sheringham, Norfolk NR26 8JE, England.
Phone: 01263 821936. e-mail address: tony@morsum.demon.co.uk)
MM home page – http://www.morsum.demon.co.uk

 Printed by Hertfordshire Display plc, Ware, Herts

SUBSCRIPTIONS (four issues remaining):
UK £8.66 *Europe* £9.33 *Rest of the World* £11.33
All overseas copies are despatched by Airmail

Overseas cheques, etc., must be payable in Sterling and drawn on a London Clearing Bank. Payment by Mastercard, Eurocard or Visa is also accepted; quote your card number and expiry date, checking that you have written them clearly and correctly.
We no longer accept payment via PostGiro or PostCash International, or by International Money Orders handled through the Girobank system.

For security reasons, we cannot accept orders for subscriptions, magazines, books, etc., via e-mail.

Make all cheques payable to 'G C Arnold Partners'.

"When does my subscription expire ...?"
The answer is to be found on the envelope that contained your latest *MM*, where the number on the top line of the address label tells you the last issue you've paid for. Also, we shall jog your memory with a renewal reminder included with that final issue.

MM Back Issues
Limited stocks of Issues Nos. **31, 32, 34–36** and **38–56 only** are now available from the Editorial offices (see top of page). Price including postage £2.20 each to UK; £2.40 to Europe: £2.75 elsewhere by airmail. Deduct 20% if ordering 3 or more.

ON OUR FRONT COVER
Full size replica of Samuel F.B. Morse's 'correspondent' (sender) used in the first demonstrations of his original numbered code in 1837 (see MM19, p.10).
Copy of a replica held in the Science Museum London and made for Fons Vanden Berghen by the Provincial Technical School of the Province of Brabant, Belgium.
Photo/Collection: Fons Vanden Berghen

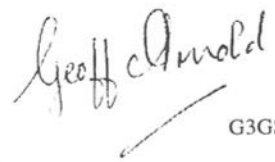
Comment

IN THE FIRST PART of his '500kc/s Story' (p6 in this issue), Jeffrey Herman remarks on how glad he was to have been part of the maritime communications system in the heyday of Morse. Looking back on my time at sea, from 1950 to 1960, I feel very similar sentiments. Seagoing R/Os I have talked to since I finally left the marine industry in 1973 all tell me that I was there at the best time.

It was a decade of technological change. At the beginning, Morse was our only mode, R/T being reserved for coasters and trawlers on MF (then commonly referred to in the marine industry as 'IF'), or for the transatlantic greyhounds on HF. Then in April 1953, the UK authorities opened up the 'trawler' band to deep-sea ships for link-calls. I was homeward bound on the RFA *Wave Conqueror* at the time, and quickly modified the handset and control arrangements of our Marconi CNY1 naval telephone set for duplex operation with our Marconi 'Mercury' receiver. It was a great success, and very popular with all who made use of the facility.

In the summer of 1956 I was appointed to the P&O cargo liner *Salsette* for her maiden voyage to the Far East. Arrangements had been made with Cable & Wireless for HF R/T tests between our 'Oceanspan V' transmitter and the C&W coast station VPS in Hong Kong, with daily schedules beginning when we were in the Indian Ocean. Contact was first made from the Straits of Malacca, and in the South China Sea we were able to establish a full duplex link with VPS, which was extended over point-to-point HF via Nairobi to Rugby. The Captain and I spoke to our respective bosses in P&O's London office, and the whole thing was pronounced a great success.

Nowadays, this all sounds rather insignificant, but remember that all telephone calls beyond a 'local' area then had to be dialled for you by the operator, and any overseas call had to be booked in advance. The first communications satellite and subscriber trunk dialling were not to become fact until almost the end of the decade. Perhaps, therefore, we could be forgiven for not realising that developments which then seemed to be widening the scope and duties of the seagoing radio officer, were in fact part of an evolution that would eventually lead to his virtual disappearance.



G3GSR

Contents

Adverts

News

RSGB Morse Test Service Anniversary Weekend

County Morse test teams will again be on the air during the 12th anniversary weekend, 9–10 May 1998. For ease of identification, all stations will use the special event GB0 prefix followed by the county code suffix, e.g., the Isle of Wight will use GB0IOW and London GB0LDN. The Chief Morse Examiner will use GB0CW and the Deputy Chief Examiner GB0MTS.

There will be a minimum of 27 stations active and a Morse Test 12th Anniversary certificate will be available to any amateur who makes contact with at least 10 of the GB stations.

The cost of the certificate is £2.50 (cheque or postal order payable to 'RSGB'), $5 or 6 IRCs. Applications with log extracts only should be sent to the Chief Morse Examiner, Roy Clayton G4SSH, 9 Green Island, Irton, Scarborough, North Yorkshire YO12 4RN. QSL cards are not required to claim the award, which is also available to listeners.

Activity will be concentrated in the 80 and 40 metre bands and, in order to encourage newcomers to apply for the award, each team will spend some time calling slowly in the Novice CW section of the 80 metre band above 3560kHz.

The event is not a contest and examiners will be happy to reply at any preferred calling speed. There are no restrictions on the type of Morse key used, all are welcome to call in and enjoy the friendship.

Callsigns to be used by Morse Test 12th Anniversary Special Event Stations, 9–10 May 1998

GB0CW	Chief Morse Examiner
GB0MTS	Deputy Chief Morse Examiner
GB0ARM	Co. Armagh
GB0ATM	Co. Antrim
GB0BFD	Bedfordshire
GB0BUX	Buckinghamshire
GB0CNL	Cornwall (Poldhu)
GB0DHM	Co. Durham
GB0DVN	Devon
GB0ESX	Essex
GB0GDD	Gwynedd
GB0GRN	Grampian
GB0HLD	Highland
GB0IOW	Isle of Wight
GB0LCN	Lincolnshire
GB0LEC	Leicestershire
GB0LDN	London
GB0LNH	Lancashire
GB0MSY	Merseyside
GB0NHM	Northamptonshire
GB0NOR	Norfolk
GB0SCD	Strathclyde
GB0SPE	Shropshire
GB0SXE	Sussex East
GB0TWR	Tyne & Wear
GB0YSE	Yorkshire East
GB0YSN	Yorkshire North

(Information from Roy Clayton G4SSH, RSGB Chief Morse Examiner)

New Railroad Book

Michael Gee, a former CPR telegrapher, tells us he has just published his third volume of steam rail readings (letters, poetry, songs) from railroaders around the world including Australia.

In the library bound book are half a dozen poems by telegraph operators describing their work environment during the steam era. The book may be obtained by sending US$39.95, plus $5.00 shipping and handling, to OLK Publications, 111-10160 Ryan Road, Richmond BC, Canada V7A 4P9.

Museums of Interest

The two wireless museums on the Isle of Wight will be open daily from Easter onwards. They are located at Arreton Manor, near Newport, and at Puckpool Park, between Ryde and Seaview.

The annual Wight Wireless Rally will be held at Arreton Manor on September 6 from 11 a.m. to 5 p.m. For further information, telephone the curator, Douglas Byrne G3KPO, on 01983 567665.

New CW Requirements for Argentine Amateurs

New regulations for Amateur Radio Licences in Argentina came into effect on 20 January 1998. The previous 10 and 15 wpm Morse tests have been abolished. There is now a Novice 5 wpm (previously UP to 5 wpm), and a standard 7 wpm test. The latter, once passed, qualifies for all subsequent progressive licence upgrades without a further Morse test.

The various grades are distinguished by qualifying periods in lower grades, age minima, frequency allocations and permitted powers.

A new category, 'Initial' (prefix AZ), without a Morse test, allows operation on frequencies above 50MHz, with a minimum age for licensees of 12 years. This can only be held for two years. The 'Novice' licence requires a 5 wpm Morse test. The minimum age for Novices is also 12 years.

The 'Intermediate' licence has a 7 wpm Morse test. The minimum age is 16 years, and the licensee must have previously held a Novice licence for 2 years.

For the 'General' licence, the licensee must have previously held an Intermediate licence for two years and be over 18 years of age. No additional Morse test is required (previous regulations required a 10 wpm test).

For the 'Superior' licence, the licensee must have previously held a General licence for three years. Again, no additional Morse test is required (previous regulations required a 15 wpm test).

The 'Special' licence is a recognition of merit, awarded to those who have been licensed radio amateurs for 50 years.

(Our thanks to Alberto U. Silva, LU1DZ, Grupo Argentine de CW, for providing the information from which the above report was compiled.)

Morse 2000 Update

Writing under the heading 'Acute Care and Code' in the fall/winter 1997/98 issue of *MORSEls*, newsletter of the Morse 2000 Outreach of the University of Wisconsin-Eau Claire; the Trace Research & Development Center at

UW-Madison; and The Johns Hopkins University Center for Technology in Education, Arnold Reinhold, K2PNK, suggests that those who know Morse code should carry a Morse Knowledge ID card (see below) for emergency situations.

He suggests also that a page on Morse code use be incorporated in standard emergency room manuals; that a 'Morse code in the E.R.' familiarisation video training tape be developed so that ER personnel know how to recognise that a patient might know the code, where to find a Morse translator, and how to use code to communicate with the patient using a Morse chart.

He recommends incorporation of Morse information in living wills of people who know the code. As an example, his own living will contains the following: 'I am familiar with Morse code, and my attorney should use a person knowledgeable in the Morse code as evidenced by a current amateur or commercial FCC license that includes a code element to try to communicate with me.'

His suggested Morse Knowledge emergency ID card contains the following:

> *'I KNOW MORSE CODE*
> *If I am unable to communicate by other means, I may be able to use Morse code. Observe me for any movement that appears to be a combination of longs and shorts or other alternating movements. You may also tap code on my body.'*

The Morse code for the alphabet is set out under this text, together with the symbols for . , ? = / error, wait, message received (R), your turn to send (K), hello (CQ), help (SOS) and laughter (HI).

Reinhold suggests that such a card could be distributed via Morse 2000, ARRL, and other Morse-interested organisations. *MM* will welcome correspondence on the suggestions made by K2PNK. Any comments received will be relayed to the Morse 2000 Outreach as appropriate.

This issue of *MORSEls* also contains an updated list of Morse-related equipment suitable for use with various disabilities, a brief report on the Morse 2000 conference held in Minneapolis last October, and several other articles relating to the use of Morse for computer access and augmentative/alternative communication techniques for people with special needs.

The Morse 2000 web site has been completely revised and improved, and can be accessed via http://www.uwec.edu/Academic/Outreach/Morse2000/morse2000.html

Those interested in the area of Morse use covered by this Outreach can subscribe to the Morse2000 listserver (no charge) by sending an e-mail to majordomo@listserve.uwec.edu (leave the subject field blank; type in the body of the message "subscribe morse2000"; turn off any signature field in the e-mail.)

Additionally, *MORSEls* is available free to those working in this field, or with a special interest in it, by writing to: Morse 2000 Outreach, Nursing/Human Sciences & Services Outreach Office, University of Wisconsin-Eau Claire, Eau Claire, WI 54702-4004, USA.

Eureka Morse Key

Cal-Av Labs, Inc. have introduced a new hand key with what the company describes as two notable features. First, it is built into its own case in an inverted design, 'which yields an elegant appearance, protects the mechanism, and allows the armature and knob to be very close to the sending desk.'

Second, says the company, 'once a force sufficient to start the knob downward is applied, the key's magnetic-release armature provides a dramatic decrease in the required force, accelerating the armature. This results in a pleasant positive contact closure, similar to a snap-action switch.'

The case is machined from a single piece of brass. The finish is polished brass and polished aluminium where the armature protrudes from the case. Chrome or gold plating can be added at additional cost.

Claimed to be extremely stable, the key is 4 inches in diameter and weighs 4.6 pounds. It has stainless steel ball bearings, silver alloy contacts, and a knob style derived from the US Navy type 26003A key. A brass bottom plate eliminates the need for a dust cover, and has a neoprene anti-skid surface.

Production of the 'Eureka' will be limited and each key will be serialised. Price US$320.00. Orders are being accepted as from 16 March 1998, with an estimated first shipment in July 1998. Orders will be accepted by money order, cashier's check, or any major credit card, including the Japanese JCB.

A deposit of US$30.00, charged at the time of the order, will reserve a serial number in the order in which orders are received. Delivery is FOB Tucson, Arizona, with an estimated shipping weight of 7 pounds.

For further information, contact Ken K6HPX at Cal-Av Labs, Inc., 1802 West Grant Road/Suite 116, Tucson, AZ 85745, USA. Phone (520) 624-1300; FAX (520) 624-1311; or e-mail calav.com

(Information from Cal-Av Labs, Inc. See their advert on page 17.)

Readers' ADs

FOR SALE

18 PAGE ILLUSTRATED LIST all kinds of telegraph related items surplus to my needs. $3.00 plus equivalent of 4 US stamps ($5.00 refund on $25 purchase). Dr. Joseph Jacobs, 5 Yorktown Place, Fort Salonga, NY 11768. Phone: 516-261-1576. Fax: 516-754-4616. E-mail: joekey@aol.com

THE MM Q & Z CODEBOOK, a comprehensive list of the Q-codes and Z-codes, including a one-page list of the original Q-codes of 1912. Available from Dick Kraayveld PA3ALM, Merellaan 209, 3145 EH Maassluis, Holland. Price £5 UK, or US$10.00 outside UK, including postage in both cases. Payment accepted in cash only.

PHOTOCOPIES OF BACK ISSUES OF MM. All out-of-print issues available. Price per copy, by airmail (US dollars, cash only): Europe $7.00; Africa/America $8.00; Oceania $10.00. Jeronimo Orellana R, EA3DOS, Av Roma 10, 08015 Barcelona, Spain.

500kc/s Story

Part 1

by Jeffrey Herman KH2PZ/KH6

THE FOLLOWING is for the historical record. We are witnessing a never-to-return era of communications style and format that was so perfect that nothing will ever be its equal. I am very glad that I was able to be a part of it, if only for three years.

US Coast Guard Radio Station Honolulu (NMO)

In July of 1977, as a 3rd Class Radioman Petty Officer for the US Coast Guard, I received orders to report from Coast Guard Group Monterey, CA, to Coast Guard Radio Station Honolulu in Wahiawa, Hawaii. I had graduated from Radioman School a year earlier concluding 5 months of training in code, propagation, radio fundamentals, ITU procedures, and other such things. 22 words per minute was the minimum code speed needed to graduate; mine was 25.

Radio Honolulu, NMO, is situated on a huge plot of land owned by the Navy, centred in the pineapple fields of Oahu. In addition to NMO, the Navy and the Marine Corps had their Central Pacific Communications Command there also. By the way, NMO has the longest over-water microwave link in the world: Oahu to the island of Kauai (for VHF marine band ops).

NMO was set up with the following glass-enclosed operating positions: 500kc/s CW, HF CW, HF and VHF voice, air-to-ground, RTTY, Fleet Broadcast, landline TTY, and the Chief's desk. From where the Chief RM sat he could watch all of the ops to make sure no one fell asleep; woe to the operator (op) who was caught sleeping while on watch!

Voice Op

The Coast Guard is the only military service that communicates directly with the public. Thus we had to know when to turn off the military radio jargon, in particular on 2182kc/s (MF international voice calling and distress frequency) and Ch. 16/156.80Mc/s (VHF international voice calling and distress frequency).

The voice op was kept busy monitoring over a dozen voice channels: 2182kc/s, the 4, 6, 8, 12, and 16Mc/s high-seas SSB ship to shore frequencies, four VHF repeaters for Ch. 16 (NMO had a repeater on Kauai (the

above microwave link), Oahu, Maui, and the Big Island), four repeaters for VHF Ch. 23, and whatever else the Chief felt needed to be listened to.

Several times each radio day the voice op had to make broadcasts (WX, Notice To Mariners, etc.) on all these frequencies (the timing was critical so the clock had to be checked frequently).

Scanning the HF CW Calling Bands

The HF CW position required two ops with two racks each consisting of four Collins 651S digital readout receivers scanning the CW calling bands on 4, 6, 8, 12, 16, and 22Mc/s. Daytime hours one op would take 8 and 12 – the other operator would take 16 and 22; night time one had 4 and 6 – the other would have 8 and 12. So, an operator might have 8Mc/s scanning in his left ear and 12Mc/s scanning in his right (the receivers automatically scanned a preset band of frequencies, for example the 8Mc/s calling band for ships calling shore stations runs from 8360.4 to 8374kc/s).

A ship calling us might have to send our callsign 20–30 times (no 3X3 format here!) while our receiver scanned – then the NMO op would hear, from the highest to lowest to highest notes possible (within 1–2 seconds) our callsign being sent; he would quickly shut off the scanner, tune in the ship and turn off our CQ tape (when no traffic was being passed we'd keep the transmitters busy sending: *CQ CQ CQ DE NMO NMO NMO QRU QRU IMI OBS AMVER QSS 4 6 8 12 16 22 MHZ AR* – sort of an advertisement for traffic), and the exchange might go some thing like this:

DE NMO
NMO DE KNFB OBS 8360 K
KNFB DE NMO R UP
UP
EE
EE

meaning the ship has a weather observation (every 6 hours starting at 00Z every ship world-wide takes an OBS and sends, at no charge, to the closest shore station), and he wants me to listen for him on 8360kc/s; he'll continue to listen to me on NMO's fixed transmitter frequency. Notice the signal UP meaning 'I'm shifting up to that frequency'. An exchange ALWAYS ends with 'dit dit' (and hams thought they'd invented that!).

Race to Collect OBS

The above was rare, for during the obs hour not just one ship would call but dozens and dozens would be calling (in both ears with the receivers scanning!) so the NMO operator would have to line them up numerically:

KNFB DE NMO UR NR 1
R 8360 TU
WSLH UR 2
R 12561 TKS
7XYM UR NR 3
DE 7XYM 8370 R UP
...
JGFD UR 25
OK UP 8375 TU

then the op would copy the WX obs from each ship one by one. After working that group of 25 ships he'd turn on the CQ tape again and scanners, and dozens more ships would pounce on him. Since WX is time-sensitive it was a race to 'collect' as many OBS as humanly possible; a lazy op might only get 100 during the 30–45 minute period.

MF CW at NMO

Adjacent to the HF CW position was a smaller room, enclosed on three sides in brick, painted off-white. The fourth side was glass, including a sliding glass door, with a small sign glued on which simply said 'MF CW'. This little booth of modest appearance was well out of proportion with respect to the role MF CW has played in the history of maritime communications.

Also, though I'm sure not by accident, the Chief's desk was positioned so he had a direct view of the MF CW booth. The Chief's position had a complement of Collins receivers, and one was ALWAYS set on 500kc/s. More often than not I'd get a glimpse of the duty Chief listening, with a gleam in his eye, to the evening traffic on 500. The remaining parts of these articles are devoted entirely to 500kc/s.

Largest 24-Hour Clock

Upon entering the MF position one was struck with the sight of the largest 24-hour clock known to mankind. It had the most unusual red markings on its face. Two red wedges, starting from the centre and flaring outward covered, respectively, minutes :15 to :18, and minutes :45 to :48; these, of course, were a blatant reminder to the op of the two world-wide silent periods (more on these later).

In addition, each of the twelve five-second intervals around the perimeter had the first four seconds blocks marked in red with the last second left white: 4 seconds red, 1 second white, 4 seconds red, 1 second white, etc., around the entire circumference. Now, these markings were to aid the 500kc/s op in manually sending the distress auto alarm: key down 4 seconds, key up 1 second, key down 4 seconds, key up 1 second, etc., for one minute. (More on the auto alarm later).

Recordings

One's attention would next be drawn to two Collins 651S receivers mounted in the op's console. The top receiver was locked on 500.000kc/s and the bottom was usually a few hundred c/s on either side of 500, say 499.500kc/s.

This, of course, prevented missing signals with which our receivers were zero-beat. The audio from these two receivers was fed into a 12-track reel-to-reel tape recorder, as were all receivers and transmitters at the station; one track was reserved for WWVH time signals.

A second 12-track tape recorder acted as a back-up to the first. Reels were changed at the beginning of each new radio day (0000Z).

Dialled Frequency/Modes

On a panel next to the two Collins receivers was a telephone-type rotary dial with 4 red lights above it. If digit 1 was dialled, the first red light would be lit, indicating our MF transmitter was on 500kc/s in the A1 mode; if digit 2 was dialled, the second red light would be lit, indicating the transmitter was on 500kc/s in the A2, or MCW (modulated CW), mode (more on A2 later); dialling digit 3 shifted the transmitter to 440kc/s in A1, where 440kc/s was NMO's working frequency; dialling digit 4 shifted the transmitter to 512kc/s, A1 (more on 512 later).

I'm not sure if this was against FCC

or ITU regulations, but our 500kc/s transmitter was ALWAYS set to the A2/MCW mode when I was at the key. I hope there is a statute of limitations concerning this possible violation! I loved the musical notes A2 produced. [1]

Note that our transmitter site was at least 5 miles away, on the 4000ft peak of the Koolau Mountains. Thus we enjoyed full duplex transmission.

Log Every Signal Heard

At a right angle to the op's desk was a typewriter containing the MF CW radio log. During radioman school we were instructed to attempt to log every signal we heard on 500 (an impossible feat), but at worst, make an entry every 5 minutes (ITU regs!). If no signals were heard within a 5-minute period (which would never happen at night) then one would enter:

NO SIGS	500	2308Z
NO SIGS	500	2313Z
BEGIN SILENT PERIOD	500	2315Z
END SILENT PERIOD	500	2318Z
KPH KPH KPH DE WNKL WNKL		
AMVER 425 K / WNKL DE		
KPH R UP / UP / EE / EE	500	2320Z
NO SIGS	500	2325Z

Thus, whatever we heard would be typed directly into the log. At a right angle to the log typewriter was a second typewriter which was used to copy traffic from ships to NMO: OBS, AMVERS, Dead Head Medicos (medical reports handled free-of-charge), and other non-commercial traffic. By US law, Coast Guard stations cannot handle commercial traffic, for that would take revenue away from the commercial stations.

Sitting on the op's desk was a Vibroplex chrome-plated bug, and a cheap straight key screwed onto a thin sheet of Plexiglas. I, of course, only used the straight key.

Watches

Shifts at NMO ran like this: 12 hours on; 12 hours off; 12 hours on; 72 hours off. The day watch started at 0700 and ended at 1900 (local); night watch ran from 1900 to 0700 the next morning (yawn ...)

During my off hours I rebuilt an old wooden sailboat that doubled as my home; that enabled me to collect money from the CG for off-base housing ... What a life, huh?

I Loved 500!

No one on my shift had any particular love for the 500 position ('what fools!' I thought), so, even though we were supposed to rotate positions every 3 hours, I volunteered to remain at the 500 position for the full 12 hours shift (especially during the night watches); I loved it!

It was at this modest console that I would spend the next three years of my life. The things that I copied would, at times, amaze me, cause me to laugh so hard I would fall out of my chair, or cause me to break down weeping.

To this day I cannot forget the ship's op I worked a distress with – how he stayed at his key while his ship broke up in heavy seas – and how his transmitter emitted a scream at the moment the ocean flooded his radio room, shorting the batteries and radios ...

Why 500kc/s – 600 metres?

I have researched the literature in order to find an answer to this question, but have found nothing. I tend to think that this particular wavelength, 600 metres, became the standard by accident rather than some body of policy-makers deciding that it was to become the world-wide calling and distress frequency.

Maybe the nature of early equipment might be the reason this wavelength became the standard; the length of the antenna on some early transmitters dictated the centre frequency of their very broadband signal – given that the antenna would run the length of the ship, this might have a bearing on how 600 metres became the international CW wavelength.

World-wide Partyline

Regardless of whether it was by accident or choice, what was handed down to us was a wavelength with excellent evening propagation. Starting at about 2100 local, 500 would come alive. Any ship or shore station within 3000–4000 miles could be heard by an excellent combination of ground wave and sky wave – nothing was missed within this radius! Shore stations more than 5000 miles were easily copied (Australia and New Zealand boomed in nightly).

Daytime propagation consisted of only ground wave: 300–500 miles was the maximum range possible. Thus most daytime traffic was passed on the HF channels.

The idea of combining a distress frequency and a calling frequency was an excellent one – it insured no distress calls would be missed, and at the same time everyone knew where everyone else was at! No need to search various frequencies looking for a particular ship or shore-station. The result was a world-wide partyline; if you sent so much as a single dit everyone would hear it.

All Hell Broke Loose!

Ships operated on either a one-op or two-op schedule so our broadcasts coincided with these skeds. But shore stations had to remain on the air 24 hours a day. Late nights could become a bit of a bore for some shore ops, heavy eyelids and such. So out of boredom (or maybe by 'accident') a single dit would ring across the Pacific, only to be answered by another dit possibly several thousands of miles away.

Then all hell would break loose: every shore station and any ship with an on-duty op would be sending dits! For several seconds 500 sounded as if 100 or more carriers were ditting away. As quickly as it started it would fade away.

A variation of this was someone sending a single GE (good evening). Of course it would be impolite not to respond in kind so someone else would answer with GE. Within a half second at least one hundred GEs would flood the frequency! My log entry would look like this:

GE / GE / GE / GE / GE / (OPNOTE: AT LEAST 100 GE'S SENT) 500 1123Z

Thoughts As One!

Some Coasties were unhappy with their duty assignment (Alaska, or some LORAN station in the middle of the Pacific, or on board a patrol ship) and

made their sentiments known to the world. One op would send an F, a second disgruntled Coast Guardsman would follow with a T, only to be followed by a third CG op sending G – three Coasties separated by 100s or 1000s of miles of water expressing their thoughts as one. The acronym FTG stood for a very common expression in the Guard: F— The Guard. In the log it goes:

FTG 500 1305Z

Needless to say, the CO (commanding officer) ('The Old Man') of NMO, upon reviewing the log the following day, would attach a nasty note expressing his displeasure at seeing such entry in an Official US Government Legal Document blah, blah, blah ... . The Chiefs on the other hand would laugh and express their delight that this acronym was still travelling the airwaves.

Steady Stream of Traffic

After 2100 local there would be a steady stream of CW on 500 – ships calling shore stations or other ships:
KOK KOK KOK KOK KOK KOK KOK KOK KOK KOK (making a pest of himself!)
DE (in other words: 'who the heck is calling me?')
DE KNLS TR K
KNLS DE KOK R UP 485 K
OK 485/480 UP
EE
EE

Translation: The ship KNLS, ignoring the usual 3X3 callsign format, was going to endlessly call the shore station KOK until he got some attention. KOK interrupted him with a simple DE after which KNLS told him he had a travel report (TR). KOK's answer was 'Roger, I'll transmit on 485kc/s', to which the ship answered 'Okay, you transmit on 485 and I'll transmit on 480 – let's go up' (up in wavelength that is, not in frequency – traditions are hard to break!). By the way, KOK was a shore station located on a beach here on Oahu.

Or,

TTT TTT TTT CQ DE ZLD ZLD CYCLONE WARNING NR 15 QSW 428 AR

(These types of broadcasts, prefaced with TTT or XXX, are discussed later.)

Or,

CQ CQ CQ DE WNOP WNOP ANY ONE HV 2100Z SOUTH PACIFIC WX? K
WNOP DE XSU GE WILL GIVE 2100 WX ON OUR 2200 BCST K
OK TKS OM SU
SEEU
EE
EE

and on and on throughout the night – very orderly. Notice again that each series of transmissions end with a 'dit dit' (recorded as EE), the prosign the amateur radio operators thought they had invented!

To be continued

[1] Around the coast of Britain in the 1950s, the use of MCW was de rigeur *on 500. I recall being given a firm rap over the knuckles by Cullercoats/GCC when (on RFA tanker* Wave Conqueror) *I used CW out of consideration for the eardrums of the Tels on the Naval tug* Mediator, *towing us to the Tyne for repairs.*
(We had been ignominiously rammed up the stern while anchored in thick fog in the River Humber!) – Geoff Arnold.

The Zulu Boys

by John Hill ZL2AYQ

JULY 1969 IS FIRMLY RECORDED in the history books as the time when men first walked on the moon but I remember the month for another reason, as that was when I learned of the life of 'Cricket' Chalmers.

I was working for a weekly newspaper in the Northern Territory of Australia then and Cricket was a local identity who occasionally walked or rode his rusty bike around the dusty little town, and more often than not could be seen wobbling his way about with his string bag and his precious Darwin stubby*. He lived along with a number of other old men at 'the barracks' which was a cluster of ramshackle huts on the edge of the rail yards.

He was always good for a yarn about nothing in particular and had been a useful source for background information over the years, especially for what we called the 'early days'. However, Cricket was also always right up to date with world events and had the reputation for knowing the news before we printed it.

Shuffled Off This Earth

I didn't get to learn much of Cricket's life until one evening when the whole town gathered in the faded ballroom of Jackson's hotel for a special showing of newsreel films of the moon landing. Somehow it fell to me to set things up and run the film though I had never seen a projector up close and had only a hazy notion of its operation.

Cricket wasn't there but a number of other old men from the barracks were. Some of them could remember when it took eight weeks for the mail to arrive from Adelaide – and now they were watching men walk on the moon.

At the end one old fellow, who looked ninety if a day but still sported wisps of shocking red hair and beard to match, thanked me and remarked "Cricket would have liked to have seen this" , "Oh?" I said "Did he not come then?". "No" said the old timer, "he's been and shuffled off this earth last night".

Enduring Loneliness

At the end of the showing I saw Bluey sitting alone in the bar and on an impulse I got drinks and went over to his table. We must have drank a gallon or so each before he began to speak. He opened by saying "I suppose you think he got his name because he once opened for Australia", then went on to tell me of his brother's life.

The two men were born at the old Barkley Ponds telegraph station. It was not a full staffed mini-town like the Alice Springs station, just a couple of small buildings with a staff (officially) of two single men, a telegraphist and a linesman, whose skills and duties overlapped.

The function of the station was to monitor north and south traffic circuits and attend to any maintenance and line breaks in an

*(*Darwin stubby - a rather large beer bottle.)*

area of about 25 miles north and south of the station. There were the usual problems of the era, white ants ate the poles, the livestock died for no apparent reason, and there was an enduring loneliness in a forever hot dry climate.

Inspector Shocked

Donald Chalmers had come north as a 16-year-old apprentice telegraphist. After five years he was given a few weeks leave in Adelaide, just long enough to meet and marry a mute girl named Margot who had recently arrived from Scotland. He dressed her in moleskins and one of his shirts to smuggle her back up the line to the station where they squeezed into the available accommodation. One thing and another was too much for the linesman who got thoroughly drunk and walked out into the desert never to be seen again.

Donald and Margot were shocked at the loss of their only human contact but too afraid of censure to report his disappearance. Donald tried to do both their duties and soon Margot was learning the code and taking a turn at the key. Head Office in Adelaide eventually realised something was amiss and sent an inspector to arrive at the station just three days after the first child was born.

He was shocked at what he learned and also amazed at Margot's skill. This was the closing decade of the last century and telegraphists were in world-wide demand. Donald and Margot pleaded to be allowed to carry on, and with no prospect of relief staff the inspector gave his reluctant permission, signing Margot on the strength as a telegraphist. One of the members of the inspector's party was an Englishman of independent means who was so taken by the plight of the young couple that he promised to invest one hundred pounds in the name of the child to ensure his satisfactory education.

Born to the Code

Cricket was the first-born and he was truly born to the code as day and night the sounders tapped out the commercial traffic, the coded diplomatic despatches and the thousands of sundry messages between Australia and the rest of the world. His father was away for weeks at a time up and down the line, and with a mute mother the sounders were all he heard in that desolate place.

He didn't learn to speak until he was nearly six but for years he had been communicating with his mother in high pitched clicks and chirps, he may have sounded like an insect to some but a skilled ear could recognise order and intelligence in the sounds for he was 'speaking' in the only tongue he knew, the voice of the telegraph.

The second boy was born two years later and he too soon learned the family language. It was another five years before the family was finally relieved and transferred down the line to Alice Springs.

School Closed

One day a telegram arrived from a firm of solicitors in Adelaide seeking instructions regarding the education fund that had been invested as promised some 15 years earlier. The parents were astonished at the sum that had accumulated, and by adding their meagre savings they were able to enrol both boys in a prestigious boys' boarding school in Melbourne.

The boys were like fish out of water and became victims of merciless taunting and teasing, so they took refuge where no others could follow – in their unique ability to communicate in their strange clicking manner.

Their remarkable ability did not go unnoticed and language experts were called from the university to study them. The boys played it out as long as they could. The experts took notes, made wax sound recordings and put their best efforts into the task. The investigation became farcical when the learned dons settled on the conclusion that the boys were reincarnations of Kalahari Desert pygmy bush-men who speak in a supposedly similar language.

Eventually, a college servant astonished the experts by showing that he could understand what the boys were saying, thus earning himself instant respect and attention. He rode the wave until one evening, tiring of the game, while serving high tea, announced he had once been a telegram boy and was returning to that rather than serve such gullible fools. The university had never been so embarrassed and promptly closed their School of African Languages.

Finally Accepted

The upshot of the 'Zulu Boys' incident, as the newspapers called it, was that the boys finally found acceptance among their fellow students and from then on made rapid progress with their studies.

The other students gave Cricket his nickname, which stuck with the older boy, and this was reinforced when he went on to play against the touring All India Eleven. The students' name for the red-headed brother was inevitable and it too stuck for a lifetime

Bluey married and returned to the Territory to open a small store near the telegraph station where he was born, and spent his entire life in that tiny town until his wife died in 1966.

Lawrence of Arabia

Cricket joined up in 1914 and soon found himself in what is now Iraq. He was held captive by the Turks for a time and while under interrogation he could hear the click of a telegraph in the next room. Everything was in code of course but Cricket was able to memorise a few hundred characters. He then used techniques he had learned from aborigine childhood friends to feign a heart attack and death, causing his captors to throw him out into the street.

Friendly Arabs took him in and put him

in contact with British Intelligence. When he wrote down what he had heard from the Turkish telegraph sounder the British were able to decode enough to get the details of a troop train movement. What then followed has gone down in history, as 'Lawrence of Arabia' led a successful attack which destroyed the train.

Weather Maps

Injuries prevented Cricket from returning to 'the inland' for some years. By this time the overland telegraph was being bypassed by radio and coastal cable routes so he took a traffic clerk's job at a railway station.

He was too old for WWII but he managed to get a civilian job at a wartime air base. He started in the meteorological office, sweeping up and acting as general assistant to the forecaster on duty. It was here that he learned to draw a complete weather map from the analysis messages that arrived as 400 or 500 five-figure groups from the offices at Darwin and Melbourne.

The airbase had all the latest equipment, including radio teletype, and just by watching the machines print and listening to the clicking of the magnet relays he very soon learned to read the five-unit code.

Eventually Cricket could listen to the incoming data and draw a weather map in all its details before the forecaster could even begin to decode and plot the message. He never wrote anything down; the clicks were to him a word picture just like the chatter of sounders in his formative years.

What Memorial for Cricket?

He took a series of jobs after the war, with the new air services and even for a while at our newspaper but most of his time was spent with the railways. Bluey told me that Cricket and his friends had over the years 'arranged' for various workmen's huts to be reported as attacked by white ants and consigned to the dump at the edge of the yard. When Cricket retired in about 1960 he just moved into one of these and was joined by his brother a few years later.

We spoke for a while of how things had been in the town over the years, what the railway had done to it, the changes that came with motor cars, and of course we talked about Father Flynn and his Inland Mission. Bluey mentioned the new memorial for Father Flynn up the road at Three Ways and I wondered aloud what memorial there would ever be to Cricket Chalmers.

And it All Started with Morse ...

"Only this" he sighed as he reached into a bag and drew out a hard covered exercise book, one of those with about 200 pages. "This is all he left" he said, "he did one last night" and passed the book to me.

I opened it to find pages of drawings of news events. The first few pages were barely recognisable but as I looked further they became more detailed and almost perfect copies of news photographs we had published over the last few years – the Queen's coronation, atom bomb tests and scenes from the Hungarian uprising – "Very good", I said, "your brother had quite a talent," not yet grasping the significance of what I was holding.

"Turn to the last one" said Bluey. I did and there was Neil Armstrong and the flag on the moon. I was astounded as we had only received that photo on the plane that day when the newsreels arrived. This was a real shock and I could not believe what I saw.

Then Bluey explained how Cricket had spent his evenings for many years hunched over his old 'short wave' radio listening first to Morse, later to radio teletype, and finally to the news services' radio picture transmissions from Manila and Sydney. Eventually he could listen to an entire 12-minute radio facsimile transmission and draw a perfect rendition of what he had heard ...

"You know" concluded Bluey, "with a bit of training he could have made a half-pie decent operator." ***MM***

Bookshelf

A mail order book service for selected telegraphy and radio titles. The letters *MM* or *RB* followed by a number after each title indicate the magazine and issue in which a review appeared.

The prices quoted for each title are inclusive of postage and packing, the first figure being for despatch to UK addresses, the second for despatch to the rest of Europe by airmail or elsewhere in the world by surface mail. Airmail rates for the rest of the world on request, or if you are using your credit card we can ship by air at your instruction, simply adding the difference in postal cost to your bill.

SEND YOUR ORDER TO:

G C Arnold Partners, 9 Wetherby Close,
Broadstone, Dorset BH18 8JB, England

Payment accepted by Mastercard or Visa (quote your card number and expiry date), or by cheque, draft or postal orders. Overseas cheques and drafts must be payable in Sterling, and drawn on a London Clearing Bank.

Wireless for the Warrior – Volume 2
by Louis Meulstee

This long-awaited book is here at last. It covers in details the sets which were summarised in Volume 1 – WS Nos. 10, 18, 19, 22, 29, 31, 38, 42, 46, 48, 52, 53, 62, 68 and 88, including AFV versions.

Published in hardback, it comprises 722 A4 pages, and contains pproximately 200 photographs, 750 line drawings and 180 data tables.

Comprehensive information is also included on vehicle installations where appropriate, giving the book considerable appeal to military vehicle enthusiasts, as well as awakening memories of those who maintained or used the sets during their time in the Services.

NOTE – This book cannot be ordered through bookshops.

MAKE ALL CHEQUES, ETC., PAYABLE TO G C ARNOLD PARTNERS

The Story of the Key by Louise Ramsey Moreau *(MM38)* ..... £3.95 (UK): £4.25 (Eur/Sur)
Sparks Around the Bridge by Harry C. Hutson *(RB44)* ..... £8.85 (UK): £10.00 (Eur/Sur)
Watchers of the Waves by Brian Faulkner *(MM47)* ..... £13.50 (UK): £14.20 (Eur/Sur)
Wake of the Wirelessman by B. J. Clemons *(RB41)* ..... £12.95 (UK): £13.75 (Eur/Sur)
"Q41" and Beyond – The Story of a Wren Telegraphist by Shirley Lawson *(MM49)* ..... £5.70 (UK): £6.10 (Eur/Sur)
Gentlemen on Imperial Service by R. Bruce Scott *(MM45)* ..... £8.75 (UK): £9.25 (Eur/Sur)
Wires, Wheels and Wings by Harry G. Reddin *(MM42)* ..... £19.25 (UK): £20.00 (Eur/Sur)
Traeger, the pedal radio man by Fred McKay ..... £9.45 (UK): £9.75 (Eur/Sur)
Transmitters, Exciters & Power Amplifiers by Raymond S. Moore ..... £16.00 (UK): £16.85 (Eur/Sur)
The RACAL Handbook by Rinus Jansen ..... £13.00 (UK): £13.75 (Eur/Sur)
Wireless for the Warrior – Volume 1 (WS1 – WS88) by Louis Meulstee *(RB38)* ..... £27.75 (UK): £28.65 (Eur/Sur)
Early Radio – in Marconi's Footsteps by Peter R. Jensen *(RB34)* ..... £28.25 (UK): £29.10 (Eur/Sur)
Radio! Radio! (3rd Edn) by Jonathan Hill *(RB45)* ..... £37.50 (UK): £38.50 (Eur/Sur)
Comprehensive Radio Valve Guides, in five books:
No. 1 (1934-1951); **2** (1951-1954); **3** (1954-1956); **4** (1956-1960); **5** (1960-1963) ..... Each £2.95 (UK): £3.25 (Eur/Sur)
Or, the set of five books: £14.00 (UK): £15.50 (Eur/Sur)
Radio, TV, Industrial & Transmitting Valve Equivalents ..... £2.95 (UK): £3.25 (Eur/Sur)

Wireless for the Warrior – Volume 2 *by Louis Meulstee* . £ 39.50(UK): £41.00 (Eur/Sur)
Because of the weight and value ofthis book, we recommend airmail despatch to addresses outside Europe. We cannot guarantee safe delivery by surface mail. Airmail prices are as follows:
Zone 1 (Africa, the Americas*, Middle East, India and Malaysia) £51.50
Zone 2 (Australia, New Zealand, Pacific Islands, China, Japan and Korea) £54.50
* **Wireless for the Warrior – Volume 2** exceeds the maximum weight for postal services to Canada. Orders for that country will therefore be sent by air parcel post, at a total price of £55.50 per copy.

Credit card orders welcome by phone or fax on 01202 658474

A Practical Working Model of
The Mecograph
Vertical Semi-automatic Key of 1906

by Dennis Goacher G3LLZ

IN *THE STORY OF THE KEY*, Louise Moreau W3WRE describes how various manufacturers sought to circumvent the Vibroplex patents which protected Vibroplex from serious competition in the market for semi-automatic keys. One successful attempt, in 1906, two years after the Vibroplex appeared, was the invention of a vertical key by W.O. Coffe of Cleveland Ohio, under US Patent No. 812183 dated 13 February 1906.

Manufactured by the Mecograph Company in Cleveland, this key's vertical design had a freely swinging pendulum, and the spring action was the factor that bypassed the Vibroplex patents. The Vibroplex made dots by creating tension in the spring, but the Mecograph utilised the release of the spring tension, and this design was deemed not to infringe the Martin patents.

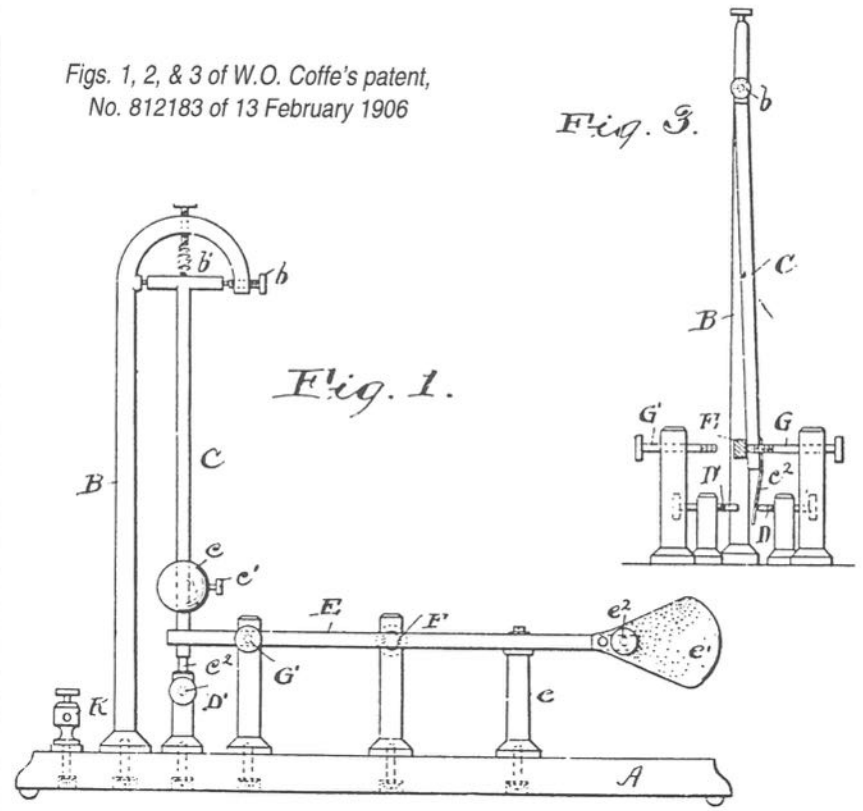
In this article, Dennis Goacher describes how he built a practical working model of the Coffe key, with certain variations, the problems he encountered, and how he overcame them.

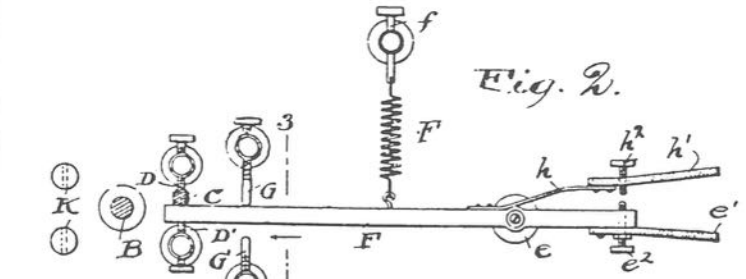
This version was built along the general lines of the patent drawings but with variations to make it a practical working model. The variations, in the form of an extra terminal for the dash paddle wire connections, and the arrangement of the underside electrical connections were as a result of considering what the inventor might have done in similar circumstances, taking account of the then current engineering practices.

The key is assembled on a mahogany base, and the main components are fashioned from brass. The only other metals used are steel for the pivots, the springs and the adjusting screws, and phosphor bronze for the contact spring.

The feet are turned from brass and have rubber inserts to prevent the key from 'walking' across the table when in use, and the finger plates are made of teak. The small rivets are of copper.

Figs. 1, 2, & 3 of W.O. Coffe's patent,
No. 812183 of 13 February 1906





Witnesses.
C. B. Gilchrist
B. W. Brockett.

Inventor:
William O. Coffe
By his Attorneys,
Thurston & Paine

The size of the key was determined by the material available, and then by scaling the drawings to suit the size of material. This resulted in a base size of 5½in x 3½in (140 x 89mm) and a height to the top of the standard of 5½in (140mm).

Construction was without any difficulties, the most awkward part being the bending of a brass rod to form the standard. This was done by first drilling and tapping one end of the rod for its mounting, then bending it a small amount at a time around a one-inch diameter steel bar held in a vice, while heating it with an oxy-acetylene flame.

Limited Oscillation

Accurate drilling of the pivot and electrical screw holes was achieved by carefully marking and centre-punching the hole positions, and then clamping the standard to an angle plate for the drilling operations.

When assembled, if the pendulum is freely suspended from the top by means of its two pivots, and allowed to swing without restriction it will do so for about ten oscillations. When the pendulum is fitted with a contact and allowed to strike the fixed contact, as if making dots, the oscillations will stop after about four dots are made, although the rate of oscillation will increase noticeably in this short time.

This is due to the small amount of energy stored in the pendulum being limited by the small swing available when the key is in use. To increase the amount of swing would involve increasing the sideways movement of the operating lever to a degree not acceptable for comfortable sending.

Increasing the Number of Dots Made

Changing the pendulum contact spring, using soft or hard materials, resulted in minimal change in the number of dots made, and no improvement in the varying rate. It was not until the final assembly, when soldering on the electri-

Dennis Goacher's version of the Mecograph (Coffe) key of 1906
Photo: Dennis Goacher

cal connection to the top of the pendulum, that a possible solution to the problem was discovered.

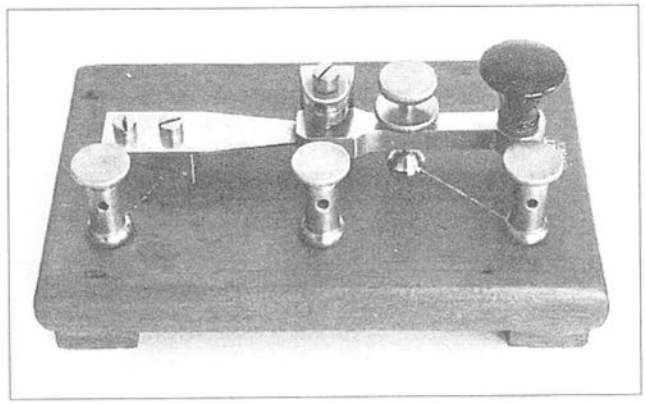
The connection was made from copper wire curled into a spring-like coil as shown in the patent drawings. At first, this caused the pendulum to be biased to one side of the natural hanging position and produced only one dot. By adjusting the wire so that the pendulum was biased towards the fixed dot contact, a more even stream of dots was produced, much more in line with what was required.

Further experimentation with different gauges of copper wire made some further, though limited, improvements, and the key was left with a coil of 26 BSWG (25 AWG) copper wire and producing eight dots with only a small rate of variation.

I am sure that the basic operation could be improved by substituting a proper steel spring for the electrical connection and using the connecting screw as an adjuster, and that is an area I will investigate in the future.

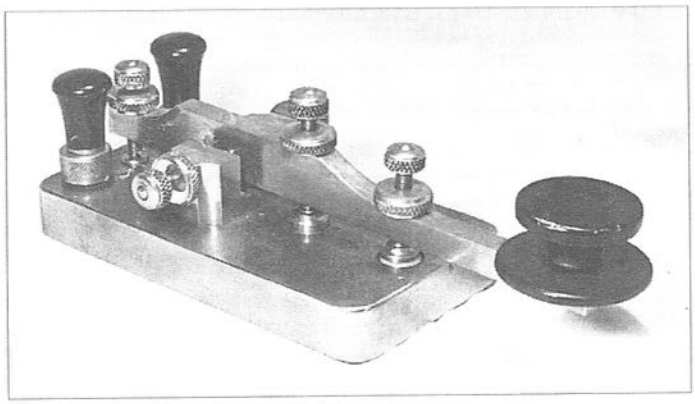
MM

Showcase



French Ducretet key

Photo/Collection: Jean Le Galudec



'The Mariner', home-made by Robert W. Betts, N1KPR, for rugged maritime service. All bronze with brass adjustments. Bob sums it up: 'Heavy, great feel'

Photo: N1KPR

Featuring keys and other collectors' items of telegraphic interest.
If anyone can add to the information given please contact
Tony Smith, 13 Morley Road. Sheringham, Norfolk NR26 8JE

Morse Learning Methods

A follow-up

by Tony Smith

THE RECENT 4-part series covering Morse learning methods over the years (MM50, 52, 53 & 54) seems to have been well-received, prompting a number of readers to send in further examples of ways to learn the code which have come to their notice. Here, therefore, is a further round-up of methods from the past including, as previously, some that must have been more difficult to master than the code itself!

Scout's Method

Bert van Kleef PA0GVK describes how he learned the code in the Scouts more than 40 years ago. He writes: "As Scouts we practised Morse by whistling it to one another across the streets, in the classroom (the headmaster was not amused) and in the dunes near The Hague using lamps and flags.

"The code was hammered in by our Scoutmaster, so severely that it seems impossible to ever forget it, just like swimming and biking. The method for remembering the code is based on keywords with specific syllables, the ones containing an 'o' represent a dash, the others dots."

A	·−	An_ton
B	−···	Bok_ke_wa_gen
C	−·−·	Com_man_do_brug
D	−··	Dors_vle_gel
E	·	Eend -
F	··−·	Feest_ge_no_ten
G	−−·	Groot_moe_der
H	····	Huis_be_zit_ter
I	··	Ie_mand
J	·−−−	Ja,_o_zo_mooi
K	−·−	Kloos_ter_poort
L	·−··	Lik_doorn_snij_der
M	−−	Mo_tor
N	−·	Noor_den
O	−−−	Oor_logs_vloot
P	·−−·	Per_mo_tor_fiets
Q	−−·−	Quols_dorp_in_nood
R	·−·	Re_vol_ver
S	···	Sein_sleu_tel
T	−	Toon -
U	··−	U_ni_form
V	···−	Va_kan_tie_oord
W	·−−	Waar_borg_som
X	−··−	Zon_der_slag_woord
Y	−·−−	Yor_ker_moor_kop
Z	−−··	Zoe_loe_kaf_fer

Fons Vanden Berghen sent us a similar list from an official Flemish Scout Handbook, *Het Jongverkenners Handboek*, 2nd edition, dated 1957. Again syllables containing an 'o' represent a dash, and all others dots. Some of the words are identical in each list, but the Flemish list has a few more that seem familiar to English speakers, such as a = al-lo; c = co-ca-co-la; d = dok-wer-ker; and l = li-mo-na-de.

Narrative Style Mnemonic

John Alcorn, VK2JWA sent a mnemonic from a Morse chart, published by Brown & Son, Glasgow, apparently some time between 1908 and 1921, which he found at the Low Head Pilot Station/ Museum, Tasmania.

This uses the well-known system of grouping progressively changing symbols together, e.g., E, I, S, H (one, two, three and four dots respectively), A, U, V (· – · · – · · · –) in sentences that must have been somewhat hard to remember:

E-nglishmen I-nvariably S-upport H-igh
A-uthorities U-nless V-indictive.
T-he M-anaging O-wners
N-ever D-estroy B-ills.
R-emember W-hen L-oose P-lay
J-angling F-ractious G-alloping Z-ig zag
K-nights X-peditely C-apture Y-our
Q-ueen

MacBeth's Mnemonic System

This system was described in a small pamphlet enclosed with a Fleron practice set, probably c.1940. Under the title: *The Continental Code – How to Learn it Quickly by a New, Simple Method*, J.C.H. MacBeth, 'Author of The *Marconi International Code*, *The Marconi Dictionary*, *Secret Ciphering*, etc.,' offers the beginner the opportunity 'to acquire a good fundamental knowledge of the Continental Code in an interesting and economical manner.'

He explains: 'The most frequently used letter of the English Alphabet is E, so in Code it received the shortest possible element, a dot (·), while T, which is next in the order of frequency, is represented by the next shorter element, a dash (–). If the student cares to try the experiment of substituting, say Z (– – · ·) for E, and X (– · · –) for T, in sending a few ordinary messages, he will be surprised to find how much longer it will take to transmit them.

'The four letters of the alphabet which follow E and T in order of frequency are A, N, I and M, so on the foregoing principle they are constituted of the next shortest number of elements, dot and dash, two dots or two dashes.

'In order to make use of the Mnemonic System the student must first commit to memory the six shortest letters, which have only one or two elements, A (· –), E (·), I (· ·), M (– –) N (– ·), T (–)

'The other twenty letters of the alphabet are composed of combinations of the above six. For instance, J (· – – –) is formed by, the combination of the elements used to form A (· –) and M (– –). Now, if A and M combined form the letter J, the word "jam" readily suggests itself as the Mnemonic or memory word. Similarly B (– · · ·) is composed of a combination of the elements used to form N (– ·) and I (· ·). As N and I form B, the memory word is "nib".'

After memorising the six shortest letters, therefore, the learner progresses to MacBeth's Mnemonic Alphabet, as shown on the right.

The Combination of	Forms	Mnemonic
N – · & I · ·	B – · · ·	niB
T – E · T – & E ·	C – · – ·	teteC
N – · & E ·	D – · ·	neD
I · · & N – ·	F · · – ·	Fin
M – – & E	G – – ·	meG
E · I · · & E ·	H · · · ·	Heie
A · – & M – –	J · – – –	Jam
T – & A · –	K – · –	taK
A · – & I · ·	L · – · ·	aiL
T – T – & T –	O – – –	Ottto
A · – & N – ·	P · – – ·	Pan
M – – & A · –	Q – – · –	maQ
A · – & E ·	R · – ·	aRe
E · & I · ·	S · · ·	eiS
I · · & T –	U · · –	Uit
I · · & A · –	V · · · –	Via
A · – & T –	W · – –	Wat
N – · & A · –	X – · · –	naX
T – & A · – & T –	Y – · – –	tatY
M – – & I · ·	Z – – · ·	miZ

Our thanks to Lynn Burlingame, N7CFO, who e-mailed details of MacBeth's Mnemonic System to *MM*.

How to Learn the Morse Code in Thirty Minutes and Remember It

If you thought MacBeth's Mnemonic System was complicated, try this one! It was published by Gale & Polden Ltd, price sixpence (possibly just after WWI judging by the mnemonics used), and is another system which promised dramatic results. In fact, the author considered thirty minutes to be a conservative estimate, writing: 'Pupils entirely ignorant of the code have picked it up in half the time and passed a test after fifteen minutes' instruction.'

The alphabet is divided into four sections:

1. The Simple Opposites: memorised by the sentence 'Ate 'im so hot', equating to the letters ET (one dot, one dash), IM (two dots, two dashes), SO (three dots, three dashes), H (four dots).

2. The Mixed Opposites: memorised by the sentence 'Ann Bee Vee, d'you feel Great War 'cutely?' (Q sound in 'cutely). This equates to the letters AN, BV, DU, FL, GW, QY with, in each case, the second letter being the exact reverse of the first.

Learners are advised to remember A as 'dot dash', because it is the first letter of the alphabet 'and Morse code is a "dot dash" code.' B is remembered by its letter shape, one upright and three horizontal lines standing for its dash and three dots = 13 = B. D by the Latin 'duo' – two; 'and so D has only a dash and two dots.'

'The word FueL makes the letters F

and L quite easy. F = UE in Morse, and L is the opposite of F. G = ME (or the word Ger-man-y), Q = MET (or 'by calling to mind the long food queues, and that the sign for Q is as G, but with a dash added').

3. The Sandwiches: memorised by the sentence 'Kaiser pax'. The letters here are K R P X and to recall these: 'We and our Allies are dots: the enemy are dashes.'

'Kaiser began war and hemmed us in, so K, which begins Kaiser is: dash dot dash.' 'R is END of Kaiser, so we have him; R is therefore: dot, dash, dot.'

'P is beginning of peace, for which enemy is forced to sue, because Allies have surrounded him; therefore P is: dot, dash, dash, dot.'

'X is end of peace (pax), with Allies in the centre, sending dismissed armies home; therefore X is: dash, dot, dot, dash.'

4. The Outsiders: memorised by the sentence 'Seize Jeremiah'. These are the letters C, Z, J, for which there are no opposites. 'We learn them by the sound of CZ, memorised as 'Seize', and the J by 'Jeremiah'. C is dash, dot repeated. Z is harsh C sound, so is double-dash, double dot, which is a sort of emphasised C. 'J is memorised as Je-re-mi-ah – one short sound (dot), and three long sounds (dashes). C can also be memorised by word CaNNe. Z by MI. J by AM (or JAM).'

In his introduction to this booklet, the author wrote that he would 'be glad to receive any recommendations for improvement from practical signallers.' One wonders if he ever did receive any recommendations – and what they said!

Our thanks to Wyn Davies for sending details of this system.

McElroy's System

Under the heading 'Morse Methods – Notes on Learning the Code and Operating Technique', *Wireless World* (April 1942) didn't think much of the various aids to memory then available for learning Morse, but was clearly impressed by the system used by T.R. McElroy, the American champion telegraphist:

'Of late the Morse code has been very much in the news. Some indication of the widespread interest in the subject is given by the fact that sales of the Wireless World booklet *Learning Morse* have now passed the quarter-million mark. Even the columns of *The Times* have carried a voluminous correspondence on the learning of the code.

'Far too much stress has been laid, both in *The Times* correspondence and elsewhere, on the relatively simple matter of learning the code; that is, of memorising the Morse symbols corresponding to each letter and figure.

'Admittedly, the use of some of the ingenious aids to memory that have been suggested may save a few hours in a process that in any case should not take more than a day or two. But the point is that such aids involve an indirect line of thought that is far too slow even for the slowest reception or transmission of signals.

'It would hardly be an exaggeration to say that the memorising of Morse symbols as such is a waste of time, if not worse. What the would-be wireless operator must memorise are, for reception, rhythmic sounds and, for transmission,

rhythmic wrist movements. Until these are firmly impressed on his subconscious mind he is a long way from becoming competent.

'What seems to be a more direct method, and one that is less wasteful of effort in the early stages of instruction, is described by T.R. McElroy, the American champion telegraphist, in the May *QST*.

'Writing under the title "Good Morse is Easier", he claims to have succeeded in getting a class of average beginners, none of whom knew a dot from a dash, to copy simple words at 20 words per minute during their first evening's instruction. This is how he did it, in his own words:

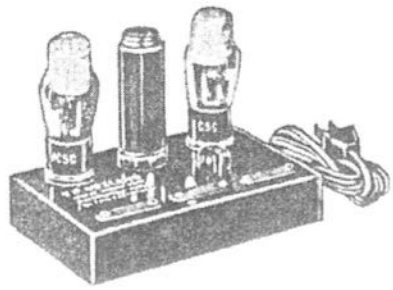
> "On the ordinary paper slip, in a Mac Recorder, made with an ordinary hand key, I made about half a dozen dots spaced very widely apart. Then, after a minute or so, I made a half dozen series of two dots, the two dots being right together as they should be, but much space between each group of two dots. Then, after an interval, three dots the same way. Then four dots. And then five dots. Then two dots again as originally.
>
> On the first night I ran that slip through my Mac Auto at 20 words per minute. A dot ran through, and I announced loudly 'That is a dot. One dot, or dit, is the letter E. Now here it is again; write it down with your pencil. Forget that it is dot – it is E'.
>
> The slip meanwhile, running at 20 words per minute, had come to the second dot. Each of the 16 persons in the group almost automatically wrote E when they heard it ...
>
> Then we came to the two-dot group. I said 'Now we'll hear two dits. Listen.' And along came dit dit at 20 words per minute. I said 'That is I. Now here it is again. Write it down with your pencils when you hear it.' And the slip, running all the while,

The Tireless Professor

Fons Vanden Berghen drew our attention to a set of (probably) five double-sided records published by the Ecole Centrale de TSF (Central Wireless College), in the Rue de la Lune, Paris, date unknown.

The record label shows 'The Tireless Professor', and reads 'The method used in the School to teach aural reading by means of gramophone records.' Lesson 10 covers the use of the automatic key.

MAC AUDIO OSCILLATOR



An audio oscillator for morse practice or modulation. Three position switch gives choice of three tones at 600, 800 and 1,000 cycles. Used in conjunction with any of McElroy's Keys, this instrument makes an ideal practice set for the individual or morse class. The price includes two glass 6C5 tubes, ballast tube and line cord for any stated voltage between 110 and 250 volts. A.C. or D.C. operation.
PRICE COMPLETE **37/6**

MAC PRACTICE SET

A 1,000 cycle mechanical oscillator designed for producing an audible note as the key is pressed. The "Hummer" is mounted on to a Heavy Based Mac Straight Key of very popular design. One of the most ingenious little gadgets in the whole radio telegraph industry. COMPLETE SET **22/6**
Heavy Duty Mac Straight Key ... only **11/-**
HUMMER only (may be added to any other key or used as an ordinary buzzer) **11/6**

In 1941, Webb's Radio, located in London's West End, was advertising a 'Mac Audio Oscillator'; and a 'Mac Practice Set', incorporating a 'heavy duty Mac Straight Key" and a 'Hummer'. See advertisement left. Does anyone recall the 'Hummer', described as a 1000 cycle mechanical oscillator?

---

came to the two dots, and again automatically the group wrote I.

After doing that a half dozen times, they would recognise I when they heard it. Mind you, they had never heard a dot or a dash before. But at 20 words per minute they automatically slapped down I. Then the letter S in the same way. Then we came to the letter H and the figure 5 in the same way.

And then back over it again, excepting that this time I said 'Now, remember this is E,' and a single dot ran through. 'This is I', and two dots ran through. 'This is S,' etc. 'Now then friends, here is a word. Write it down just as you did the letters. Don't let it fool you.'

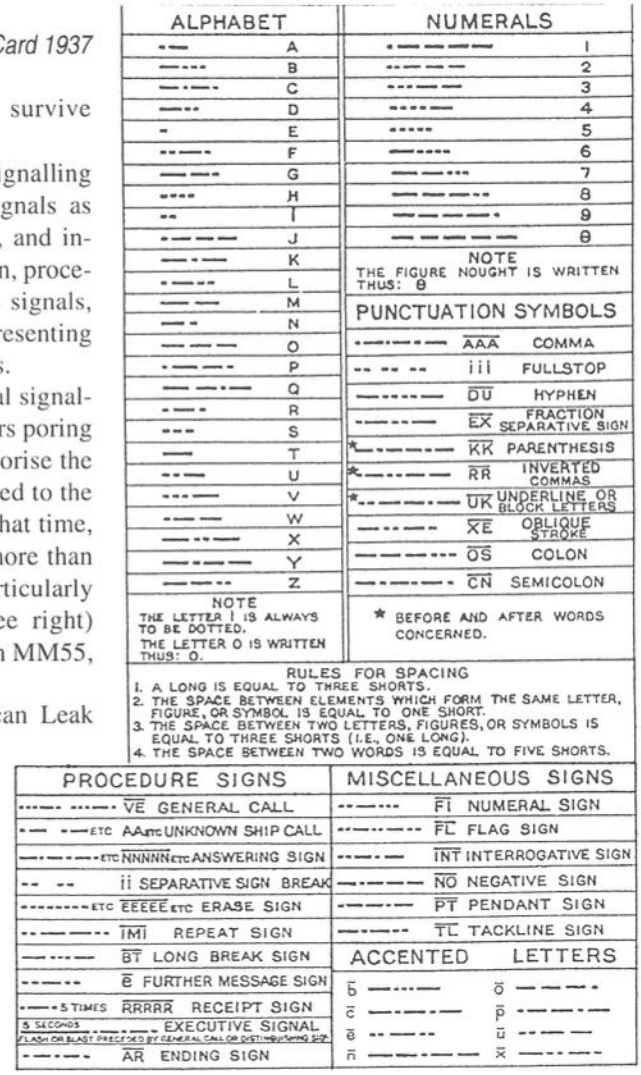
And then letter S ran through. All of this at 20 words per minute you understand, but with a lot of space between the letters. Then the letter I and then the letter S again. 'And now friends, you've copied the word SIS at 20 words per minute. Isn't it easy?' And by showing them how simple the code is, and how easy to copy at 20 words per minute, they had the job licked before they had hardly started. Then came the word HIS and the word SHE, etc.

The second lesson, two nights later, I took them to the dash characters, and the third lesson, two nights later, to the combinations. The entire group, after the first week of three nights, one hour each night, were copying, automatically and happily, easy words at 20 words per minute, and copying them correctly too. Very easy ones, of course, but words just the same ..."

Signal Card 1937

Published by His Majesty's Stationery Office, price 9d, this is more of an *aide mémoire* than a learning system, comprising four stiff cards in booklet form with a canvas back pasted on,

Plate V from the Signal Card 1937



ALPHABET		NUMERALS	
·—	A	·————	1
—···	B	··———	2
—·—·	C	···——	3
—··	D	····—	4
·	E	·····	5
··—·	F	—····	6
——·	G	——···	7
····	H	———··	8
··	I	————·	9
·———	J	—————	0
—·—	K	NOTE THE FIGURE NOUGHT IS WRITTEN THUS: 0	
·—··	L	PUNCTUATION SYMBOLS	
——	M	·—·—·— AAA	COMMA
—·	N	·· ·· ·· iii	FULLSTOP
———	O	—····— DU	HYPHEN
·——·	P	—··—· EX	FRACTION SEPARATIVE SIGN
——·—	Q	*—·——·— KK	PARENTHESIS
·—·	R	*·—··—· RR	INVERTED COMMAS
···	S	*··——·— UK	UNDERLINE OR BLOCK LETTERS
—	T	—··—· XE	OBLIQUE STROKE
··—	U	———··· OS	COLON
···—	V	—·—·—· CN	SEMICOLON
·——	W	NOTE THE LETTER I IS ALWAYS TO BE DOTTED. THE LETTER O IS WRITTEN THUS: O.	* BEFORE AND AFTER WORDS CONCERNED.
—··—	X		
—·——	Y		
——··	Z		

RULES FOR SPACING
1. A LONG IS EQUAL TO THREE SHORTS.
2. THE SPACE BETWEEN ELEMENTS WHICH FORM THE SAME LETTER, FIGURE, OR SYMBOL IS EQUAL TO ONE SHORT.
3. THE SPACE BETWEEN TWO LETTERS, FIGURES, OR SYMBOLS IS EQUAL TO THREE SHORTS (I.E. ONE LONG).
4. THE SPACE BETWEEN TWO WORDS IS EQUAL TO FIVE SHORTS.

PROCEDURE SIGNS		MISCELLANEOUS SIGNS	
····— ·····—	VE GENERAL CALL	··——···	FI NUMERAL SIGN
·— —·—·ETC	AA ETC UNKNOWN SHIP CALL	··—·—·—	FL FLAG SIGN
—·—·—·ETC	NNNNN ETC ANSWERING SIGN	··—·—	INT INTERROGATIVE SIGN
·· ··	ii SEPARATIVE SIGN BREAK	—·————	NO NEGATIVE SIGN
·····ETC	EEEEE ETC ERASE SIGN	·———·—	PT PENDANT SIGN
··———··	IMI REPEAT SIGN	—·—·—··	TL TACKLINE SIGN
———·———	BT LONG BREAK SIGN	ACCENTED LETTERS	
·——··	e FURTHER MESSAGE SIGN	b —···	o ———
·—·5 TIMES	RRRRR RECEIPT SIGN	c —·—·	p ·——·—
5 SECONDS ——— ·—·— FLASH OR BLAST PRECEDED BY GENERAL CALL OR DISTINGUISHING SIGN	EXECUTIVE SIGN	e ··	u ··——
·—·—·	AR ENDING SIGN	n ——·—	x —··—·

obviously intended to survive rough treatment.

It contains Naval signalling flags and Semaphore signals as well as the Morse code, and includes Morse punctuation, procedural and miscellaneous signals, plus Morse signals representing Naval flags and pendants.

No doubt many Naval signalmen spent countless hours poring over these cards to memorise the special signals, as opposed to the normal ones which, by that time, they were presumably more than familiar with! Note particularly the accented letters (see right) which were referred to in MM55, p.7.

Our thanks to Duncan Leak for sending copies of these cards. He tells us that his son was issued with a similar card when he was in the Navy in the 1970s.

Morse Indicator

This double-sided Rotor-Tutor Self Instructor and Practice Board, price 9d, was intended for use in accordance with the instructions printed on the device. See illustrations at the foot of the opposite page.

One side contained the alphabet. The other contained numerals, punctuation and some procedural signs. Although undated, the printed reference to variations from the International code used by the RAF possibly indicates early WWII use.

Thanks to Duncan Leak for copies of this device.

The Complete Morse Instructor

Written by F. Tait, 'Telegraphist and Wireless Operator, Central Telegraph

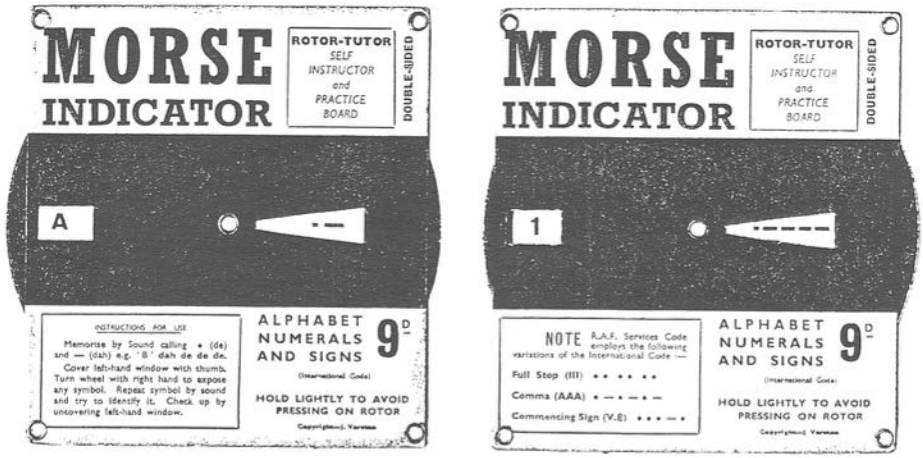
Office, London', and published by Pitman in 1944, this is a good sensible instruction manual without gimmicks. In particular, there are no mnemonics, just learning by sound.

The text is aimed at both instructors taking a class and individual students working on their own. Lessons 1 to 7 cover the letters of the alphabet in alphabetical order, the first five lessons each cover four letters, with the next two having three letters each. Each lesson also includes practice material covering the letters learned in previous lessons.

The eighth lesson covers figures and introduces practice groups of mixed letters and figures, while the remaining 9 lessons are practice sessions of increasing complexity and increasing speed involving letter groups, mixed groups and plain language.

For the practical learner, some simple buzzer and valve oscillator circuits are provided. Additionally, a long list of 'Miscellaneous Hints' offers practical help to the beginner, including:

- Advice to practice reading one or two letters in arrears.
- How to deal with erasures.
- How to deal with misspelt words in messages for transmission.
- A recommendation to practise occasionally with a dummy key, to promote 'crispness' in keying.
- A suggestion that slow dictation (without having to concentrate on Morse signals) provides good practice in legible printing – also recommended for those approaching the higher manual speeds, who 'can read it, but can't get it down.'
- Advice that, when receiving plain language, learners should not scribble each letter hurriedly, in order to devote their whole attention to the next letter. Instead, they should write each word slowly and smoothly without taking the pencil from the paper between letters. 'They thus begin early to do two things at once – listening to the signal while writing.'



Both sides of the Morse Indicator (see previous page for description)

• Instructions on how to request repetitions using the signals IMI (barred) and the letters AA, AB, WA, and WB.

This is one of the best teaching systems I have seen in the material reviewed for this series. Having taught the basic code, it then goes on to cover many practical aspects of actual operating which usually mystify a beginner.

Apart from listing the more common Q-codes, including the QSA and QRK strength and readability signals, it explains the 24-hour clock; provides an introduction to light signalling, including procedures; lists old and new punctuation signs, both of which were likely to be heard at that time; and has a section on semaphore. In short a book for the complete signaller!

Our thanks to Duncan Leak for providing MM with a copy of this book.

Thanks

My thanks to the many readers who sent in material referred to in this, and in the previous articles, relating to Morse learning methods. It has been an interesting exploration of the subject, although it must be stressed that the reproduction of mnemonic or other memory aids in *MM* is purely of historical interest and is in no way a recommendation to learners to try them!

There's no doubt that such systems help in memorising virtually anything (once the system itself has been mastered). However, this can be self-defeating when using Morse in a practical situation where what is required is instant recognition of not one but a stream of signals.

By the time one signal has been mentally aligned to a mnemonic to identify it, several more will have arrived. The result will be complete confusion and the only way to progress is to forget the hard-learned memory aids at the earliest opportunity.

In the past, many people did learn the code using these systems, and survived to become good operators, but one can't help wondering how many more who had mastered their favoured system gave up when faced with the realities of real-life operating.

As mentioned several times in the series, and on other occasions in *MM*, the best way to learn Morse is by a system which teaches the student to memorise the sound of individual symbols, thus ensuring instant recognition whenever they are heard.

Please note that this is the final article in the series and no further examples of Morse learning methods are required by *MM*.

Radio Operating in Papua New Guinea

Part 2 – Working Life on the Smaller Islands – Early Equipment

by Allan Moore VK1AL

JACK QUEALY worked in Port Moresby, Lae and Rabaul, and at many other smaller outstations. He relieved many a European operator who went 'home' on leave after a 21 months stint in the Territory.

One interesting station was Sohano, an Island near Bougainville and only about 3/4 of a mile in circumference. Jack is unsure of the receivers (possibly different types of AWA receivers) but well-remembers using 3BZ transmitters between Sohano and Rabaul.

The 3BZ (there were earlier models), was a pre-war transmitter designed in about 1936–37, and made in about 1938–39 by the AWA Company, which may have been known as a Teleradio. It covered 500kHz to 22MHz (similar to the AR8/AT5).

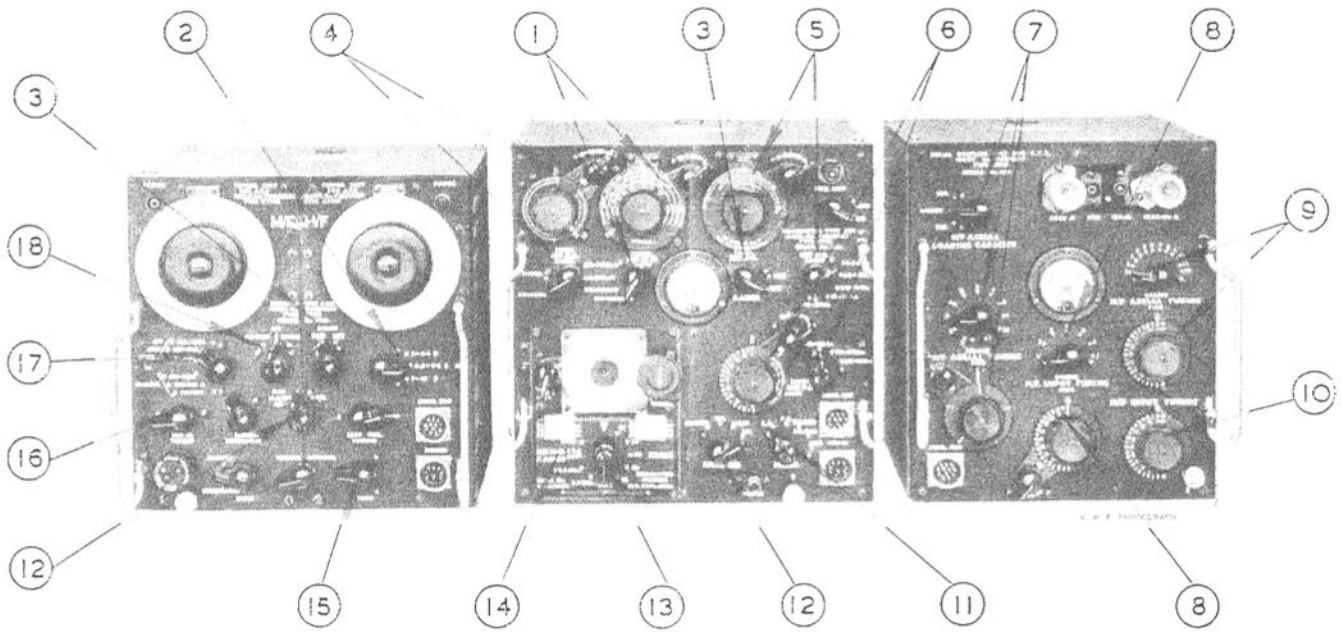
Jack sent many thousands of words using this old-style equipment by CW and it only had an output of about 10 watts. The 3BZ was also used by operators of the Australian Coast Watcher Service during the War. Originally designed for pedal or battery operation, they obviously did a sterling job.

Jack knew Amos Tamti and Nelson (or George) Tokidoro very well, and said they were superb operators. He knew of about 20 indigenous operators round the Territory in his time and said he never found a poor operator – they all appeared to have a flair for Morse code. Another well known PNG local operator who worked in Port Moresby with Jack was Joseph Auna, whom I met many years later in Melbourne.

Officers-in-charge of Post and Telegraph outstations were usually 1st Class Certificated Officers with indigenous staff in some locations, and supported at times by European female voice operators working smaller stations. Where staff with little or no technical qualifications were situated, the AR8/AT5 configuration, or perhaps Australian made AT20 500-watt transmitters, were used.

The AR8/AT5 receiver/transmitter configuration commonly used at many Post and Telegraph controlled outstations in Papua New Guinea. Made by Amalgamated Wireless of Australasia (AWA) this MF/HF installation was originally used in Beaufort and Hudson bombers during WWII. Power, about 50 watts, modes CW, MCW, AM, and pulse transmission >>

① M.F. OSCILLATOR RANGE SWITCH AND TUNING
② H.F. RANGE SELECTOR
③ M.F. H.F. CHANNEL SELECTOR SWITCHES
④ H.F. BUFFER RANGE
⑤ H.F. P.A. RANGE SWITCH AND TUNING
⑥ H.F. P.A. RANGE SWITCH AND TUNING
⑦ H.F. AERIAL TUNING
⑧ H.F. AERIAL COUPLING
⑨ M.F. AERIAL TUNING
⑩ M.F. AERIAL COUPLING
⑪ METER SWITCH
⑫ OPERATORS FUNCTIONAL CONTROL SWITCH
⑬ H.F. OSC. RANGES AND CRYSTAL SELECTOR
⑭ PLUG IN CRYSTALS MOUNT BEHIND HINGED COVER
⑮ TONE CONTROL AND INTERWIRING SWITCH
⑯ M.F. AERIAL TUNING COND
⑰ M.F. RANGE SELECTOR SWITCH
⑱ D.F. TRAFFIC SELECTOR



RECEIVER AR8 TRANSMITTER AT5 AERIAL COUPLING UNIT

Teletype

Radio teletype circuits existed between Port Moresby and Lae with HF 500-watt marine type transmitters, using a tone-modulated Hellschreiber (German) system. Received copy was on thin paper tape with letter quality similar to dot-matrix printers. Tapes were cut and pasted by staff on to telegram forms prior to delivery or re-transmission. CW was used in the event of difficulties with equipment or the circuit.

The 'old' looking teleprinter churned out miles of paper during its long and relatively effective life. Siemens Model 100 teletypes were also used on VHF telegraph circuits to Lae. Jack Quealy tells of his time in about 1966–67 when radio teletype circuits were introduced between Lae and Rabaul. At times when the circuit was 'not commercial', operators at both terminals would tape up their traffic ready to transmit when the circuit was restored.

There were some early difficulties here, for when the local operator at the distant end was asked to re-transmit his message from a particular message number, some could not initially do this as they had not been taught to read tape (the 5-unit Baudot system). The problem was quickly overcome with some rapid tape reading instruction.

A system using standard landline techniques and Siemens Model 100 machines was used between the Port Moresby Telegraph Office, and Konedobu, the Public Service and Diplomatic Headquarters. Quite a volume of traffic passed over this circuit, but it did not particularly excite the operators rostered to work it.

Transmitters and Equipment

Port Moresby transmitters were located at the shared 4 Mile OTC site. They were principally AWA 500-watt marine types used for CW and AM trunks to Rabaul. Made for the Royal Australian Air Force during WWII, Australian STC-built AT20M 500-watt transmitters were also in use at the three main centres. (Some of these models were also built by a Melbourne firm, Eclipse Radio Company, a subsidiary of Radio Corporation of Australia).

They were coupled to delta-fed dipoles operating between 5 to 10MHz, and duplex frequencies allowed incoming and outgoing traffic to be continuous. This system was replaced later by a 5-channel VHF system via Mt. Lawes (30 miles from Port Moresby) and Mt. Kainde (near Wau). One channel was RTTY, the remainder were telephone circuits, although only two of these could be called commercial quality.

The AR8/AT5 receiver/transmitter configuration was common at many Post and Telegraph controlled outstations where indigenous operators were complemented by expatriate (usually Australian), operators.

Radio Switchboard

There was a two-person manned radio switchboard for controlling trunk calls within the Papua area, which at night was lightly loaded. The AM Voice Radio Network was also handled from one of the exchange positions. At night an operator handled all Territory calls on an Emergency frequency of 5880kHz until the Telegraph Office opened again at 7 a.m. the following day.

There was an SSB circuit between Port Moresby and Samarai for telephone trunk traffic, which was not used at night. Similar arrangements were in force in Lae and Rabaul. Expatriate operators like myself, would take turns at weekends on a rotating roster to man the radio switchboard.

Categories of Traffic

Much of the traffic was similar to that we had handled in Australia, such as shipping telegrams, meteorological messages, birthday and other congratulatory messages, business and commercial traffic, and even vulcanology reports from scientists in areas where large, active volcanoes were being regularly monitored.

A great deal of traffic was exchanged between the principal Administration Offices in Port Moresby and their representatives in the field – the District Commissioners, District Officers and Patrol Officers. Some of these men were located in extremely isolated areas and the story of the Patrol Officer is highly recommended reading.

All circuits were very busy and it was rare that operators could have a decent yarn while on the job. A perfect situation for operators who enjoyed transmitting and receiving Morse code all day for their living.

Radio Inspectors and Monitoring Functions

In the early 1960s the Posts and Telegraphs Department was handicapped by not having its own Radio Communications Legislation. All Radio Frequency emissions were controlled by the Australian Wireless Telegraphy Act. Rob Gurr formulated a proposal to introduce local PNG Legislation to cover such emissions which was supported by the local Administration, however this took many years to achieve.

The PNG Administration, well aware that much planning towards locally controlled administration of the International Radio Regulations would be necessary as Independence approached, employed Rob Gurr as Senior Inspector (and his support staff of three Inspectors – John Rutherford, Jack Bell and Ruth Donovan) to administer the requirements of the Australian Wireless Telegraphy Act, the controlling legislation of the day.

Monitoring facilities, as mentioned earlier, were located at Paga Hill, adjacent to the Telegraph Office at Port Moresby, and from here the general conduct of all services, Marine, Aviation, Land Mobile, Amateur, and of course our own fairly extensive telegraph network, was professionally monitored. The usual international checks were made including frequency accuracy, modulation bandwidth, procedures and overall legal operational aspects.

The monitoring equipment in use varied, but high grade Rohde and Schwarz receiving and frequency measuring equipment was used for most purposes. The little group of busy Inspectors rapped the operators' knuckles occasionally when they departed from established protocol, and I had a warning or two myself.

Some of us from PMG backgrounds tended to 'forget' to use the official callsign and abbreviated them into 2-letter callsigns. For example calling VL8BR

(Rabaul) would suddenly become BR BR BR de BM (Port Moresby). We soon observed the correct regime, however, and the PMG operators became first-class hands with CW operating procedures after a short time.

OTC Office and Coastal Radio

The Australian Overseas Telecommunications Commission handled international and coastal radio circuits, including telephone and telegraph traffic on behalf of PNG, and were located in Rabaul, Lae and Port Moresby. I remember seeing a Chicago Model 14/15 Teletype in the Port Moresby Office (co-located in the Post and Telegraph Office Building) which was used between there and Sydney.

They had 5 to 10-kilowatt transmitters for the Sydney circuit, and I imagine Rabaul and Lae may have been similarly equipped. Rob Gurr said the OTC operators (who held First Class 'Tickets') used to receive taped Wheatstone CW at up to 35 words per minute, closely comparable with the speeds achieved by Posts and Telegraph operators.

An emergency link for administrative purposes was set up between Port Moresby and Hollandia, the then capital of Netherlands New Guinea. This caused some concern as it was OTC's Charter by legislation to provide International circuits.

The normal connection would have been from Port Moresby to Sydney by radio, Sydney to Holland by cable, and Holland back to Hollandia on HF radio. This circuit was difficult to manage, however, because of time differences and circuit access problems, and was technically unsound for a number of other reasons. Rob Gurr's Radio Frequency Administrators and Engineering staff found this circuitous route frustrating to say the least.

Amateur Operating

There were a number of amateur operators in the region in those days, and they were allocated the Australian VK9 prefix. They were quite active and an invaluable backup in times of emergency. Nevertheless, they were obliged to observe the same rules and regulations as their Australian mainland counterparts, and in all were a well-disciplined group. A Branch of the Wireless Institute of Australia was formed in Port Moresby, which was active for a number of years but ceased in 1962.

Well Operated Network

Even with limited radio experience at the time, I sensed a particularly strong and very well operated and administered radio network in Papua New Guinea. It was fast and accurate, and provided employment not only for excited and interested expatriates, but for a long list of indigenous citizens who turned out to be first-class radio operators, technicians, engineers and Inspectors – who would handle their own Telegraph Service in the not-too-distant future with confidence and expertise.

The progress towards independence was assisted by loans from the World Bank and this enabled the modernisation of the PNG Communications System. The system in existence today would not be anything like that of the 50s and

60s, but from our personal viewpoints we believe that the 60s methods mentioned above were commercially as good as the technology of the day permitted – and the work was very enjoyable.

End of a Short, Busy and Interesting Period

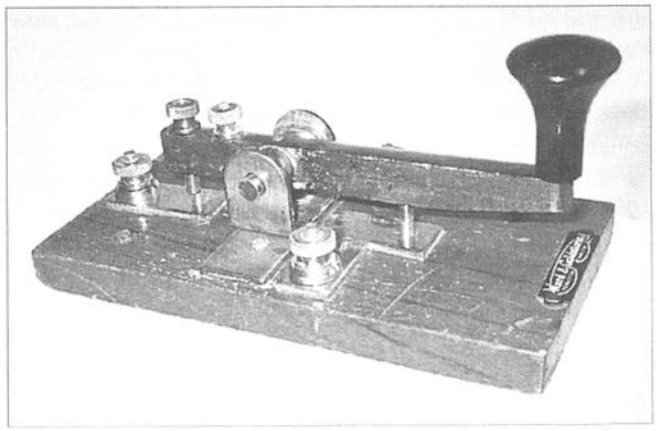
My stay in the Territory was for a few months only. I learned a little about radio – not enough, but sufficient to whet my appetite while I was aiming for the Antarctic.

With some regrets I left Port Moresby and flew to Brisbane, and later Canberra where I worked again as a landline telegraphist in the two Chief Telegraph Offices. In 1962 I was selected to go South with the January 1963 Expeditions.

Some years later I returned to the Pacific area and spent some time in a clerical relief position in Vanuatu. Later, I spent seven months in the Solomon Islands on the well-known Island of Guadalcanal of WWII fame. My amateur callsign was H44AM, and I had some interesting experiences with amateur radio and the annual Scout Jamboree of the Air with an old, but trusty Kenwood TS-520.

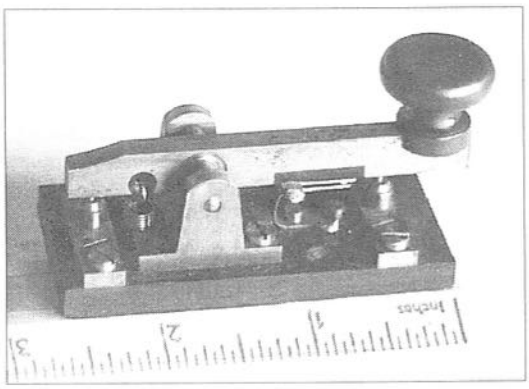
My most sincere thanks and gratitude are extended to Rob Gurr for his time, technical input, advice, and background information, most of which I knew nothing about at the time. I am also very grateful to Jack Quealy for his welcome contributions and, similarly, to John Gore (VK1PG) a retired Canberra radio inspector and Heard Island veteran of 1950, who provided additional information regarding the 3BZs and AR8/AT5 equipment. All three men are retired but still have a strong love of radio and Morse telegraphy, and retain their skills to this day. ***MM***

Info Please!



Photo/Collection: Jack Barker

Key marked 'Ward & Goldstone Ltd, PENDLETON, MAN/CR'.
Jack Barker comments: 'It is all brass except for the tension control, and appears to be a rather crude and cheap variation of the early GPO keys. It has the same base and arm dimensions, but the base plates are much thinner and are poorly aligned. It works well, though, and has a nice action.'
Any information on this key, or on Ward & Goldstone Ltd, will be welcome



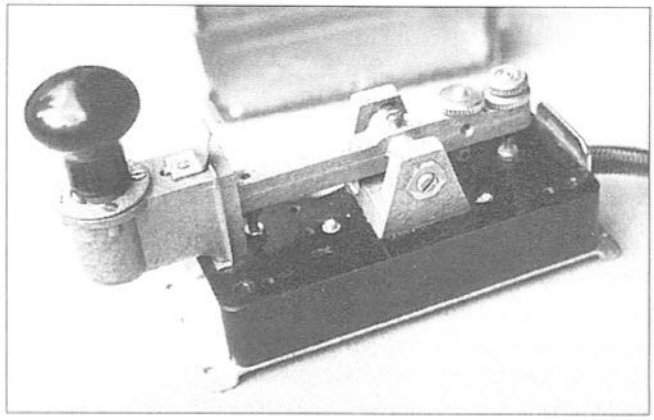
Small key, just over 2½ inches long, bought in Prague recently. Has an additional contact under the lever (insulated from the rest of the key) which closes just before the front contact. Mike Kerr, ZL2BCW, says: 'The metal work is finely executed and the lacquered brass has that patina that is only acquired over a considerable period of time. The knob and base are ebonite or hard rubber perhaps. There are no markings of any kind'. Info requested

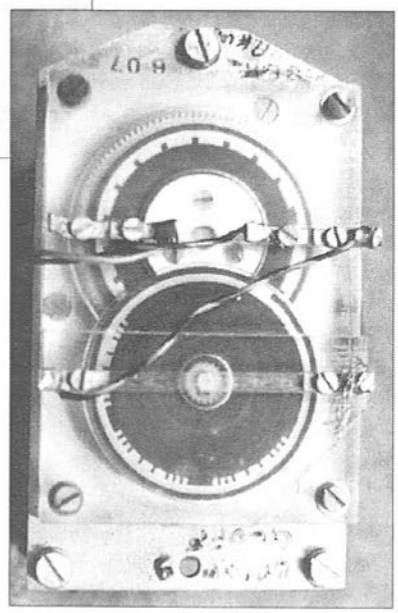
Collection /Photo: Mike Kerr

Readers require further information on the keys, etc., featured here.
Please write to Tony Smith, 13 Morley Road, Sheringham, Norfolk NR26 8JE if you can help.
All useful information received will be published in MM *in a later issue*

Unknown German key, shown with cover removed. Any information welcomed re maker, use, date, etc.

Collection/Photo: Clive Redfern G4CZR/PA3EUX





Unknown key, possibly British. Sends 'SOS' continuously when handle is turned. Top view above; underneath view, showing code-wheels, right. [The upper of the two code-wheels appears to be intended for transmission of the auto-alarm signal (four-second dashes with one-second spaces) used to alert off-watch operators before the 'SOS' is transmitted. – Ed.] Info requested

Collection/Photo: Stephen P. Smith, VK2SPS

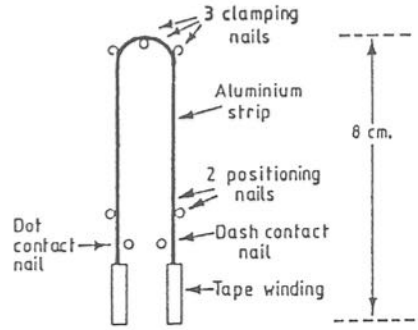
Electronic Keyer Paddles

by Dr Gary Bold ZL1AN

A PERFECTLY adequate iambic 'starting' paddle can be made in five minutes (I timed myself) from a piece of flat wood, seven 1½-inch (40mm) nails, scrap aluminium and masking tape.

Trim an offcut of chassis aluminium into a strip about 200mm by 10mm. Bend it symmetrically in the middle around something cylindrical (about 20mm in diameter) to form a 'U' shape. Wind a few turns of masking tape around both ends. Place the strip on the edge on the wood with the ends projecting about 20mm.

Fix it in place by hammering in seven nails as in the sketch. Outwards tension in the strip keeps it pressed against the two outer positioning nails, and the three nails at the bend keep it clamped in place. The only two nails that don't touch the metal strip (but are very close to it) form the dot and dash contacts.



Sketch of Gary Bold's simple paddle

Nobody Can Tell Difference

Solder wires to these nails, and another (the common or ground) to one of the back ones (or just use alligator clips – keyer input circuits draw very little current). These three wires go to the keyer. The dot and dash contacts are closed by simply pressing the 'U' strip inwards to touch their respective nails.

I have made ten paddles over the years, and this is by far the best of the cheap and dirty variety. Up to about 30 wpm, nobody can tell whether I am using this or my precision machined, gold contact professionally made paddle. In fact, if you are only capable of manipulating a keyer at about 20 wpm, this simple paddle might serve you perfectly well, and the money you save will buy the components for the keyer.

Qualities of Good Paddles

In what way is this paddle inferior,

and what qualities should a good one have? These are MY requirements: both the movement and the finger pads must be very rigid so that nothing bends (even slightly) in use. I even replaced the thin pads that came with my commercial paddle with thicker Perspex ones – but I don't know anyone else who has gone to this trouble.

The spring tension should be adjustable – but separate springs for dot and dash are not necessary. The dot and dash contact surfaces should be large with non-corrosive plating. The contact gaps should be finely adjustable with locking screws. The base must be heavy with individually height adjustable legs (to cope with uneven tables) and non-slip feet. How do these qualities make a paddle 'better' than the el cheapo one described above?

Feels Better

The movement I use is the elegant but very simple one that came in 1977 from the Brown Brothers Machine Co. of St Louis, MO, USA. This was the paddle originally recommended by Jim Garrett for use with his 'Accukeyer', and although you couldn't tell at the receiving end which paddle I was using, I certainly could.

The BB paddle 'feels better'. It's set up exactly right for my personal sending style, and it stays in tune. It is solid and responds like a piece of precision machinery. I'm sure that when I'm tired, or sending at my upper speed limit, I make fewer mistakes with it. But frankly, most of the time it probably doesn't form my Morse any better than my nails and aluminium paddle.

Economical Movements

I prefer the spring tension very light, with both dot and dash gaps very small, about one-thousandth of an inch – much less than bug gaps. With this spacing you can't even see the arms move. You can get away with such minute spacings because the dot arm doesn't have to start a massive horizontal pendulum swinging.

I've set the 'finger gap' (between the outer faces of the finger pads) 23mm apart – larger than most people prefer, with the pads 55mm above the table, at my comfortable relaxed wrist height. The paddle sits six inches (150mm) back on the operating table, and I rest my wrist on the table while sending, using only thumb and forefinger on the paddles, fluttering my hand left and right. I have trained myself to use the most economical (smallest and lightest) movements. This is less tiring and aids higher speed sending.

Home-brew Successes and Failures

I like this paddle so much that I have home-brewed two others to the Brown Brothers' pattern, but with simplified adjustments and rubber bands for springs. Both send Morse just like the original.

I have also made some really lousy experimental paddles, e.g., two straight keys horizontally back to back (not much good, movement too heavy, paddles too far apart and unwieldy to grasp); two microswitches with finger paddles, screwed to a baseboard (very positive feel, but too much movement, and too 'sloppy'); also clothes-pegs, hacksaw blades and my converted Eddystone bug. None of these efforts were very satisfac

tory, but many operators do use converted bug movements with complete satisfaction.

Empirical Gadget Principle

Before you run out and buy a chromed, complex, magnificently machined mechanical masterpiece to improve your electronic keying, think of Bold's 'Empirical Gadget Principle':

'The improvement effected by any gadget you buy is proportional to one plus the logarithm of the price of the new one over the price of the old one.'

Thus, if you replace a $10 gadget with a $100 gadget, it will deliver TWICE the performance, not ten times the performance. (Be honest – is your new $5000 rig ten times as useful as the $500 rig it replaced?)

(Extracted and edited for MM from Gary Bold's 'The Morseman' column, in Break-In, *journal of NZART, August 1988)*

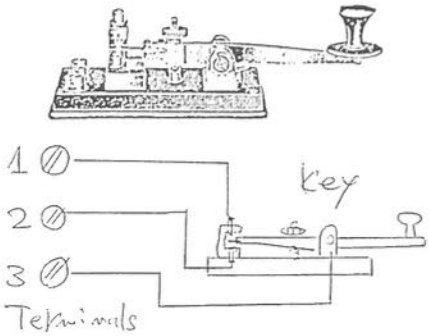
(We will welcome brief descriptions from readers of their own 'home-brew' paddles, with comments on their performance. – Ed.)

Your Letters

Readers' letters on any Morse subject are always welcome, but may be edited when space is limited. When more than one subject is covered, letters may be divided into single subjects in order to bring comments on various matters together for easy reference

Unknown Key MM38

The unknown key at the bottom of p.39, MM38, is a model MA-K6 made by Ohshima Denki Kogyosyo Co. Ltd, Tokyo, Japan, as illustrated in their 1930 catalogue.



It was used on Japanese ships c.1929–1945. The terminals are numbered 1 to 3, connected as illustrated, and were used for break-in operation with MF and HF transmitters.

Motoaki Uotome JA1GZV
Tokyo, Japan

Key & Plug Assembly No. 19

In MM37, p.12, the question is asked whether the No. 19 Key & Plug Assembly was used with the Wireless Sets Nos. 21 and 22.

The WS No. 21 had a key built into the control box, and there was no way of connecting a No. 19 Assembly. In fact, the set had no facilities for connecting an external key of any type.

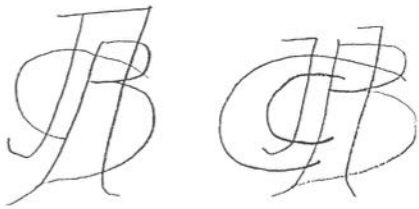
Regarding the No. 22 set, all my documentation indicates that this set used the No. 2B Key & Plug Assembly.

Tony Bell VK5UA
Broadview, South Australia

Mystery Logo

A friend of mine has two keys, marked as sketched. Presumably these indicate the manufacturers and I wonder if anyone can identify them?

Fons Vanden Berghen
Halle, Belgium



(The initials could be JHB, representing J.H. Bunnell, but we have been unable to find such a logo in the several Bunnell catalogues held at MM. *– Ed.)*

Height Measuring Instrument

The height measuring instrument shown on p.33 of MM56 is a 'hypsometer'. There are two legs to the inverted V in the photo. The left leg should also be graduated on one face and should slide in and out through the mounting.

How do I know this? My son has a book on science projects for the home, one of which is to make one of these to measure skyscraper heights.

Peter Holtham VK4COZ
Chapel Hill
Queensland, Australia

(Peter included details of how to use this instrument to measure the height of telegraph poles. If any reader would like to have this information, please contact MM. *– Ed.)*

AWA Keys

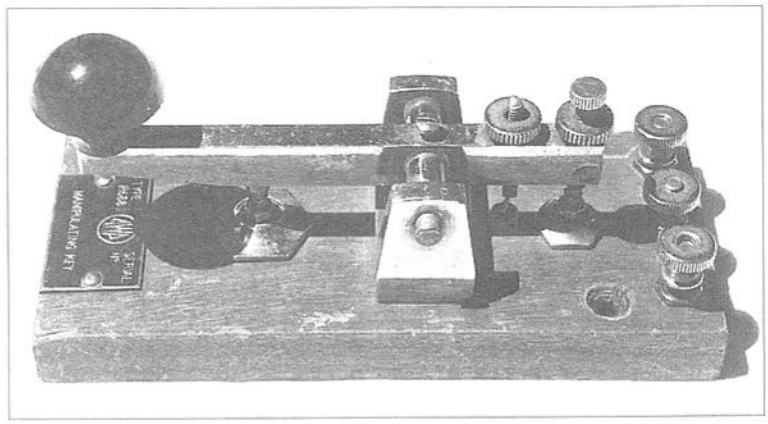
Readers may be interested in the following list of keys made by Amalgamated Wireless (Australasia) Pty Ltd. These are the ones I know about. There are probably more that I have overlooked or am not aware of:

(a) Manipulating Key R688B (see the photograph below). This appears to be quite early. The knob is of the Key WT 8 Amp type which may be a replacement. I do not know what equipment this key was used with.

(b) Key, Transmitting 3R2018. This appears to be a Key WT 8 Amp mounted on a wooden base. As far as I am aware, it was used with the 3B (Coast Watcher's W/S), 3BZ and the Reciprocal Lend-Lease version of the 3BZ, the AMC-145, supplied to the United States.

(c) Hand Key B50410. This appears to be a No. 9 Key & Plug Assembly, without the top cover. It was used with the Reciprocal Lend-Lease AMT-150 Transmitter.

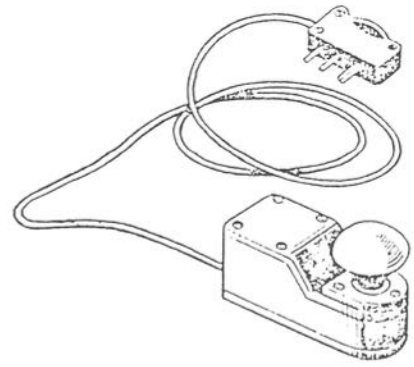
(d) Key & Plug Assembly No. 2B, ZA4500. Appears to be identical to the British version. It was used with Wireless Sets No. 11 (Aust.), No. 108 Mk.III, No. 208, and 208 Mk.II. The latter three sets were made by Radio Corporation.



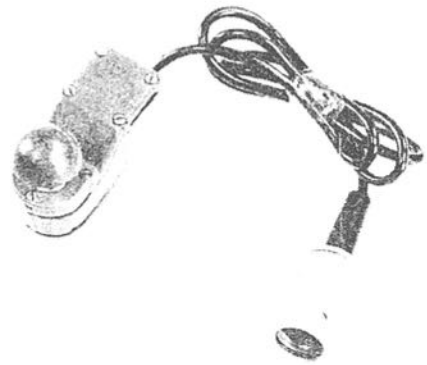
AWA Manipulating Key R688B

(e) Key & Plug Assembly No. 9, ZA0937.
(f) Key & Plug Assembly No. 133, ZAA4317. Used with both the WS No. 133, and its successor, the WS No. 153. I assume this used a Key WT 8 Amp with an unknown mounting.
(g) Key Telegraph, Lightweight, (Aust.), No. 1, Y1/TSE(W)9-2 (a stock numbering system used for a short time during the 1950s), later re-numbered 5805-66-054-5423. Used with the Radio Set A510 which was widely used from about 1955 to about 1970. Based on the British 'Key Telegraph' 5805-99-949-9618 used with the British A13 and A14 manpacks of the 1950s-1970s.
(h) Key Telegraph, Lightweight, (Aust.), No. 1 Mk.2. Identical to the above except for the connector which was changed for the PRC-F1 Radio Set which saw service from about 1970 to 1995. Both keys have a base dovetailed to facilitate mounting on a key support fixture on the front panel of both sets.

Tony Bell VK5UA
Broadview
South Australia



Key Telegraph, Lightweight, (Aust.), No. 1



Key Telegraph, Lightweight, (Aust.), No. 1 Mk.2

Key Info

An early camelback key similar to mine on page 42 of MM55 is described on Tom Perera's website (http://www.chss.montclair.edu), at N 0181, as an early Prussian landline key. *(There is a link to this site, the Telegraph and Scientific Instrument Cyber-museum, on the* MM *home page. – Ed.)*

I have a similar key to the miniature key, purchased in France just after WWII, shown on the same page. Mine was obtained in Italy, and I was told it was of Italian manufacture. Who knows for sure?

Regarding the ex-USSR marine key on page 23 of MM56, I have received from Greg Ulsamer a photo of two similar keys, but with the addition of two switches on the top cover. One is for switching TX/RX, the other to select CW wide/narrow. These keys were used on aircraft stations R847 (mikron) and R849 (yadro).

Jean Le Galudec
Nancy, France

Telegraphy on Stamps

by Tony Smith

Thematic stamp collecting is the practice of collecting stamps relating to particular themes. Even if they are not dedicated stamp collectors, the possibility of a themed collection covering Morse telegraphy, or telegraphy generally, may well be of interest to those who already collect other telegraphic memorabilia.

Many stamps with a telegraphic theme have been issued over the years, usually commemorating a particular anniversary, achievement, or inventor. The stories behind them may already be known, or they may spark off research to discover information previously unknown to the collector.

Literature on the subject is scarce, just an occasional magazine article or booklet written by enthusiasts. One example, by the late Don deNeuf, WA1SPM, was a superb 10-page article in *IEEE Spectrum*[1], August 1983. This included 9 pages of full-colour reproductions of stamps from around the world on aspects of electricity and electrical science. Apart from telegraphy itself, this article covered telephony, radio, broadcast listening, telecommunications, the ITU, power, the United Nations, and famous inventors. Also included were examples of non-postal franking stamps issued by early telegraph companies to be affixed to telegrams.

A small 16-page booklet, *Telegraphy on Stamps*[2], by retired Post Office Telegraphist W.C.L. Gorton, was published in 1982. This begins with stamps illustrating Signals by Fire, the African Bush Telegraph, the Heliograph, and the Semaphore before moving on to the genesis of the electric telegraph, including the Morse, ABC, Telewriter, Bain's Chemical Printing and Hughes Synchronous Printing systems.

There are also stamps covering the submarine telegraph, the Baudot multiplex system, and even a stamp (from Mali) illustrating pneumatic tubes such as were used by the London Central Telegraph Office in the 1870s to carry telegrams physically to and from other large offices for onward transmission on different circuits.

Concluding with stamps dedicated to inventors, including Marconi, this small publication, if obtainable today, would be an excellent introduction to the idea of starting one's own Telegraphic stamp collection, and learning more about the subjects illustrated in the process.

Add in Amateur Radio, which has also been featured on many stamps, and there is great potential for acquiring an intriguing collection related to telegraphic interests. As a 'taster' of what can be obtained, a number of stamps are illustrated inside the back cover in this issue and there will be more in the next issue of *MM*.

References

[1] 'EE Heroes and Happenings: A Philatelic Review', by Donald K, deNeuf. *IEEE Spectrum*, journal of the Institute of Electrical and Electronic Engineers, August 1983.

[2] *Telegraphy on Stamps*, by W.C.L. Gorton, pub. 1982 by Picton Publishing, Citadel Works, Bath Road, Chippenham, Wilts SN15 2AB. ISBN 0 902633 84 8.

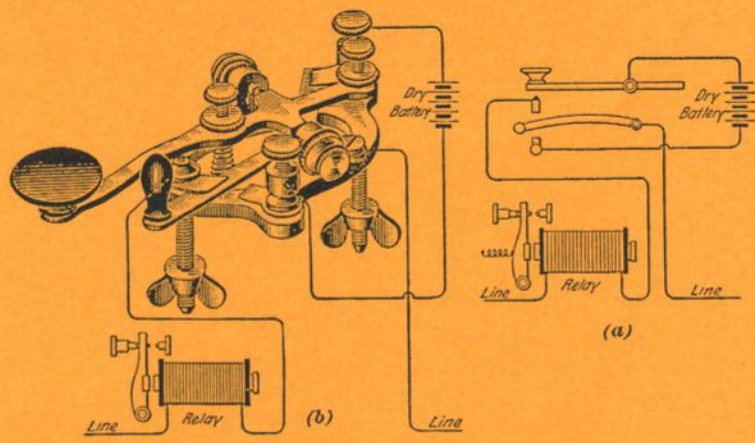
Telegraphy on Stamps

Samuel F.B. Morse. First Day Cover October 7, 1940. USA, 2¢

What Hath God Wrought! Centenary of the Morse Telegraph 1944. USA, 3¢

'Demonstration of the first reception of radio, 1895' From a painting by N.A. Sysojeva. Commemorating A.S. Popov 1859–1906. USSR, 1989, 10 kopeks

< Ernst Krenkel, RAEM, heroic polar radio operator, famous radio amateur, Hero of the Soviet Union. USSR, 1973, 4 kopeks



Fry, Open-Circuit, Dry Battery, Telegraph Key

Mr U.J. Fry has devised a key to be used in telegraph circuits operated by dry batteries, which are being used in place of gravity cells by some railroads. In such a circuit, the dry batteries must be left on open circuit when not being used to send signals, but the line circuit containing the relay must at the same time be closed so as to be able to receive signals.

The connections are shown at (a), and a view of the key and its connections at (b). In order to use the key devised by Mr Fry, the operators do not have to learn anything new. The movement for throwing open the circuit-closer on the Fry key is the same as for the ordinary key, this movement connecting the battery in series with the line and relay, that is, in a position to transmit signals.

The reverse movement, or the closing of the circuit closer, puts the home dry battery on open circuit but leaves the relay in series with the line, that is, in a position to receive signals.

When the circuit switch is in closed position, the battery circuit cannot be closed by pressing down the key lever, hence there is no danger of wasting the battery by a book or other heavy article resting on the key knob.

It is claimed that reliable dry cells are so much cheaper than gravity cells that exhausted ones can be thrown away and replaced by new ones at less expense than for attending and renewing gravity cells. Enough cells must be used, however, at each station to operate the whole line.

Illustration and text taken from: Elementary Telegraphy, *published for International Correspondence College, USA, 1911*