Number 87 – November 2003

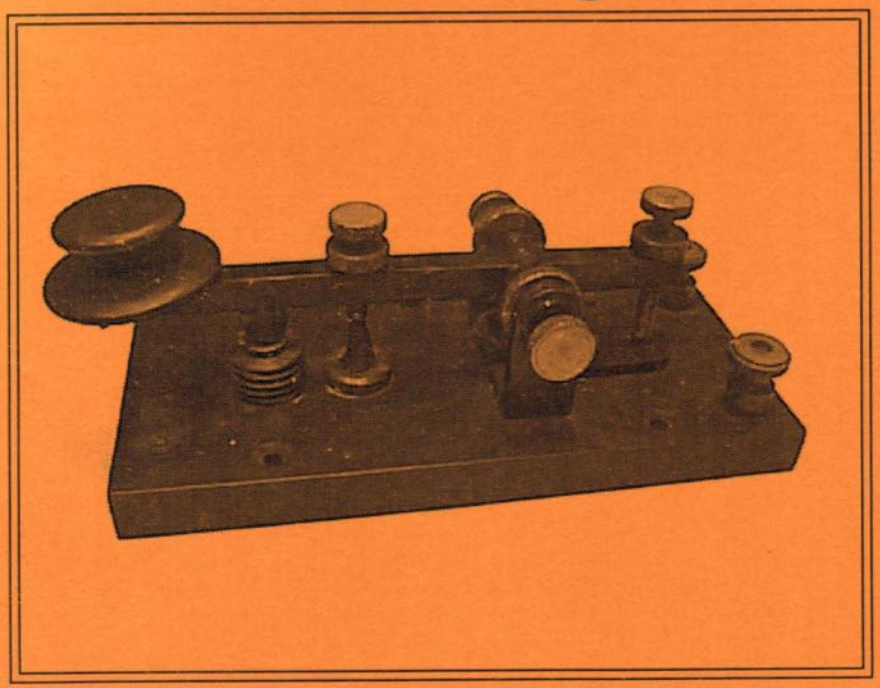
Flying the flag for Morse

Morsum Magnificat

ISSN 0953-6426

£2.75

The Morse Magazine



Norwegian Lemkuhl Spark Key

The International Journal of Morse Telegraphy

Flying the flag for Morse

Morsum Magnificat

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MORSUM MAGNIFICAT was first published as a quarterly magazine in Holland, in 1983, by the late Rinus Hellemons PA0BFN. It has been produced four, then six times a year in Britain since 1986, and up to January 1999 was published and edited by Tony Smith, G4FAI and Geoff Arnold, G3GSR. It aims to provide international coverage of all aspects of Morse telegraphy, past present and future. MORSUM MAGNIFICAT is for all Morse enthusiasts, amateur or professional, active or retired. It brings together material which would otherwise be lost to posterity, providing an invaluable source of interest, reference and record relating to the traditions and practice of Morse.

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 Printed by Hertfordshire Display plc, Ware, Herts

ANNUAL SUBSCRIPTIONS (six issues):

UK £15.00 *Europe* £17.00 *Rest of the World* £20.00 (US $30 approx)

All overseas copies are despatched by Airmail

* Prices in US dollars may vary slightly with currency exchange rates and commission charges

MasterCard VISA PayPal

Make all cheques payable to 'Morsum Magnificat'

PayPal: US $30.00 to zyg@morsemag.com

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MM Back Issues

Issues Nos. **34,35** and **38–86** available from the Editorial offices (see top of page). Price including postage £2.75 each to UK; £2.95 to Europe; £3.25 (US $5) Rest of the World by airmail. Deduct 20% if ordering 3 or more.

FRONT COVER

An early Norwegian spark key made in Oslo by Ingenior J. Lemkuhl. The lower contact has a set of metal fins which help to dissipate the heat generated by switching the high currents of a spark transmitter. The serial number is 962.

Photo/Collection: Tom Perera, W1TP.

IMPORTANT ANNOUNCEMENT

MORSUM MAGNIFICAT TO CLOSE

I am sorry to announce that, unless someone else can be found to take it over, MORSUM MAGNIFICAT WILL CLOSE WITH ISSUE 89. This means that there are 3 issues to go including this one. I am having considerable difficulty in producing these to the normal deadlines, but they will be delivered.

BACK ISSUES, BOOKS and BINDERS

Back issues, specialist books and MM binders (designed to hold 12 issues per binder) will continue to be for sale while stocks last. .

REFUNDS

All readers will receive a statement of the issues paid for and the refund due for issues beyond MM89.

Credit card subscribers will receive the refund directly to their credit card account. This the easiest method. Otherwise cheques will be sent to UK readers. Overseas readers may receive refunds by PAYPAL. If possible, please help by accepting refunds using these methods - the bank will charge me 10.00 GBP for each refund by International Bank Draft and I hope that you can help avoiding this charge.

RENEWALS

Renewals will continue and charged up to issue 89.

PLEASE CONTINUE TO SEND ITEMS FOR PUBLICATION

Please do not stop the flow of articles, letters, pictures etc. I will do my best to include these in the last issues. I also have a number of articles in preparation here that would be available for anyone who would like to take over MM.

Sincere thanks to all authors and contributors for the valuable work that they have freely given in the interests of Morse.

THE MM INDEX

Normally an annual index is produced but, in view of the imminent closure, this will be produced with the final issue.

THE WEB SITE

The Web Site will be maintained for the foreseeable future.

A NEW PUBLISHER

If any individual or group is interested in taking on the magazine, please contact me.

Zyg Nilski, G3OKD

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News

FCC Consultation on Morse

The Federal Communications Commission (FCC) has sounded the bell to begin Round 2 of the Morse code debate by inviting public comment on another group of seven Morse-related petitions for rulemaking. The FCC put the petitions on public notice October 8, and comments are due by November 7. Members of the amateur community may make their opinions known on any or all of these filings using the FCC's Electronic Comment Filing System (ECFS) http://www.fcc.gov/cgb/ecfs/ The petitions are RM-10805 through RM-10811. To summarize:

Charles L. Young Jr, AG4YO, asks the FCC to delete the 5 WPM Morse code test (Element 1) for Technician-plus-Element 1 privileges (formerly "Tech Plus"). Designated RM-10805, his petition would retain Element 1 as an examination requirement for General and Amateur Extra applicants and give Technicians limited HF SSB privileges.

Frank Napurano, K2OKA, describing CW as "the purest, most accurate, efficient, reliable and economical form of radio communications ever devised," requests that the FCC retain the 5 WPM Morse requirement "in the interest of public safety, the preservation of a radio art and as a tribute of support for a prized and respected avocation." The FCC designated his filing as RM-10806.

Robert G. Rightsell, AE4FA and Harry A.M. Kholer, N0PU, designated RM-10807, petitioned to continue Morse testing but give applicants up to 24 points of exam credit according to their success on Element 1. The final exam score would be the sum of earned Element 1 points and the written test score for a possible total of 100 points. Their petition also calls on the FCC to consolidate the Novice and Technician and the Advanced and Amateur Extra licenses, boost the number and range of written test questions and give new Technicians CW and data privileges.

Joseph Speroni, AH0A, seeks to have the FCC delete Element 1 for applicants who want to operate phone on HF but retain Element 1 at 5 WPM for applicants who want to operate CW. Designated RM-10808, his petition would restructure the Amateur Radio testing regime to require specific knowledge of "RTTY, data, image, spread spec-

trum, pulse/test, RACES/ARES and space communications only for those wishing to operate these modes." Under Speroni's plan, applicants would be under no obligation to pass mode-specific examination elements for mode privileges they don't wish to operate.

The Puerto Rico Amateur Radio League (PRARL) asks the FCC to delete Element 1 for Technician and General classes but to increase the rigor of the written elements for those two license classes. The PRARL would keep the 5 WPM Morse exam for Extra applicants. The PRARL also would eliminate same-session retesting and require 30 days between retakes. The petition is designated RM-10809.

James Roux, W4YA, proposes in his petition, designated RM-10810, that the FCC cut the number of license classes to two—General and Amateur Extra—and the number of written examination elements to one—at the General level. Roux's petition would eliminate the 5 WPM Morse code exam for General but require Extra applicants to pass a 15 WPM test. Roux also would give Generals all currently available amateur privileges except the Extra-class CW subbands.

FISTS

A petition filed on behalf of FISTS CW Club <http://www.fists.org> would delete the requirement to pass Element 1 to obtain Technician plus Element 1 (ie, "Tech Plus") HF privileges. Designated RM-10811, it would merge Tech and Tech Plus into a single class, emphasize technical content, including digital modes, on written examinations and extend digital mode privileges within Novice/Tech Plus subbands. It would not provide additional HF phone privileges for Technicians, however. The FISTS petition would retain a 5 WPM Morse exam for General applicants and raise the Morse exam to 12 WPM for Amateur Extra applicants while increasing the technical level on written examinations for both classes.

The FISTS CW Club petition had attracted more than 230 comments by week's end. In all, the FCC had recorded a total of approximately 500 comments on the seven petitions as of October 10. Interested parties may file comments on any or all of these petitions using the FCC's Electronic Comment Filing System (ECFS) <http://www.fcc.gov/cgb/ecfs/>, which also permits users to view all comments.

To file a comment, click on "Submit a Filing" under "ECFS Main Links." In the "Proceeding" field, type the full RM number and complete the required fields. "RM" must be in capital letters, and you must include the hyphen between "RM" and the five-digit number. You may type your remarks into a form or attach a file. ECFS also accepts comments in active proceedings via e-mail, per instructions on the ECFS page.

To view filed comments, click on "Search for Filed Comments" under "ECFS Main Links" and type in the complete RM number, including the hyphen, in the "Proceeding" field. "RM" must be in capital letters.

Sparks What's Going On - New Book

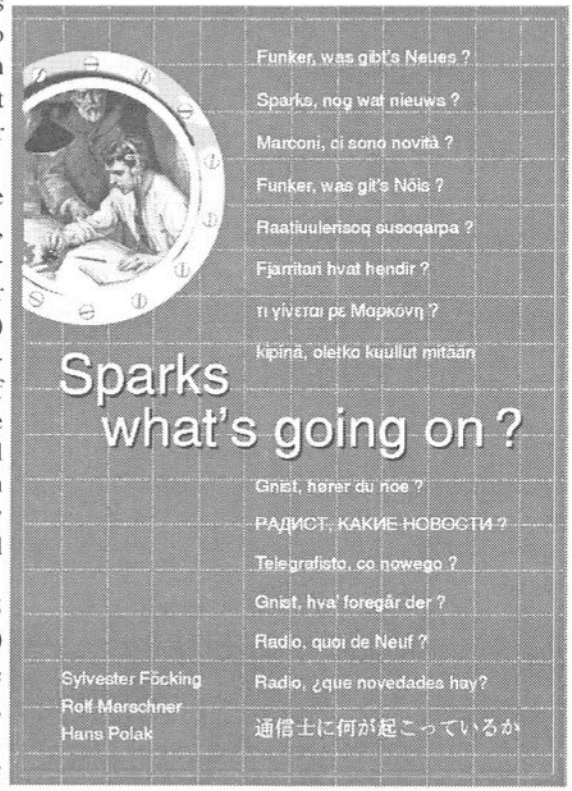
On February 1st, 1999, radio-telegraph service on board ships ended. Radio officers were no longer needed on ships and the majority of coast-stations ceased their services. The grand era of transmission of messages by Morse code had lasted almost 100 years .

Former German ship's radio officer, Sylvester Föcking (DH4PB), distributed more than 700 copies of his CD-album of the final transmissions of many coast stations, "Radio Telegraphy Worldwide News". In many letters received, OM's confessed that they listened to the recordings with "tears in their eyes," and enthused about the great era of the radio officer profession.

To ensure that the profession is remembered, Sylvester, together with ex-colleagues Rolf Marschner (DL9CM) and (Dutchman) Hans Polak (NL 9694 and ex-PCH) compiled a collection of funny, sad and unbelievable stories of colleagues from all over the world, and to publish them. Now, after 1½ years, they are available in a book entitled "Sparks What's Going On?".

In 300 pages, A5 format, 64 colleagues from 20 nations tell more than one hundred, partly illustrated, stories in the English language. For example, there is the partly illustrated story of:
Disaster Hinnerk
Legendary Tugboat Captain Kalkman
Radio officer with a Service Bicycle
Football on Ice
Stool Samples in Jam Pots
Parrot Smuggle
Drive by Taxi to the "Consulate"
The good old Goldfranc
A Canary Saved from Distress
About the "Schlackertaste (Vibroplex-Morse-key) and many dramatic and funny stories of life at sea and at the coastal stations.

The publication of this book is on a non-profit basis, and the authors



willingly declined an author's fee so that any profits would take the form of a gift to preserve the memory of sea-wireless radio, e.g. to a museum or other organisations for the preservation of radio communication at sea, or radio officer's lives. The book was published on the 50th anniversary of the "Seefunkkameradschaft BREMEN" (R/O comradeship), on August 30th, 2003.

There is something for everybody and costs EUR 13.00 (plus postage and packing). Postage and packing from Germany costs for Europe/World 3.70 EURO, economy air mail (surface mail on land, air mail over sea), payment with order.

Order from Sylvester Föcking, Wormser Strasse 16, D 55276 Oppenheim, Germany. E-mail: foecking@main-rheiner.de
Or for more information visit the web page: www.seefunker.de

How a Bug Key Works

Anyone wishing to see how a bug key works can visit http://www.ae4rv.com/tn/education/bug.htm This is an interactive site that shows the moving parts of the key operate when the paddle is moved from side-to-side. *(Information Kathy Stanfill, KS6CW)*

Foundation Licensee CW Only Award

Since getting his Foundation licence Chelmsford Amateur Radio Society member Ron Ingate M3CAM has been very active on the key and can copy Morse at up to 20 wpm.

Ron completed his Foundation course a year ago and he recently submitted the first ever all CW entry for the Chelmsford Award. He is shown receiving his certificate from CARS Vice-President Carl Thomson G3PEM.

The Chelmsford Award is available to all Amateurs and SWL's and the proceeds from it are donated to the Essex Air Ambulance.

For further details contact the CARS Awards Manager Martyn Medcalf G1EFL, 47 Paddock Drive, Chelmsford, Essex, CM1 6UX. Tel: 01245 469008
E-mail: awards@g0mwt.org.uk
Website: http://www.g0mwt.org.uk/

Publicity for Key Collection

Mark Stern, 4Z4KX/4ZØX fromRishin Le Zion, Israel is the IARC Contest and Awards Manager. In June this year Mark's collection of keys featured in the daily newspaper "Yedioth Ahronoth" (Last News). As a result of this publicity he received more keys and stories from people around the country. To view the collection, visit the web site www.qrz.co.il

The Radio Officers Association

Membership is open primarily to former MN radio officers but is also open to anyone who has had an association with maritime communications or is interested in the subject. Members receive the quarterly newsletter QSO and its associated amateur component QRZ. There is an annual reunion and AGM. 2004 sees the meeting taking place on Merseyside. For further details and information please contact the Membership Secretary - John Russell, 21 Landcross Drive, Northampton, NN3 3LR.

FISTS CW Club – The International Morse Preservation Society

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

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

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

Video Review
The Secret Wireless War
by Tony Smith

This extraordinary video is in two parts, "Beyond Bletchley Park" and "Black Propaganda". The first part should be of particular interest to readers of MM as it tells the story of those radio amateurs who, at the beginning of WW2, became Voluntary Interceptors (V.I'.s), unpaid part-time members of the Radio Security Service. Their task, initially and in secret, was to listen in their spare time to defined parts of the HF bands and report any unusual CW signals heard. The reports were sent daily by post to Box 25, Barnet Herts.

Initially, they were listening for signals from German spies, or fifth columnists within the UK but in the event there were none to be heard. What they did hear, however, was Morse traffic on non-military frequencies between German stations in occupied Europe which turned out to be of great interest to the R.S.S.

In recent years, there has been much written about the code-breaking activities of Bletchley Park but little about how the coded material was obtained. Through the memories of some of those involved in this work, the video tells how some 1500 V.I.'s were recruited to monitor German Intelligence traffic, how the system worked, and how the success of the V.I.'s and the R.S.S led to the establishment of a full-time listening station at Hanslope Park in 1941. In all, during the war, 268,000 messages intercepted by the R.S.S. were deciphered by Bletchley Park.

There is much, much, more in this 1-hour programme, all of Morse interest. Direction finding stations pinpointed the location of monitored stations to help identify them and assist in the code-breaking process; military traffic was monitored by the Y Service, which had 24 major intercept stations around the UK, all feeding material into Bletchley. Also described are the "dummy" stations with chocolate names like "Cadbury", "Fry" and "Nestle" set up to deceive the enemy with bogus traffic before D-Day, all of which disappeared from the air on June 6, 1944.

When Europe was invaded, special vehicles were equipped with transmitting and receiving equipment by the Special Communications Unit at Whaddon Hall for use as Special Liaison Units. These vehicles, together with similar vehicles housing cipher sections, accompanied top military commanders in the field, providing secret communications between military and intelligence sections at Bletchley and the field commanders.

There is so much detailed information in this film, it is impossible to cover everything in a short review. If you are a Morse person, and you are interested in how radio amateurs used their Morse skills during the Second World War, then you should have a copy of this historical and fascinating video.

It begins with the words "Very little evidence remains to tell the story of Britain's secret wireless operations during the Second World War... save the memories of those who were there". It does a marvellous job in presenting those memories in a lucid and compelling way, and it held my interest from beginning to end.

Black Propaganda

The second part of "The Secret Wireless War" covers another extraordinary WW2 radio feat, the "black" propaganda campaign waged against the enemy with broadcasts from the UK that the Germans believed, in some cases, emanated from inside mainland Europe.

There is no Morse here, but all radio enthusiasts will surely find this story fascinating. It tells how recordings of propaganda programmes with scandalous stories about the Nazi hierarchy, and such like, were broadcast and re-broadcast from a station called "Gustav Siegfried Eins", or "GS1", which pretended to be a subversive German station in occupied Europe.

When it was decided to close down GS1, a mock raid by the Gestapo was staged with machine-gun fire heard over the air, suggesting that the clandestine station had been finally found and put out of action. Unfortunately the effect was lost when the recording was re-broadcast at a later scheduled time, the transmitting staff not having been told that the station had been "eliminated"!!

A new medium wave 600 kW transmitter in Ashdown forest, Sussex, known as "Aspidistra, later came on the air as "Soldaten Calais", pretending to be a German Forces programme located in France. A further, short wave, station called "Atlantic South West" was aimed at U-boat crews.

These stations, unlike GS1, transmitted genuine official German news items obtained from various monitoring sources and included only subtle disturbing items aimed at the morale of their recipients.

One very clever trick was to take over regional German station frequencies when they closed down at the approach of Allied bombers to avoid acting as directional beacons. Aspidistra, pretending to be the regional station then issued instructions to the civilian population on what to do in emergency situations which were contrary to those issued by the German authorities, thus causing much mayhem and confusion during and after the raids.

When the war was nearly over, and during the last two days of "black" broadcasting, Atlantic South West transmitted "official instructions" to U-boat commanders on how to surrender their vessels to the enemy without loss of life in the interest of the

Fatherland.

The last broadcasts from these stations took place on Monday April 30, 1945. They just stopped transmitting without any announcement or farewells. Evidence of their activities was destroyed. There was no public acknowledgment of their work, and it has taken many years for this story to emerge

Availability.

These two films, "Beyond Bletchley Park" and "Black Propaganda", each lasting one hour, are on the same video, "The Secret Wireless War", price £14.99. It is available from the Bletchley Park shop, the RSGB, or direct from the producers, Grindelwald Productions, PO Box 38, Princes Risborough, Bucks, HP27 9YL. It is also available in NTSC for American viewers, price $33.00. See www.grindelwald.co.uk for more details.

This video contains much fascinating and detailed material and I strongly recommend it to anyone interested in the areas of wartime activity covered by the two films. ***MM***

Evolution of the International Morse Code

Part 2 - Adoption by ITU

by Tony Smith G4FAI

Part 1 described how the Morse telegraph arrived in Europe, how Morse's original code was modified by F.C. Gerke in Hamburg to make it more suitable for German use, and how the code was subsequently further modified and adapted for international use across Europe by the Austro-German Telegraph Union.

IN 1864, FRANCE INVITED all the major countries in Europe, except Britain, to attend a conference in Paris to negotiate a convention to provide uniformity in the international telegraph system. The conference was held in May 1865, attended by delegates from Austria, Baden, Bavaria, Belgium, Denmark, France, Greece, Hamburg, Hanover, Italy, the Netherlands, Portugal, Prussia, Russia, Saxony, Spain, Sweden-Norway, Switzerland, Turkey and Würtemberg. Britain, the only other European state with a significant telegraph network, was not invited because the British telegraphs were not state owned.

The Paris Telegraph Convention, signed on May 13 and 17, 1865, created the International Telegraph Union, and a new set of Telegraph Regulations defined, amongst other things, a table of uniform tariffs, procedures to be observed, and the code to be used with Morse telegraphic apparatus by all countries party to the Convention.

The Convention and Regulations came into effect on 1st January 1866 and, in order to achieve uniformity of practice, the contracting states agreed to impose, as far as possible, the provisions of the new regulations on all private telegraph companies operating under their authority and to negotiate with them a reciprocal reduction of tariffs where necessary.

The European code adopted by the Convention was the original ITU code and is shown in Fig. 1 as ITU Morse 1866. The spacing and length of the code signals were defined as follows:

One dash is equal to three dots.

The space between signals in the same letter is equal to one dot.

The space between two letters is equal to three dots.

The space between two words is equal to four dots.

Countries Outside Europe Observe Convention

The use of the internationally agreed code began to spread as more countries undertook to observe the Paris Convention, beginning with Mecklenburg, 1865; Luxemburg, 1866; Nassau, 1866; Serbia, 1866; Moldo-Valachia (Rumania), 1866; Asiatic Russia, 1867; and Asiatic Turkey, 1868. In addition, the telegraph companies of Malta and Corfu agreed to implement the Convention and Regulations in 1867.

Increasingly, countries outside Europe agreed to join the ITU and to observe the new standardised code and regulations. At the Vienna Conference in 1868 Persia was admitted, together with India. The latter was represented by Great Britain which had still not qualified for membership in its own right.

At the third ITU Conference, held in Rome in 1871, Britain, which had nationalised her telegraphs the previous year, was admitted as a member, and Japan sent an observer.

At this conference, the Swiss delegate read to the Plenary assembly letters from Mr. Cyrus Field, the well-known pioneer associated with the Atlantic cable, and Professor Samuel F.B. Morse. Mr Field suggested that an agreement between the great powers could protect telegraph lines from destruction in time of war, and Prof. Morse urged that all nations be asked to protect *"this powerful agent of civilisation"*. The conference felt that such a resolution was not within its power, but agreed to draw the attention of Governments to the views expressed in the two letters.

The fourth ITU conference was held in St. Petersburg in 1875, when Egypt was represented for the first time independently of Turkey, and this time observers attended from the USA as well as Japan. No further ITU conferences were held for almost 60 years, until 1932, but the 1875 conference, noting that the Telegraph Regulations and Telegraph Rates needed periodical revision, decided that "Administrative Conferences" should carry out this task. The first of these conferences was held in London in 1879, but no revision of the initially agreed International Morse code of 1866 (Paris Conference,1865), was to take place for many years, and then only minor changes were made.

Figure 1 shows the development of the alphabetical codes from 1838 to 1866.

Punctuation and Service Signals

Figure 2 shows the changes in punctuation from 1844 to 1866. It has not been possible to find a list of Gerke's punctuation, but as he changed Morse's alphabet to eliminate the spaced dot symbols and retained the original numerals which had no spaced dots, the possibility exists that he retained Morse's punctuation which also had no spaced dots.

Some telegraph "service" signals dating from 1866 are included in the summary to indicate their origins for the benefit of present-day users. Other more specialised signals have not been included. These include signals for

	First Alphabetical code 1838	American Morse 1844	Gerke code 1848	Austro-German 1852	Austro-German 1858	ITU Morse 1866
A	·–	·—	·—	·—	·—	·—
Ä				·—·—	·—·—	·—·—
B	–···	—···	—···	—···	—···	—···
C	–·–·	—·—·	—·—·	—·—·	—·—·	—·—·
CH			—·—·—	—·—·	—·—·	—·—·
D	–··	—··	—··	—··	—··	—··
E	·	·	·	·	·	·
É					··—··	··—··
F	···–·	···—·	···—·	···—·	···—·	···—·
G	––·	——·	——·	——·	——·	——·
H	····	····	····	····	····	····
I	··	··	··	··	··	··
J	·–––	·———	Not used	·———	·———	·———
K	–·–	—·—	—·—	—·—	—·—	—·—
L	·–··	·—··	·—··	·—··	·—··	·—··
M	––	——	——	——	——	——
N	–·	—·	—·	—·	—·	—·
Ñ						——·——
O	–––	———	———	———	———	———
Ö				———·	———·	———·
P	·––··	·——··	·——··	·——··	·——··	·——··
Q	––·–	——·—	——·—	——·—	——·—	——·—
R	·–·	·—·	·—·	·—·	·—·	·—·
S	···	···	···	···	···	···
T	–	—	—	—	—	—
U	··–	··—	··—	··—	··—	··—
Ü				··——	··——	··——
V	···–	···—	···—	···—	···—	···—
W	·––	·——	·——	·——	·——	·——
X	–··–	—··—	—··—	—··—	—··—	—··—
Y	–·––	—·——	—·——	—·——	—·——	—·——
Z	––··	——··	——··	——··	——··	——··
&		·–···				

Figure 1. Development of the Alphabetical Codes from 1838 to 1866

Note that in the 1838 code phonetically similar letters, i.e. GJ, IY and SZ, had the same symbols, and that the 1848 code did not use the letter J. Twenty of the American Morse symbols of 1844 survived in the ITU alphabetical code of 1866 (and thus to the present day) but with changed meanings in four cases, namely F, J, Q, and X. These became R, C, F and L in Gerke's 1848 code, and he created new symbols for the remaining letters of the alphabet, namely, O, Q, X, Y, Z. Of these, O, X, Y, Z were changed again in the Austro-German code of 1852.

	American Morse 1844	Gerke code 1848	Austro-German 1852	Austro-German 1858	ITU Morse 1866
Full stop (period)	· — — — · —		· · · · · ·	· · · · · ·	· — · — · —
Comma	· — · — —		· — · — · —	· — · — · —	— — · · — —
Question mark	— · · — — ·		· · — — — · ·	· · — — — · ·	· · — — — · ·
Exclamation mark	— — — — ·		— — · · — —	— — · · — —	— — · · — —
Inverted commas	· — · · — · — —			· — · · — ·	· — · · — ·
Brackets, L & R	· — — · — —			— · — — · —	— · — — · —
Semi-colon	· — · — · —		— · — · — ·	— · — · — ·	— · — · — ·
Colon			— — — · · ·	— — — · · ·	— — — · · ·
Dash			— · · · · —	— · · · · —	— · · · · —
Apostrophe			· — — — — ·	· — — — — ·	· — — — — ·
Stroke			— — — — — —	— — — — — —	
Paragraph	— — — —			· — · — · ·	· — · — · ·
Italics / underline				· · — — · —	· · — — · —
Call (preliminary of every transmission)					— · — · —
Understood					· · · — ·
Error					· · · · · · · ·
End of transmission					· — · — ·
Invitation to transmit					— · — · —
Wait					· — · · ·
Acknowledgement of receipt (Received)					· — · — · — ·

Figure 2. Punctuation & Service signals. See text re omissions.

telegrams, used by the telegraph service, such as "Signed (separating text from signature)", "Government telegram", "Service telegram", "Private telegram", and "Response by called station".

See Figure 2. for punctuation and service signals.

International Radiotelegraph Union

The introduction of wireless telegraphy resulted in new international conferences being held to decide on codes and practices for use in the new service, initially for maritime use including the safety of life at sea. At a preliminary International Radio Telegraphic Conference in Berlin, 1903, it was recommended to participating governments that as far as possible the provisions of the existing International Telegraph Regulations (St. Petersburg, 1875) should be applicable to transmissions by wireless telegraphy, the effect being, amongst other things, that the International Morse code should be common to both land based and wireless international telegraphy.

The International Wireless Telegraph Convention, 1906, held in Berlin and attended by delegates from many nations, ratified this recommendation and created the International Radiotelegraph Union with its own Convention and annexed Regulations, including the adoption of the SOS distress signal. The new convention came into effect internationally on 1st July 1908, but each government participating was required to ratify the convention before it was applicable to its own country. Due to administrative or other delays, not all countries did this before 1st July 1908, consequently in some countries it will be found that the official implementation date was later than the

date specified by the convention. Similarly, this situation applied to previous and subsequent conventions and agreements, so that contemporary manuals do not always reflect the latest official changes.

Although a separate Radiotelegraph Union was created, the International Telegraph Union Secretariat served both Unions. In 1927, the Radiotelegraph Conference held in Washington D.C., decided to convene its next Conference in 1932 to coincide with that of the International Telegraph Union so that integration of the Telegraph and Radiotelegraph Conventions could be considered.

At the Madrid 1932 joint conferences, it was decided to establish a single new Convention creating the International Telecommunication Union, embracing telegraphy, telephony, and radio. At its 1947 Conference in Atlantic City, the ITU became a specialized agency of the United Nations.

Changes after 1866

The International Morse code remained virtually unchanged after 1865, but a number of minor changes, mainly punctuation were made by successive conferences from 1906 onwards as follows:

1906 – Berlin. Effective 1.7.1908
Invitation to transmit changed from — - - - - — to — - —

1912 – London. Effective 1.7.1913
New symbol for Á or Å introduced - — — - —
New symbol for "/" (fraction) introduced — - - — - (until 1858 this was — — — — — —)
Paragraph - — - — - - discontinued
'Error' changed from - - - - - - - - - - to - - - - - - - -
"Received" changed from - — - - — - - — - to - — -
Spacing between words increased from 4 dots to 5 dots.

1932 – Madrid. Effective January 1, 1934.
Exclamation mark — — - - — — discontinued.
Semi-colon —-—-—- discontinued

1938 - Cairo. Revision of International Telegraph Regulations, effective January 1, 1939.
Comma changed from - — - — - — to — — - - — — (exclamation mark until 1934)
Full stop changed from - - - - - - to - — - — - — (previously comma)

1949 – Paris. Revision of International Telegraph Regulations, effective July 1, 1950.
Brackets changed to L/H — - — — - and R/H — - — — - — (previously — - — — - — for both)
Italics/underline - - — — - — discontinued
Spacing between words increased from 5 dots to 7 dots.
(Note: The 1949/50 changes have been arrived at by a process of deduction, and with limited reference material. If any reader has any form of official documentation that can confirm or amend these details, please contact the author via MM.)

Spacing

As noted earlier, in Gerke's 1848 code, a dash equalled three dots, a space within a character equalled one dot, the space between two characters equalled 3 dots, and the space between words or groups of figures equalled 6 dots.

When the International Morse code was defined by the ITU in 1865, Gerke's original spacing was retained, except that the space between two words was now defined as being equal to four dots. This was increased to 5 dots in 1912 and finally to 7 dots in 1950 (but see Note in previous section re 1949/50 changes). This progression is shown in Fig.3.

Apart from the variations in word spacing, Gerke's original spacing has remained unchanged to the present day.

Gerke 1848	6 dots
ITU 1866	4 dots
London 1913	5 dots
Paris 1950 ?	7 dots

Figure 3. Changes in spacing between words.

National variations

In noting the changes to the code that have taken place, it should be stressed that these refer to the *International* Morse code, when used for *international* communications as defined by the various international conventions at any given time. As will be noted from telegraphic handbooks and manuals published nationally, there have always been variations within individual countries and in individual services in those countries, including national language versions of the code specifically for internal use.

Sometimes the internal landline services did not make changes until well after the designated date, sometimes they anticipated changes, and sometimes they used symbols of their own for specific purposes. For example, the British Army's *Instruction in Army Telegraphy and Telephony, Vol. 1, Instruments*, HMSO 1908, shows a period as - — - — - — anticipating the use of this signal internationally by some 30 years, and there is no comma in the Army's code; *The New Morse Code Manual*, by F/O A.W. Eley, 1941, 'recognised by the Air Ministry as a Text Book for the Air Training Corps', gives the period as - — - — - — - but adds a footnote that the old period sign - - - - - - is used as a comma by the RAF; and the British Post Office used the signal — — — — (CH in International code) as the signal to be used between whole numbers and fractions. A further example is illustrated below in the discussion on abbreviated numerals.

Numerals

The development of the Numerical Codes from 1844 to 1865 is shown in Fig.4. Note that although Gerke changed the alphabet, he retained American Morse numbers for his 1847 code. The numbers still in use today date from the Austro-German code of 1852.

	American Morse 1844	Gerke code 1847	Austro-German 1852	Austro-German 1858	ITU Morse 1866
1	·—·—	·—·—	·————	·————	·————
2	··—·—	··—·—	··———	··———	··———
3	···—·	···—·	···——	···——	···——
4	····—	····—	····—	····—	····—
5	———	———	·····	·····	·····
6	·····	·····	—····	—····	—····
7	——·—	——·—	——···	——···	——···
8	—····	—····	———··	———··	———··
9	—··—	—··—	————·	————·	————·
0	————	————	—————	—————	—————

Figure 4. Numerical Codes from 1844 to 1866, when they were adopted by the newly-created ITU.

Abbreviated Numerals

At the Paris Conference of the International Telegraph Union, in 1865, the French administration drew attention to the fact that despite measures taken by most central administrations, telegraphists were in the habit of using abbreviations for numerals as shown in Fig.5.

1	·—	6	—····
2	··—	7	—····
3	···—	8	—··
4	····—	9	—·
5	·····	0	—

Figure.5. Abbreviated numerals referred to by the French Administration at the Paris Conference, 1865.

The French pointed out that several of these characters could be confused with others representing letters, thus creating serious difficulties. However, as the use of these characters reduced slightly the length of a transmission it was suggested their use could be regularised (or a similar list created) with the addition of a special character to precede and follow any passage written with such numerals.

Despite this suggestion, the list of symbols approved by the conference did not include such a character so, presumably, it was left to individual administrations to make such provision as they thought fit to minimise the possibility of confusion between letters and abbreviated figures.

Amongst the official British handbooks consulted for this article, the 1908 Postmaster General's *Handbook for Wireless Telegraph Operators* refers to the abbreviated signals, saying: "*The following signals may also be employed to express figures, but only in official repetitions and in the preamble, and in the text of telegrams written entirely in figures.*"

The 1916 Post Office *Handbook*

for Wireless Telegraph Operators (revised in accordance with the Radiotelegraph Convention of London 1912) says: *"In official repetitions and in the preamble of radiotelegrams figures must be rendered by the following signals (ie, the abbreviated numerals), which may also be used in the text of radiotelegrams written entirely in figures. In the latter case the message must bear the service instruction 'in figures'."*

The 1938 *Handbook for Wireless Operators* (revised in accordance with International Radio Communications Regulations [Cairo revision 1938) contains much the same instructions, while the 1961 Handbook simply says: *"In routine repetitions, if there can be no misunderstanding in consequence of the presence together of figures and letters or groups of letters, figures may be rendered by means of the following abbreviated signals."*

In these examples, some have a special signal to indicate the subsequent use of abbreviated figures as suggested by the French in 1865, but others do not. Presumably the various restrictions put on the use of abbreviated figures were thought by the authorities to make such special signals unnecessary.

It would be interesting to have more material to refer to on this matter. If any readers have other "official" examples, from any country, of the use of abbreviated figures in International Morse at any time, including the use of any special signal before and after their use, please send details to the writer via MM for possible later publication.

One Dot or Five?

A minor, but interesting, variation of an abbreviated numeral provides a further example of a national or specialist variation in the use of the code, in this case the use of one dot instead of five dots for the number '5'.

A British Post Office Telegraphs instruction card of 1899 lists the abbreviated numerals as shown in Fig.5, but with number 5 shown as one dot instead of five dots. The single dot for 5 is also found in:

The British Army's "Signalling Instructions 1896".

The British Army's "Instruction in Army Telegraphy and Telephony", 1908,

The British Admiralty's "Handbook of Signalling", 1913,

"Imperial Army Series - Signalling", 1914.

"Signalling Handbook for Australian Military Forces", 1916.

Whilst these variations were in use, the five dot signal was still officially in use internationally as illustrated by the 1908 *Handbook for Wireless Telegraph Operators* and its later equivalents. "Official" manuals or handbooks post-WW1 consulted for this article also list the abbreviated signal for 5 as five dots only. The author will welcome evidence of any earlier or later "one dot" listings in national or specific services.

Everyone is Right!

It is the distinction between international, national, and specific service applications that causes confusion when "correct" codes are

discussed by users. Ex-servicemen, ex-professionals, or older amateurs will recall that they used a certain signal which is at variance with the recollections of those in other services, or even current practice, but all examples quoted could well be correct for the applications in which they were used. It is simply the case that the International Morse code, as defined in the ITU service regulations, was intended solely for *international* telegraphic communications, originally by landline, and eventually by wireless telegraphy as well. These regulations did not cover the use of the code in any other application, leaving the way open for variations in use by non-international services, usually in the form of modified procedural signals.

Now in Amateur Hands – But for How Long?

The time when international regulations governing Morse code were necessary to facilitate international commercial, or official communications, and safety of life at sea has now gone.

Morse at sea officially ceased on 31st January, 1999, and the only large-scale user of Morse left is the Amateur Radio Service, which itself is in turmoil over the future of the code.

Concurrent with the demise of professional Morse, the requirement in the amateur radio licence to demonstrate a working knowledge of the code has been gradually eroded, resulting in many new licensees around the world having minimal knowledge, with neither the inclination nor sufficient ability to use the code on the air.

Proposals by the International Amateur Radio Union to the ITU at WRC2003 finally resulted in the abolition of the international Morse requirement altogether, effective 5th July 2003, although administrations were free to retain an amateur Morse test if they wished. Just three weeks later, on 26th July, 2003, Britain's Radio-communications Agency abolished the Morse test in the UK, and other countries soon began to follow the UK's example. Sadly, this development could signal the beginning of the end for amateur Morse as existing operators become older and fewer, and insufficient newcomers feel encouraged to come forward to take their place.

Within the foreseeable future it seems very likely that amateur Morse, like professional Morse, will become just a memory and a line will finally be drawn under the story of the International Morse Code. The hierarchy of Amateur Radio, once expected to be the final guardian of Morse telegraphy, will go on record as its final executioner.

Thanks

Much of the material used to prepare this article has been sent to MM, over a number of years, by various readers too numerous to mention individually, and their help and interest is much appreciated. Valuable help was also given by Ken Quigg and the late Bill Pierpont in translating various documents from the German language. Thanks go also to John Alcorn who is following similar lines of enquiry for

progressive editions of his book, *Radiotelegraph and Radiotelephone Codes, Prowords and Abbreviations*, who gladly shared with the author the results of many hours spent searching the internet for relevant information.

References:

Samuel F.B. Morse – Letters and Journals, Vol.2, by Edward Lind Morse, pub Houghton Mifflin Co., 1914: Boston and N.Y. 1914;

The International Telecommunication Union – an experiment in international cooperation, by George Arthur Codding Jr, pub E.J. Brill, Leiden, 1952;

Geschichte der Telegraphie, by Th. Karrass, Braunschweig, Vieweg 1909;

Geschichte der Nachrichtentechnik, Vol.2, by V. Aschoff, pub Springer-Verlag, 1987;

Archiv für Deutsche Postgeschichte, heft 2/ 1979;

ITU Paris Telegraph Convention, 1865;

1st International Radio Telegraph Conference, Berlin 1903;

International Wireless Telegraph Convention, Berlin 1906;

International Radiotelegraph Convention, London 1912;

International Telecommunication Convention, Madrid 1932;

QST February 1939;

The Telegraph Manual, by Tal P. Shaffner, pub Pudney & Russell, N.Y., 1859.

Also other publications or documents mentioned in the text of the article. ***MM***

Book Review

Radion och Radiotegrafisten

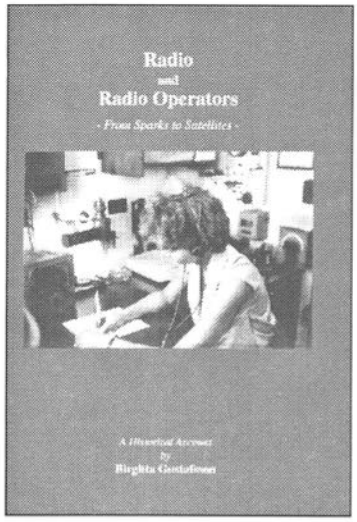
Radio and Radio Operators

Radion och Radiotegrafisten by Birgitta Gustafsson was first published in 1991 in Swedish and became available with a companion English translation of the text and captions, entitled "Radio and Radio Operators - From Sparks to Satellites" in 2003. The translation is available as a companion book or on a CD in Microsoft Word.

This is a well researched book, using mainly Swedish sources, is very well illustrated with 250 photographs and illustrations. It has a quality hard cover binding (8½ x 9½ inches) and is printed on quality gloss paper.

The 256 pages cover the history of radio and radio operators on land, sea and in the air and includes a short chapter on radio amateurs. The greatest part of the book is devoted to Morse and Morse operators. The author, Bergitta Gustaffson was a radio officer at sea and there is a strong emphasis on maritime communications.

The book traces maritime radio



from the very beginning with the experiments carried out by Marconi at sea and the first ships equipped with wireless telegraphy for commercial use in 1900. It is fascinating to read about those early operators, who they were, where they came from and how they were trained. It is sometimes forgotten that sailing ships still in commercial use up to 1930s also had radio operators.

There are 18 chapters including Morse & Marconi, Radio Goes to Sea, The First Radio Operators, Ship Radio Stations, International and National Radio Regulations, Training, Professional Telegraphists, Post War Radio Officers, Women Wireless Operators, CQD and SOS, Coast Stations and Operators in Civil Aviation.

A wonderful read, no less enjoyable for having to place two books side-by-side in order to see the many photographs and illustrations. It is especially recommended to anyone interested in the history of maritime radio.

The Swedish edition is attractively hardbound, and printed on good quality paper, which does justice to the many photographs and other illustrations. The printed translation is spiral bound for ease of use, with page numbers cross-referenced to the Swedish edition so that the English reader can easily keep track of the photographs.

The CD version of the English translation is a Microsoft Word file and readers would need to check that this software is available on their computer.

The books and CD are available from the MM office (see inside front cover) and will continue to be available after the magazine has closed.

The price, including postage and packing for the Swedish book & English translation on CD is £20.00 (UK and Europe) and £24.00 to the rest of the world.

The price, including postage and packing, for the Swedish book and English translation in book form is £25.00 (UK and Europe) and £32.00 to the rest of the world. *MM*

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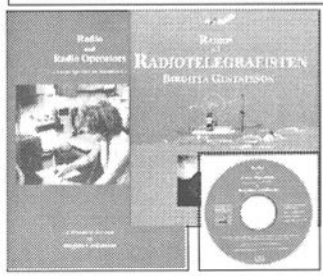

Radio & Radio Operators by Bigitta Gustafsson

This is a hardback book in Swedish with a companion English translation of the text, either in book form or on CD (needs Microsoft Word). It traces the history of radio and radio operators illustrated with 250 photographs and diagrams. 256 pages.See book review in MM87, page 20.

Book & CD: £20.00 UK & Europe - £24.00 Rest of World
Book & Book Translation: £25.00 UK & Europe - £32.00 - World

Wake of the Wirelessman by B.J. Clemons

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

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

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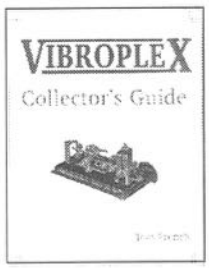

Vibroplex Collector's Guide by Tom French

This classic work on Vibroplex bug keys and their history is back in print. It covers all the models from the 1902 "Autoplex" to the present day and includes original design information and drawings, copies of patents, nameplates, serial numbers and decals. The book is rich in drawings and photographs. Softcover, 126 pages, 8½ x 10¾ ins (21.5 x 27.5 cm) Available in January 2002.

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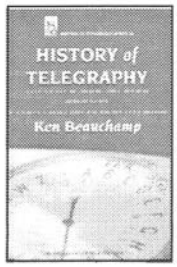

History of Telegraphy by Ken Beauchamp

This is certainly not a superficial book. Published by the IEE, this thoroughly researched book covers the history of telegraphy over two centuries, details of the technologies adopted and applications from semaphore to satellite communication, including its inventors, the industry and the users. Developments are put into a social context through time. 413 pages (16 x 24 cm) 133 drawings, photos and tables. (See MM78 for review)

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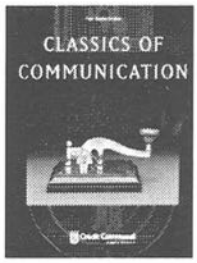

Classics of Communication (English Edition) by Fons Vanden Berghen

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

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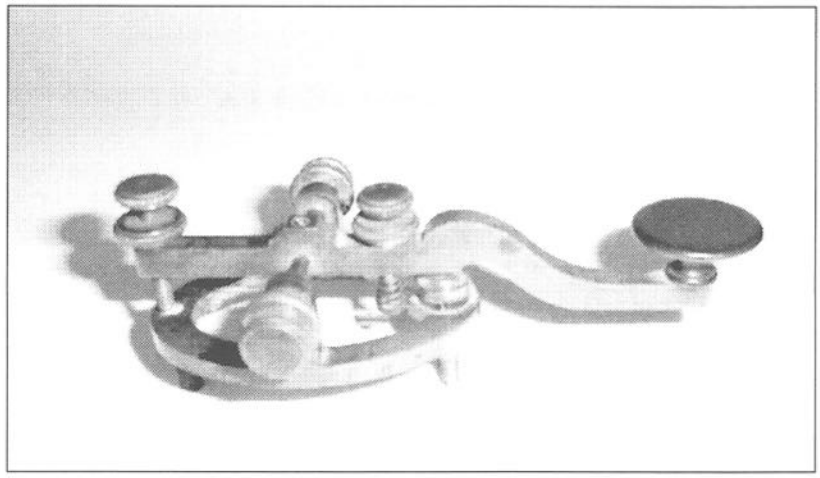
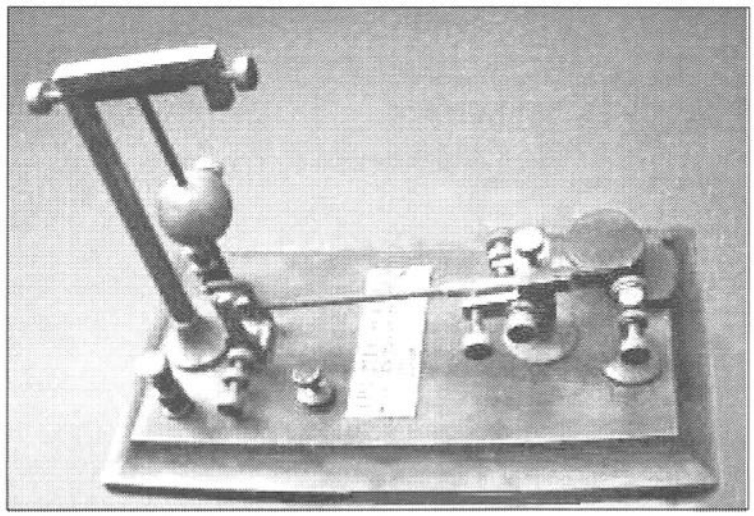


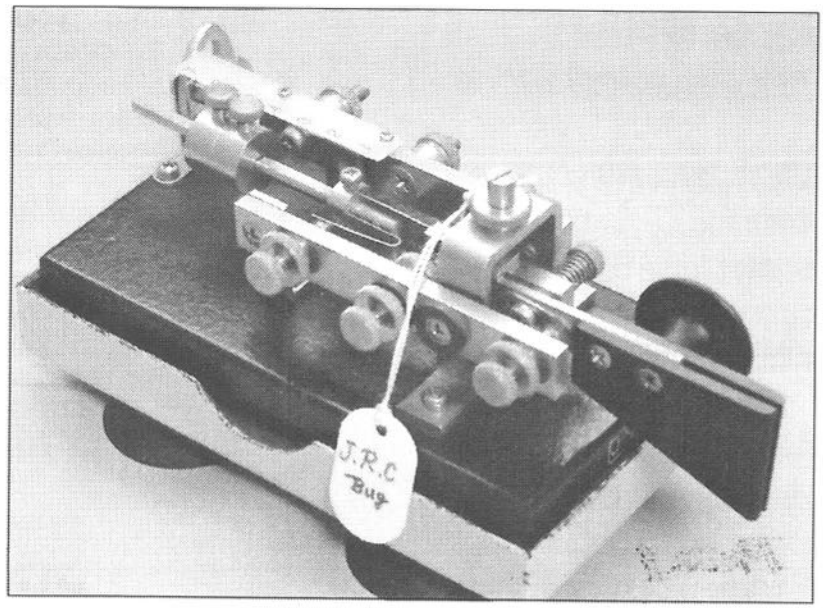
Early Tillotson legged camel back key made around the time of the American Civil War. The key is marked "L. G. Tillotson & Co., 8 Dey St., New York. Serial Nr 515".

Photo/Collection: Russ Kleinman, WA5Y



A rare example of the Coffee vertical key patented in 1906, which gets around the Martin Patent for the Vibroplex.

Photo/Collection: Heisuke Kimura, JA1DVV



A bug key made by **株式会社　日本無線。** *- Japan Radio Company Ltd. (J. R. C.) The model number is unknown but its size is 140 x 70 x 75 cm and weighs 1.230 kg. It has a steel base painted black. This is a professional key for maritime and other other uses. It is shown mounted in a second base to provide additional stability on the operating table.*

Photo/Collection: Wyn Davies

A British Admiralty Pattern Hether Mk III Signalling lamp made by Thomas Francis and Sons, Bolton. It fits on top of a pair of binoculars for short range signalling.

Morse Matters

by Dr Gary Bold ZL1AN

Iambic type A or type B?
Triambic Keying?
Old-time Morse Speeds
Counting in "Fives"?
The Telegraph Sounder
The AutoMorse Automatic Key

Iambic type A or type B?

Several emails have arrived from people who have built one of the cheap and excellent microprocessor controlled keyers I talk about from time to time. Having done so, they are perplexed at having to now select "type A or type B iambic timing", and ask "what does this mean, and which is best?"

The short answer is, people use both with equal facility, but whichever one you choose, be prepared to stick with it, because its characteristics will rapidly become embedded in your brain, and you won't be able to reliably send with the other.

How did they originate? These timing protocols were defined by Jack Curtis, who in 1973 designed and sold the first "keyer on a chip", the Curtis 4043. Several improved versions rapidly followed, culminating in the 8044ABM, released in 1975, which allowed you to select what he called "type A or B timing", because other iambic keyers being produced at the time always used one or the other, and he decided to offer both.

Iambic keyers have two paddles. Closing one gives automatic dahs, the other automatic dits. When both are closed, an iambic stream of alternating dits and dahs results, which aids the sending of letters like "C". The difference between modes A and B lies in what happens when both paddles, closed for an iambic sequence, are opened again.

- Mode A completes the element being sent when the paddles were released.
- Mode B completes this element, but then sends an additional element of the opposite type.

It's best illustrated with Figure 1, the classic diagram illustrating how you send "C" in either mode. The top plots show the paddle closure timing required for type A. You can see that the last dit has to start before the paddles are released. The lower plot shows mode B timing. The paddles must be released during the last dah, or (not shown in the plots) during the dit-space between this and the last dit. The classic Accukeyer of James Garrett used type B, and this is the timing I grew up with, and which is indelibly burnt into my bionic CW ROM. The advantage of type A is supposedly that the fingers must hold the paddles

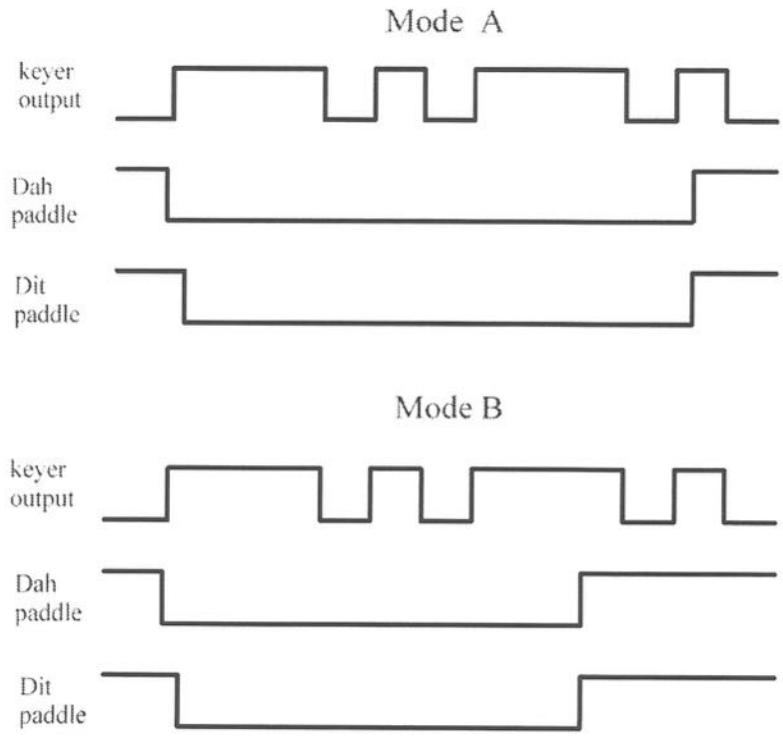


Figure 1. Timing diagrams for iambic modes A and B

closed for longer, which is said to be easier at high speeds, where all paddle manipulations have to be very fast. Roughly speaking, "it's easier to hold the paddles closed reliably for a short time than for an even shorter time".

Many transceivers now come out with built-in keyers. Their manuals never (in my experience) tell you which mode they use, but the majority seem to be type A - like the keyer on my FT-767GX - which accordingly I cannot use. (Neither does it implement character autospace, which I absolutely insist on, but that's another story for another column). How can you tell? If you can slow your keyer down to maybe 3 wpm and experiment by releasing the paddle at different times you may be able to work it out. But an accurate high-speed OP will tell you instantly. A type B person attempting "C" on a type A keyer will send "K". A type A person sending on a type B keyer will send "KA-barred". or "dah-di-dah-di-dah".

So choose whichever you wish. If you insist on my advice, go for B, because that's what I use. It will never cause a problem, because all modern keyers allow you to change to either mode at any time, usually with a

paddle-initiated command.

At higher speeds, it becomes increasingly difficult to reliably hold the dit paddle closed for the short periods of time required to send the multiple dit-streams in letters like "H", "X" and "B", giving rise to what I call the "erratic dit-count" problem. This was addressed in a novel way as described in the next section.

Triambic Keying?

In the February 1985 issue of Practical Wireless Mike, G4FMS, published an article entitled A Triambic Keyer. This put forward an entirely new keying principle, which Mike hoped would circumvent this erratic dit-count problem.

Mike proposed that there should be three paddle contacts, instead of two, which should be operated with the left hand, to keep the right hand free for writing.

- The contacts should be three buttons, closely spaced, facing upwards in a row,
- the first button should form automatic dashes in the normal manner,
- the second should form a single dot - no matter how long it was pressed,
- the third button should form two dots, repeat, and be queued. That is, if the button was still pressed at the end of one double-dot sequence, another should be sent. Pressing this button fast, twice, should therefore send four dots.

Thus, sending "H" would require 3 taps in rapid succession on the "E", "I" and "E" buttons. "5" would also require three taps - one on the "E" button, and two rapidly on the "I" button. The finger movements required, he reasoned, would be more accurate to make because they were alternate, and require less digital dexterity than needed for holding a standard keyer's dit paddle closed for exactly the right time.

Mike published a circuit using 8 CMOS ICs, one a 40105 CMOS FIFO (first in, first out) buffer to implement the logic. I never built this, but was intrigued enough to write a software simulator in BASIC, using three keys on the bottom row of the computer keyboard for the buttons.

This worked fine, but as Mike had observed, "it takes time to learn". My left hand seemed clumsy, so after a short struggle I gave up and switched to my right. I practiced off and on for a week or so, and got to that stage we all get to when learning to manipulate a standard keyer paddle, where I could send acceptable Morse at about 15 wpm, but still had to concentrate and "think ahead" about each upcoming letter.

I gave up before sending became completely automatic, probably because I had become so proficient with the standard paddle that sending using this method seemed like very hard work indeed. I might have persevered if I had been starting from scratch, and had never used a conventional keyer, because forming characters with the 3 buttons was certainly far less work than pounding a

pump-handle key.

We wouldn't use hard-wired logic for such a keyer these days, we'd program up either a PIC or AVR microprocessor - a simple assembler code would do the job nicely. Maybe, if somebody wants to try this, we could persuade Murray ZL1BPU to write a suitable code - or it would make a nice exercise for somebody following his series on microprocessor projects.

I sometimes wonder whatever became of Mike's idea. I've never seen it mentioned again. Did it vanish without trace, another seemingly "great idea" that never caught on? Or do Mike and some earnest enthusiasts use it yet? If you have ever seen this idea since, let us know.

Another "great idea" that was launched with much fanfare, promising to revolutionize voice communication, was NBVM - Narrow Band Voice Modulation - the subject of several highly technical articles in QST in the late 1970's - if my memory serves correctly. That great idea was to eliminate the parts of the audio frequency spectrum that carry little intelligibility information, compress the rest together, and transmit at about half the bandwidth required for a standard SSB signal.

The audio spectrum was reconstituted again after reception. The method worked, but the circuits were just too sophisticated for the average Ham to build and align, no commercial manufacturer picked it up, and as far as I know, it has vanished again without trace. Has anybody heard of it since?

Old-time Morse Speeds

Several people have written concerning how Morse speed was determined in the days of the classical telegraphists, triggered by my comments in the last column. All gave fascinating stories of their telegraph experiences, which unfortunately, I don't have space to print. Brian, ZL2ARJ wrote a particularly intersting account, saying (edited) "I started working as a telegraph cadet in Paeroa, then in Invercargill, in 1948. Over two years, initially working as a telegraph messenger, I learnt sounder Morse by practising and listening, encouraged by an enthusiastic Chief Postmaster. After achieving around 12 - 15 wpm, keen candidates were transferred to the Telegraph training school. I spent some months here, learning and being tested daily, until I achieved 22 wpm (not 25), the passing-out requirement.

"I was then transferred to the Auckland CPO where the simultaneous clatter of 100 busy landline circuits took some getting used to! I spent about 18 months here, and that brought me to a level of achievement way beyond what I had ever imagined! The working speed on most circuits seemed to be around 20 - 25 wpm, using the conventional P & T `pump-handle' key, and nobody seemed to find that too much effort.

"In 1955 I joined the Post Office Maritime Coast Station ZLB Awarua, where I remained for 9 years. The basic entry requirements were an interest in radio plus an operating speed

of at least 25 wpm. In 1964 I became an assistant instructor at the Post Office HQ Training School for 3 years.

"I never used a bug. My average speeds, sending and receiving, were well beyond 25, probably closer to 30 wpm under ideal working conditions. 40 years on, my speed is much reduced - around 15 - 20 wpm, as is found on most Ham bands these days.

"I don't know whether anyone else has quoted this, but despite my many years in the radio field of operating, I much preferred to copy Morse off a sounder. I found it more relaxing irrespective of the quality of the sending operator. Just something `magic' about it all."

"I've laid out for you, from rusty memory, the achievement levels we sought in the PO in the 50's and 60's. The plain language texts we copied were usually from the Parliamentary Hansard record. Here is a sample:

"The Hon Mr Nash - Sir there are just one or two points raised by the member for Hauraki which really need clarification He quoted the Public Works contract on the Hauraki plains drainage work to be not performing within the terms laid down by that Department."

"The counting of words in plain language was in "fives" (the spaces not being counted)"

Counting in "Fives"?

What? I had never heard of this! Indeed, Brian's hand-written copy of the Nash text above is neatly sectioned by oblique strokes into 5-letter groups. There are 42 such groups, with 1 letter left over. The actual word count is 46, slightly more. But Brian says that the "fives-count" was the number of " standard words" considered to be represented in the text.

How does this compare with the current standard? Using the now universally accepted ARRL speed definition (10 dots/second equals 24 wpm) 42.2 "standard words" would take 127 seconds to send at 20 wpm. It is easy to check this, using my instructional program "Teach"[1]. I typed this text into a file, loaded it up, and fired it off. It took 133 seconds, just 5% longer than that predicted by the "fives" count!

I repeated this with several other texts, and found that sending them using the modern standard took 5 to 12% longer than predicted by the "fives count". Thus, it seems that "counting fives" gives a much better estimate of the "equivalent modern standard" number of words than by simply counting the number of "physical words" in the text.

Furthermore, the resulting wpm rate is slightly higher than the modern rate. That is, a telegraphist sending at 25 wpm estimated by the "fives count" would be sending at 26 to 28 wpm by today's standard. Impressive!

Obviously old-time telegraphists knew about "fives", but I did not. I sought further clarification from Ian, ZL1BFB, another well-known telegraphist and RI of that era. He confirmed that "counting

fives" was indeed used to estimate words for sending both Amateur and Post Office Morse tests, and was surprised that I had never come across it. (Well, after all, I'm just a youngster who didn't become a Ham until 1960, and I've never operated a telegraph). Numbers, and punctuation such as "oblique stroke", counted as two characters. He also told me that Brian is being somewhat modest. He writes:

"Brian Webb was our tutor at the Morse school. We challenged him to demonstrate his own receiving capability. We set him up with a typewriter, and wound the Creed (automatic Morse- tape sending machine) up until he said `stop'. He was able to receive at 53 wpm!

"The claim that telegraphists would send and receive at 25 - 35 wpm is correct. And they would have to be better than that to cope with stress and pile-ups. I'd still like to hear it done. Has anyone anything further to add?

The Telegraph Sounder

Brian copied using a telegraph sounder for many years, but I know that many newer Hams have never seen or heard one of these. Samuel Morse's original telegraph used a cumbersome electro-mechanical device called a "register". This inked incoming dots and dashes onto a moving strip of paper, which were then read visually by operators who transferred the words to telegram forms.

In the 1850's, experienced telegraphists began to realize that they could recognize the different characters by simply listening to the register's relay clacks. They then started to copy the text down directly as it came in, eliminating the time-consuming step of transcribing from the inked tape, and making the process a real-time one. Alfred Vail, one of Morse's collaborators, is said the have invented the sounder soon after, to make the relay clicks more audible. However, the register continued in use for some years, since it didn't require a skilled operator who could "read by ear".

Samuel Morse himself resisted the introduction of the sounder, and anecdotes claim that he would stop and rebuke telegraphists copying by ear in offices he visited!

A great variety of designs proliferated, many of which you can see on different web pages. Bunnell patented his classic sounder design in 1875, and virtually all later ones followed his layout. One of my two highly prized Bunnell sounders is shown in Figure 2.

An electromagnet, formed by windings on the two vertical bobbins, pulls a spring-loaded, pivoted arm down when energised, with a solid "clunk". When released, it springs back against a stop with a lighter "click". The spring tension and spacing can be adjusted by knurled knobs.

It is universally claimed that telegraphists could instantly recognise the particular cadence of their own sounder even in a busy telegraph office where many other sounders were also in action.

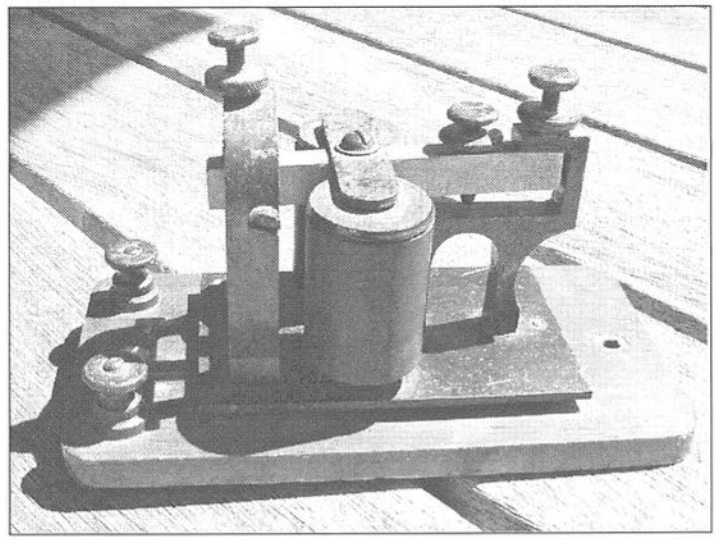


Figure 2. Bunnell Sounder.

In a class of 50, five or six are able to recognise the letters instantly after my short teaching session, and clearly have that mysterious ability needed to become good Morse operators. Alas, my students are too loaded with University work to take it further and sit the Ham exam.

With some practice, it is just as easy to recognise the code characters this way as when copying from a tone. I learned how to do it from necessity, when, years ago, my keying audio monitor failed in the middle of a CW QSO. I was using an electronic keyer, but I found that I could still follow my keying by listening to the clicks of the keying relay. I never bothered fixing the monitor, and just listened to the relay for some years until I obtained my first commercial transceiver.

Every year I demonstrate sounder Morse to my second-year Electromagnetism class using a P & T key, a 12 volt battery, and a two-wire circuit across the lecture theatre. I teach them a few letters, and then send some simple words. Invariably the class is fascinated, and almost all can distinguish between the letters after a few minutes.

You can play a sound file (au format) of a sounder in action from a link on the web page of the Morse Telegraph Club[2]. It plays best if you download it (148 kB) first. This file was created using Jim Farrior's DOS program The Mill, and appears to be in American Morse.

Anyway, I can't read it, although that might be due to the slight background noise, and some echo. At least you'll get the sense of what sounder Morse sounded like. You can download Jim's program, which produces both American and International Morse either with a tone or a simulated sounder from his website[3]. There are also instructions for inducing later Windows versions, which don't support DOS programs directly, to boot up in a DOS-supporting mode, although I've never tried this. I'll stick to Win98, which has no such scruples.

Demonstrating sounder Morse makes a nice club-night activity, particularly if you can unearth an old-time telegraphist who can 'esh' it out by telling it as it was.

The AutoMorse Automatic Key

Again, in the last column, I mentioned the AutoMorse key, which, like the Melehan Valiant, could send both automatic dots and dashes. Brian, ZL3BX, reports that there is one of these keys, working, at the Ferrymead Heritage Society Telegraph Office, Christchurch. Figure 3 shows a top, and Figure 4 a side view. There are three paddles. The top two act as in a standard bug, where dashes are formed manually.

The bottom paddle, activated with the forefinger, activates the auto-dash mechanism. You can see this most clearly in Figure 3. The plate reads "AutoMorse Pat 7613 H P Thomas Adelaide"

Don Hobbs, who obtained the key, tells how it came about:

"I found it at a small German Heritage village called Hahndorf in the hills behind Adelaide in Australia. The man sold it to us on the understanding that it would be used in our display of telegraph equipment. I have wired it to a sounder so the public can hear what the signals sounded like, and try it themselves. I know nothing about its history.

"I talked to an old Morse operator who had used one of these keys, and he said that he personally seldom used the bottom (automatic dash) paddle, and preferred to make manual dashes with the upper (standard

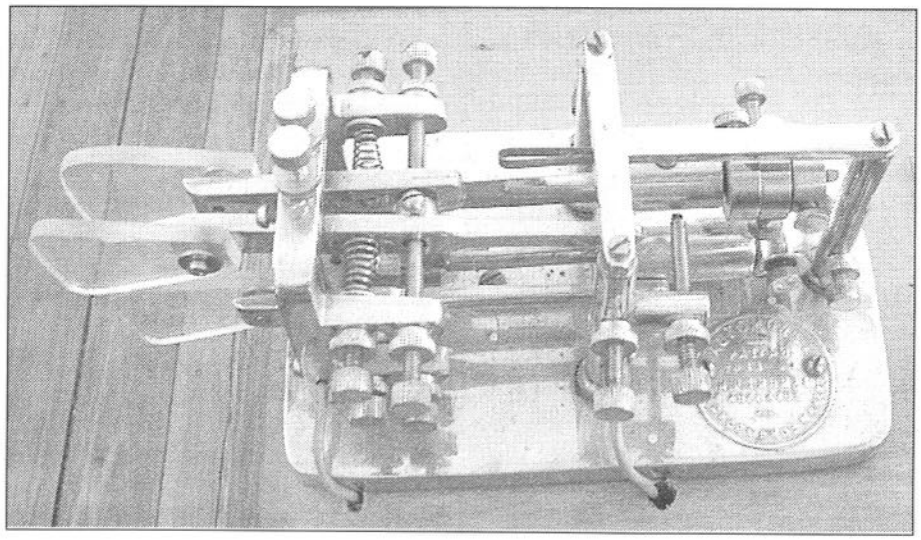


Figure 3. The AutoMorse - top view.

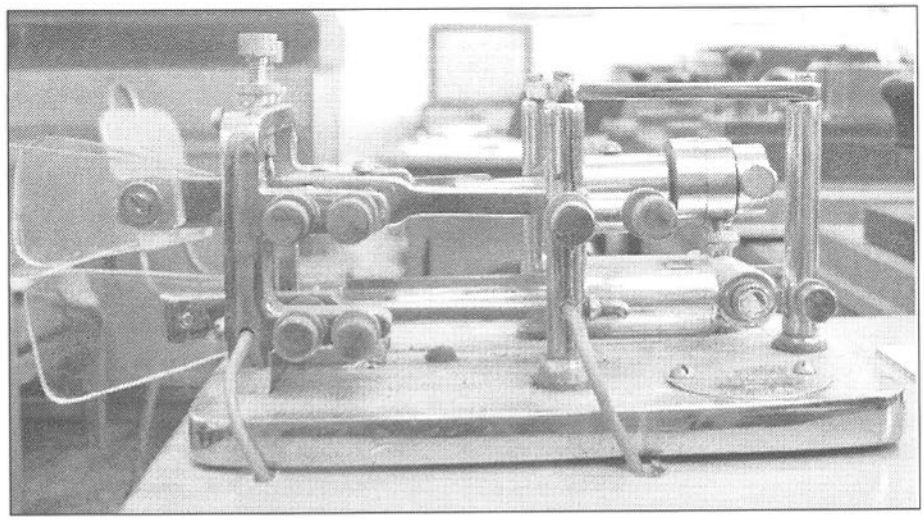


Figure 4. The AutoMorse - side view.

bug-type) paddle. But this would obviously depend on the operator's preference.

"I have wired up a number of other Morse circuits in our telegraph office, including a copy of the first one in New Zealand. This ran from Christchurch to Ferrymead, to Lyttleton in 1862. The Ferrymead office had a double-current key with two sets of contacts, which sent in both directions, to both Christchurch and Lytellton.

"We also have a keyboard, used to punch Morse characters onto a paper tape. The tape can be fed through an `undulator', which transcribes the characters onto another tape. These tapes could be sent at up to 200 wpm over fast circuits.

"If you would like to see our working display, come along! Our working day is Thursday, when most of our technical staff are present".

Don enclosed a sample of undulator tape, which has Morse characters clearly inked upon it. I'll certainly attempt to see this display when I get to Christchurch again, because I still have no firm picture of how the AutoMorse automatic-dash paddle is mechanically configured. I know that Don would be delighted to see you, too.

References

1 Teach.exe. Download version 2.02, free, from the NZART website at http://www.nzart.org.nz/nzart/index.html

2 Home page of the Morse Telegraph Club at http://members.tripod.com/Morsefftelegraphffclub/

3 Home page of Jim Farrior, W4FOK, at http://www.net-magic.net/users/w4fok/ *MM*

Transmission of the Queen's Speech by Electric Telegraph

The following was sent by David Lane who discovered it on the (internet) Dorset Life Mailing List. It is thought to be a report dating to 1847/48.

On Tuesday, the electric telegraph was brought into active operation on a grand scale, for the purpose of transmitting the Queen's speech to the various large towns and cities throughout England and Scotland. An early copy of the Queen's speech specially granted for the purpose, was expressed from Westminster to the central station in the Strand, and at Euston Square, both of which places it reached by about a quarter past one.

The manipulators at these stations, having touched the wires communicating with every telegraphic station throughout the kingdom, thereby sounding a bell at each, and giving the note of preparation, commenced throwing off in a continuous stream along the wires, successive sentences of the speech. This operation occupied from a quarter past one to a quarter to three, on the principal lines of telegraph, but considerably less than this - owing to the greater proficiency of the manipulators - on the Eastern Counties and South Western. It was completed to Southampton, where a steamer was in readiness to express the speech to the continent, in about an hour.

During the two hours the speech was transmitted over 1,300 miles, to 60 central towns or stations, where one or more manipulators were occupied in deciphering the transmitted symbols. Immediately on its arrival at Liverpool, Birmingham, Rotherham, Wolverhampton, Leeds, Wakefield, Halifax, Hull, Rochdale, Gosport, Southampton, Dorchester, Gloucester, Leicester, Manchester, Nottingham, Derby, Lincoln, Sheffield, York, Newcastle, Norwich, Edinburgh, and Glasgow, where the speech was printed and generally distributed, and the local papers published special editions.

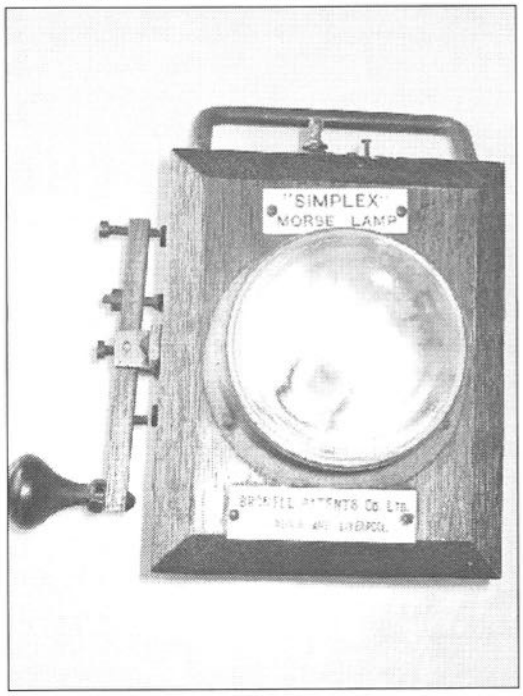
It was telegraphed at the rate of 65 letters in a minute, or at the rate of 430 words in an hour; several of the long words, such as "embarrassments", "infringements" and "manufacturing" taking longer time, no abbreviations being used, so that the 730 words (the exact number contained in the speech) were, including pauses and repetitions, disposed of in 120 minutes, or two hours.

Owing to the old telegraph between Edinburgh and Glasgow having just been taken down, so as to allow for the substitution of the new one, the intelligence had to be transmitted from Edinburgh to Glasgow by train, though by this medium the speech would reach Glasgow at four, or within two hours after its delivery in London.

The last Queen's speech, being but half the length of the present one, was transmitted in half the time, reaching Norwich, 120 miles, in less than an hour.

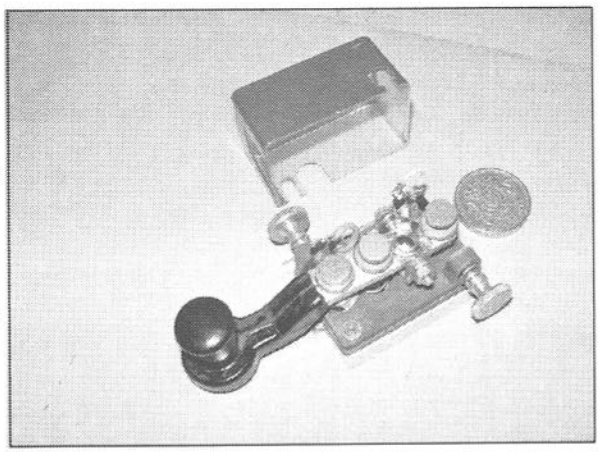
Info Please!

Photo/Collection: Wyn Davies



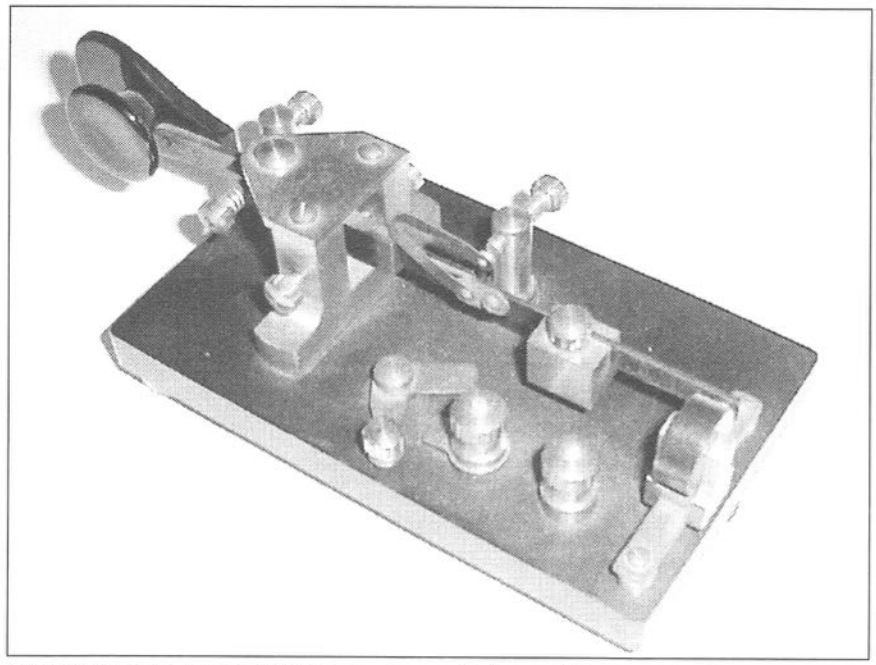
A Simplex Morse lamp with bullseye lens made by Bromwell Patents Co.Ltd., Glasgow and Liverpool. Ever Ready made a lamp identical to this but without the key. Were these Ever Ready lamps that were modified by the Bromwell Patents Co?

Photo/Collection: George Eddowes, G3NOH



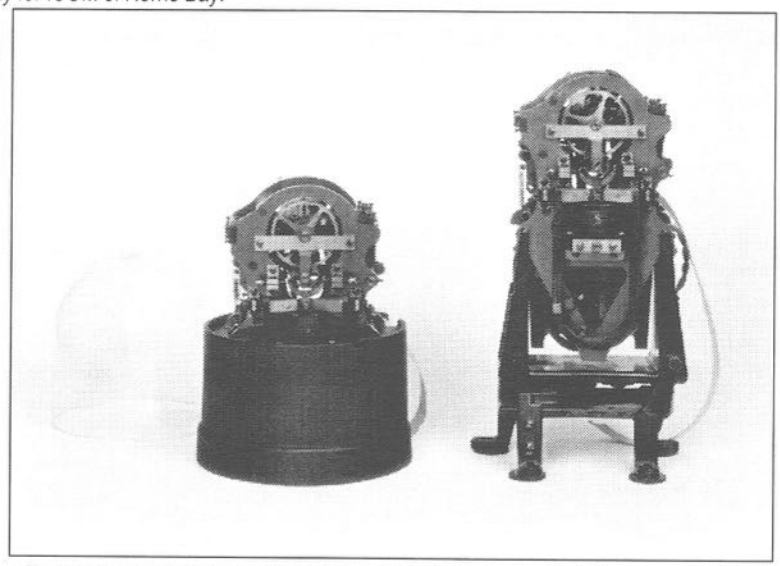
A miniature Russian key probably designed for portable equipment. Info please.

Photo/Collection: John Francis, G3LWI



British bug key. It is believed that this key was one of a few made by an engineering company in Kent, possibly for ICOM of Herne Bay.

Photo/Collection: Fons Vanden Berghen, Halle, Belgium



Can anyone help? This is a photograph of the Self-winding Stockticker type 1-C by T. A. Edison. Fons Vanden Berghen is in need of a base, either the round one or the one with feet.

Resurrection of an Australian Simplex Auto Bug Key

by Peter Holtham

THE SIMPLEX AUTO is an Australian made right-angled bug key made by Leo. G. Cohen. He was a telegraphist at the Central Telegraph Office in Melbourne, Victoria and sold various models of bug key from sometime in the 1920s onwards.

The Australian GPO used them, and after the days of landline Morse code, quite a few fell into the hands of Australian radio amateurs.

I have been looking out for one for several years, and finally came across a very sad example in a Brisbane antique shop. The label tied to it simply said "PMG Gadget, $25" so the shop owner clearly had no idea what it was. He knew it was ex Post Office, but that was only because it had a government arrow and "PMG 311" stamped on the top.

Although the black and white photo in Figure 1 does not really show it, the key was in a terrible state. The nickel plating was badly tarnished and worn, the screws were rusty, and the

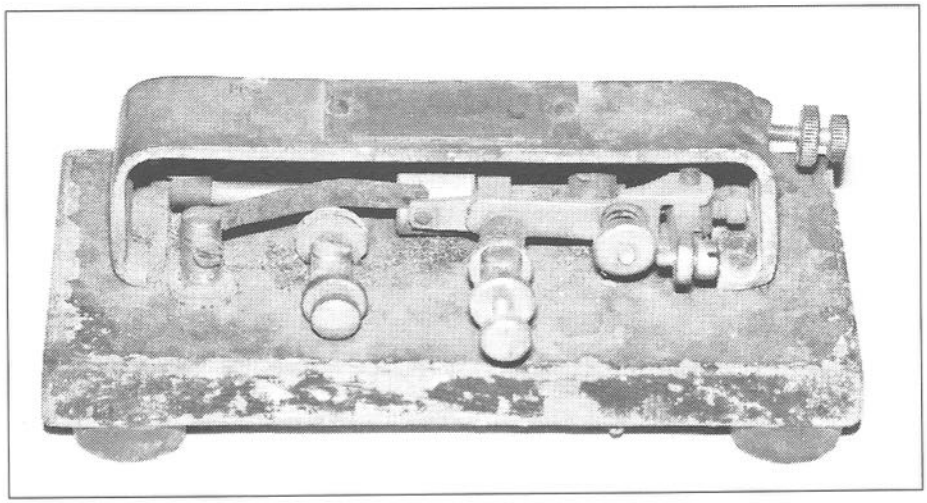


Figure 1. In a terrible state.

pendulum jammed under one of the adjusting screws. What was left of the manipulating arm was rusted solid.

The rest of the arm, the thumb piece and knob were missing. Strangely, the arm attachment screw was still in place. Perhaps someone had unscrewed the arm to pack the key away and somehow the two pieces had got separated. The missing piece wasn't in any of the nearby junk; I would have to replace it.

A bit of haggling, with an emphasis on its condition got me $10 AUS off the price, and I was finally the proud owner of a Simplex Auto. Rubbing the filth of ages off the label revealed that it was number 6232.

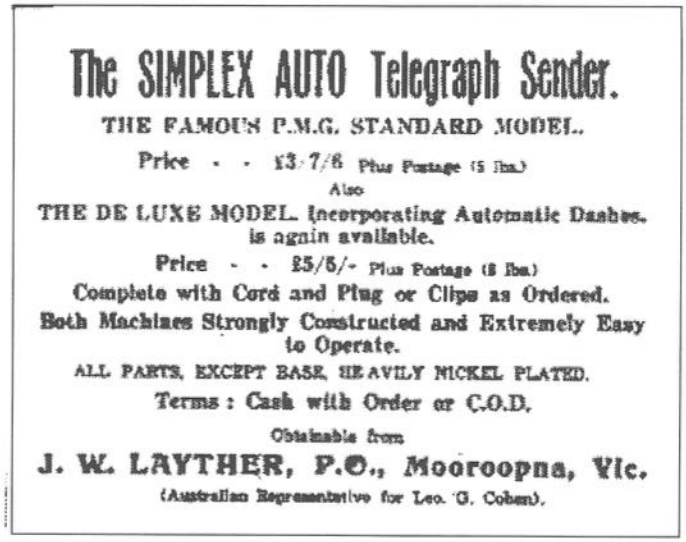
Restoration Plan

Now the question was how to restore it. Step one would have be a complete strip down, which turned out to be a major effort. The screws in the base plate holding all the pillars needed an impact driver to shift them. The brass lower bearing screw sheared off and had to be removed with a screw extractor. Most of the other screws were rusted solid and need copious amounts of penetrating oil before they could be undone. The rivets holding the nameplate on the top of the bridge had to be drilled out.

Finally I had a heap of bits, and a sketch of where they all came from. A thread gauge showed me that all the fastening screws were 5/32 inch Whitworth, so at least I could buy replacements.

Meanwhile a search for "Simplex Auto" on Google turned up quite a few useful websites. I found an original advert (Figure 2) plus a scanned copy of an original instruction leaflet (Figure 3). Photos from key collectors around the world showed various models, some slightly different from mine.

The adverts told me that the key was originally heavily nickel-plated on a black painted base and cost £3-7s-6d. The plating on mine was pitted and


The SIMPLEX AUTO Telegraph Sender.

THE FAMOUS P.M.G. STANDARD MODEL.

Price - - £3/7/6 Plus Postage (5 lbs.)

Also

THE DE LUXE MODEL. Incorporating Automatic Dashes. is again available.

Price - - £5/5/- Plus Postage (8 lbs.)

Complete with Cord and Plug or Clips as Ordered.

Both Machines Strongly Constructed and Extremely Easy to Operate.

ALL PARTS, EXCEPT BASE, HEAVILY NICKEL PLATED.

Terms : Cash with Order or C.O.D.

Obtainable from

J. W. LAYTHER, P.O., Mooroopna, Vic.

(Australian Representative for Leo. G. Cohen).

Figure 2. An original advertisement for the Simplex Auto.

To regulate the speed of the dots move the weights along the bar of the vibrator.

The vibrator must vibrate without bumping against the releasing

arm. If it is allowed to bump a false dot will be the result. See that there is sufficient clearance to prevent this. Should it bump give the arm a little more play by slightly unscrewing the outside lock nut and screw situated to the left of the lever. The inside nut is merely for varying the tension on the dot side of the lever.

The lever is jointed to allow the handle to be adjusted to a comfortable working height.

Adjust the tension springs so that the touch of the lever handle feels best.

KEEP THE CONTACT POINTS CLEAN.

OIL THE MOVING PARTS OCCASIONALLY WITH SEWING MACHINE OIL.

How to Manipulate the Simplex Auto

Rest the hand on the table. Use a wrist not a finger movement. Never grip the handle—that is, when you are pressing the dot side with the thumb do not permit the fingers to touch the dash side;

likewise when making a dash do not touch the dot side with the thumb.

Do no try to operate the machine with merely a finger movement. The arm, being quicker and stronger, makes the manipulation easier and more accurate. Use the tip of the thumb and the tips of the first two fingers.

In learning to use the SIMPLEX AUTO make plenty of space between the letters and words and make dashes of ample length. One of the beauties of Morse is the correct timing of the spaces and dashes. Do not be in a hurry. Accuracy is the thing. Speed will come with practice. Make clean cut even signals your objective.

Do not have your dots too fast. In adjusting the dot speed of the SIMPLEX AUTO a good rule is to imitate the sending of a strong clear hand sender.

The safety cover makes it impossible for the SIMPLEX AUTO to get accidentally knocked out of adjustment, but it is a good idea to occasionally test the adjustments.

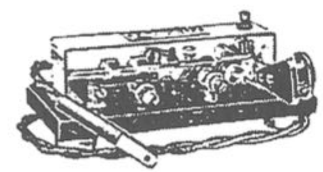
Do not permit others to use your machine or to change the adjustments.

The Simplex Auto

(REGD.)

Semi-Automatic Telegraphic

Sending Machine



New Improved Model

More Speed

Less Effort

Strong Carrying Signals

Figure 3. A Simplex Auto instruction leaflet.

tarnished. No amount of cleaning and polishing by me made any great difference. The paint on the base plate flaked off at the slightest touch.

Given all these problems I decided I would try to restore the key to as-new condition by replating and repainting. Some people may argue this destroys any historical value. I decided there are sufficient original Simplex Auto keys around in much better condition not to worry.

I measured photos downloaded from the Internet to work out the size of the missing arm and cut a new one out of a piece of brass. Then all the bits went off to a local electroplater who specialised in restoration of antiques.

Parts Refurbished

While they were away I resprayed the base in matt black and cut a new thumb piece from a piece of perspex. I also gave the rubber feet a wash in warm soapy water. I don't have a lathe so a fellow member of the Brisbane Amateur Radio Club turned a new knob for me.

When I picked the bits up from the plater a few weeks later, the transformation was amazing. The new nickel plating sparkled and shone. The downside was that all the threads on the knurled adjusting screws and nuts were over plated. What was worse, the nameplate was so thickly plated that the serial number had almost disappeared.

The thread problem was soon solved; all that was needed was to clean them up with a $^{5}/_{32}$ inch tap or die. The nameplate was a bit more serious, and for a while I didn't know what to do.

Referring to my dismantling sketch it was quite easy to get everything back together. The only

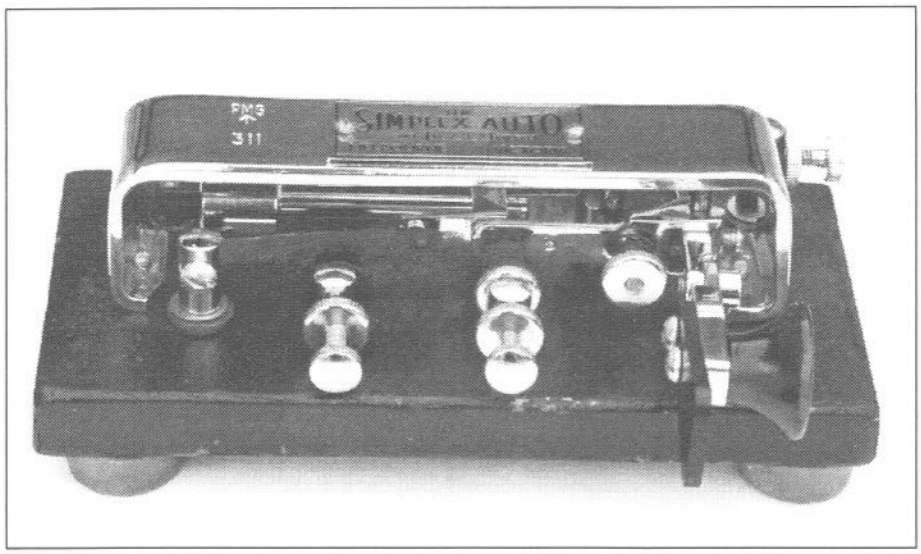


Figure 4. The finished restoration.

slight problem was again excess plating which had narrowed the slots in the support pillars for the pendulum and dot contact springs. A thin blade helped to prise them apart.

Finishing Touch

At this point the original adjustment instructions proved handy. Hooking the key up to the side tone of my transceiver it was easy to follow the instructions and set the dot contact gap.

Some test transmissions showed me that the key worked really well. But without the nameplate on top it lacked that final finishing touch.

Then I had an idea. I looked up engravers in the Yellow Pages, and found a local badge making company. I showed them the problem, and yes they could help. They would scan my original and make me a copy, with all the engraving properly filled in black. A week later I had the new nameplate, as promised it was an exact copy.

I screwed it back into position and the restoration was complete. Figure 4 shows the final result, Simplex Auto number 6232 was back from the dead and ready for some amateur band action.

My thanks to Bob Marshall and Mick Kilmartin for help with the dismantling and Renato Langersek, VK4TNT, for making the knob. You can download the original instructions and see some other Simplex photos at Tim Patton's website http://www.tim-patton.net/Telegraph.html. The adverts come from Larry's website http://home.iprimus.com.au/oseagram/jigger.html. My thanks to them both for their help. ***MM***

Your Letters

The PS213A Key

With reference to the PS213 key featured on page 25 of MM85, I was surprised to read that it came from Australia and wonder whether this was its country of manufacture.

My understanding was that it was produced by the General Post Office workshops at Rugby (GBR), England in the early 1970s for use by coast stations. Some readers may have noted this key in use by David/G3RID performing the final transmission from Landsend Radio/GLD in the video "QRT 500".

My PS213A does have a sheathing on the arm and I find it a "Rolls Royce" to use.

Brian Payne, G4CJY
High Wycombe, UK

Bathtub Key

With reference to the letter from Henri Jacob/F6GTC regarding the 'Bathtub' key. I used to use this key in various aircraft of the RAF, the last being the Wellington bomber as a Wireless Operator/ Air Gunner (WOP/AG). In fact, I have one at hand at the moment, but not to use as I found it was not easy to send with, even at moderate speed!!

The spring clip was used for direction finding and when after an SOS on abandoning the aircraft, so that the DF stations could get bearing or 'fix' on aircraft. Also, of course, if you wanted a bearing or 'fix' for your aircraft, the spring clip was used to close the key so that receiving stations had time to determine the bearing.

As a matter of interest I still have and use the RAF 'ditching' box-kite with the very thin antenna wire etc. I also have the 'J' switch for the 1154/ 1155 – what memories!!!

Peter Jones, G3ESY
Hereford, UK

Plug & Play Keys

With regard to the news item on about "Plug & Play" keys in MM 86, page 6,

Please keep on sending your letters - we are not finished yet!

the idea of using a nail file as a paddle in this way is about 25 years old. I think that it was in 1979 that I was shown just such a key by G3HIS.

Jim Phillipson, G4BEZ
Whitley Bay, UK

Bathtub Key

Further to the information on page 37 of MM 85, now that I have come across a picture of a Bathtub key installed in the open air in a Royal Navy Swordfish aircraft. The Telegraphist Air Gunner (TAG) had an unenviable working environment to say the least! Apparently over 1000 TAGs saw operational service, of whom nearly 400 were killed on active service.

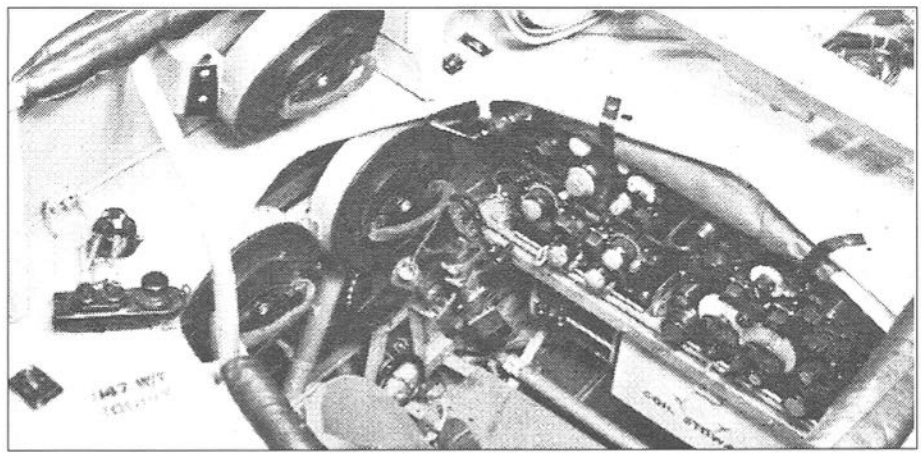
The photograph and information are taken from "Guns in the Sky, The Air Gunners of World War II" by Chaz Bowyer, published by J. M. Dent & Sons Ltd., 1979. This is an excellent book for those interested in the bomber war.

P J Smith, ZS6FS
Gauteng, South Africa

The Clipsal Key

May I correct a popular misconception about the Clipsal and its description on page 24 of MM86? The vast majority of PMG (Post Office) working was on closed circuits and therefore required a key equipped with a circuit closer. This was also the reason that most Australian jiggers did not have a circuit closer - there was already one on the main key.

Clipsals were used by the Post Office but on a very very few radio circuits. Therefore I don't think they can be described as an "Australian Post



Office" key. They are quite different from the true Australian PO keys. Clipsals were made during the war for the RAAF and also were popular with ham radio operators because of the absence of a circuit closer and for this reason production continued for a while after the war.

The text accompanying the Automorse photo in the previous issue was also incorrect. This has prompted me to do an article on both the Automorse and Pendograph which I've almost finished.

Ron McMullen
Yass, New South Wales

Vandalism

How's this for a piece of vandalism? I bought a straight key at a small rally. It was nothing special, just in nice condition and a sensible price.

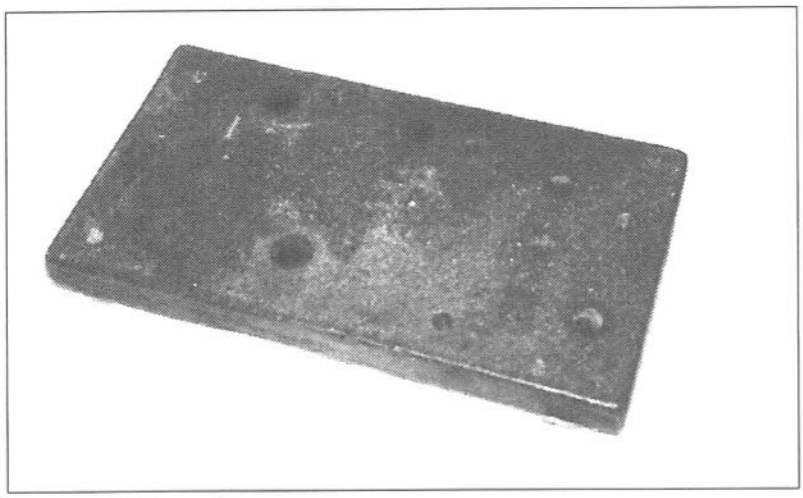
It had been mounted on a heavy base which I removed when I got home. The photo shows what I found. There is a mark left by a maker nameplate and immediately I thought "this was a bug key".

The base is 3½ inches wide and finished with black crackle paint. If it was a Vibroplex then it was either an Original, Lightning bug or Champion.

Comparing the pattern of the holes with these keys, I think that this was an Original which has had nine additional holes drilled through it.

I wonder what happened to the working parts?

Jim Phillipson, G4BEZ
Whitley Bay, UK

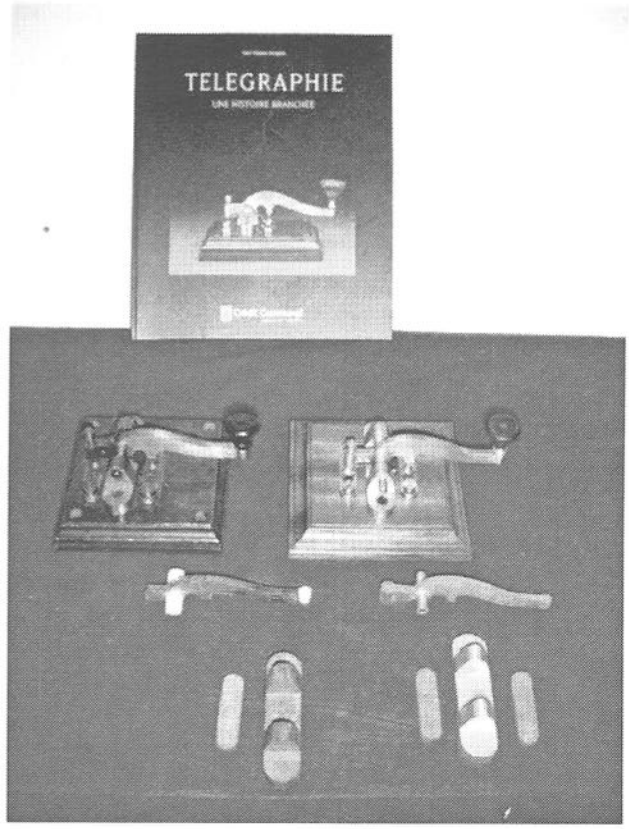


Morse Key Construction

Having read the article "Morse Key Construction Competition" in MM86 readers might be interested in a construction project, undertaken by myself and a friend, to make a replica of my first camelback key. It is the one on the cover of my book.

In the photo you can see the original, the copy, the plastic mould and some rough moulded parts in brass.

Fons Vanden Berghen
Halle, Belgium



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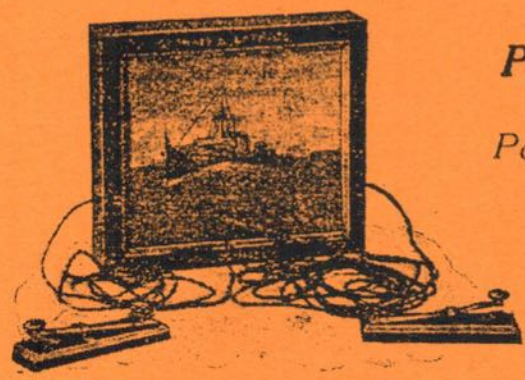

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