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Flying the flag for Morse

Morsum Magnificat

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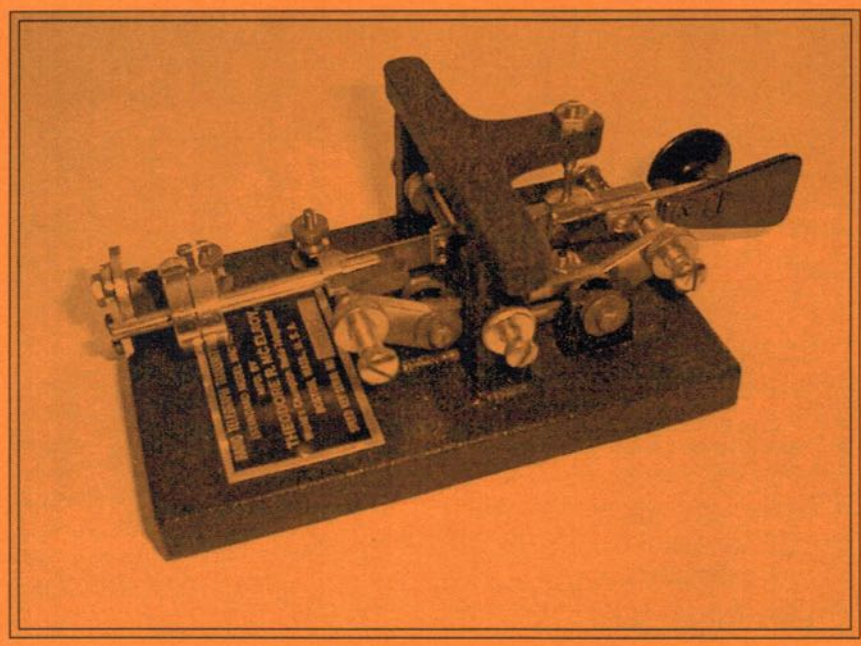
The Morse Magazine



Standard Model Mac 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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Issues Nos. **34,35** and **38–76** 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

1938 Standard Model Mac Key made by the Theodore R. McElroy Co., Boston, Massachusetts, USA.

Photo/Collection: John Francis, G3LWI

Comment

Wishing All MM Readers a Merry Christmas and a Happy New Year

Correction: MM77, p23 The first French Morse register by Bréguet came AFTER the dual and the single needle telegraphs, not before as stated. Apologies to Fons Vanden Berghen.

Zyg Nilski, G3OKD

Contents

Adverts

News

Russian Federation Supports Retention of Morse Code

In a document relating to the WRC-03 agenda, released by the International Telecommunications Union on 12 October, 2001, the Russian Federation says there is a need to retain the Morse code requirement for Amateur Radio operation below 30 Mhz.

A review is currently being made of Article 25 of the Radio Regulations, which contains the basic provisions relating to the radio amateur and radio amateur satellite services.

In the document, the Administration of the Russian Federation agrees that there is a need to modify Article S25, and fully supports the proposals by the International Amateur Radio Union (IARU.) "In this regard, it would like to express its concern regarding the deletion of certain provisions:

1. No. S25.5 -We consider it advisable to retain the provisions in the Radio Regulations which stipulate the need for a command of Morse code in order to be issued a radio amateur licence. Reasons:

- A knowledge of Morse code determines the boundary separating users of the radio amateur service from citizen band (CB) users.
- An analysis of the current situation carried out by Russian radio amateurs shows that the lowering of requirements regarding knowledge of Morse code in different countries did not lead to a significant increase in the number of radio amateurs. On the contrary, to abolish the requirement regarding a knowledge of Morse code in the short-wave bands may produce a significant increase in the number of untrained radio amateurs.
- The working statistics of major radio contests indicate that roughly the same number of communications are effected using telegraph (Morse code) as single side-band modulation, and a very low percentage of radiocommunications are effected using modern digital transmission facilities.
- A survey of Russian radio amateurs has shown that an overwhelming number of those having submitted comments are in favour of requiring a knowledge of Morse code for the issue of a licence to operate at frequencies below 30 MHz.
- Russian radio amateurs consider that revoking the requirement for a knowledge of Morse code would lower the level of proficiency and lead to numerous infringements in parts of the amateur ranges.

In addition it is well known that:

- radiotelegraphy signals constitute the most interference-suppressing means of effecting amateur radio communications, this being of no small importance to radio amateurs.
- radio telegraphy constitutes one of the most effective means of communication in emergency situations.

Conclusion: The practical ability to work in telegraph mode when operating in frequencies below 30 MHz, i.e. using Morse code, is a mandatory condition, when it comes to examining the proficiency of individuals wishing to be issued a radio amateur licence."

(Information from the W5YI Report. Note that on 8th October the IARU Administrative Council voted to support removal of Morse (see below), contrary to the Russian Federation's understanding of their position – Ed.)

IARU Supports Abolition of Morse Test

The Administrative Council of the International Amateur Radio Union met on 6-8 October 2001 in Guatemala City, Guatemala, following the 14th General Assembly of IARU Region 2. The principal business at the Guatemala City meeting was to continue preparations for WRC-2003, which has several items of importance to the amateur services on its agenda...

The IARU Council adopted the following resolution:

Considering the approval without opposition of ITU-R Recommendation M.1544, which sets out the minimum qualifications of radio amateurs,

recognizing that the Morse code continues to be an effective and efficient mode of communication used by many thousands of radio amateurs, but

further recognizing that the position of Morse as a qualifying criterion for an HF amateur license is no longer relevant to the healthy future of amateur radio,

resolves that

1. member societies are urged to seek, as an interim measure, Morse code testing speeds not exceeding five words per minute;
2. setting aside any previous relevant decisions, IARU policy is to support the removal of Morse code testing as an ITU requirement for an amateur license to operate on frequencies below 30 MHz.

(Extracted from an International Amateur Radio Union News Release dated 8 October 2001)

Build Your Own Morse Code Trainer

Michael Ahlgrimm, DJ9BX has designed a simple do-it-yourself Morse code trainer around the PIC 16F84 microchip. No computer or tape is required.

The device generates pseudo-random groups of 5 characters but plain text, callsigns or Q-groups are not produced. Sent texts can be changed both in rate and pitch. Also during hearing a step-by-step change of speed is possible.

In the same way an increase of the speed around 1 Wpm all 4 groups is possible. The Farnsworth mode can also be activated where the normal space between letters is extended or with the Farnsworth-II mode, the inter-word spaces are extended correspondingly. The circuit and description are available in full on his web site at:

www.qsl.net/dj9bx/zufall8en.html

Art & Skill of Radio-Telegraphy Now a Book

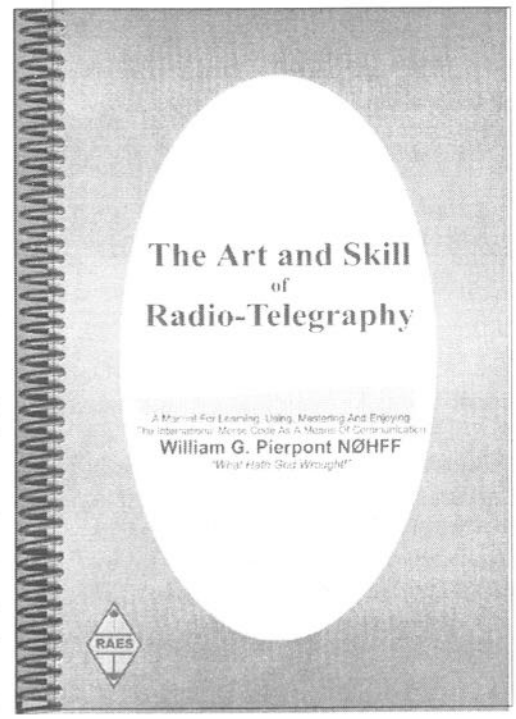
The Art & Skill of Radio-Telegraphy by William G. Pierpont, NØHFF has been available as a free download from a number of web sites for several years and has been translated into Danish, French and Japanese.

This has been a major 'labour of love' for Bill Pierpont and, to make it as widely available as possible, he allows it to be freely reproduced and published, but only on a no-profit basis. The latest, Third Revised Edition has now also been printed in book form by the Radio Amateur Educational Society (RAES) of Canada.

This 236 page work is a comprehensive manual for learning, using, mastering and enjoying International Morse Code as a means of communication. In Bill Pierpont's words it is "For those who are interested in telegraphy, for those who would like to learn it, for those who love it, and for those who want to improve their skills in it."

The book includes sections on learning international and American Morse code, listening and copying skills, using the key, pitch and timing. There are also sections on using computer and tapes for self-learning. Throughout the book interesting historical references are woven into the narrative. This book must be the definitive work on the Morse code.

The book is 5.5 x 8.5 inches (14 x 21.5 cm) with coil binding so that the book will lie flat when open for easy reference when in use. There is a full Table of Contents for the 34 Chapters and a simplified Index. In keeping with the Morse code theme used by the Radio



Amateur Educational Society (RAES) the cover has a picture of the Titanic with the first and last message sent by MGY these are in the background of the Book Title text. The story of the Titanic as recorded by Lloyd's of London is in the back of the book. The basic cover price of the book is $ 14.00 US. The prices, including postage are:

$28.00 CDN including postage to Canada

$18.00 US including postage to Continental USA.

$21.50 US including postage Internationally.

Orders should be sent to Dave Clarke, VE6LX, RAES, 8607 - 34A Avenue, Edmonton, Alberta, Canada - T6K 0B9. Cheques and money orders should be made payable to Dave Clarke.

Further information is also available on the RAES web site at http://www.raes.ab.ca/book/index.html E-mail: raes@sas.ab.ca

New Canadian Morse Proficiency Certificate

Industry Canada has discontinued the requirement for the 12 wpm Morse code qualification and now accepts the 5 wpm Morse code qualification for operating privileges on all HF Bands. This leaves a conspicuous gap in the encouragement of Morse code proficiency at higher speeds for the many amateur radio operations in CW mode on HF and VHF bands.

Radio Amateurs of Canada (RAC) now offers a Certificate of Proficiency in Morse Code, to be administered by the RAC Awards Manager, to recognize voluntary candidate Morse code reception proficiency at speeds of 12, 15, 20, 25, 30, 35, and 40 WPM. A new dated certificate will be issued with each new 'qualification' earned. The examination and certificate are also available in the French language. A charge of $5 is assessed to cover printing, handling and postage costs.

The certificate and associated testing is for reception proficiency using the Industry Canada RIC-1 standard of a three minute receiving test with less than 5 errors remaining after a two minute correction time allowance. Any Accredited Examiner holding a current Industry Canada Letter of Authority who voluntarily chooses to participate in this program may conduct the tests.

The examination may be generated by any of several software programs available from the RAC web site, or audio tapes prepared using such a program, using suitable text selected by the Accredited Examiner. As with 5 and 12 wpm Morse code examinations under RIC-1, the plain language examination text is limited to the letters of the alphabet, the ten numerals, and the period, comma, dash, question mark and fraction bar.

To stimulate interest among newcomers and old-timers alike, amateur radio clubs are encouraged to run periodic Morse Nights so that an Accredited Examiner can qualify groups at progressively higher speeds. Links to a variety of software, and Morse practice files can be found on the CW and Beginners pages on the RAC web site at: http://www.rac.ca/morsepro.htm

(Information Nicola Fidecaro, HE9VIZ)

SSB Contest Swamps CW Again

Maurice Colombani-Gailleur, F6IIE has again written to CQ Magazine on behalf of UFT, Union Française des Télégraphistes, following the misuse of IARU bandplan for 40 metres during this years CQ WW SSB contest. In his letter he says, "...Yes, I know and I must admit this band is too narrow for any contest. But, until we get a world-wide bandplan from 6.900 to 7.200 MHz, all amateurs taking part of any contest MUST FOLLOW the IARU recommendations and, much more important, follow their own country rules and regulations..."

5 wpm Test for ZL Radio Amateurs

New Zealand now has only two classes of Amateur Licence: Limited and General. The Novice and the Novice/Limited licences have been removed. The existing Limited licensing procedure is unchanged and the General licensing procedure is only changed by the lowering of the Morse test requirement to 5 words-per-minute.

The existing callsign grouping that indicates the class of licence of the holder will remain in force. This will require all licensees upgrading to a General licence to obtain a new callsign.

It is expected that NZART Morse Examiners will test at 12wpm on request for those who may wish to meet this higher operating standard for overseas travel.

(Information: Ministry of Economic Development, Radio Spectrum Management, New Zealand.)

International Museums Weekend 2002

Earlier this year, Harry Bloomfield ran what proved to be a very popular and enjoyable amateur radio event in Great Britain, called the 'National Museums Weekend 2001' (NMW 2001).

Next year the event will become international and be renamed the 'International Museums Weekend 2002' (IMW 2002). The IMW 2002 will take place on the weekend of the 15th and 16th of June 2002. Individual operators as well as amateur radio clubs from around the world are invited to join in the event, by setting up a special event station at their local museum.

Registration is a requirement for taking part in the event. Registration is free via the website.... http://www.imw.f2s.com/ More information about the event can also be found there.

Nearer the event, the original NMW 2001 web site http://www.qsl.net/m1byt/ will become a mirror site for the IMW 2002.

(Information: Harry Bloomfield, telephone: +44 (0)113 2866 897 or e-mail: harry_m1byt@ntlworld.com)

Tourists Love Live CW on Queen Mary

This Summer Kathy Stanfill, KS6CW tried something different for the visitors to W6RO on the Queen Mary. Interested tourists were encouraged to enter the ham shack and sit down and practice with the paddle key oscillator. One receiver was tuned to the 20-meter band with all kinds of CW signals! Visitors really loved hearing that.

Visitors were reminded that the "Morse Code" they are hearing was NOT recorded but a live transmissions. Since many thought that CW was dead, they listened in awe when they learned that whilst commercial CW is no longer used, it is still used by many radio hams around the world.

Both adults and children, who tried out the practice key, had a wonderful time. Kathy had made a chart of the alphabet and corresponding Morse code. Aspects of the history of telegraphy were explained and they were shown how to work the key and send their names in Morse code. A couple of boys (different times inside the shack) loved the key so much that they worked it for about 20 minutes or so.

David, a visitor from England who knew nothing about Morse code or how to send it, by the time he left with his father, Mike, could send with a good fist. While David was on the key having so much fun trying different words his father explained that their next-door neighbour is a radio ham.

A husband and wife came by and the wife appeared very interested in trying out the key and commented, "I could do this all day." She just loved working the telegraph key (paddle) and said that she'd rather use the key than a microphone. I gave her a FISTS CW CLUB brochure.

Others took pictures of their children working the telegraph key in the Queen Mary radio room and, as one lady said, "This is so special - thanks." Dick Doan, W9CBD paid W6RO a visit, hoping to see a semi-automatic bug key, but W6RO does not have one as yet.

(Report by Kathy Stanfill, KS6CW)

Jim Ricks, W9TO - SK

Jim Ricks, W9TO, who became famous among amateur radio telegraphers for his introduction of the W9TO keyer, and later by his promotion of the keyboard for high speed CW died on October 20th, 2001.

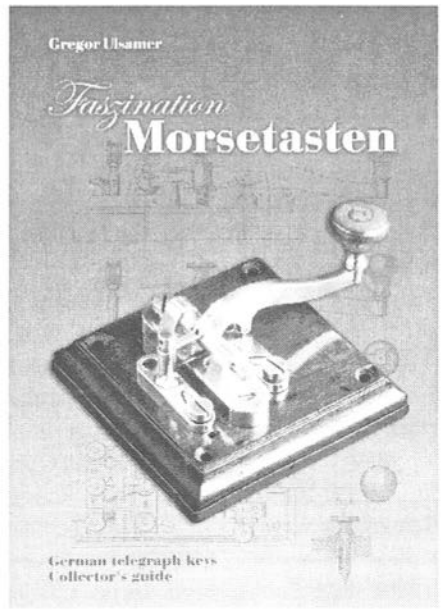
He was the also the founder of the Chicken Fat Operators Club (CFO) for high speed CW operators. The entry requirements are a deep love of CW and a habit of participating in extended ragchews at 40 wpm plus.

CFO's cluck in Morse at the end of a QSO and meet for "Cluck-ins" at Hamfests and Conventions. They have mysterious, yet simple acoustical-mechanical devices for producing audible chicken clucks but send lots and lots of beautiful CW to each other.

His death was not unexpected as he had been ill for some time, and had not been active.

New Book
"Faszination Morsetasten"
German Key Collector's Guide

Greg Ulsamer, DL1BFE, has published his extensive knowledge of German, Austrian and Swiss keys and the history of the telegraphy in a new book, "Faszination Morsetasten - German Telegraph Keys Collector's Guide".



It came as a surprise to Greg himself, to discover that there were more than 250 key designs, from more than 100 manufacturers made in the German-speaking countries. They date from 1850 to 2000.

The 180 page Book is printed on A4-size quality gloss paper, is written in German, but includes 400 fine photos and diagrams and is a very useful reference guide even for non-German-speaking readers. It is, without doubt, the definitive work on German keys which every serious key collector and telegraphy historian will want on their bookshelf.

"Faszination Morsetasten" is available from Greg Ulsamer, Logumer Str. 66, D-26723 Emden, Germany. Tel. +49-4921-61460. (E-mail dl1bfe@emsnet.de), price 27.5 Euros including surface mail (25 Euros to Germany).

It is also available from the MM Bookshelf – see page 40

(Karl) Ferdinand Braun

6 June 1850 - 20 April 1918

An Early Radio-Telegraphy Pioneer Part 2

by Thomas Roth, DL1CQ

Based on the Braun biography by Friedrich Kurylo, Munich 1965

BRAUN'S INVOLVEMENT with wireless telegraphy started in 1897 upon his return from Canada when he was called upon to inspect a device that transmitted signals through water. He was immediately intrigued by the idea and started to investigate how it worked and to possibly improve the design. Initial tests were only marginally successful and it wasn't long before his laboratory was transformed into a testing ground for all sorts of transmitting and receiving devices. The quiet days of the Institute of Physics were over and the crashing noise of sparks could be heard almost at all times.

In the summer of 1898 he made an observation that would become of historic significance for the further development of wireless telegraphy. Since July 1897 Marconi hadn't managed to improve his system. He could bridge distances of up to 15km, but for even marginally greater distances he had to go to so much trouble that it didn't seem worth it. Prof. Braun asked himself: "Why does he have so much trouble increasing the distance? When a certain set-up works over a distance of, say 15km, why shouldn't we be able, through increasing the initial current for which we have the means, to double or even multiply the distances?"

The solution gradually appeared to Braun when he realized that Marconi's antenna and feeding system resembled that of the hydro-telegraphic apparatus, which he had experimented with earlier. It actually reminded him of the methods that had worked worst! With this realization in mind, it took only a few hours to verify the theory. Braun tried his own designs, which had improved transmission through water significantly, on the air. "The result", said Zenneck, Braun's assistant "were an immediate success. The Braun-Transmitter was born".

The Braun Transmitter

The first demonstration of Braun's transmitter was completely improvised. A transmitting wire was pulled up the square tower of the Physical Institute. A wooden pole held up a receiving wire. The distance was approximately 1km. When using a circuit of Marconi's design and putting the coherer on its most sensitive setting, signals could be heard very faintly, but only when there was a

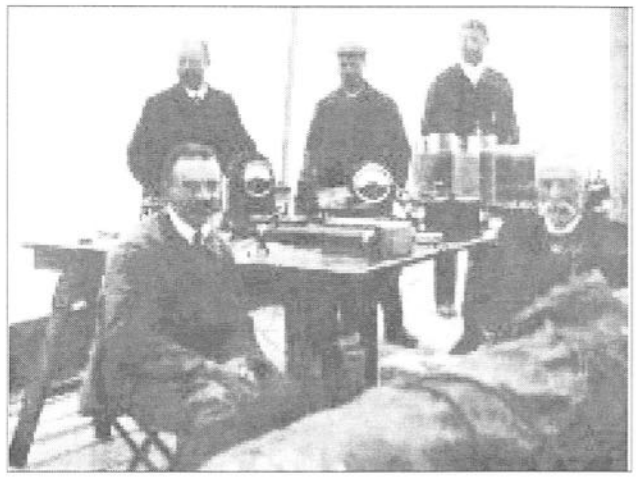
line of sight between transmitter and receiver. When the receiver was moved to a position where a bell tower obscured the transmitter, no reception was possible anymore.

Not so with Braun's design. They tried all kinds of configurations with and without line of sight and with partial or complete obscuration of visibility between the two stations. No matter what, reception was always excellent. Naturally Braun and the witnesses to this demonstration were very enthusiastic and overjoyed at these unexpected results. It only occurred to them later that Braun's design didn't infringe in any way upon any of Marconi's designs.

When Braun had his circuit patented, a newspaper reported: "Prof. Braun proves scientifically that his apparatus can transmit three times as far as Marconi's". It was quite a sensation. Taking into account that Marconi was, for the time being, stuck at bridging 15km but had still managed to double the capital of his "Wireless Telegraph and Signal Company", Braun and his colleagues founded a "Wireless Telegraphy Society". Braun is reported to have jokingly said one day that: "In the light of today's successful experiments it seems very probable that soon we'll be able to bridge distances of 100km or even more. Therefore I'd rather own a few more shares of our company instead of more cash".

Differences Between Braun and Marconi Designs

What was the difference between the Marconi and Braun designs? Marconi's transmitter consisted of an antenna/earth wire, which was interrupted by a spark gap. Antenna and earth wire were loaded against each other through a current source until a spark jumped across the interrupting gap and created an electrical oscillation, which was transmitted by the system at the same time. Because Marconi used the same system for both generating and transmitting the resulting signal, it wasn't possible to transmit the signal over a greater distance. Both functions hampered each other's effectiveness.



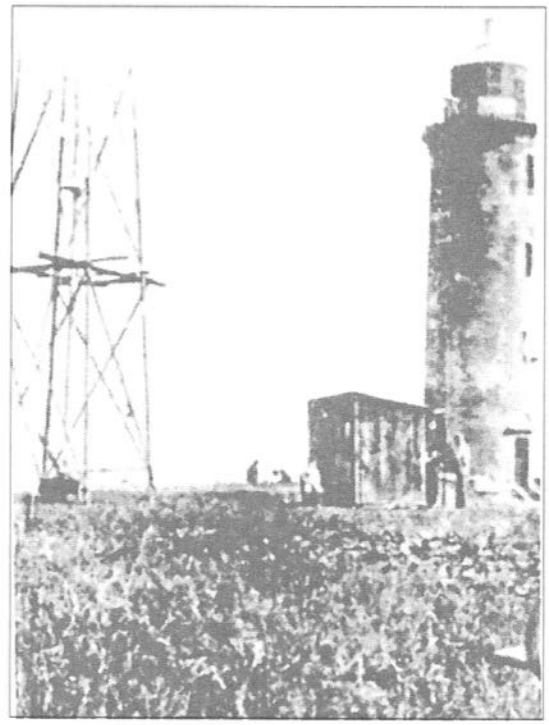
Wireless experiments with "Graf Zeppelin" at the "Bodensee", South Germany.

Braun's design put these functions into individual systems. The generation of oscillations into its

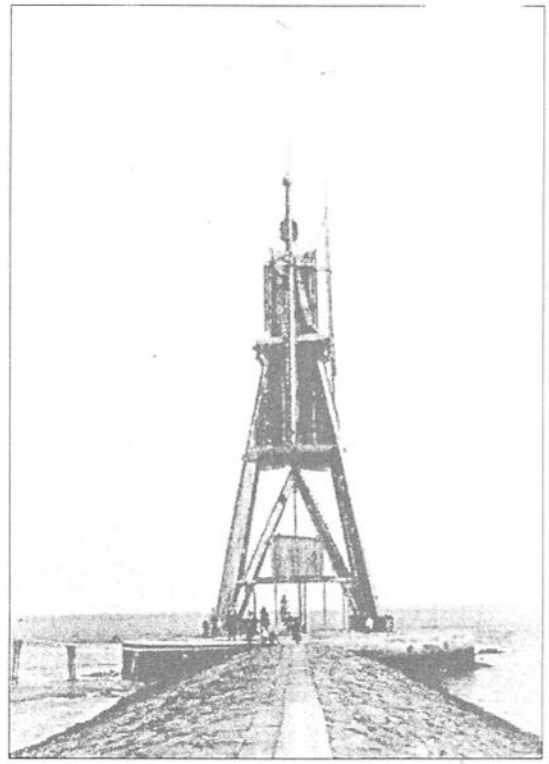
own closed circuit and the transmission of the resulting signal into the inductively coupled antenna circuit. This was not just an improvement of Marconi's design, but a completely new system, which has remained the basis for broadcasting technology until the present day. For those who weren't interested so much in the physics but more in the practical usage of Braun's discovery, two points were the most important. Wireless telegraphy had been freed of its "15km fetters" and the technology wasn't as life threatening as Marconi's. In Marconi's design, the antenna and its feedline were subject to very high currents. A situation that made it very dangerous when inadvertently touched by someone. There was no such danger in Braun's set-up because the antenna wasn't loaded against earth at all.

In autumn 1898 Braun wrote to a sponsor: "Marconi still seems to be stuck. All the more reason to take our apparatus to the sea to compare our results with his". Easter 1899 he did just that. The North German coast town of Cuxhaven and the island of Helgoland (Heligoland) looked like the right place to conduct experiments. A number of lighthouses and ships made it possible to try the apparatus over various, ever-increasing distances. Things weren't easy and they experimented with many different kinds of aerials until they were satisfied. The North Sea weather didn't help either. More than once they were on the brink of success when high winds or storm gales or even floods snapped the poles that held up their antennas.

After many tests and experiments from various locations, Braun finally decided to try to bridge the full 62km between Cuxhaven and the island of Helgoland. Such a distance had never been overcome by wireless telegraphy before. On 24 September 1900 the great



The lighthouse "Alte Liebe" at Cuxhaven. The wooden 'shack' next to it housed some of the apparatus. On the left is part of a wooden tower for the antenna. This shaky contraption was destroyed by high winds and storms several times.



The famous beacon at Cuxhaven. Note the wooden 'shack' in the lower part which housed one of the stations.

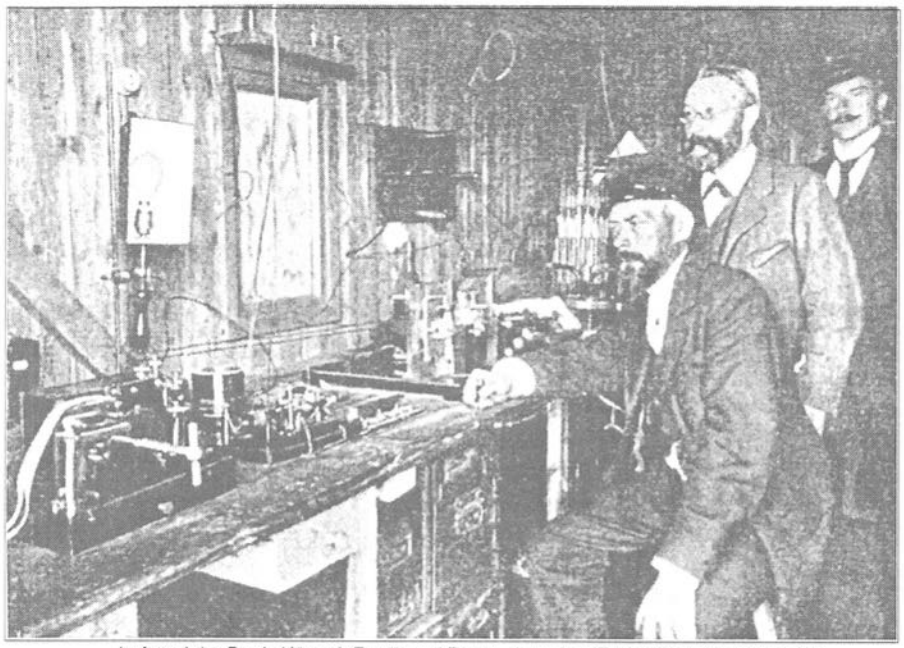
day had finally come. The test was preceded by a couple of days of testing between the island and various mainland locations. Signals were heard and identified on both sides. At long last all was set up and working to satisfaction. Braun himself was on the island. All crews were assembled both here and on the mainland. Helgoland starts transmitting. The time is 11 a.m. Then, all of a sudden, their receiver starts ticking. Cuxhaven asks: "Is Prof. Braun there?" The telegrapher looks at Braun who nods and says: "Just arrived" which he transmits. The mainland replies: "Greetings from Zenneck (Braun's assistant)" to which Helgoland answers: "Cheers, Braun". A number of greetings are exchanged and the mood heightens and changes into cheers and a lot of backslapping at the obviously very successful experiment. Then the mainland sends: "Please send a telegram of 15 to 25 words."

Braun thinks for a moment. All the stress and hard work are forgotten and those with him know that this telegram will not be the kind of congratulatory message for the annals of wireless telegraphy, the kind of which Marconi has dozens, framed and adorning the walls of his office. This telegram will be for the people who have helped to make this success come true, and it shows again the great humour Braun was capable of. It's meaning and humour is only obvious to those who understand the German language. But here it is anyway:

"Zum heutigen Feste
der Wuensche beste.
Trinkt nicht soviel bei Doelle,
sonst werdet ihr voelle."

The meaning is roughly: For todays occasion, the best of wishes. Don't drink/celebrate too much at Doelle (a Hotel in Cuxhaven) or you'll be drunk (voelle). Of course it doesn't rhyme in English.

Loud laughter greets Braun's



Left to right: Dr. A. Köpsel, Ferdinand Braun, Jonathan Zenneck at the station for wireless telegraphy on Helgoland Island.

message on the mainland and correct reception is signalled back. The report of this day goes on to say that many more highly modern poems were transmitted and a good time was had by all. The ultimate test was the transmission of strings of characters without any meaning. All of them were correctly received and sent back to Helgoland.

The news got out of course and soon all sorts of interested parties were knocking on Braun's door to learn more. A new company was founded under the name of Telebraun. It was the predecessor of todays multi-billion-dollar conglomerate Telefunken. True to his nature, Braun didn't relax after this success while proceeding to become a rich man. Instead he returned to his university and continued to do what he liked best. Teaching physics and mathematics. Of course he was involved with many decisions of the companies that marketed and improved upon his design. But teaching remained his greatest passion.

A great many court cases were fought over patent infringements and other things between Telebraun and Marconi's Wireless Company. Some of them took years. It was one of these cases which brought Prof. Braun to America one more time. The year was 1915, the First World War was in full swing and it wasn't easy for Braun to leave Germany and attend the hearings. He even had to use a false name. Otherwise he would not have been permitted to enter the USA.

Prof. Braun was not to see Germany again. The war made a return impossible. While in the States, he fell sick with an old ailment that had bothered him for many years already. He was operated upon and things seemed to get better. But in the end the operation wound got gradually worse and Braun remained sick for the rest of his years. He passed away on 20 April 1918.

For his graduation from school in 1868 Braun had written an essay entitled "Vita sumna brevis spes nos inchorate longam" in which he wrote about how life is too short to expect much of it. He very obviously disproved himself. When the news of his passing spread, many of the greatest physicists and mathematicians of his time, from all over the world, honoured him as one of the greatest and most influential experimenters and inventors of their time. His passing was widely mourned.

It was Prof. Braun's wish to be buried in Germany. Because of the war that was not possible and his body was cremated instead. Not before 1921 was it possible for one of Braun's sons to return his ashes to Germany. The burial ceremony took place on 4 June 1921, two days before the 71st birthday of the deceased. Apart from Braun's family only a few people had found their way to the family cemetery. *MM*

Morse in the Australian Antarctic Part 8 - End of the Road for ANARE Morse

by Allan Moore, VK1AL

In this last instalment of Allan Moore's fascinating series, an indication of the vast scale of Antarctic radio communications dating from IGY 1957/58 (when Morse still reigned supreme), is gained from the SCARCOM Antarctic Telecommunications Guidance Manual.

The inevitable demise of Antarctic Morse approaches, and even the systems replacing it have a limited life as satellite communications are introduced. By 1997, the 50th year of ANARE's existence, satellites are providing communications facilities with Antarctica far beyond the wildest dreams of the early ANARE pioneers.

By 1975, good Morse operators were becoming increasingly difficult to find and, for the first time since ANARE's inception, two of the four radio officers at Casey that year did not possess Morse qualifications. Both were experienced in handling high volume machine telegraphy traffic in Australia, which was vital at this, the principal relay centre for Australia.

Casey was principally a keyboard/voice operating station with only occasional Morse requirements, usually with ships, which were worked by the Morse qualified operators. The non-Morse operators managed the job required of them quite well but, understandably, there was some additional pressure on the other operators when working with ships or field parties under bad ionospheric conditions, when Morse was the only workable means of communication.

Without detracting in any way from the skills of our colleagues, it was a trial which did not last long, and preference for Morse qualified operators continued. Only a handful of non-Morse operators went south in later years while HF transmissions were still being used.

1976 - Davis

F. Read Edwards (PMG) was radio supervisor/RTO at Davis this year, assisted by radio officer Dagur Vilhjalmsson. Read learned his Morse in the Australian Army and Dagur was a product of the Icelandic School of Wireless. The only regular Morse operating was the 0550 GMT weather schedule with Mawson, and Read said this was just to keep up their Morse skills, particularly Dagur's who had to return to the Icelandic fishing fleet as a radio officer at some stage.

Leaving aside contacts with *Nella Dan*, which was worked using Morse and voice when en route to and from Antarctica, or in the station's vicinity, Davis had eleven RTT schedules daily, five with Mawson, three with Sydney, three with Casey, and one on Thursdays by voice with VNM Melbourne. During the year, a new mode was introduced when the first facsimile picture ever sent from the station was successfully transmitted to Sydney - a photo of the group.

1977 - Macquarie Island

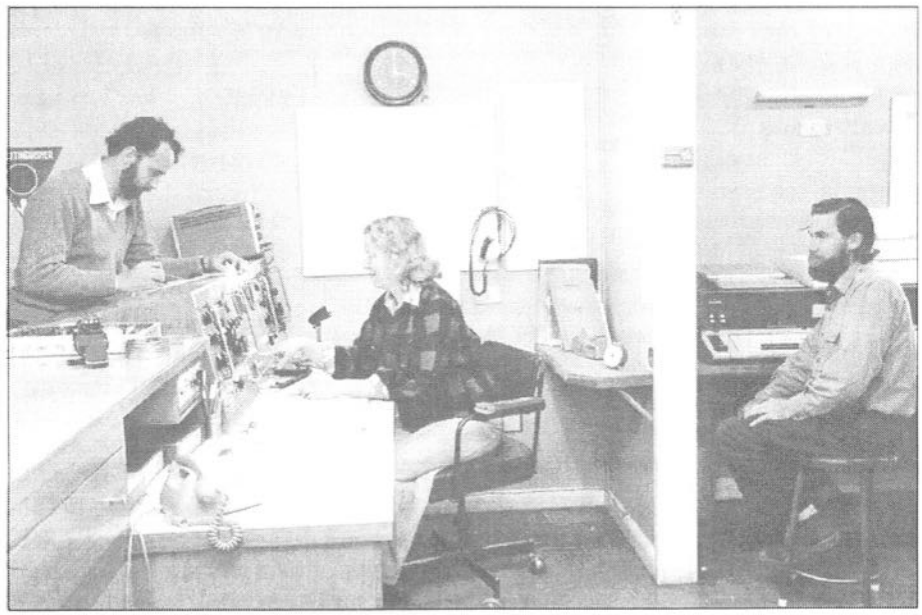
This year, at Macquarie, saw the appointment of the first woman radio officer to serve at an ANARE station. She was Sarah Stephens, who learned Morse in the Australian Army, and later joined the PMG in Melbourne as a telegraphist.

Several women had already served as operators on the *DAN* ships and other polar vessels chartered by ANARE, and in the years following, to the end of 1997 (the end of the period covered by this account), ANARE station members enjoyed the company and skills of some 15 women over 26 winters, serving in technical communications as well as radio operational areas.

1978 - Leased Lines

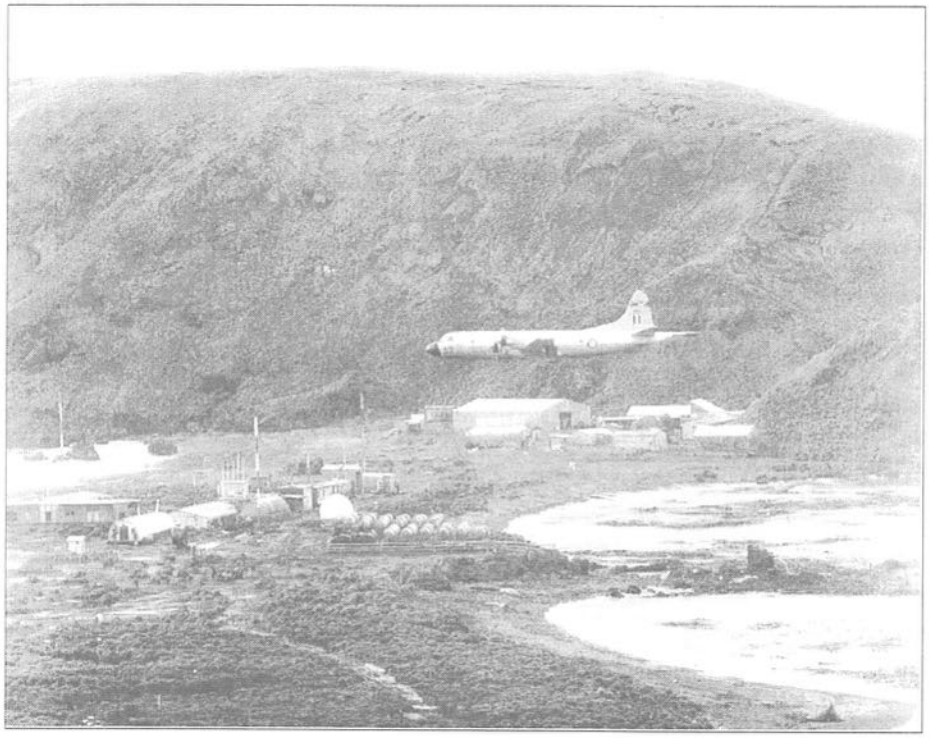
So-called "leased lines" were now in use between OTC Sydney, Casey and Macquarie Island, using Hasler ARQ (error correction) equipment. Terry Weatherson provided an excellent explanation of the system in the Spring 1978 edition of *Aurora*, which is

Antarctic Division photo by Jutta Hosel



Macquarie Island, 1977. Left to right, Laurie Cole, Sarah Stephens and Tom Ware.

Photo: R. Fletcher



Macquarie Island 1978. RAAF Orion aircraft skims radio masts during a mail drop.

reproduced in part here: "*A new system of radio communications between Australia and her Antarctic stations has been introduced. The old system of fixed-time radio teleprinter schedules between Casey and Sydney, and Macquarie Island and Sydney, has been replaced by a 24-hour continuous circuit. Now, both Casey and Macquarie are linked direct by teleprinter to the Antarctic Division and Bureau of Meteorology in Melbourne, in all except the worst radio conditions. Casey acts as collector and distributor of all outwards and inwards teleprinter messages from Mawson and Davis. Fixed-time radio schedules are being maintained between these three stations. (To overcome) the inherent transmission difficulties associated with HF radio propagation.... OTC provided Hasler error detection equipment on a no cost long-term basis. Whilst the Hasler equipment does not fully overcome the difficulty of HF transmission, it greatly assists by being able to accept a poorer signal to noise ratio than normal and still provide accurate information. In addition, when the signal fades out or is interfered with by noise, the equipment is able to detect this and request the sending station to repeat the affected character....*"

Bryan Taylor, Radio Officer in Charge at Macquarie Island, 1997/98, described the impact of the new system

on working practices: *"On 3 January 1978, at 0001 GMT, we were the first of the ANARE stations to go on 24 hours leased line operations. This meant the end of shift work for both operators, but it also meant more work for the Met. Section who had to send their own traffic during the night."*

1979 - Casey

Because of structural problems with some parts of the original Casey station (which proved to be a comfortable and efficient station), ANARE began the construction of a second Casey station in 1979.

Doug Twigg recollects: *"The new station was quite different from the original. A completely new building concept was introduced. The buildings, which are built on the ground, are much larger and structurally much stronger, better insulated and functional. Modern facilities and services are installed, ie, heating, fire-protection, sewerage and water supply. Each expeditioner has their own room. The new station was opened for occupancy in January 1989, when operations were gradually transferred from the old station. The building programme was completed in 1991"*

1980 - Mawson

HF transmissions were still being used to full capacity in the ANARE radio network, albeit with much reduced Morse traffic. Peter Stickland, Radio Officer in Charge, recalls that Mawson's armoury of transmitters was healthy, including the two 5 kW CTH-7s and the two 10 kW Collins units. The 1 kW Redifon transmitter, first installed in 1963, was still giving good service and was used principally on the Davis Morse code weather circuit every three hours. The venerable Collins 51J-4 receivers were still working well, but now only complemented the new Drake Type DSR2 "free-tuning" models.

The Molodezhnaya RTT circuit was in full swing but the Mawson group worked several Russian flights direct during the year by CW, including fixed wing aircraft and Type MI3 helicopter units. Peter said the Russians were still working at their normal furious Morse speeds, which he enjoyed.

1981 - Davis

Peter was transferred to Davis on *Nella Dan* to provide radio assistance over a three month's period. He remembers using a 1 kW transmitter, the Collins receivers, and probably the Drake DSR2 units.

Apart from a morning Morse weather schedule with Mawson and some ships in the area, all other traffic was exchanged between Casey using FSK radio teleprinter mode. Peter enjoyed his short stay at Davis which he described, as others have before him, as "the Riviera of the South". (Davis, of course, enjoys the usual savage blizzards each year, as does Casey and Mawson).

1982-1983

The designation "Radio Officer" which had endured since 1955, was changed in 1982 to "Communications Officer". The previous practice of nominating one of the operators as the senior, or operator-in-charge, was discontinued.

In 1983, Peter Stickland was a communications officer at Casey. Rhombic antennas were still in use, as were the Collins 51J-4 receivers and the later model Drake DSR-2 units. Peter said that although Morse was not used a great deal at Casey, he and his group had a number of contacts with ships carrying scientific/biological expeditions, and a considerable volume of scientific traffic was received by Morse. This was passed on to Hobart via the machine error correction RTT system.

Antarctic Telecommunications Guidance Manual

The following information was extracted from Volume One (1983 edition) of the SCARCOM Manual (Scientific Committee on Antarctic Research - Communications):

In 1955, prior to the beginning of the International Geophysical Year (IGY), four countries had established a total of 21 continuously operating stations. It is understood that after the war and up until IGY, this period was not noted for any degree of international co-operation, and each nation tended to establish its radio networks with only a minimum of attention to its Antarctic neighbours.

When the IGY program was being planned in July 1955 in Paris by the IGY Antarctic Conference, it was realised that the large increase in Antarctic expeditions would result in greatly increased radio traffic. With the high frequency radio spectrum about to be inundated by over 60 radio stations, using more than 1,000 separate frequencies to communicate, careful planning and regulation was needed. Transmissions originating in the Antarctic can cause interference and serious disruption to other established radio services elsewhere in the world, depending on the time of day and time of year.

A Working Group was established which put forward to the International Frequency Registration Board carefully selected and checked sets of frequencies, with due regard to the timing of schedules, the direction of signals being radiated, and so forth. The success of the Group's work was assured. No complaints of interference between Antarctic stations, or interference with other traffic, were received by the Working Group during the whole period of IGY.

So that all parties involved knew what others were doing, many meetings were held and exchanges of information made over the following years, and the first Antarctic Telecommunications Guidance Manual, or original SCARCOM Manual of September 1968, was the result.

Field/Mobile Radio Equipment

The inevitable decline in Morse communication can clearly be seen from the following extracts from comments made by Doug Twigg on field activities from the 1980's onwards: *In the early 1980's base stations were supplemented by the provision of ICOM model M700 transceivers. These took over the role of base stations for field parties at all stations, as well as at field bases for summer operations.... they were also installed in supply ships. These sets operated in the 2.0 to 23.0 MHz bands in SSB mode with a transmitter output power of about 100 watts, supplied from*

a 240 volts AC pack. A variety of antennas could be used by the use of an automatic antenna tuning unit. With the introduction of radio telex to the field bases the ICOM700 could be fitted with SITOR (simplex teleprinter over radio) terminals.

Portable HF transceivers were fitted with emergency call facilities as a safety precaution for parties in the field, and complementary receiving devices were also installed at the stations, which gave an alarm signal when an emergency call was picked up. This facility also allowed for calls to be made outside of radio schedule times, and expedited responses to emergency situations.

Hand-held 'walkie-talkies' had been in use with ANARE since 1960 and were used for a variety of purposes, including co-ordination of ship unloading operations and keeping in touch with people moving around a station. However, problems were experienced due to their small internal battery packs, which froze up, and unwieldy large collapsible whip aerials.

The situation improved in the mid-1970s when VHF hand-held sets were provided, small enough to to be carried inside a parka, with rechargeable batteries and small 'rubber duckie' antennas. With the introduction of the VHF hand-helds came the compatible VHF FM station, supplied by General Electric Co., specially constructed for service in polar regions, with an output power of 25 watts, and powered by a 24 volt DC battery or a 240 volt AC power pack.

The range of VHF coverage was extended with the introduction of VHF repeaters which were eventually installed from Mawson to deep into the Prince Charles Mountains, giving VHF coverage over most of the summer operational areas. The repeaters are transportable and can easily be placed on suitable mountain tops by helicopter to provide the required VHF coverage. In most circumstances personnel could now communicate with the field base, and Mawson, as well as with each other. With such improved links larger volumes of messages and meteorological data could be passed over the system faster, and more reliably, than through the old HF field network.

The later use of satellites increased field coverage to hitherto unimaginable distances, and even allowed the passage of messages from field parties direct to Head Office in Kingston, Tasmania. The base/mobile equipment described above remained in use for many years. At least up to the end of 1997, HF transmissions were still being used for the larger long distance helicopter flights. Radio operators no longer wintered over, but during the summer season there was still a requirement to continuously manage ground to air operations until aircraft were safe on the ground.

1984 - ANARE Satellite Communication is Born

On 4th October 1957, Russia successfully launched *Sputnik*, the world's first orbital satellite. This landmark debut of an outstanding new technology led to a gradual decline (but not quite the end) of high frequency radio systems such as those used so effectively by ANARE for decades. In stark contrast

to this 'modern' technology little Davis station, situated hundreds of kilometres below Sputnik's orbit, and established a scant nine months earlier, was equipped mainly with WW2 surplus radio communications equipment, and was relying solely on Morse code for its principal means of communication. By 1997, the 50th year of ANARE's existence, numerous satellites, communications and otherwise, were orbiting or geo-stationary above our planet's ionosphere, scarcely raising an eyebrow of the modern computer-literate generation.

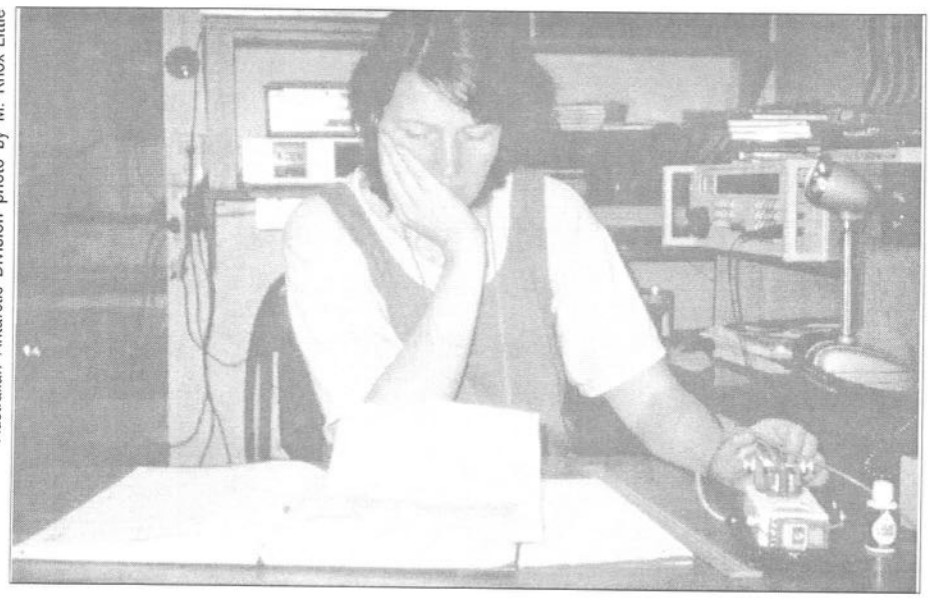
Mawson joined the IMMARSAT system in 1984 followed by Davis and Casey in 1985, and Macquarie Island in 1986, and the current system, ANARESAT, was not too far distant. An important factor that speeded up progress towards satellite communications was pressure exerted by OTC (Overseas Telecommunications Commission) which managed the radio terminal facilities in Australia. ANARE was the last of OTC's customers using the HF point-to-point service, and it was costing them several million dollars annually to operate one leased circuit to Casey and one to Macquarie Island.

1986 - Davis

On his eighth and final expedition, and still using an old skill learned in the 1950's, Ken Bennett said Morse code was gradually approaching its last gasp at Davis.

It had been in use at the station for thirty years by the time Ken's last expedition year had finished. In fact, taking into account Heard and Macquarie

Australian Antarctic Division photo by M. Knox-Little



Mawson 1987. Ulla Knox-Little sending messages by Morse.

Islands, by the end of 1987 Morse had been in continuous use by ANARE operators for forty years. Now Morse was used only to transmit the Davis 0600 hours weather observation to Mawson.

1987 - Loss of *Nella Dan*

M.V. *Nella Dan* sank off Macquarie Island on 24th December 1987. Tough little *Nella* had survived so many battering storms, rough passages through ice, and besetment, that the thought of her sinking so late in her long sailing life was beyond belief.

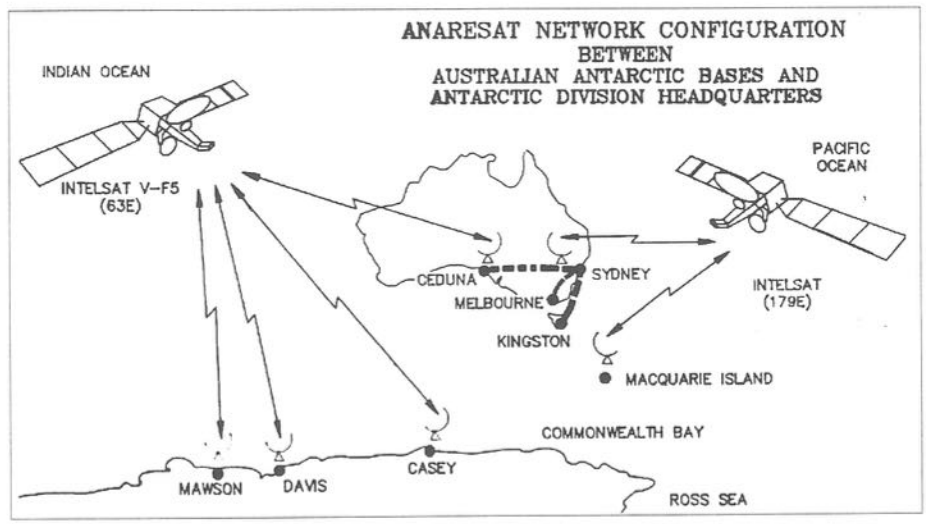
For nearly 25 years, radio operators working in her busy little radio office had received and transmitted countless messages, first by Morse code and later with the addition of radio teletype.

Had *Nella Dan's* tragic sinking taken place just two days later, it would have coincided with the anniversary of an historic pioneer radio event that occurred forty years earlier in ANARE history - the first Morse code radio message between Heard Island and mainland Australia, on 26th December, 1947.

ANARESAT

In 1985, OTC was asked by the Antarctic Division to upgrade the telecommunications services to its Antarctic stations by providing a private network using the INTELSAT satellite VISTA service, which became known as ANARESAT.

The first satellite station was installed and commissioned at Davis in March 1987. Mawson was commissioned in January 1988, Casey in March 1988, and Macquarie Island in December of the same year. Not unexpectedly, the ANARESAT network vastly improved communications with Antarctica in terms



ANARESAT network configuration between Australian Antarctic Bases and Antarctic Division Headquarters.

Photo: J. Gillies

Melbourne 1997. Mawson 1985 Radio Technical Officer David Jewell demonstrating a still functioning Angry-9 field transceiver with knee-mounted key.

of quality, availability, reliability and capacity. It also signalled the final demise of ANARE Morse code operation which had served ANARE Antarctic expeditions so well over so many years.

The author is grateful to the many expeditioners and other contributors and organisations already named in this series for their contributions and photographs, and permission to publish certain material. Without the help of all the good people involved, including non-expeditioners, a great deal of important material might never have been published. The original series, as published in *Aurora*, covers all aspects of ANARE radio communications, but for the benefit of readers of *Morsum Magnificat* the series has been specially edited to highlight and record the pivotal role played by Morse telegraphy and its operators in the early history of Australian Antarctic exploration.

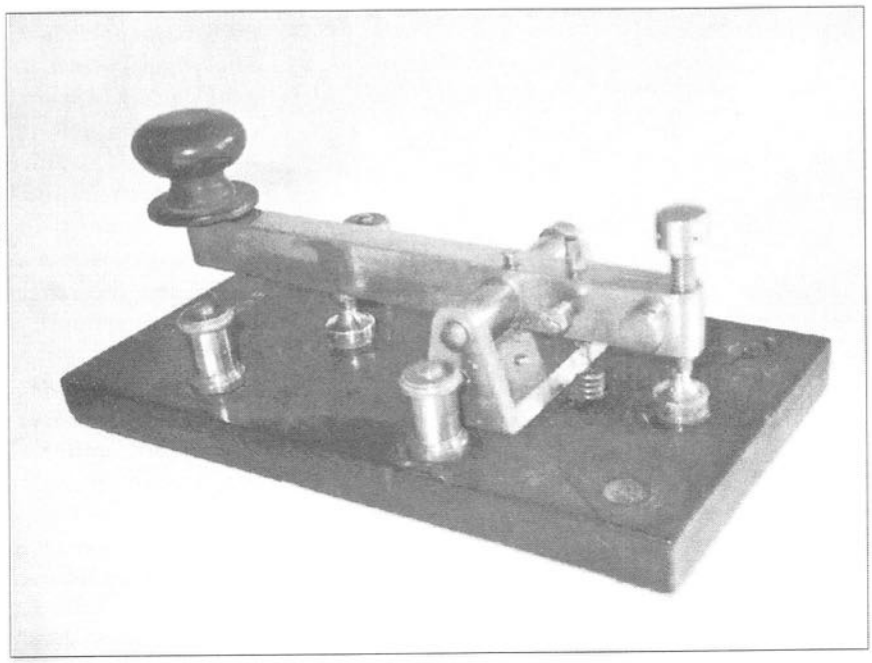
Allan Moore, VK1AL.
December, 2000

Extracted/summarised from *Fifty Years of Australian Radio Communications in the Antarctic, 1947-1997*, a series of articles written by Allan Moore to celebrate the Jubilee Year of ANARE (the Australian National Antarctic Research Expeditions) for *Aurora*, Club Journal of ANARE. Many thanks to Allan, and to the editor of *Aurora*, for allowing MM the privilege of printing a specially edited version of this historic series. Ed.) ***MM***

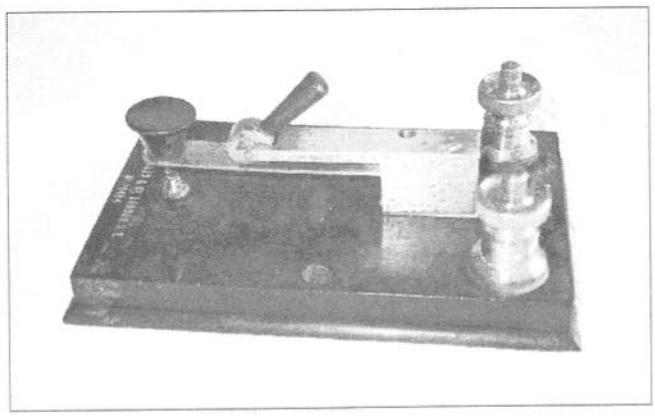
Showcase

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

Photo/Collection: Jack Barker

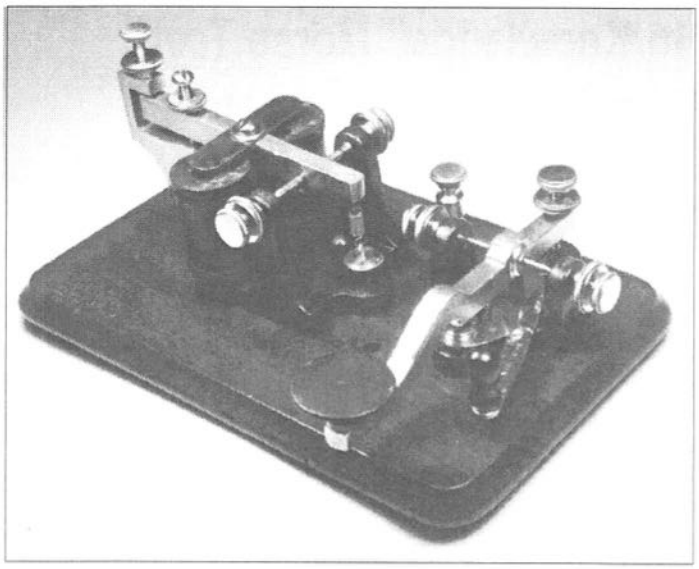


Photo/Collection: Jack Barker



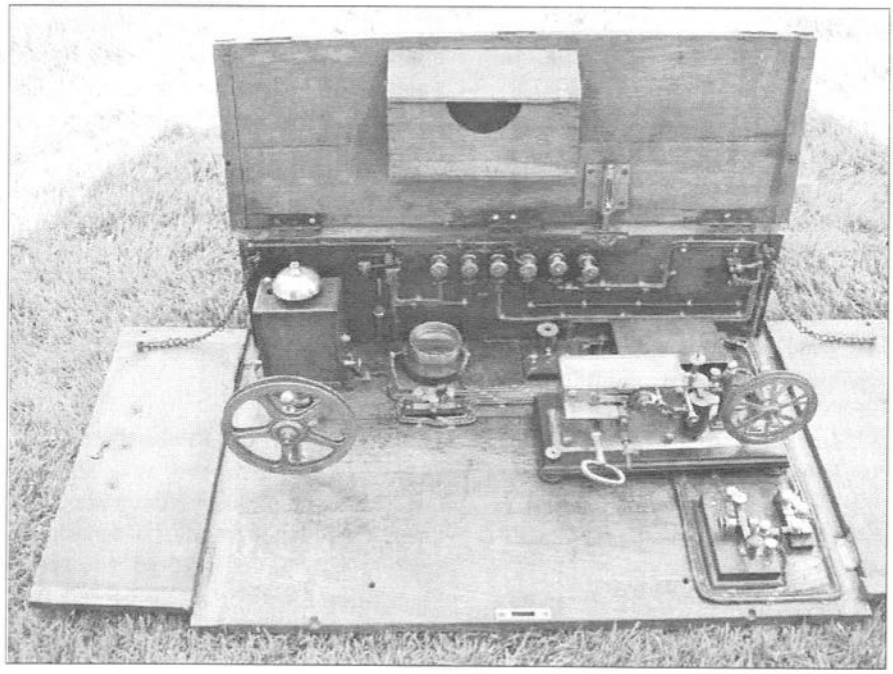
Jack Barker found the heavy brass key (Above) marked "S.R.E.K.T. 21" on the base. This key was found in a junk box together with the laboratory galvanometer key (Left) by "H. Tinsley & Co., London S.E." and marked "S.R.E.K.T. 60" Does anyone know the meaning of "S.R.E.K.T." or whether H. Tinsley & Co. ever made Morse keys?

Photo/Collection: Dave Pennes



The J. H. Bunnell camelback KOB is an unusual version of this ubiquitous instrument. These were made from the late 1870's or 1880's until around the turn of the century or later. Originally marketed as 'Learners sets' they were widely used commercially by the railroads for short line work and came with coils wound for 4 ohms and 20 ohms. This is a 4 ohm instrument, and is unlike any other encountered by Dave Pennes inasmuch as the key lever is cast iron and was gilded. The hardware is a mixture of both red and yellow brass. He suspects that this is one of the earlier versions of this instrument.

Photo/Collection: Fons Vanden Berghen - Halle, Belgium



French "Télégraphe Municipale" with all the elements of a complete station in a transportable (but very heavy..) case..

UK "No Knowledge" Morse Test

Beginning of the End for Amateur Morse?

By Tony Smith G4FAI

As reported in MM77, the UK's Radiocommunications Agency (RA) has announced a series of changes to the radio amateur licensing regime which include lowering the Morse Code speed requirement from 12 wpm to 5 wpm for full licensees, and the creation of a new, 50w RF output, Intermediate licence (A and B, with HF access for Intermediate A licensees after passing a 5wpm code test) to replace the existing Novice Licence.

Also introduced, from the beginning of 2002, is a new Foundation Class licence requiring just 10 hours study over a weekend, followed by an assessment consisting of 20 multiple-choice questions, which will allow newcomers to the hobby access to the H.F. bands, with 10 watts output. To obtain this licence, candidates must also pass a "no knowledge" Morse test. Additionally, Class B (VHF only) licensees can take the same "Morse test" to obtain Foundation Licence HF privileges.

Transitional Arrangements for Class B Licensees

The Radiocommunications Agency's announcement concerning Class B licensees is as follows:

"The Agency is now happy to announce that Class B Licensees who do not wish (for whatever reason) to take the 5wpm Morse test can gain access to HF bands via the 'Foundation Licence' route.

In order to obtain a Foundation Licence, Radio Amateurs who have held their Class B licence for not less than 12 months need only take the Foundation Licence Morse Assessment.

Class B licensees operating in the HF bands under the cover of their Foundation Licence must abide by the Terms and Conditions of their Foundation Licence and must only use their M2 Callsign.

For further details of the Press Notice announcing the new licensing structure, and the draft copy of the BR68/F (Foundation Licence Terms and Conditions Booklet), please refer to the Radiocommunications Agency website: www.radio.gov.uk"

Foundation Licence Pilot Scheme

The RSGB weekly news service, GB2RS, reported on 4th November 2001 that twelve sites across the UK have been selected to take part in the new Foundation Licence 'pilot scheme'. The sites are a mixture of clubs, schools, youth organisations and a number of disabled candidates. This trial, says the RSGB, is

designed to test out the syllabus, tutor guide, examination software and administrative procedures before the new licence is introduced on the 1st of January 2002.

As part of the Foundation Licence training pilot scheme, the RSGB is offering week-day afternoon Morse Assessment sessions at its headquarters in Potters Bar. These sessions are aimed at Full and Novice Class B licence-holders in order to allow them to qualify for a Foundation Licence when these become available on 1st January 2002.

The RSGB hopes that before too long this service will be offered across the UK. It says: "The aim is to get as many Class B licensees who want to take the assessment through the system before Christmas so that they may go on the HF bands from the 1st of January."

How to Pass the Morse Test Without Knowing the Code

The RA and the RSGB have re-interpreted part of the International Radio Regulations in anticipation of their being changed at WRC2003 or at a later WRC.

The following Questions and Answers extracted from the RSGB's *Amateur Radio Foundation Licence Information Sheet* explain how the so-called "Foundation Licence Morse Assessment Test" will be administered whilst paradoxically confirming that the United Kingdom still has an obligation to abide by the International Radio Regulations.

"Q6. Will knowledge of the Morse code be necessary?

A. The International Radio Regulations require that, to operate on the HF frequencies, the operator must 'demonstrate an ability to send correctly by hand and to receive correctly by ear, texts in Morse code signals'. In practice, this will consist of a simple assessment using crib sheets to encode messages into Morse, for example ? ? (what) is the letter A, so you would look at the crib sheet, write down the letter A as a dot and a dash and then send it. The same would work in reverse when decoding a series of dots and dashes - you write them down and, using the crib sheet, translate them into letters.

"Q17. Will the Morse requirement remain after WRC2003?

A. Whilst it is expected that WRC2003 will remove the Morse requirement there is always the possibility that it will not. The UK has an obligation to abide by the International Radio Regulations. If it is abolished, it is likely that the 'A' and 'B' class distinction in the current Novice/ Intermediate and Full licences will be removed."

Foundation Morse Syllabus

The RA says that until the Morse requirement is removed, the following section forms a part of the syllabus for the Foundation licence. This section may be taken at any time in relation to the training course *but prior to the exam*.

"10a. Send and Receive Morse Code.

10.1. Demonstrate that he/she is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals.

Note: The Foundation Licence permits access to both HF and VHF amateur bands. There is no concept of an 'A' or 'B'

licence as currently in force for the Novice (Intermediate) and Full licence classes."

Enjoy It While You Can

As the UK's example spreads to other countries, with few likely to bother to learn usable Morse any more, CW as an amateur mode must surely enter an accelerated period of decline in the not too distant future. Fortunately, it seems in good heart at present with still plenty of code to be heard on the bands. Let us continue to enjoy it for as long as we can. *(Readers' views on the new Foundation Licence Morse Assessment Test, and its implications, will be welcomed. Ed.)* ***MM***

Book Review
History of Telegraphy by Ken Beauchamp
Reviewed by Fons Vanden Berghen

I was myself gradually beginning to prepare to write another book to follow my *Classics of Communication* and, when I first paged through this book, I was startled - *History of Telegraphy* was exactly the book that I had imagined I would write. On reading further, I soon realised that I would never have realised the level Ken Beauchamp has achieved and I have now put my own plans away.

Dr. Beauchamp conducted an extraordinary amount of research for this book to achieve this high level of detail, which sometimes could make it long-winded for some readers. It is certainly not a superficial book. Rather, it is one that digs deeply and brings up much new and interesting information.

The word "History" in the title has to be interpreted in its broadest sense. Presented, is the history of the technology of telegraphy, from semaphore to satellite communication, its inventors and the industry, the applications and the users. Developments are put into a social context through time, and, very extensively, applications in wartime on land, at sea, and in the air.

This book records the growth of telegraphy over two centuries, depicting the discoveries and ingenuity of the experimenters and engineers involved, the equipment they designed and built, the organisation and applications they devised, and the effects on society. There were two main phases, cable-based techniques that were launched early in the 19th century and then wireless transmission in the 20th, which are paralleled with the changes in voice and data communications of recent years.

Contents

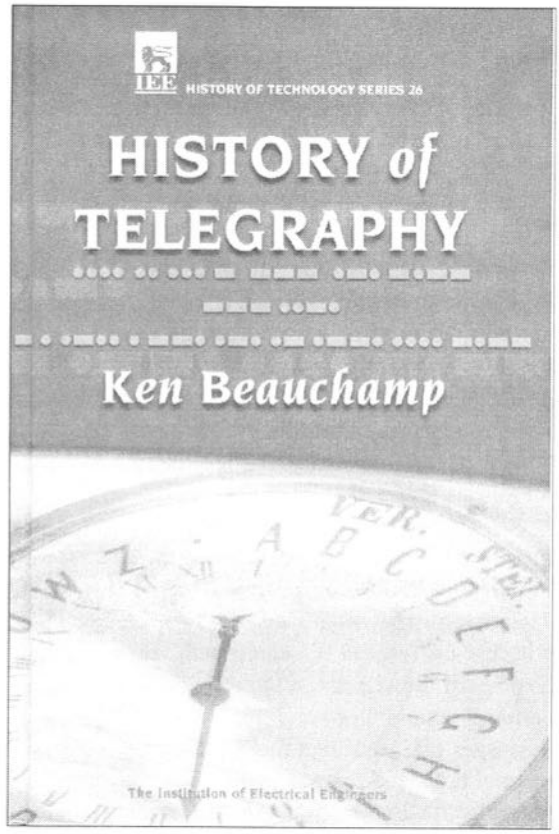
Part 1 - Terrestrial telegraphy: 1: Things mechanical; 2: Early electrical ideas; 3: Commercial telegraphy; 4: Military

operations; 5: Submarine cables. *Part 2: Aerial telegraphy:* 6: Marconi and the experimenters; 7: Telegraphy for peace; 8: ...and at war; 9: Military telegraphy at sea; 10: Military telegraphy in the air; 11: Epilogue; Bibliography; Index.

The book is well illustrated although the quality of the drawings and pictures (black & white) is not always of the highest standard. There are 112 of them in total as well as 21 tables - but not a single photograph of a Morse Register.

The telegraph landscape is seen mainly through British/ American eyes but I noted only a few minor inaccuracies. The book is not cheap at £55.00 plus postage and packing.

Dr. Beauchamp, who unfortunately has passed away before the publication of this book, also wrote *Exhibiting Electricity* (published by the IEE in 1997).



Summary:

History of Telegraphy by Ken Beauchamp. Published in April 2001 by the Institution of Electrical Engineers (IEE), London as No. 26 in the History of Technology Series. ISBN 0 85 296 7926 – 413 pages (16 x 24 cm) 133 drawings, photos and tables. Price: £55.00 plus pp. *(History of the Telegraph is available from the MM Bookshelf – see page 40)*

Signals from the Titanic and Audio CW Filters

By Dr Gary Bold ZL1AN

DICK, 3D2CM, SENT ME THIS summary of an incident recounted in an autobiography of a Dr Duguid, who was travelling from England to Australia as a ship's doctor. At about 1 am one morning he was woken by the wireless operator, very agitated because he had just copied a distress call from the *Titanic*, reporting that this well-known, "unsinkable" ship was, in fact, sinking. Should he wake the Captain?

Dr Duguid advised that there was little point, as they were near Capetown, South Africa, far too distant to be of assistance. However, he joined the wireless operator at his equipment, and also heard the signals (although almost certainly could not read them). Later messages indicated that the Titanic was beyond help, and doomed. This incident naturally made a lasting impression on the Doctor, who years later recalled it in his book.

The full text of the Titanic's wireless messages were available a few months back from the excellent website http://www2.dynamite.com.au/rmstitanic/ The originals of 34 of these messages, transcribed on the *Olympic*, were auctioned at Christies a few years back for $110,000!

I included a photo of a reconstruction of the Titanic's wireless equipment and a reputedly genuine schematic in MM73. More detail is given on the website above. Only two genuine photographs of the wireless room are known to exist - one showing a rear view of Phillips sitting at the equipment, the other a general view obscured by glass, taken by a Jesuit Priest who was a passenger.

The transmitter was the most powerful and (of course) modern marine type then in use, a rotary spark type, powered by a 5 kW motor alternator, fed from the ship's lighting circuit. The four wire antenna was suspended between the ship's two masts, some 250 feet above the sea. The manufacturer guaranteed a working range of 250 miles, but the Titanic's two operators (Harold Bride and Jack Phillips) reportedly had achieved two-way communication up to 400 miles during daylight and up to 3000 miles at night.

However, the interesting point here is that Dr Duguid's ship was over 6000 miles (10,000 km) from the *Titanic*, far beyond the range normally considered possible. It is therefore not impossible that *other* distant ships also heard the

signals, but I have never seen this reported. Does anyone know of other accounts of this?

And despite extensive reading, I have never seen an authoritative working wavelength of the Titanic's wireless transmitter quoted. Has anyone else?

We think little of communicating with QRP power over such distances these days, but we use transmitters where *all* of the energy is concentrated in a very narrow bandwidth. Spark transmitters spread their energy over a wide frequency range (some later accounts quote "covering the whole of the modern AM broadcast band"). Similarly, receivers were broadband, and passive, with no amplification - although I know of one (but only one) description which says that the Titanic was equipped with "magnetic detector, *valve receiver* and emergency gear" (emphasis mine). But there is no sign of a valve receiver in the schematic on the website above. Only a "coherer receiver" and a "magnetic detector" are shown. This last device is sufficiently interesting (and astonishing) to warrant a description.

The Magnetic Detector

Marconi developed the magnetic detector because of the erratic behaviour of coherer rectifiers. While not as sensitive, it was reportedly much more reliable. A schematic is shown in Fig.2 . Fig.3 shows the handsome wooden box in which it was mounted. The picture will probably reproduce poorly, but you'll see the handle at left used for winding the clockwork motor, and maybe the four terminals labelled E, T, T, and A - for "Earth", "Telephone", "Telephone" and "Aerial.

Clockwork? Yes, two wooden disks, rotated by clockwork, fed a loop of about 15 insulated soft iron wires through

Figure 1. Reconstruction of the Titanic's wireless equipment

a glass tube, upon which were wound the two coils of a mutual inductor. One winding connected to the aerial and earth, the other to headphones. Two horseshoe magnets were clamped near the tube, causing a non-linear magnetic field around the moving wires and inductor. These were adjusted and locked in position by the Marconi company after which "no further adjustment is necessary". The mutual inductor was broadly tuned to the operating wavelength by undisclosed components (switch-selected capacitors?) in another box below it.

The physical arrangement was thus astonishingly simple, but the reason why it worked is far less so, and contemporary explanations read somewhat unconvincingly in the light of modern electromagnetic knowledge. No explanation is given for the asymmetric mounting of the magnets, or how they are adjusted.

Basically, it works because of interactions between the non-linear magnetic field surrounding the inductor and the non-linear, hysteris affected, magnetisation of the wires passing through it. It's a transformer with a continuously moving core. When an incoming signal induces an oscillating *ac* current in the primary winding, a similar signal is induced in the secondary, headphone winding. This will also be modulated at audio frequencies by the ragged envelope imposed by the spark transmission process. Because of the non-linearities, a plethora of sum and difference frequency waveforms will also be generated in the headphone winding, one of which will be the audible envelope of the spark signal.

In hindsight, it is obvious that this detector, even though widely used and supplied by the prestigious Marconi Company, led into a blind alley in the development of receivers. Soon, it vanished as if it had never been, and few people now have even heard of it. I marvel that those magnificent operators actually used it to copy the signals they did, over such long distances.

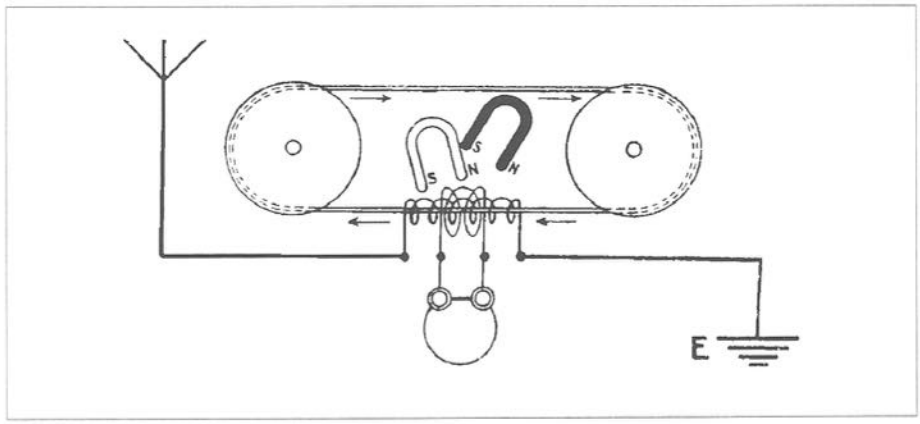


Figure 2. Schematic of Magnetic Detector

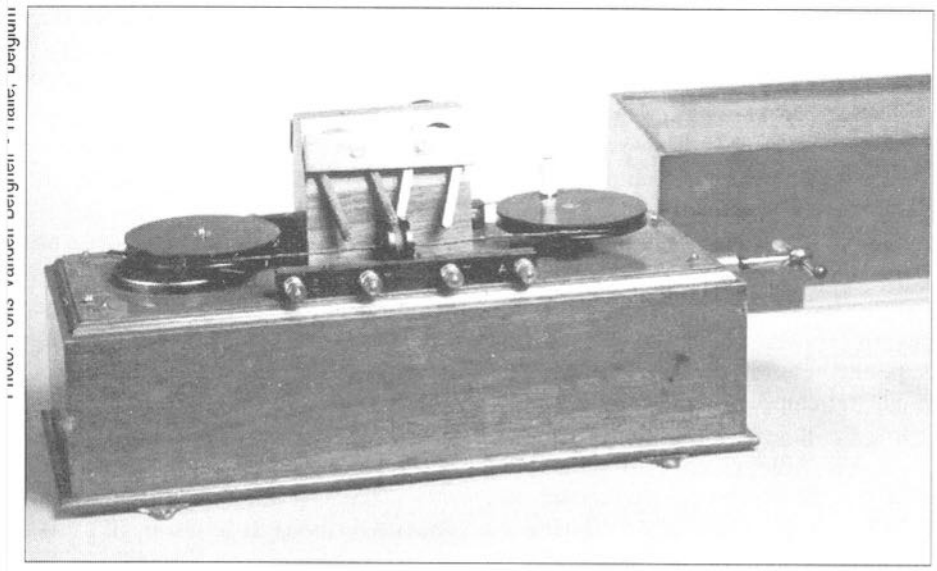


Figure 3. Photograph of Magnetic Detector

Audio CW Filters

If you want a bandpass CW filter, most modern rigs require you to install one as an optional extra, and many of us don't do that. Hence, I'm often asked to recommend an *audio* filter, which you can add between the phone jack and the phones. I've described several in the past, and I'll outline three of them below.

The MF8 Audio Filter

I designed, use, and *used to* recommend, the circuit shown in figure 4. I say "used to" because its heart, the excellent National MF8 4-pole filter chip, has been discontinued. I publish it again in the hope that somebody out there knows of old stock somewhere. If you do, tell me?

I described this filter initially in my column in *Break-In* in August 1989, with an update in the August 1993 column. Standard operational amplifier active filters require one R/C pair per pole, so 4 closely matched resistors and capacitors are required for a four-pole filter. However the MF8, being a switched-capacitor type, requires no frequency determining components whatsoever. Furthermore, the passband centre frequency can be varied, by front-panel control, between about 450 Hz to 1.2 kHz using the 10k Omega pot. This changes the frequency of the internal clock oscillator.

There's also a *wide/narrow* switch which switches the 3 dB bandwidth between 155 Hz and 45 Hz at a centre frequency of 800 Hz. These bandwidths are narrower than used in conventional IF filters, but the skirts are not particularly steep, and when I need a narrow filter, I like a serious one. The right-hand chip is just an audio amplifier, and several other chips would do the job.

While writing this, I've been searching the web for replacement switched-capacitor filter chips. I've just

downloaded the PDF datasheet of the *Linear Technology* LTC1060, which appears to be a reasonable, and apparently available, partial replacement for the MF8. (Did you know that you can grab current datasheets for any chip from the web?) Although more versatile (in particular, it can provide a *notch* filter output as well) it requires twice as many resistors to select the filter type, and an *external* clock generator - another CMOS chip. Maybe somebody out there knows of a better chip?

The Series-tuned Filter

I described this filter, designed by Malcolm, ZL1AOM, in my column in *Break-In* September 1987. Malcolm wrote, "My TS530S already has a 260 Hz IF filter. This gives pretty good skirt selectivity but lacks the sharp nose I prefer for CW. Also, there's no filtering after the IF and the post-filter noise introduced is excessive. My answer was to put 0.1muF and a ferrite pot core inductor in series with the phones. The pot core, origins lost in the mists of antiquity, is 35 mm outside diameter, wound with 28 swg enamel wire. The capacitor was vintage junkbox, selected heuristically. This combination gives a resonance at the TS830s offset frequency of 800 Hz. Insertion loss is made up by taking audio from the loudspeaker socket.

"There's sufficient Q to give a bit of a ring when tuned right on the nose, which lifts a wanted signal out of noise and heterodynes. I switch 100 ohms across both the L and C when tuning, otherwise it's a bit sharp. To me, it has the advantage of being simple, passive and cheap."

This is a simple filter to try. The inductance required is about 400 mH, and the pot core is a good idea to keep the Q reasonably high.

The Beverage Filter

This filter is the ultimate in simplicity. "Beverage" is normally a name associated with antennas, but back in the April 1987 issue of the Australian journal *Amateur Radio*, Ivan VK5QV described a *passive* acoustic filter,

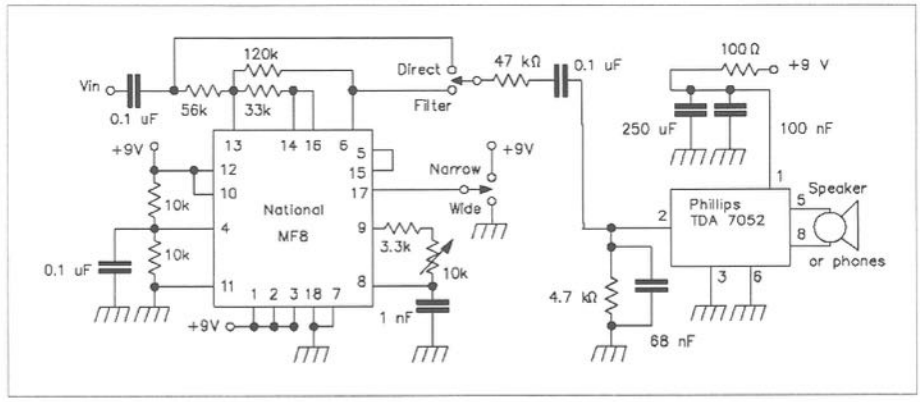


Figure 4. Schematic of MF8 filter

constructed by suspending a 2 inch speaker connected to the receiver's audio output over a drinking glass of similar diameter, partially full of the operators favourite fizzy health-drink. The empty portion of the glass forms a resonant enclosure, excited by the speaker. The resonant frequency will be (and in practice, is) adjusted by consuming the beverage. The more beverage is consumed, the lower the resonant frequency becomes, so frequent topping up may be necessary. Ivan did not see this as particularly disadvantageous. This would be an interesting filter to try on a hot summer afternoon.

In a follow-up article (October 1987) Ivan described a more sophisticated version constructed from cleverly cut 65 mm plastic water pipe. This lacks the charming simplicity and lubricative potential of the original, but probably makes a better, if more boring filter.

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

Extract from The Wireless World, February 1915

Discovered by Jack Barker from Wireless World, February, 1935 under the heading "Twenty Years Ago".

Letter to the Editor from a reader sentenced by court martial to six months' imprisonment:-

"I would like to thank you, sir, for giving due prominence to my unfortunate case, as I hope it will serve as a warning to other experimenters to have every particle of their apparatus removed , sealed, or obtain a permit to keep component parts of apparatus on their premises."

" ... the apparatus mentioned in my case was simply a buzzer set with which my wife and I had been keeping up our Morse practice. I, therefore, tremble to think what would happen to any unfortunate amateur who was found by certain Territorial officers to have in his possession a practice set as described by Mr. Cyril C. Barnard in your November issue.

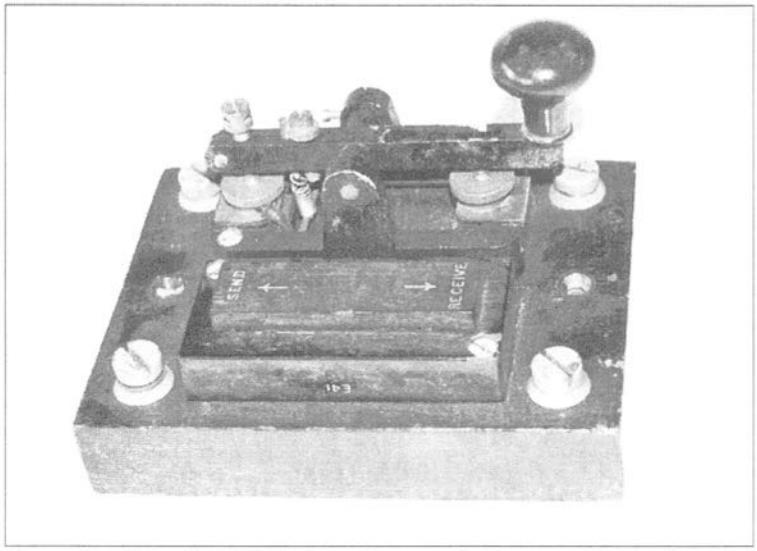
Apologising for taking up your valuable space, I am,

Yours faithfully (sgd) ——."

Info Please!

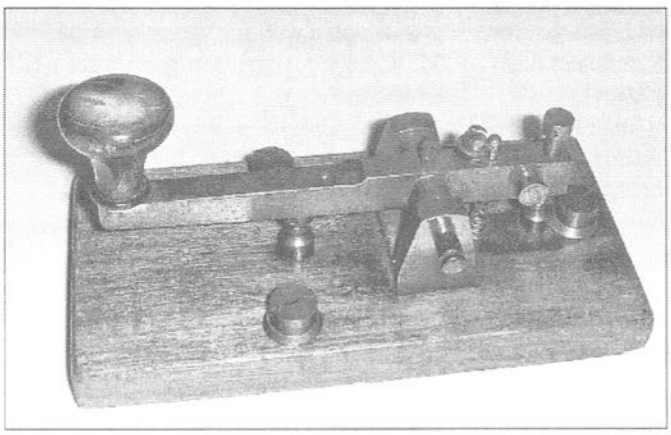
Readers are invited to contribute any additional information and stories, no matter how minor, to the Editor, Morsum Magnificat. There have been thousands of designs of keys & telegraphy instuments. Information will be lost unless it is compiled in one place and shared with other readers.

Photo/Collection: Fons Vanden Berghen - Halle, Belgium

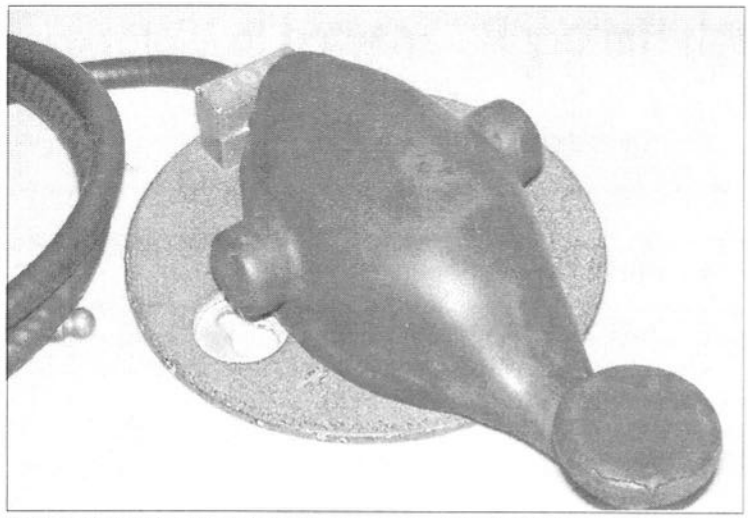


The send/receive switch on this key has not been mounted in a very professional manner. On the other side, the 4 brass screws, painted grey are typical of the British GPO pattern. The key was obtained from the Republic of Ireland. Is this key a GPO model or is it home-made?

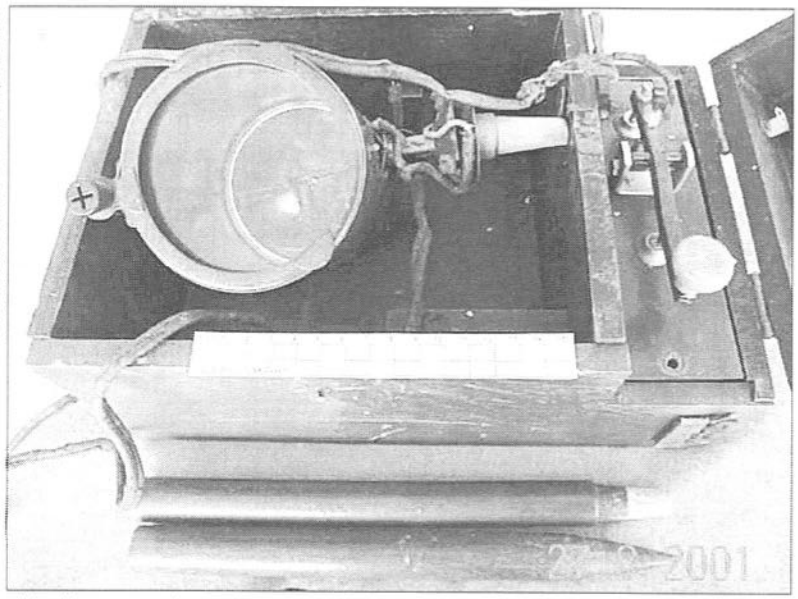
Photo/Collection: Alex Pringle



Any information on this key would be very welcome



This key has a 100% waterproof rubber cover and is shown with the original cord and plug. It is marked "S401". Is this a US Army WWII key or from elsewhere? Info please on its maker, country of origin etc.



John Alcorn recently purchased this Morse signal lamp from New Zealand via e-bay. It is approximately a commercial equivalent of the Army - Lamp, Signalling, Short Range. It is painted Army green etc. but not up to military specification quality, but is, however of reasonable utility commercial quality. It has absolutely no identifying marks, numbers or labels on it. It is in good condition for age and originally had a shoulder strap, now missing. The previous owner had no idea of its history or usage but thinks it is quite old. Does anyone have any idea?

Telegraph History Re-enacted in Victoria

by David Dunn, VK3DBD

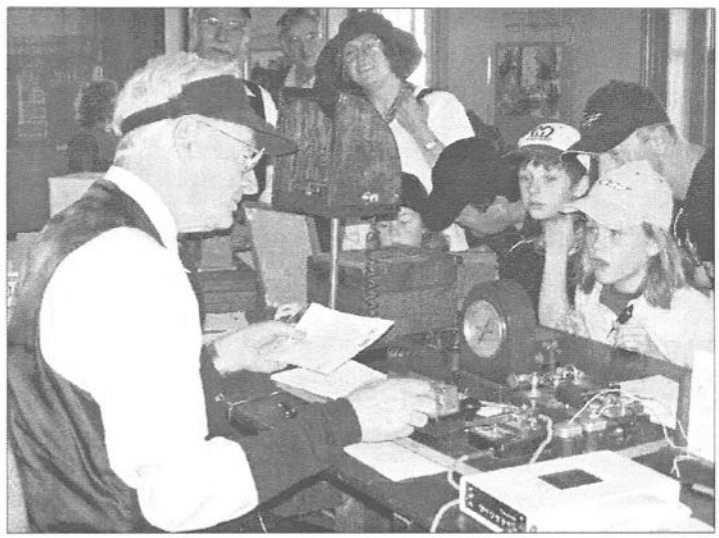
In North Eastern Victoria, Australia, in the heart of the Gold Country, the telegraph system was of vital importance in the Gold Rush days.

Beechworth, a popular tourist town, is accepted to be one of Australia's best preserved Gold towns with most of the fine colonial buildings preserved or renovated and open to the public where appropriate.

During the weekend of 6-7th October 2001 a special commemorative weekend took place and among the attractions was the operation of the Telegraph Station. Interest was very high and was operated by Bill Morrow and Peter Shaw of the Sydney Morsecodians Fraternity, giving the public the chance to send telegrams and watch the operators, using the old sounder equipment and Morse key to relay the messages.

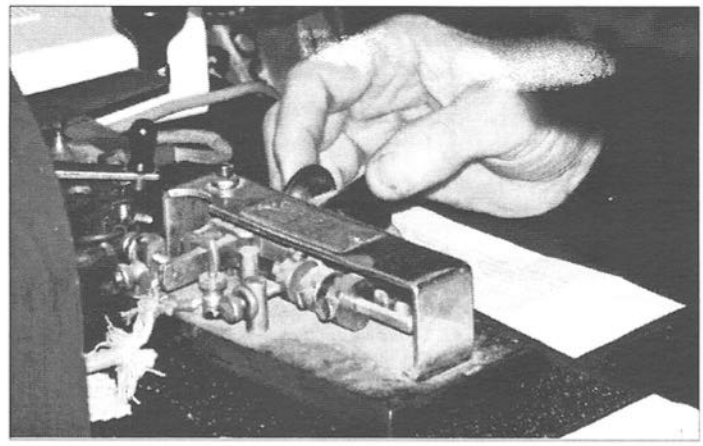
They handled just over 400 messages, most of which were sent at the request of members of the public to various destinations, manned by telegraph enthusiasts at the receiving station in Canberra using similar equipment. Only the telegraph boy with his bicycle was missing and so, the otherwise authentic, Morse-sent telegram was despatched by post to the recipient in various places in Australia.

Commercial use of the telegraph in Australia ceased in 1962. Beechworth Telegraph Station, dating from January 1858, is second only to one at Castlemaine, which originated in 1857.



Bill Morrow, a member of the Sydney Morsecodians Fraternity, operating the Beechworth station under the gaze of a new generation of customers.

Both Bill Morrow and Peter Shaw started their telegraph careers in Bendigo, within a short time of each other, as telegram delivery boys in about 1951 and progressed to better things a few months later by taking the 12 wpm Morse test. This qualified them for operator training to later pass the 22.5 words per minute Morse test. (Yes, twenty-two and a half).



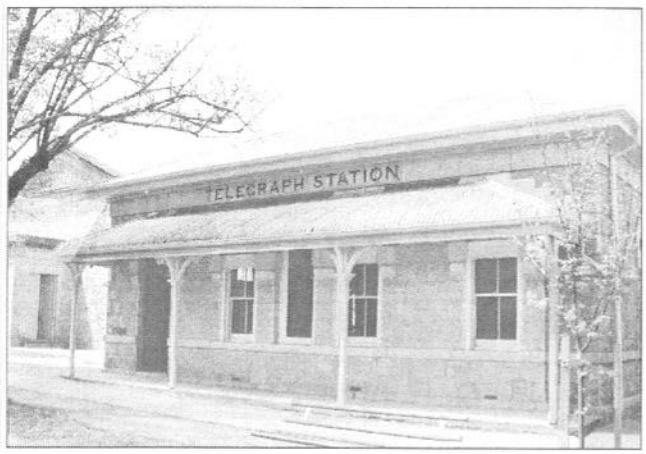
The Simplex Auto key in use

All the equipment used at Beechworth was authentic except for a modem that was used for transmission of signals via the public telephone system.

At the receiving end, the process was reversed and the click of the sounder was read by an operator who took down the message on a proper "Mill" - the single case typewriter.

The key detailed in the photo is a Simplex Auto. Also in use was a Vibroplex Bug and a straight key.

The Beechworth telegraph station is one of several beautifully restored colonial buildings in the town open to the public. It now contains historical displays of changes through the years and a visitor is greeted with a clicking sounder re-enacting an authentic historical news item message dating from 1900, concerning a shooting incident involving the Prince of Wales.



The restored Beechworth Telegraph Station

The station was activated again in a similar manner during the16 and 17th November. ***MM***

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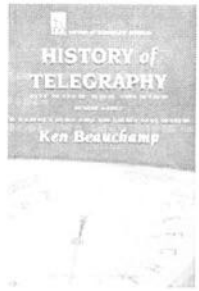
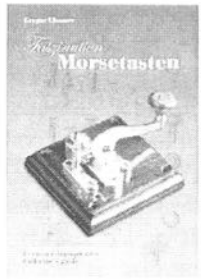


History of Telegraphy *by Ken Beauchamp*

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)

£60.00 – UK **£61.00 – EU** **£63.00 - World**



Faszination Morsetasten – German Telegraph Keys Collector's Guide by Gregor Ulsamer

This 180 page Book is printed on quality gloss paper, is written in German, but includes 400 fine photos and diagrams and is a very useful reference guide even for non-German-speaking readers and covers 250 key designs, from more than 100 manufacturers made in the German-speaking countries. It is a major work which every serious key collector and telegraphy historian will want on their bookshelf.
Softcover, 21 x 29.75 cm.

£20.00 – UK **£22.00 – EU** **£23.30 - World**

Vibroplex Collector's Guide by Tom French

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

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

	UK	EU	WORLD
Marconi's Atlantic Leap by Gordon Bussey Hardback, illustrated with 71 archive photos. 96pp - centennial edition.	£5.00	£5.20	£5.50
American Telegraphy & Encyclopedia of the Telegraph by William Maver Jr. Facsimile of the 700 page illustrated 1912 encyclopedia (5th Edition) of equipment, circuits, and procedures of the telegraph - a classic.	£39.00	£40.00	£43.50
The Singing Line by Alice Thompson Charles Todd constructed the trans-Australia telegraph (and named Alice Springs after his wife).	£9.50	£10.00	£11.00

	UK	EU	WORLD
Inspired chronicle by their great-great-granddaughter.			
Marconi & His Wireless Stations in Wales by Hari Williams	£5.60	£6.50	£7.00
Illustrated account of the early Welsh stations and the relationship between Marconi and Preece.			
AWA Review Vol. 8, 1993 by The Antique Wireless Association	£9.50	£10.50	£12.00
Includes 45 page paper by Louis Meulstee on "Unusual Military Morse Keys" (delivery Jan. 2002)			
Perera's Collector's Reference CD by Tom Perera	£9.00	£9.20	£9.70
An absolute mine of information for collectors compiled from variety of sources			
Perera's Telegraph Collector's Guide by Tom Perera	£7.60	£8.10	£8.90
An essential pocket-size reference guide for collector and historian			
The Story of the Key by Louise Ramsey Moreau	£4.25	£4.50	£5.00
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Wake of the Wirelessman by B. J. Clemons	£14.20	£14.70	£17.00
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Radiotelegraph & Radiotelephone codes - Prowords & Abbreviations by John Alcorn	£12.85	£13.70	£15.50
A History of the GPO Mark 1, 2 and 3 Morse Telegraph Keys by Dennis Goacher*(MM65)*	£6.00	£6.50	£7.20
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Your Letters

Readers' letters on any Morse subject are always welcome, but may be edited when space is limited. When more than one subject is covered, letters may be divided into single subjects in order to bring comments on various matters together for easy reference. Please note that the views in readers letters are not necessarily those of MM.

Telegraphic Code Books

Since 2000 I have been advertising in MM for Telegraphic Codebooks and, as a result of the response I got and what I had collected independently, I now have 10 codebooks in various different forms. Many thanks to those who have contributed. What I have is:

Bentley's Complete Phrase Code, US Reprint of the 1st Edition, 1909

The Anglo-American Telegraphic Code, 1894.

Adams Cable Codex, 11th Edition, Copyrighted in 1924. A code created between the World Wars but in the style of the turn of the century.

Unicode or "The Universal Telegraphic Phrase Book", 1894.

Unicode (Cook's Special Edition) 1903. This is made up of the 1894 Unicode plus an annex of codewords for messages specifically for Thomas Cook & Son.

ACME Commodity & Phrase Code, photocopy

ABC Universal Commercial Electric Telegraphic Code, 1901, photocopy

The International Code of Signals 1931, Vol 1 – Visual & Vol 2 – Radio (not a matched pair).

The International Code of Signals 1969

The Merchant Navy Code, issued by the Admiralty from the start of World War II. A Two Part Code of which I only have the Encode. My copy has amendments running from Feb 1940 to May 41 when I believe the code was withdrawn.

TAC-OPS. I found this as an illustration in a book on covert communications. It claimed that the US Army used this code in the field during the Vietnam War.

From MM I have also acquired the MM Q&Z Codebook, the Phillips Code and John Alcorn's book "Radiotelegraph and Radiotelephone Codes, Prowords and Abbreviations". I am still interested in collecting other codebooks, particularly the Lombard Code and the code printed onto silk scarves for use by the SOE during World War II. Since it is the codes I am collecting, a good photocopy is perfectly acceptable. Now that I have so many codes, what am I going to do with them? It seemed to me to be a waste to just leave them on the shelf, so I have started to load them into computer databases. This will make them more easily accessible and also easier to analyse.

So far I have done the three smallest codes (the 2 Unicodes as one database and TAC-OPS; about 3,000 codewords

each); I am writing reports on what I have learnt about these codes from entering them into the databases. These are available as two, Winzipped Microsoft Access 97 files, which I am quite happy to email to those who ask for them. My email address is:
darling@patrol.i-way.co.uk.

However, for my own protection, I must insist that when you ask for them, you specifically state that you:

- Only want the copies for research and not for actual use or for financial gain (e.g. to sell them on).
- Accept the databases with any mistakes included and
- Accept that I have no liability for the consequences of whatever you do with them.

My current project is the next biggest code, the Merchant Navy Code, for which I need the Decode. The book contains 1-, 2- and 4-character codes and it is the latter of about 30,000 codewords that I am copying into a database. Even working with a scanner and OCR software, it takes me at least half an hour to import each page and the whole job will take over 100 man-hours; I have been working on it casually since April 2000.

The major codes are ten times bigger than this and I need a more efficient method for processing them to make it practical to do it. Any suggestions would be gratefully received.

Again I would like to thank those who have contributed so far and to repeat that I am still interested in other codebooks.

Mark Darling
Swindon, UK

RAF Signals NGZ and NAP

Gary Bold, ZL1AN, was quite right when he said ".. that you never even look at a printed version of the Morse code!" Just listen, even in your mind's ear, to NGZ and NAP.

NGZ is a quasi-mathematical series of three letters. The fourth would be either the key held down or silence. It goes, for those who do not have the rhythm of Morse: dah dit, dah dah dit, dah dah dit dit and then? 'Z' is a suitable letter to finish with as it signifies the end.

NAP signifies 'it's finished' or, in more recent parlance, 'it's gone pear-shaped'. Again, listen to the signal. It is in two halves: NA and P. In Morse: dah dit, dit dah and dit dah dah dit. Actually this is an inside out or upside down signal which could just as well have been sent as XP. But other operators were expecting a three letter code so three letters it has to be.

When a stricken bomber is about to ditch the rest of the uninjured crew are either struggling with the controls or trying to get out. Only the Radio Operator has the means of contacting the outside world. Probably 'radio silence' would be the standard condition except when the plane is about to be lost. What else can he say in three letters?

While on the subject of rhythm of Morse I should like to comment that when we were training Operators Wireless and Line (OWLs) in No. 3 Training Regiment, Royal Signals, Catterick Garrison in the 1950's we used the Farnsworth system. It was not called this or by any name, as far as I can remember.

The trainees listened to signals from a Ferrograph tape recorder. The magnetic tapes had been prepared from paper tapes and a Creed machine. The base speed was about 18 words per minute with increased spaces between letters and words to slow it down for learning purposes

Most of the tapes were five letter (or figure) groups as Army messages were encoded. The nominal speed was increased: 6, 8, 10, 12, 14, 16 and 18 wpm. The Passing Out speed for Operators B3 was 16 wpm. To try to relax and give confidence to soldiers who had not coped with the latest speed increase we called them back in the evening to receive hand sent Morse from some "juicy" paperback.

Perhaps someone can help me by naming the tune which goes: /, /, /,T or spoken: oblique stroke, oblique stroke, oblique stroke Tare?

Peter Walker, G4PLW
Hitchin, Hertfordshire

OZ7BO Keyer

That was a fine article by Gary Bold, ZL1AN in the last MM. The first electronic keyer was probably made in 1942 by Lovett Garceau Electro-Medical Laboratory. There is a picture of it on p.37 of "The Vibroplex Co., Inc." by Bill Holly.

The first commercially sold paddle/keyer was the 'Mon-Key', in 1948 and made by the Electric Eye Equipment Co. of Danville, Illinois. Their old literature includes a schematic diagram. They made no other paddle/keyer and are now out of business.

There was also an article in April 1940 QST "Electronic Keying" by Harry Beecher - also see "Fifty Years of ARRL" (1965) p. 102.

Chuck Grey, ND7K
Marathon Shores, Florida

Bug User Group - BUG

A couple of friends and myself have "founded" BUG - the 'Bug User Group' (Uli, DF5DW came up with that great name). We're a bunch of folks who not only collect bugs but like to put them back on the air where they belong.

We meet every 10th, 20th and 30th of the month on either 3547 or 7017 kHz depending on the QRM. The time is 20:00 CEST/CET or 18:00/19:00 UTC. We don't have a president, any officers, any numbers or membership fees - nothing of the kind - and that's to remain so.

Anyone who wants to put his old bug back on the air or just feels like giving it a try is welcome. Simply turn up and join the fun. The call to meet folks is simply CQ BUG.

We also have a URL, which is http://www.qsl.net/bug which at the moment is only in German. If there's sufficient interest, there might be an English version.

Thomas Roth, DL1CQ
Hannover, Germany

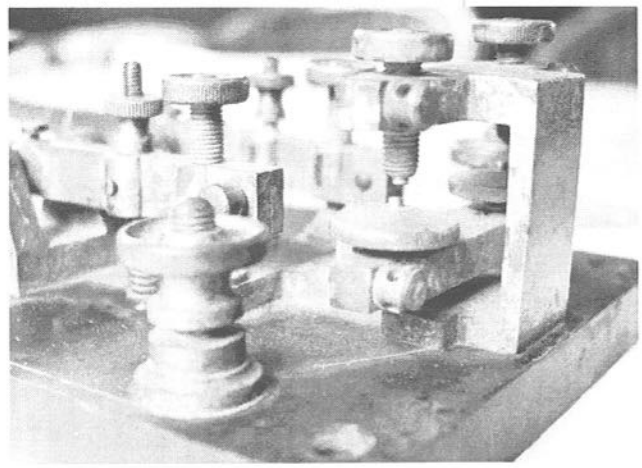
Submarine Cable Key

I refer to the picture in Issue number 77, page 37, of a "Saunders Signalling Key". This key was possibly manufactured by Muirhead and Co. Ltd. of Westminster and looks very much like a cable code key used in submarine cables. What baffles me is the use of the unusual arrangement at the rear of the key.

There was a gentleman by the name of H.A.C. Saunders who designed, among other things, a "Capacity Key" (for testing purposes of submarine cables) and a "Lightning Guard" for aerial circuits and there was a Latimer Clark who was the inventor of a dry cell (used as a standard) which gave precisely 1.434 volts at 15° C. He also developed an early type of insulator and was the author of a book called "Electrical Measurement".

Gustavo Coll
Montevideo, Uruguay

(Rob Wardenaar has since supplied a photo-detail of the rear contacts. Any further information from readers would be very welcome – Ed.)



James Ricks, W9TO SK

My name is Carter Ricks Hawley, and my dad was James Ricks, W9TO founder of the Chicken Fat Operators (CFO #1).

I didn't know very much about his radio life, except that it was really important to him, and that we took every vacation planned around when and where he could string up a temporary antenna.

I would be interested in any member's recollections or thoughts about my dad, to help fill in the gaps. If anyone has anything to share, please e-mail it my way to: chawley500@msn.com

Thanks to all CFOs. You were a really important part of his life.

Info Please MM76 A. Mason Key

I have a key, made by A. Mason, very similar to the one owned by DL1BFE except that mine has a wider knob and has "GAMAGE 1095" punched on the end of the wooden base. It was originally owned by G6TA and I assume that he used it when first licenced in the 1930s.

David R. Bowman, G3LUB
Buckinghamshire, UK

(There is a key of the same design but not marked @A. Mason in Tony Smith's article on Gamages in MM65, p.31. and probably dates from the 1920s – Ed.)

Letters - continued

Left Handed Keys

With regard to Allan Williams' comment about a left-handed angled key. I remember that there was a report of some work done, in Japan I think, on the use of angled keys. It was suggested that operators try placing a pencil under the left-hand side of the key. Clearly, if you are a left-handed, then place the pencil under the right-hand edge.

The tip also works works for Iambic keys bringing the the paddle face to a more natural angle. I think the method will work with any type of key including the Vibroplex-type, although there could be some adjustment necessary to the weight on the vibrating arm.

I would urge operators to try this tip. It really does make a difference to the comfort level.

I used to teach a lot of Morse code and found the tip helps some students to get a better swinf and rhythm.

Ron Wilson, G4NZU
Nottingham, UK

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Tel. +32.2.356 05 56 (home: after 8 pm my local time) or office: +32.16.38 27 21 or e-mail: fovabe@telindus.be

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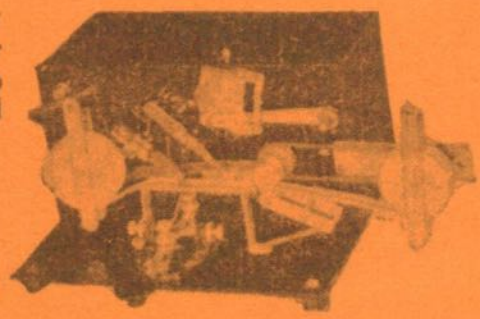

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