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for
Morse

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The Morse Magazine

Very Early French Needle Telegraph

The International Journal of Morse Telegraphy

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Also, we shall jog your memory with a renewal reminder included with that final issue.

MM Back Issues
Issues Nos. **34,35** and **38–73** available from the
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FRONT COVER

Very early French needle telegraph by Foy & Bréguet. The needle could adopt one of eight positions simulating the signal arm of the (optical) Chappe system. Two consecutive signals represented a figure between 1 and 64. Consecutive figures referred to a word, an expression etc.

Photo/Collection: Fons Vanden Berghen

Comment

I was phoned by an MM reader, Terry Thomas last year. He had just gained his M5 amateur licence (5wpm Morse) and wanted to increase his speed to 12 wpm for a full licence. He was worried that he wouldn't get the practice needed because, with the controversy surrounding the Code – No Code debate, other stations wouldn't work him at 5 wpm.

Well - last week he phoned again to say how wrong he was. Other operators would always work at his speed. Terry, who is 69, has now passed the 12wpm test and applied for a full licence. Congratulations Terry! The spirit of telegraphy lives on.

Because MM is published every two months, news items arrive here which would be out of date before the next issue. A system is now in place to e-mail MM readers with this news.

Unfortunately some of the e-mail addresses on file are obsolete and messages are being returned. If you have not received 'Late News' e-mails from MM over the past two months and would like to receive these news items, please send an e-mail to zyg@morsemag.com and your address will be added to the list.

Apologies to readers who do not have e-mail but it is uneconomic to send this information by post.

Zyg Nilski G3OKD

Contents

Adverts

The Once & Future Web: Worlds Woven by the Telegraph and Internet

On 24 May 2001, the National Library of Medicine, Bethesda, Maryland, USA will be launching an exhibition and extensive website, bringing together the similarities of the information revolutions that resulted from the electric telegraph and today's internet. This theme is encapsulated in the exhibition's title, *The Once and Future Web*.

Over 150 years ago, a new world was born when an electric telegraph transmitted the message, "What hath God wrought," through a copper wire strung between Baltimore and Washington DC. Soon, governments and private companies had strung telegraph cables across countries and the world to meet the insatiable demand for high-speed, long-distance transfer of information.

By comparing and contrasting the history of the telegraph and the Internet, *The Once & Future Web* explores how a previous generation's enthusiasm for a new communication technology holds important messages for people living and working in the age of the information superhighway. As Tom Standage states in his book *The Victorian Internet*, "The

hype, scepticism, and bewilderment associated with the Internet—concerns about new forms of crime, adjustments in social mores, and redefinition of business practices—mirror the hopes, fears, and misunderstandings inspired by the telegraph. . . .They are the direct consequences of human nature, rather than technology."

The Once & Future Web includes eleven touch screen interactives that deliver text, images, music, videos, and a searchable exhibition library for subjects ranging from Samuel FB Morse's original invention to the role the Internet plays today in delivering medical information to the public. In addition, the exhibition includes four interactive stations: visitors can send a Morse coded message; learn about digitizing and manipulating images; participate in a virtual conversation with one of the leaders of the Internet community; and see a demonstration of virtual anatomy.

The exhibition is grouped in four thematic areas: creating the technology, who uses the technology and how they use it, how new technologies change our perceptions about ourselves, and the medical applications of these communication technologies. Artefacts and reproductions include original publications featuring stories and images about the technologies, key documents from the development of the telegraph

and the Internet, hardware, original messages, etc.

Through the use of static displays and multimedia interactive devices, visitors will walk away from *The Once & Future Web* with a better understanding of the communications revolution launched by the Internet. And audiences will have the opportunity to see how new communication networks enable people to transform their health, their lives, and their world.

The web site address will be www.nlm.nih.gov/onceandfutureweb *(Information: Beth Wood, Exhibition Coordinator)*

"Wireless Bridges the Atlantic" Commemorative Coin

To commemorate Marconi's historic achievement of transatlantic wireless transmission - an achievement that was to revolutionise global communication and bring tremendous benefits to mankind, the British Royal Mint has produced a special £2 coin.

There are gold, silver and base metal £2 versions available, which can be purchased from the online shop of the Royal Mint web site at www.royalmint.com or by phoning the order line on +44 (0)1443 623456.

A gold version is for sale at £295.00, silver at £28.50 and base metal for £6.95. Taking radio waves as its theme, the design by Robert Evans symbolises Marconi's impact on twentieth-century communication. Radio waves decorate both the centre and outer border while a spark of electricity linking the zeros of the date represents the generation of the signal. The commemorative design is completed with an edge inscription, "WIRELESS BRIDGES THE ATLANTIC... MARCONI 1901"
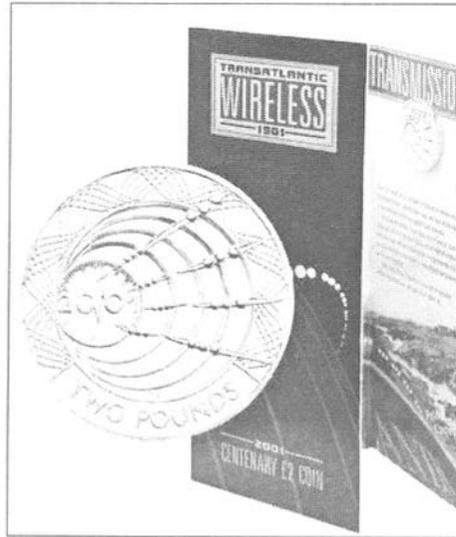
Industry Canada Confirms 5wpm

Radio Amateurs of Canada met with Industry Canada officials at the semi-annual spring meeting of the Canadian Amateur Radio Advisory Board (CARAB) in Cornwall, Ontario on April 26th. At the meeting Industry Canada confirmed that a Canada Gazette notice will soon be released with regard to reducing the 12 wpm code requirement to 5 wpm for full HF operating privileges.

Industry Canada has found and corrected errors in the new automatic

exam generator. There still may be some minor problems to be corrected in the next version.

(Guy Charron, VA3FZA - RAC Bulletin)

GACW Introduce eQSLs and Awards

GACW, The CW Group of Argentina will now accept eQSL cards to achieve the awards that it currently offers. eQSL cards will also be accepted for any special certificates of merit issued to relevant individuals and/or organizations.

The GACW coordinators have introduced this system for the benefit of more than 500 members in Argentina and some in other countries and wish to encourage the use of this very safe, quick and cheap method of confirming amateur radio contacts.

(Information Raul M. Diaz, LU6EF, GACW Coordinator and QSL Manager Web Site http://www.cysnet.com.ar/gacw/

NVCF
An Interesting Find

The National Vintage Communication Fair took place at the National Exhibition Centre, Birmingham, England on 29th April, 2001. Unusually, one stall included a number of rare 19th century Morse needle telegraphs for sale, used on the British railway sytems. The stallholder was a collector of railway memorabilia and had been forced to purchase these items as part of a job-lot in order to acquire the railway items he wanted.

Help Wanted SCARD Europe

The Civil War Signal Corps Association Re-enactors Division (SCARD), Michigan State representative, Dave Harbin has made a reproduction set of Daniell battery jars for Civil War re-enactment activities throughout the US Mid-west. They appear to be similar to the drawings in George Prescott's 1866 "History, Theory & Practice of the Electric Telegraph"

Gerd Buchsteiner, currently working in Washington DC will be returning to Europe in July and is keen to recruit a SCARD group for re-enactments in Europe. Anyone interested in this fascinating aspect of Morse telegraphy please make contact c/o MM.

(Walt Mathers, Signal Corps Association Re-enactors Division (SCARD))

Web Site on Franklin L. Pope

John Casales has put together a simple web site about Franklin Pope. He was a prominent American telegraph engineer during the 19th century who, among many other things, surveyed the route for the Vancouver-Yukon stretch of the Russian American telegraph, part of a plan by Western Union to connect the USA with Europe with an overland telegraph. The plan was eventually abandoned because of the success of the transatlantic submarine cable.

Some of the images might be of particular interest. John Casales had the opportunity to examine and photograph Mr. Pope's diary and sketch book that he had with him during the Russian-American Telegraph Expedition of 1865-66. All the sketches were done by him on

Photo: Dave Bock

Reproduction Civil War Daniell Cells and, inset, the diagram from George C. Prescott's book.

small cards, about the size of 4x6 index cards and are excellent examples of his artistic abilities. Unfortunately, most of them are faded and stained now, a few of the better ones were photographed and have put on the web site after receiving permission from Mr.Pope's descendants.

The web site address is: http://members.aol.com/w2ni/telegraph/pope/index.htm

(Information: John Casales, W2NI)
(Franklin L. Pope's book "Modern Practice of the Electric Telegraph, published in 1871 is also available online

Pigeons at War
'The Flying Telegraph'
Exhibition

Not strictly Morse - but The Museum of Submarine Telegraphy in Porthcurno, Cornwall is mounting an exhibition entitled 'Pigeons at War – The Flying Telegraph' until 26th October, 2001.

As a message carrier, the homing pigeon has played an important role for many thousands of years. From the ancient Egyptians to the Second World War, pigeons were used to communicate vital messages.

Over the centuries, pigeon post became a widely used and well-organised system of communication, but with the coming of the electric telegraph and wireless in the 19th and early 20th centuries, the civilian pigeon post began to disappear. It did however, remain a vital means of communication in times of war.

Before the outbreak of WWI,

Germany had established a network of secret pigeon lofts throughout England, which were used to carry secret messages between the two countries. By 1916 Britain had converted old pre-war omnibuses into mobile pigeon lofts for use in France.

During WWII 200,000 pigeons were supplied by private breeders to the National Pigeon Service in Britain, and another 50,000 were bred by the United States Army. Birds were used by the Royal Air Force as standard equipment on all bomber and reconnaissance aircraft and on many occasions were instrumental in the rescue of aircrew.

Because a pigeon flies silently through the air and creates no wave to reveal its presence, they were also used by the army and intelligence services and 16,554 pigeons were parachuted onto the continent of which, 1842 returned.

The Dickin Medal, the animal version of the Victoria Cross, was awarded to 32 birds.

The exhibition includes unique photographs, pigeon parachutes, scale models and secret messages. For more information contact the Porthcurno Museum of Submarine Telegraphy, Eastern House, Porthcurno, Penzance, TR19 6JX, UK or phone +44 (0)1736 810966. The web site is www.porthcurno.org.uk

Commemorated everywhere - this brown sugar sachet was served with coffee to the Editor in a pub in Co. Durham, England.

KPH on 500kc

Ex-RCA coast station KPH will attempt to contact the Liberty ship SS Jeremiah O'Brien/KXCH on Sunday, 20 May 2001. The O'Brien will be cruising in San Francisco Bay at the time.

A qualified commercial operator (Rod Deakin of Globe Wireless) will be aboard to activate the vintage Radiomarine console on the ship.

Primary activity will take place on MF. As is standard procedure in the maritime service the initial contact will take place on 500kc, then shift to 426kc (KPH) and 425kc (KXCH). KPH will be using about 3kW on these frequencies, KXCH about 200W. Since this operation will take place in daylight the range of the signals is likely to be limited. However KPH may also use 6477.5kc, which should be heard over a greater distance.

The 6Mc calling and working frequencies of the O'Brien have yet to be determined.

Commemorative messages and possibly a traffic list will be broadcast by KPH so there will be opportunities to copy the station at times other than the contact with KXCH.

The exact times of operation have not yet been decided but KPH will probably be on the air beginning at about 1030PDT (1730GMT) and possibly continuing through about 1500PDT (2200GMT).

If you'd like to hear KPH, the "wireless giant of the Pacific", on the air once again please tune in. Please also see the Web site of the Maritime Radio Historical Society at http://www.radiomarine.org for further information about KPH.

(Dick Dillman, Maritime Radio Historical Society, San Francisco)

Launch of the Online Marconi Museum
www.marconicalling.com

On 3rd May 2001 British e-Minister Patricia Hewitt visited Grey Coat Hospital Secondary School in London to launch the interactive online Marconi Museum sponsored by Marconi plc, now a global communications and IT company. The website launch coincides with the 100-year anniversary of the world's first transatlantic wireless transmission by Guglielmo Marconi, and captures the extraordinary achievements and the innovative tradition of Marconi, the pioneer of wireless communication

http://www.marconicalling.com/ is a comprehensive site featuring 10,000 web pages containing an historic collection of 500 pieces of ephemera, 426 photographs, 33 sound clips and 10 film clips. The Marconi Online Museum caters for the interests of all ages including
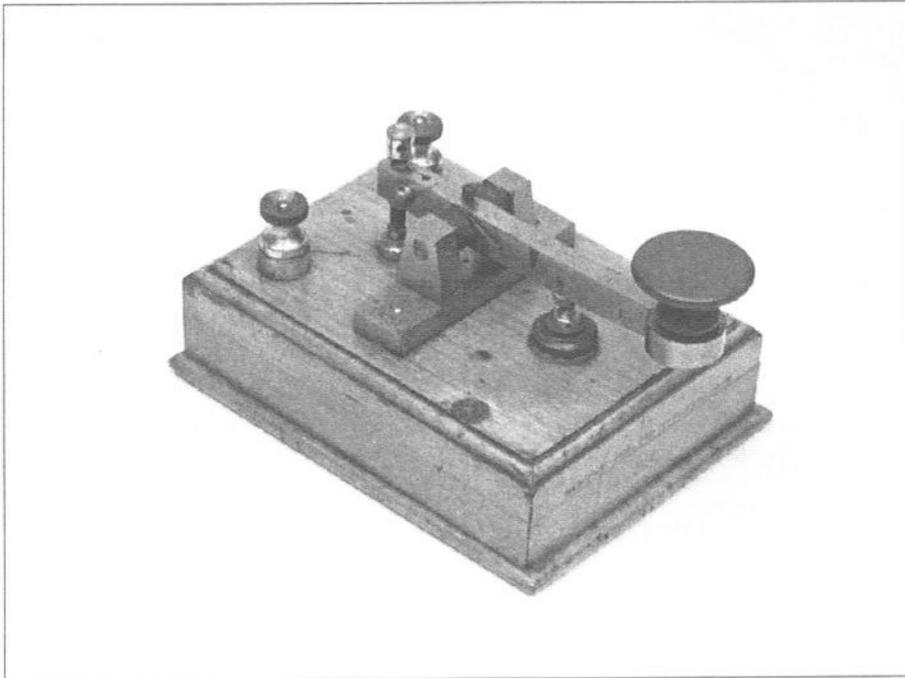
No.50 - The Haven Hotel key with mahogany base and lacquered brass fittings - 16cm (6 3/8in.) long.

students, historians, researchers and wireless enthusiasts, and particularly schoolchildren.

It embraces the very latest internet technology and boasts a wealth of fascinating archive material.

The Museum spans Marconi's achievements from 1901 to the present day and has an easy to use timeline enabling users to navigate through the site visiting key events which define the history of communication.

There are special visual and informative areas on Titanic and Dr Crippen, the first criminal apprehended with the aid of wireless telegraphy. Within the area dedicated to Titanic there are the messages transmitted between the liner and Olympic, cataloguing the ice warnings and deterioration of weather conditions on the Titanic's route. Also the messages survivors sent to loved ones once aboard the Carpathia and a film clip of Marconi preparing to meet survivors.

The site also includes interesting and historic wireless telegraph instruments. Of historic significance is the Morse key used by Marconi during his experiments at the Haven Hotel, Poole leading to the development of his specification for tuning which resulted in the 'Four Sevens', 7777 Patent of April 1900. It was made by the Marconi's
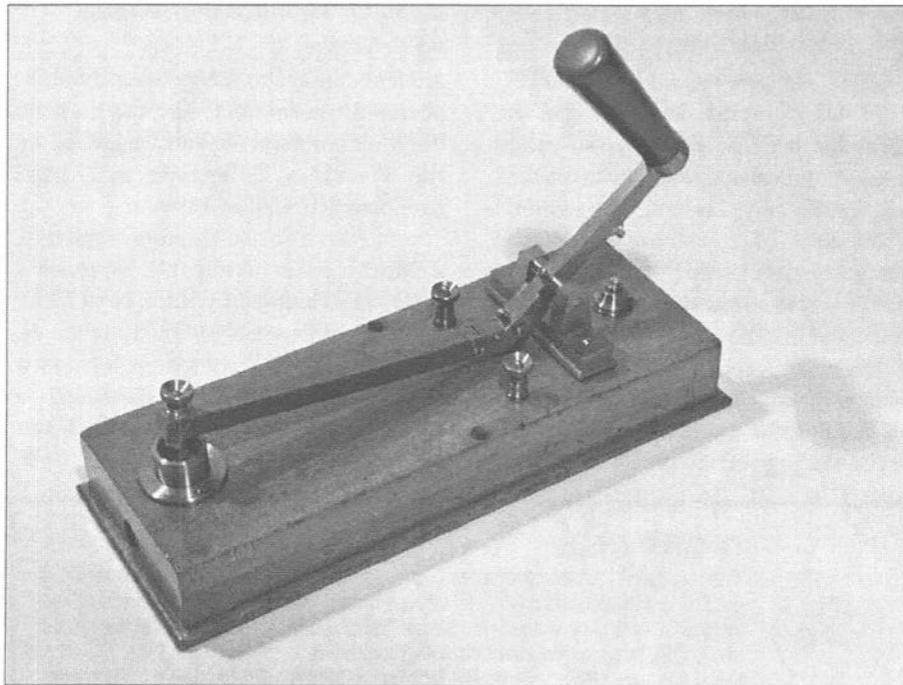
The 'Grasshopper' key. It has a tapered ebonite handgrip, ebonite back-arm and mahogany base - 33cm (13in.) wide, 12.7cm (5in.) deep, 21.6cm (8.5in.) high.
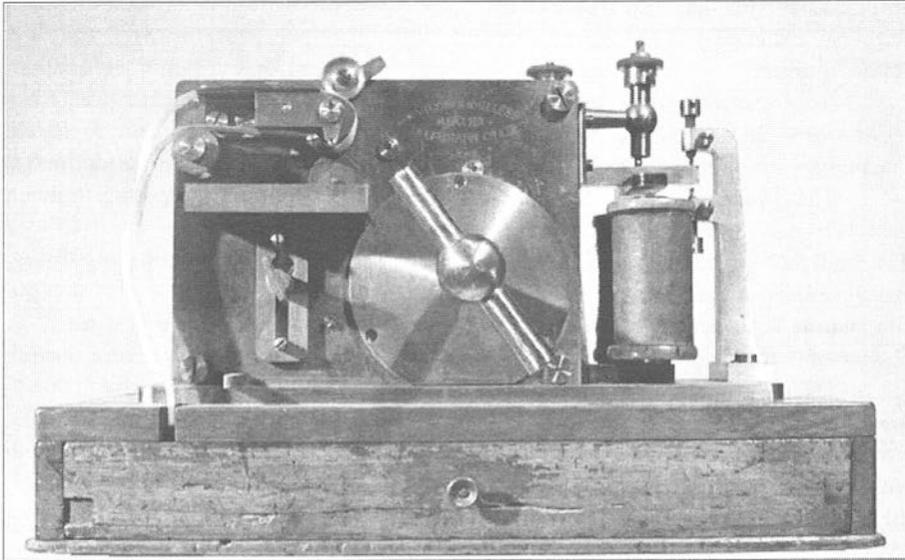
The Morse inker or automatic recorder device - 33.5cm (13.25in.) wide, 28cm (11in.) deep, 21.5cm (8.5in.) high.

Wireless Telegraph Co. Ltd in 1900.

Of special interest is the "Grasshopper" Morse key, so-called because of its shape. The key also acted as a 'send/receive' switch. The terminal at the rear of the ebonite rod was connected to the aerial by a flexible wire, and the screened terminal beneath it was connected to the receiver by a lead-covered wire. A spring kept the terminals' contacts together until the operator pulled the handle for transmitting, thereby disconnecting aerial and receiver to prevent damage to the receiver by high-powered transmitters. The key is from the Marconi archives and was made by the Wireless Telegraph & Signal Company Limited in 1899.

Also from the Marconi archives is a Morse inker made by Marconi's Wireless Telegraph Co. Ltd., circa 1900. For use with an early wireless receiver, the mahogany base contains a drawer for a spool of paper tape. On the base is a clockwork motor, the key of which can be seen. *MM*
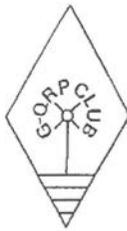
A Short History of Öller and Ericsson Keys

by Gunnar Eriksson, SM4GL

Jan Moller, K6FM, a good friend of mine for 60 years, wrote an article about Swedish keys in MM67. Can I offer some additional information that may be of interest to MM readers.

Anton Henric Öller conducted many experiments with his keys to improve the design, and together with a watchmaker N. P. Lundström, registered patent number 54 on 17th November, 1857 for the key which, with small changes, became a kind of standard for many years.

A month later he opened his first workshop, starting with two employees. Around 1870, Lars Magnus Ericsson (LME) joined the company, but in 1872 applied to the government for a scholarship to study abroad and went to Germany to study and improve his knowledge in telegraph communication. There he worked for Siemens-Halske in Berlin.

Ericsson returned to Öller in Stockholm in 1875 but in 1876 left again and opened his own factory manufacturing the same type of equipment as Öller.

Another two of Öller's employees, A. J. Lindholm and J. L. Wikström, noticed that orders from the Swedish Telegraph Administration dropped due to competition from LME and in 1878 also left Öller to open their own workshop, manufacturing the same type of equipment, especially the keys.

Anton Henric Öller

Thus there were three manufacturers of keys with almost the same design and dimensions but Öller held his patent for 6 years.

On the longer models the 3 metal blocks at the far end of the base were used to attach either a big battery (SB) for the longer telegraph lines. On the shorter model a smaller battery was connected.

For several periods in his life, Öller was employed by the Swedish Telegraph Authority.

Due to financial problems, Öller discontinued manufacturing in 1886 but continued to repair telegraph equipment. He passed away in 1889 at the age of 73. Lindholm & Wikström bought the stock and orders from Öller's estate and continued manufacturing until 1905 when they seperated. ***MM***

The Bulldog Iambic Paddle and Comments on the Falling Morse Standard

by Dr Gary Bold ZL1AN

COLIN MACKAY wrote "I thought you might be interested in this example of the "bulldog" paddle. I imported a couple for homebrew projects. As you can see, it is a cunning re-use of an office clip."

What Colin sent me was the Bulldog model BD1-HD, which sells for $12.95 (US). You can see what you get, front view, in Fig. 1. A NZ two dollar coin is shown for size comparison. It's just a simple paddle "head", which you mount yourself. Fig. 2 shows a side view.

You can also purchase a ready-to-go version mounted on a wooden baseboard for $24.95. This has three suction cups on the bottom to stick it to any convenient smooth surface.

It's small. The unit measures about 32 mm front-to-back, 20 mm between the faces of the metal finger pads. Three wires come out, to be connected to a key jack in the standard manner - the convention is tip, dit; ring, dah; ground, common. Those of you who are web-capable can see further pictures and ordering information on K9LU's website http://www.amateurradioproducts.com/h_BD1_p1.html

Wandering around this website, I found several reviews: All were enthusiastic. Here's a sample: "I was introduced to your little Bulldog Paddle at our QRP Field Day operation by a ham buddy. What a really slick item! Although I had my computer with keyboard CW, a K8FF paddle and an MFJ/Bencher keyer,

I used the Bulldog for about 90% of my QSO's on 20M QRP (NorCal 20).

It was just plain fun. Congratulations on a fine product! 73 de George W0AV"

This seemed encouraging, but I'm fairly suspicious of strange paddles, which are usually sloppy and somewhat eccentric in operation. Not wanting to drill mounting holes in Colin's unit, I simply clamped it to the front of my operating table with a G-cramp, wired it to a plug, and fed it to the CMOS Superkeyer II. Surprise! It wasn't sloppy at all, and indeed fingered much better than some of the strange homebrew units I have encountered in various shacks.

I like very rigid arms, a slop-free action, and a fine gap. The instruction sheet tells you how to change the gap by bending the contact wires, and this is easy to do - no tools are necessary. I set the gaps as fine as I dared, and ran my
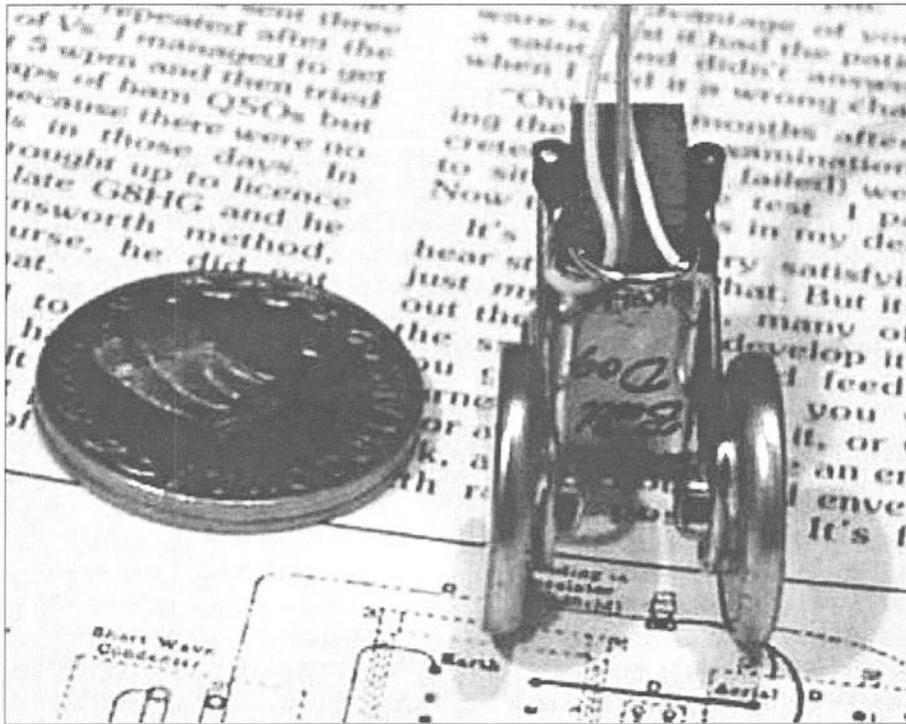
Figure 1 (Above). Bulldog model BD1-HD paddle, front view.
Figure 2 (Below). Bulldog model BD1-HD paddle, side view.
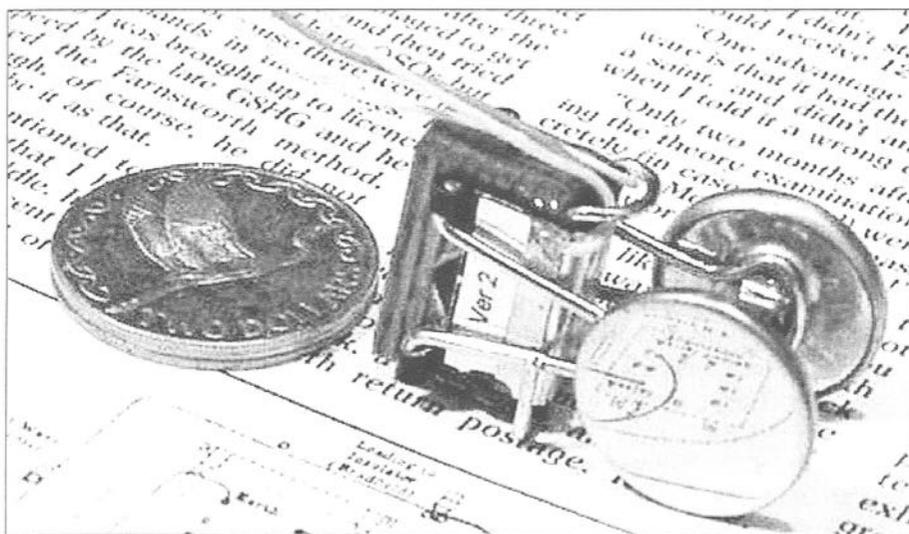
standard paddle accuracy test.

This involves reeling off a sequence of "quick brown foxes" at increasing speeds until errors start to occur. I found that I could comfortably send with the bulldog at 35 wpm, which is the maximum speed my keyer is normally set for. (Above this I go to keyboard software.) I was impressed.

The action is not as clean or positive as my Brown Brothers model, but it's surprisingly good, and I can see why the reviewers enthused about it, particularly for portable operation. There are no adjustments to vibrate loose in transit, no bearings, no hinges, virtually nothing to go wrong at all. The idea is very clever!

The complete paddle and base is cheaper by about a factor of 5 than the lowest priced models from well-known commercial manufacturers. Maybe it's worth thinking about.

A Brilliant Wheeze

Many of us great thinkers get our most revolutionary ideas when asleep, or nearly so. (Walter Candler, the great code teacher, relates in an introductory lesson how he discovered early in his career that he read code best when drowsy, with his subconscious mind unhindered by restrictive analytic processing). This morning I awoke to find that *my* subconscious mind had designed a brilliant kiwi version of the bulldog paddle while I was asleep and left it highlighted in my brain. This afternoon it took 15 minutes to construct, using one used bulldog clip (of a different design), and materials from my meticulously stocked basement junkbox (my whole basement

has turned into a junkbox).

I clamped a bulldog clip around the back of a small block of wood nailed to a baseboard, and pulled the handles around to the front. I stuck a drawing pin into the block inside each handle, and soldered wires to each. These are the dit and dah contacts. Two nails outside the handles serve as stops. A rubber band looped around the handles passes around two more nails, then behind the block to provide outward tension. The handles are already electrically connected, and form the common or ground terminal. To test it, I simply clipped the 3 wires to the Brown Brothers paddle and g-cramped the base to the front of the operating table. While I was fingering experimental quick brown foxes, Tony ZL2VG started making exploratory peeps in the passband of the IC701, then called CQ. We held a short rag-chew, and I found that I could use *this* paddle also perfectly satisfactorily.

This has to be the simplest and most successful zero-cost homebrew paddle I've yet constructed (others have used clothes-pegs, hacksaw-blades, aluminium strips, micro-switches, reed relays). It was so simple I immediately made another, using a *smaller* bulldog clip. You can see this in figure 3, again with a two dollar coin for size comparison. It works just as well, and I've now used it for several DX contacts. Why did I not think of this before? My hat is off to K9LU, who realized that a simple bulldog clip incorporates all the elements of a simple paddle, and now offers this kitset.

My local version is sloppier, its wire handles are not as classy as the round metal finger-pads on K9LU's

product, and rubber bands make somewhat crude springs. But it works, and again I can use it at 35 wpm. If you can follow the constructional description, put one together and check it out.

If such simple devices work OK, why do dedicated Morse-people pay hundreds of dollars for expensive paddles? The answer is that while the op at the other end can't tell whether I'm using this zero-cost contraption or my beautiful Brown-Brothers paddle, I certainly can.

A crude paddle like this sends Morse just the same, but I have to work harder at it. Several people have told me how surprised they were when they fingered a high-quality paddle for the first time and felt its "smoothness" and a sensed a feeling of "rightness". But just as a musician only becomes aware of the difference between a fine instrument and a mediocre one after some experience, it takes many QSOs before most of us really appreciate the aesthetic pleasure a fine paddle gives.

My good mate Jess, W8MCP, now alas a silent key, spent time as a seagoing commercial op. He said to me once that the bottom line is this: "The mark of a good operator is the ability to send good Morse on whatever key you find yourself in front of". A nice key is a bonus.

The Falling Morse Standard

You'll probably know that several countries have introduced new Ham HF licences with lower Morse qualifying speeds, and the USA has now dropped its maximum testing speed to 5 wpm. The New Zealand Radio Spectrum Management Group has placed a revision of our own radio regulations before parliament. When this is passed, the Morse speed for full HF access in ZL will also drop to 5 wpm. Grade names will also change. Several people have asked me to comment on this. I now do so.

Firstly, this proposal is *not* a unilateral, heavy-handed action by the MED (Ministry of Economic Development). The NZART was fully
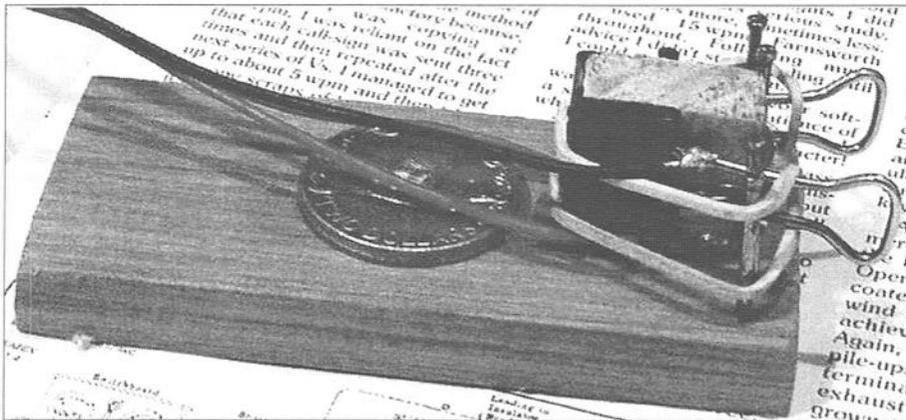

Figure 3. Gary's 'local' version of the bulldog paddle.

aware of all details given in the letter, and in fact recommended them.

Secondly, I predict that a small increase in the number of HF operators will result, but entry-level recruitment will not be affected at all. This has been the case in the USA, where in May this year 2.3% of all operators used the relaxed licensing standard to upgrade to a higher class, but the *total* number of Hams fell by 0.1%. This is a sobering, given the much higher profile of amateur radio in the USA.

This global and dramatic fall in Morse-testing standard has been relatively sudden. But it's not a result of "enlightened" policies, it's caused by simple fear of extinction. I have a theorem about *the actions of threatened societies*. This states that: **"when an organisation perceives that its membership has reached some critical low level, it reacts by lowering its entry standards."**

There is also a corollary to this theorem which states: **"This has no effect on reversing the membership trend".**

I have seen this reaction and its null result in the activities of universities, service clubs, and religious organisations. Now it is happening in Hamdom. Numbers are declining, and the head honchos are running scared. But the golden age of Hamming has passed, and we will not attract new members simply by making it easier to get in.

I will be fascinated to see the results of the new regulations, and I'd love to be proved wrong. But I'm not holding my breath. Neither am I despairing. Morse lives! Build a bulldog paddle and join us in the long grass at the bottom of the bands!

(Adapted and edited for MM from Gary Bold's *The Morseman* column in *Break-In*, journal of NZART, August/September, 2000.) *MM*
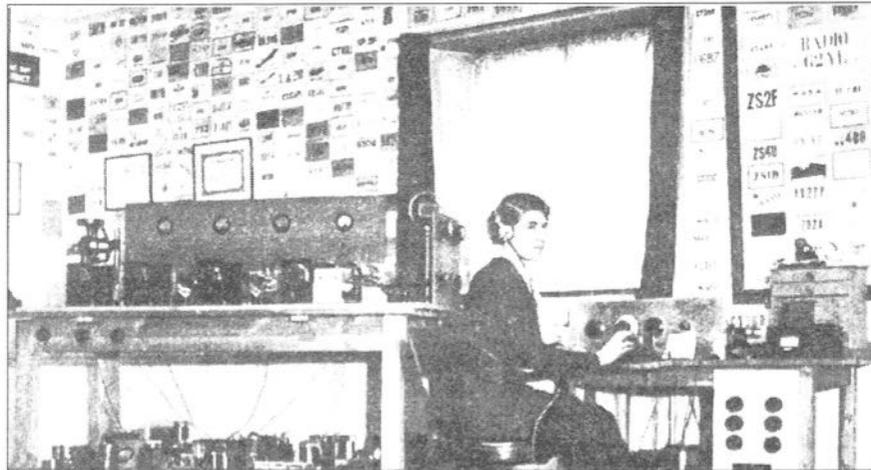
The station of Nell Corry, G2YL, Tadworth, Surrey. She was the second female (YL) radio amateur in Britain. All the equipoment was home built. This photo was taken in 1934.

The Coming of the Telegraph to Arkansas

by Edward C. Newton

(from The Arkansas Gazette, Little Rock, November 20, 1919)

THE MOST RAPID MEANS of communication, previous to the year 1860, between Little Rock and the outside world was by stage coaches and stern wheel steamboats plying between Little Rock and Memphis, the former having the advantage in making a little faster time between these points. This stage line was operated by the firm of Hanger, Rapley & Gaines, and was equipped with large six-horse coaches which arrived and departed daily on a 24-hour schedule, which schedule, however, depended on the condition of the roads, rivers, and bayous. The stagecoaches carried the United States mail and also as many passengers as could be accommodated, that is, nine on the three seats inside and two with the driver outside.

But in 1859 H. A. Montgomery of Memphis came to Little Rock and proceeded to organize the Arkansas Telegraph Company for the purpose of building a telegraph line between Little Rock and Memphis, with Chas. P. Bertrand president, and James A. Henry secretary, both of Little Rock, and H. A. Montgomery superintendent. Some stock in this company was placed locally, but Mr. Montgomery retained a majority.

> This article was kindly provided by Greg Newton. It was written by his great-grandfather Edward C. Newton who was born May 4, 1844, probably at New Madrid, Missouri. He died at Little Rock, Arkansas January 11, 1923. His brothers were also telegraphers, Jeremiah L. Newton (1846 - 1917) pounding the brass at Houston and San Antonio, Texas, and Charles Newton (1853 - 1901) at Frankfort, Kentucky.

The railroad between Little Rock and Memphis was projected, but not constructed, and the Arkansas Telegraph Company had to find a way for its lines through the primeval forests and swamps, which, in many instances, offered many obstacles not easily overcome. But the promoter was a forceful man of indefatigable energy, and as soon as it was possible to get the wire and material distributed by wagons along the route through the wilderness he proceeded with the work in the then primitive way of building telegraph lines. Brackets, designed to carry square glass insulators, were nailed to trees, and where there were no trees available, post-oak and cypress poles were used. The wire was of plain iron

(not galvanized as now) of No. 9 gauge, and was placed in an open slot on receptacles in the top of the square glass insulator, which arrangement allowed it to slide back and forth through the insulator to prevent breakage of the wire by the swaying of the trees in high winds and storms.

The most difficult part of the route was through the forty miles of low country between the St. Francis River and Memphis. In some places the region was at that time almost impenetrable, and it was, besides, the habitat of every wild

No. 9 iron wire, 7¾ cts. per lb., 320 lbs. per mile,	$ 24.80
30 posts, at 80 cts.,	24.00
30 insulators, at 20 cts.,	6.00
Setting posts per mile,	5.00
Putting up the wire per mile,	2.00
Total cost per mile,	$ 61.80

This is about the cost of construction of a majority of our lines; but if constructed as they should be, they would cost $ 150 per mile.

The cost of posts varies according to the locality. In some places they can be had of good chestnut for forty cents apiece.

We also give the prices of the different kinds of insulators in general use : —

Glass (unprotected), with iron spike,	13 cts.
Glass, with wooden shield and brackets,	25 cts.
White flint, with wooden pin,	18 cts.
Bone-rubber, with block,	20 cts.
Bone-rubber, with iron covering,	62 cts.

Cost of Instruments, Batteries, &c.

Morse register,	$ 30.00
Morse relay magnet,	15.00
Key,	4.00
Local battery,	3.00
Total cost of apparatus for office,	$ 52.00

Typical cost per mile of telegraph components in 1866 (From 'History Theory and Practice of the Electric Telegraph by George B. Prescott,, published by Ticknor & Fields, Boston 1866.

animal and reptile indigenous to Arkansas. I have heard Mr. Montgomery tell of his adventures in building the telegraph line in this region, which were both thrilling and laughable.

The wire, however, was finally erected and completed in the year 1860 with offices at Little Rock, Brownsville, Des Arc, Clarendon, Madison and Memphis. The office at Little Rock was located on the second floor of an old brick building on the northeast corner of East Markham and Scott streets, which had formerly been the residence of W. E. Woodruff, founder of the Gazette.

It was now demonstrated that a steamboat could announce its departure on the very day of its leaving Memphis, and orders for merchandise could be placed by telegraph for shipment by that boat and also a telegram might be sent to New York and an answer received the same day. Furthermore, a telegraph news report, of perhaps 200 words, was appearing in the Gazette, which was considered both remarkable and very enterprising on the part of the paper.

The building of this telegraph line was not only an event in the history of Arkansas, but greatly appreciated by the people, especially just at the inception of the Civil War.

The second telegraph line was built between Little Rock and Pine Bluff in 1861 by the Pine Bluff Telegraph Co., which was organized at Pine Bluff by Snow & Ketchum, and which also had its office at Little Rock in the old Woodruff Building. David O. Dodd, the young Confederate martyr, who had learned the rudiments of telegraphy, was the operator on that line in 1862 for a brief period. His knowledge of the telegraph alphabet proved his undoing, for he used it as a code in an attempt to conceal the information about the Federal forces he had obtained on a later visit to Little Rock, resulting in his capture and execution as a spy in 1864. This unfortunate boy, modest and unassuming in his manner and appearance, showed the qualities of a hero at his trial when, on an offer of clemency, he refused, even to the last minute on the scaffold, to disclose the name of the person who furnished the important military information found in his possession.

When the Confederate troops evacuated Little Rock in September 1863, the Arkansas Telegraph Company, with which I was then associated, retreated also, saving as much wire and material as possible for the purpose of extending its line from Arkdelphia via Camden to Shreveport. The United States Military Telegraph controlled the wires running out of Little Rock during the occupation of the city by the Federal forces, which wires were returned to the companies six months after the close of the Civil War.

H. A. Montgomery, the pioneer of the telegraph in Arkansas, disposed of his telegraph interests to a larger company soon after the war. He became a prominent and wealthy citizen of Memphis. The celebrated Montgomery Park was named after him. He died in that city and a life-like marble statue of heroic size was erected to his memory at his tomb, in Elmwood cemetery. *MM*

R EADERS MAY RECALL an item in MM66, page 14 "A Ham on the Ice" wherein I mentioned the exchange of midwinter hand-made presents among Scott Base staff, where I was postmaster. The following explanation of the gift I received may be of interest to some Morse operators.

The 8" x 8" x 4.5" box (Photo 1) made by John Williams, laboratory technician, houses a mechanism and circuit that spells out at 12 wpm the phrase "Courage Sacrifice Devotion". This is the inscription on the reverse side of the American Antarctic Service medal that was awarded to all personnel who wintered over.

With no knowledge of the Morse code, John had painstakingly drilled through a 5" diameter aluminium disc a series of 1/32" holes at 2" radius (Photo 2). Single holes to produce "**dits**" and a group of 3 holes filed into a slot to produce "**dah's**". The disc is mounted on the shaft of a small 3 rpm synchronous motor. A 2.4-volt lamp closely mounted above the Morse path shines through the combinations of holes and/or slots as the disc rotates. The interrupted light is picked up by a photoelectric cell, which in turn activates a multi-vibrator and 3-transistor circuit to provide an audible tone.
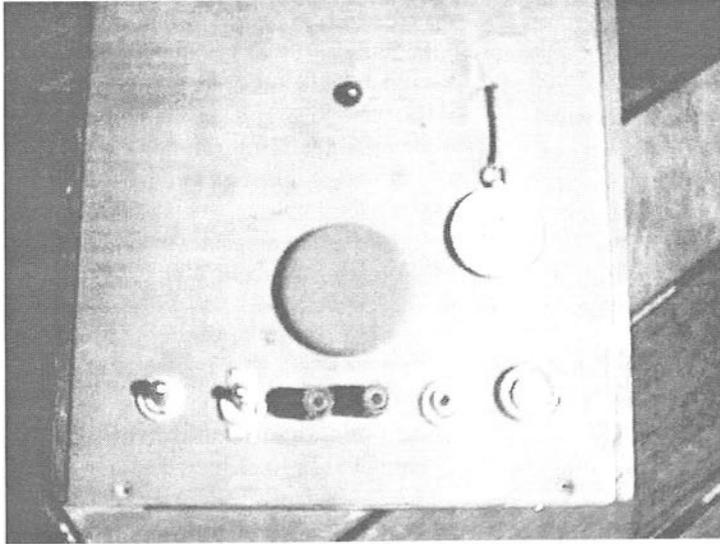
The wooden case and mounted medal
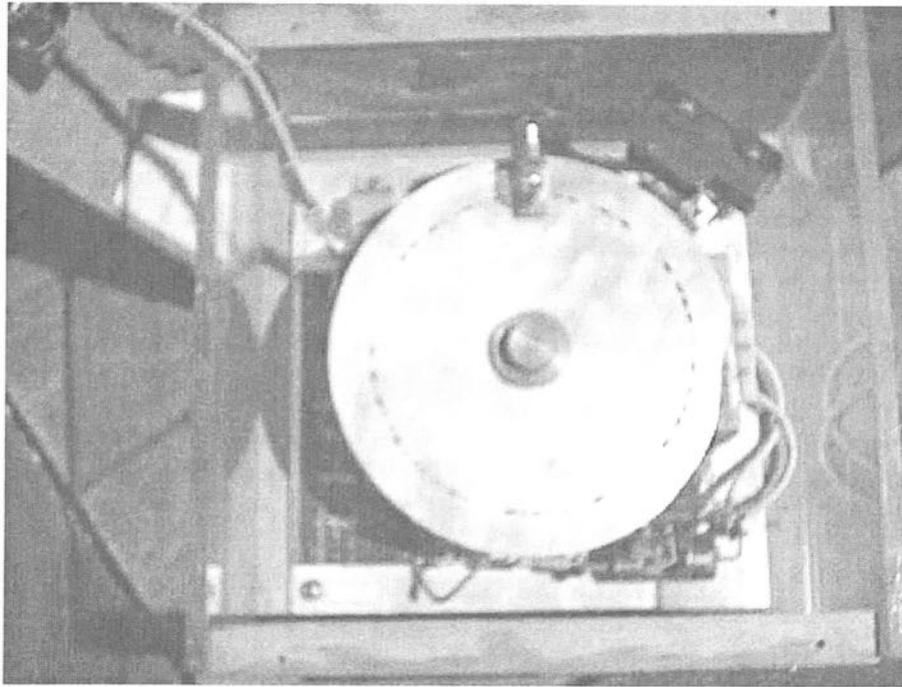
Internal view of the disc.
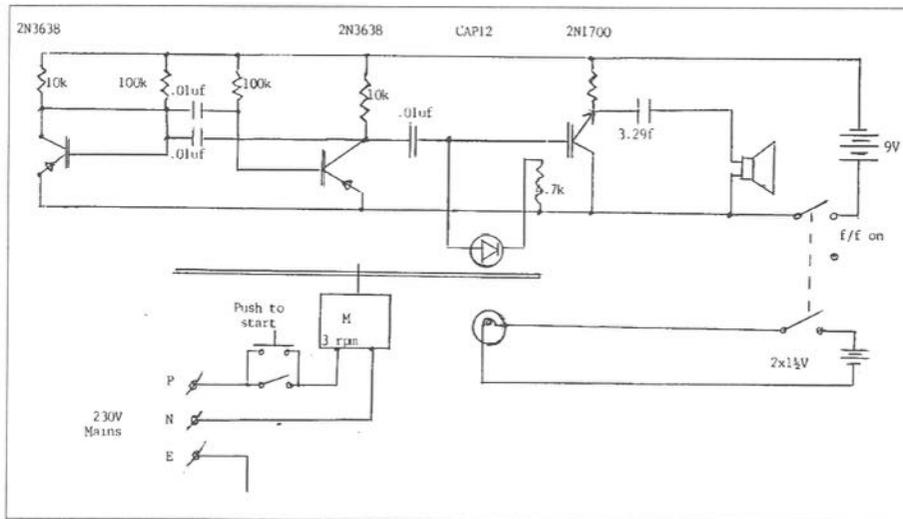
The original circuit diagram conveys an idea of the electronics involved.

A dwell in the periphery of the rotating disc activates an on/off switch once per revolution. If continuous running is desired there is a second switch provided to override the dwell action. A small speaker combined with an earphone jack is mounted on the top of the case. Provision is made for a hand key or auto keyer to be plugged in for practice sessions. Also mounted on the case is a small plaque (read Double sided PC board) upon which is inscribed in Gothic Script details of presentation, to whom, from and date etc.

On the inside of the box John had inscribed the following verse.

To he who sends greetings from the snow,
From those intrepid folks down below,
He's really quite a devil,
Is the one called Neville,
Our man who inhabits the PO.

'Tis midwinter the year of seventy-three
That this box of goodies comes to thee,
So Neville our friend,
When you're going 'round the bend',
Plug in – push the button – let it key!

MM

Why 30 To End Newspaper Stories
by Richard L. Thomas

A retired newspaperman friend of mine was asked by a working woman-journalist the history behind the use of "30" by newspaper people to indicate the end of a news story.

My friend, knowing I'd been a telegrapher, then asked me. I wrote the following "off the top of my head" in a hurry. Most of you already know this, and perhaps the rest don't care.

In any event, having done the chore, I figured I might as well pass it along to others. I don't think newspaper people use "30" to end stories anymore, not since computers came into the newsrooms. I got out of the news business 31 years ago, and at that time we were still using manual typewriters and writing "30."

Why '30' To End Newspaper Stories

In short, the figure 30 was part of the Phillips Code, and it was used first by AP telegraphers starting in the 1870s. It meant "end of story." Since AP was, of course, serving newspapers and the figure "30" was at the bottom of "wire" (telegraphed) stories, the newspaper reporters picked up on it and started putting "30" at the bottom of their local stories. It is strictly a telegrapher's tool, and in no way was invented or used

first by newspapermen.

To back up, a guy named Walter Phillips was an AP telegrapher who rose to an executive position. He "invented" the Phillips Code. The code was, in effect, literally hundreds of abbreviations that would speed the transmission of news stories by telegraph. Until about 1906, all telegraph messages were sent by a "straight" key, the key most people think of when a telegraph key is mentioned. It required an up-and-down motion to make dots and dashes. This was pretty slow, and an operator's arm would get very tired. Many operators developed "telegraphers' paralysis," known today as carpal tunnel syndrome.

So Phillips came up with, in effect, two codes-within-the-Morse-code, both numbers and abbreviations.

Example: 30, end of message; 25, busy on another wire; 73, best wishes; POTUS, president of the United States; SCOTUS, supreme court of the United States, msj, message. (Why "j" instead of "g" I don't know.)

By 1906 the "bug" was becoming a popular alternative to the straight key. This is a semiautomatic key in which the operator uses his thumb, and index and middle fingers, to push a lever with springs and weights on a horizontal pendulum, right for dots and left for dashes. It was more than twice as fast as a straight key and much less tiring on the arm. Some of the stories of the San Francisco earthquake of 1906 were sent with a "bug."

The Phillips code remained in use until the AP replaced telegraphers with teletype machines starting in the late 1920s. My friend, the late Aubrey Keel, an AP telegrapher working in Texas, said teletypes weren't installed there until around 1933.

The Phillips Code was used to a lesser extent by Western Union, railroad, and private-wire operators until telegraphy finally expired altogether in the 1960s.

I have a copy of the Phillips Code book, but I can't find it at the moment. Over the years, the code was updated and revised. I know a guy who owns a 1945 edition, published by Telegraph & Telephone Age. It has 96 pages.

My friend said it took about a year for an operator to really get the code down in his head. The sending operator would send POTUS and the receiving operator would have to type out President of the United States.

My friend said a good sending operator would send some Phillips abbreviations and then slow down a bit on the straight text to give the receiving operator time to catch up.

MM

Showcase

Photo/Collection: Dave Pennes, WA3LKN

Chester weight-driven embossing register. New York circa. 1855-71. Electrically intact and functional.

Photo/Collection: Jacob Henri, F6GTC

This is a solid straight key; the arm can be removed by releasing the screw in the middle, making it easier to clean the large contacts. The base is made of alunimium and bakelite, and the cover is pressed steel. The contacts are marked 'C' and 'T', and it is stamped in white: "T" with two crossed flags and the number 28. It is supposed that it a French army key but may be for aviation use.
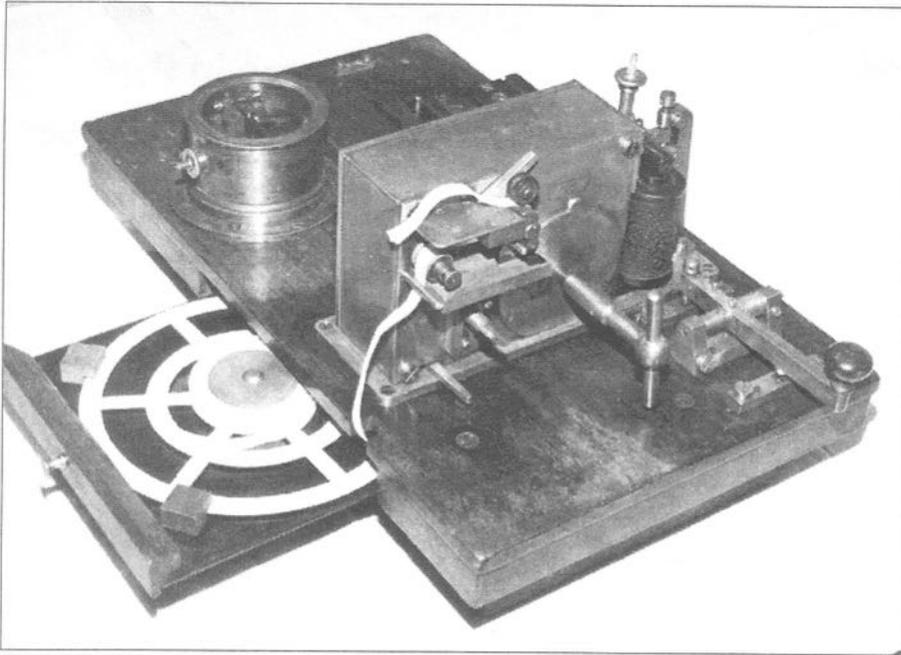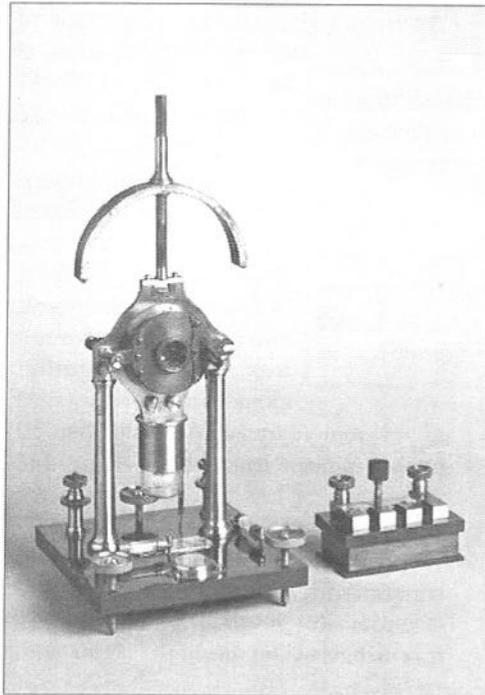
Above: Siemens-Halske relay. The assembly is marked on the bottom "Geb. 9.4.31" "Geb." stands for 'gebaut' (built). The mechanism is solid brass and still working!

Left: Mirrorgalvanometer for use as a receiver on submarine cables. This one is by the Telegraph Works Silvertown (London)

Morse in the Australian Antarctic Part 5 - Radio Activities Continue on the Ice

by Allan Moore, VK1AL

THE YEARS 1960 onwards saw an expansion of scientific programmes at the stations for which additional support was required. More powerful transmitters, radio teleprinters and improved antenna systems were installed to handle additional radio schedules and increased communications traffic. For all this progress (with the exception of occasional personal calls made from Wilkes using the "SFERICS" schedules) radiotelephone links were still non-existent between our stations and Australia.

In 1961, Doug Twigg joined the Antarctic Division as Senior Radio Technical Officer and enthusiastically embarked on a programme of modernising communications equipment and systems at the stations. At this time, Morse telegraphy was still giving good service but was allowed to decline on some of the busier circuits. ANARE was making greater use of the faster Radio-Teletype system (RTT).

> Although Morse is phased out by the Post Office in Australia, it continues to hold its own in Australian Antarctic communications. Despite the cold war, there is friendly collaboration with Russian expeditioners and their air-crews - and the Q-code is found to be extremely helpful.

Operators needed to be good touch-typists and be competent in visually reading another code punched on tape, the Baudot 5 unit code. However, the presence of operators with Morse skills was still mandatory at all our stations.

Higher Power

A new generation of high-powered Australian transmitters was about to emerge. Two new 5 kilowatt Type CTH7 transmitters, built for the commercial market by Australian manufacturers, A.W.A., were purchased for Wilkes and Mawson. The march away from WW2 surplus equipment, efficient and effective as it was, began to gather momentum. Once installed in new remote transmitter huts, their 10 pre-set frequencies could be changed in 30 seconds or less by simply dialling a single digit number.

By operating another switch, transmitting antennas could be electronically selected within seconds, favouring the direction of the station with

which we were communicating. These powerful transmitters operated on CW, RTT and AM, and could be switched between modes in seconds. However, they were not equipped with SSB, which was rapidly overtaking the old AM voice system at the stations.

They were heavy users of electricity. In winter, when overall station power requirements were high, it was often necessary to run two diesel generators in tandem to help feed the 'monsters' as they were generally called.

In 1962, a UK made 1.5 kilowatt Redifon G423A transmitter became Macquarie Island's main transmitter. This unit was manually tuned and was installed in a small alcove just outside the main radio operations room. It operated on CW, AM, and SSB. It was close enough for technicians and operators to readily access it, change frequencies and re-tune as necessary. All traffic still flowed by Morse to Sydney and Awarua (NZ). Voice schedules with Melbourne were changed to the more efficient SSB mode. The old RAAF AT20s were now to play a supporting and emergency role.

Russian High Speeds

Radio Officer Dave Keyser recalls that Mawson in 1961, with four radio officers, was a far busier station than Macquarie Island. Four operators at a time may have seemed excessive, but fieldwork required the inclusion of a radio operator. At that time Mawson was a collection station, and totally Morse.

Dave also recalls the high Morse speeds of the Russians, particularly when broadcasting their five-figure synopses using automatic Morse equipment at 55

words per minute, sometimes faster. Dave's best effort was copying figures at 55 wpm, a very high speed with which some operators can relate.

In 1962, a new rhombic transmitting antenna was erected at Mawson to maximise signals to Wilkes. With this high performance antenna and the new CTH7 transmitter, permanent RTT schedules commenced with Wilkes and Morse code contacts were discontinued on the circuit. Wilkes was now Mawson's main point of contact between the continent and Australia. All Mawson traffic was transmitted several times each day in this way. Messages were received at Wilkes on punched tape, and retransmitted to Sydney using the same tape.

Similarly, Wilkes received and retransmitted traffic received from Sydney on tape to Mawson by RTT, without having to manually re-punch or type every message. Mawson retained two daily Morse schedules with Perth Radio as a back-up for weather or other urgent messages if necessary. Perth was an excellent back-up circuit and was used for years to come.

Morse Tape Skills

Exchanges of weather traffic between Mawson and South Africa by CW continued during 1962 using the CTH7 and prepared Morse tapes running through an automatic Morse transmitter. After operators tuned each other in, they let their tapes run and copied the other's traffic. It became hectic if interference was experienced. Tapes had to be stopped, re-inserted at the correct point and re-run. This was a skilful exercise and required

much practice. RTT tests were also made from time to time with the same distant terminal, located at Jan Smuts Airport, Johannesburg. The South Africans, in turn, commenced RTT test transmissions during the year to Mawson.

At Wilkes in 1962 communications were working well. With RTT fully operational with Mawson, several Morse circuits remained - McMurdo Sound, Mirny, Dumont d'Urville, Davis and Macquarie Island.

Four Months Field Trip

One celebrated Australian Antarctic field trip that year was the Wilkes-Vostok traverse using completely mechanised transport. The journey lasted almost four months with the party arriving back at the station on 14th January 1963. An unusual aspect of the trip was the absence of a qualified radio operator, due in part to the composition of the party and other logistical problems. Previous experience indicated that voice contact was often unreliable once a party commenced to ascend the blue ice plateau behind the station, but the Officer in Charge, Bob Thompson, who could manage slow Morse at perhaps five words or so per minute, was prepared to give it a go.

During the trip, the station radio group made extra efforts to monitor the progress of, and maintain contact with, the field party using a changing pattern of transmitters, receivers and antennas, combined with extra vigilance. It appears that propagation was only fair at best and

John Mckenzie and Graham Currie repairing radio masts, Wilkes 1963.

Bob Thompson sometimes had to revert from voice to slow Morse.

Because of the need to keep the tractor train moving in very low temperatures, and for other reasons, schedules were sometimes by-passed by the field party. On one occasion, the radio group was much relieved to have confirmed, after several attempts at sending slow Morse to the field party, that precise timing details of a planned drop of fuel and supplies for them by an American Globemaster aircraft had been accurately received.

It was a creditable and lengthy

example of perseverance which also highlighted the problems that can be encountered when using voice, particularly the old AM system, and the fact that Morse can get through on most occasions when other means fail.

The End of Morse Telegraphy in Australia

The conclusion of the 1957 PMG telegraphist-in-training courses, in which Morse code was still being taught to a small number of Sydney and Melbourne trainees, saw the last of this unique training within the organisation. Future courses concentrated on machine telegraphy (Teletypes and teleprinters) although the designation 'telegraphist' managed to survive until the mid-1980s.

By mid-1963, sounder-system Morse telegraphy was phased out of the Australian PMG public telegraph network, having been completely overtaken by Teletype/teleprinter machine systems. A few small radio systems using CW lasted a little longer. Brisbane to Thursday Island closed down in June 1964, and in Western Australia the last radio circuits were closed after the final messages were sent from Roebourne to Onslow and Wittenoom Gorge in November 1968.

Antarctic Morse Continued

In contrast, Morse in Antarctica, although declining on smaller circuits, was still very much alive to the satisfaction of PMG telegraphists seconded to ANARE. The Australian Armed Forces continued to train radio telegraphists for some years to come, which provided a pool of experienced men and women attracted to Antarctic radio communications work.

As in previous years, Morse was used between Mawson and Davis, Kerguelen, Amsterdam and Marion Islands, SANAE, Perth, and very occasionally, Macquarie Island. Heard Island was also worked when it was reactivated by a summer party undertaking scientific studies - with radio officer Nils Lied using his beloved 'pekkinklakker' side-swiper, previously mentioned. CW was also still the main means of contact with Australian and foreign ships and aircraft.

One unusual circuit was the Mirny Morse broadcast. Twice daily, morning and evening, Mirny station broadcast an all-stations call for about five minutes so that operators could tune in their receivers. This was followed by a lengthy series of Russian collective weather observations in five-figure weather code.

The Mirny Morse tape was run through equipment similar to ours, at about 30 words per minute. During times of good propagation some Mirny operators 'played' occasionally with the speed dial, moving it up and down in quick succession during the broadcast. This kept receiving operators on their toes, as speeds could alternate in split seconds between ten and forty words per minute. The broadcast was instituted not long after Mirny was established and continued for years to come.

Hours of Duty

At Mawson, with a four operators, radio schedules (Morse and RTT) covered seven days a week for about 20 hours each day, commencing at 0600 hours

local time. One man was rostered for each of the daily shifts. The fourth had a day off, or undertook other chores around the station, such as night-watchman, slushy (cook's assistant), painting, helping the supervising technician, or operating equipment on field trips. At times a fourth person was needed to work Russian aircraft, our ships, and other non-routine circuits.

The last operator finishing duty, at about 1 a.m., ensured that RTT traffic was taped up ready for the early morning operator to send, completed radio logs, left information notes, pre-selected antennas, and set up the transmitters and receivers on appropriate frequencies ready for the first schedule four or five hours later. Similar routines occurred at all ANARE stations.

New Hut for Radio VLV

During changeover at Mawson in 1963, a new VLV prefabricated radio operations hut was erected. It was a large building, much more spacious than the original 1954 radio hut. One half was designed to house Morse and voice operations, log book and report writing, and a 'public' counter to accept messages. One quarter was designed for RTT operations, with the remaining quarter equipped as a technical workshop and technician's office.

To some radio staff members, the new hut was a little unsettling in very high winds. Its movement resembled aircraft turbulence when high winds and blizzards screamed under the raised flooring and bearers. The guy wires seemed to fight to hold the building from

Photo: Ken Shennan

Radio VLV, Mawson radio hut, constructed 1963.

Radio VLV. Operating consoles, 1963.

lift-off. In similar blows, the cosy old pioneer hut appeared to hug the ground more tightly and engendered a sense of security.

Nevertheless, the new hut was a welcome addition and allowed the work to be conducted in a more structured way with plenty of room to move. Visible several miles out to sea from the station, the large VLV sign on the front of the building, known to hundreds of expeditioners over three decades, was made by radio officer Tony Warriner and carpenter Jock Davidson. Incidentally, the little pioneer radio hut received heritage status in 1997 along with several other original Mawson buildings of the early 1950s.

In this new environment, RTT was increasingly used, but there were times when operators had to revert to Morse when RTT signals were simply too weak to print. However, this new technology gradually contributed to a lessening need for every operator at the larger stations to possess Morse qualifications.

Communications with Russian Aircraft

In early 1963, a group of Russian fliers visited Mawson. As in the past, Mawson (and Davis) continued to be very much a part of the Russian aeradio 'team', together with Mirny, Molodezhnaya and their aircraft, working on a common Russian air-to-ground frequency of 6244 kHz. The AT20 transmitter was activated many times during the year on this frequency with never a loss of contact. When working Russian aircraft, its master oscillator was always used as the working crystal was not held.

In bad weather, Mawson hosted several 'sleep over' parties of Russian fliers. If stays were imminent, their operators used the station's radio equipment to call Mirny and/or Molodezhnaya to brief them, calling again

prior to departure. CW was used but occasionally they tried voice each way.

The Q-code was extremely helpful for use between land stations, ships, and aircraft. for example, QAL RUZU? *When do you land at Molodezhnaya?* Response, QAL RUZU 1230Z *I land at Molodezhnaya at 1230 hours GMT*, helping to overcome many language difficulties. Russian flying demanded a good deal of time, effort and patience which was always accepted by our people in a happy and co-operative manner.

Russian aircraft radio operator Valentin with the author at Mawson 1963. Li-2 aircraft in background.

On several occasions, approaching Russian aircraft flew very low, not too far above the radio aerial masts, and passed once or twice over the station before landing at Gwamm airfield, tilting their wings in greeting. Very occasionally three, or even four, aircraft flew together, using two-letter call signs such as RA, RB, RC, and RR. Although Mawson usually sent weather observations to one designated aircraft in a group, sometimes the other operators also acknowledged receipt or signalled a brief greeting. At the end of their flights, a short 'thank you' was always sent to the stations.

Despite the so-called 'cold war',

relations between our expeditions were very friendly. On a few occasions personal gifts were exchanged between counterparts, and Russian cigarettes and vodka were sometimes forthcoming. One Russian flight operator, a regular on the run between Mirny and Molodezhnaya, was Valentin (with a difficult surname) whom the operators got to know in the air, and by several visits to the station. Another visitor this year was big Oleg Brok, a Mirny station operator who later served at Molodezhnaya. It was enjoyable working these excellent Morse operators.

(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.)

To be continued *MM*

The Talking Machine and the Railways

Part 1 - The Electric Telegraph

by Peter Brankin

JUST TEN DAYS before the accession of Queen Victoria, the Great Seal was applied to Patent no.7390 of 1837. Number 7390 "Improvements in Giving signals and Sounding Alarums in distant Places by means of Electric Currents transmitted through Metallic Circuits" was the brain-child of William Fothergill Cooke and Charles Wheatstone.

It consisted of five vertical magnetic needles fixed onto a diamond-shaped dial, which was marked with a grid of twenty letters (the omitted letters being C,J,Q,U,X and Z). The letters were indicated by the convergence of two of the needles when an electric current was applied.

In January 1836, Cooke, an anatomical wax modeller, had witnessed a demonstration in Heidelberg of a single line telegraph. He immediately saw its potential and by March had constructed his first telegraph. Professor Charles Wheatstone's experiments on the transmission of sound in rods -coupled with his knowledge of electricity -led to his interest in the telegraph and by the time the two men met in January 1837, he had already constructed 'two or three' telegraphs and had four miles of wire laid out for experimental purposes.

An Outline of the Part Played by the Railways in Britain in the Development of Communications.

First published in 'Transmitting' - The Newsletter of the Museum of Communication Foundation, Bo'ness, Scotland.

The railways were in their infancy. The first public railway, the Liverpool & Manchester Railway, had opened in 1830 and was experiencing difficulties at the Liverpool terminus in Lime Street. It was quite common for trains to be cable hauled in certain sections, often because of the gradients. At Lime Street, the train ran downhill, through a tunnel and into the station, and was winched back up by cable attached to a winding engine. Obviously, communication between train and winding engine was vital.

Cooke saw an opportunity, met with the directors of the L&MR and in January 1837, demonstrated his telegraph. Although they were impressed, Cooke's system was not adopted and he returned to his experiments.

Worried about the possible deterioration of signals over a distance, he contacted Wheatstone and with the impending opening of the London & Birmingham Railway, ideas were pooled and Patent no.7390 became a reality.

The final section of the L&BR (at Euston) was cable hauled, with the winding engine sited at the head of the longest incline in Camden Town, a mile and a half from the terminus.

In July 1837, Cooke and Wheatstone demonstrated first a 4-needle and then a 5-needle telegraph, with the wires encased in a wooden channel. The system, though impressive, was not adopted -possibly because of installation costs, which were estimated at between £400 -£500 per mile.

Success eventually came in June 1838, with the opening of the Great Western Railway. Cooke installed a 5-needle telegraph, using 6 wires running in iron conduit, from Paddington to West Dray ton for a cost of £2,817. 10s.

The system was replaced in 1843 by 2-needle instruments and extended to Slough. Local messages were transmitted -including the birth of a son (Prince Albert) to Queen Victoria at nearby Windsor in August 1844.

The 2-needle instrument required
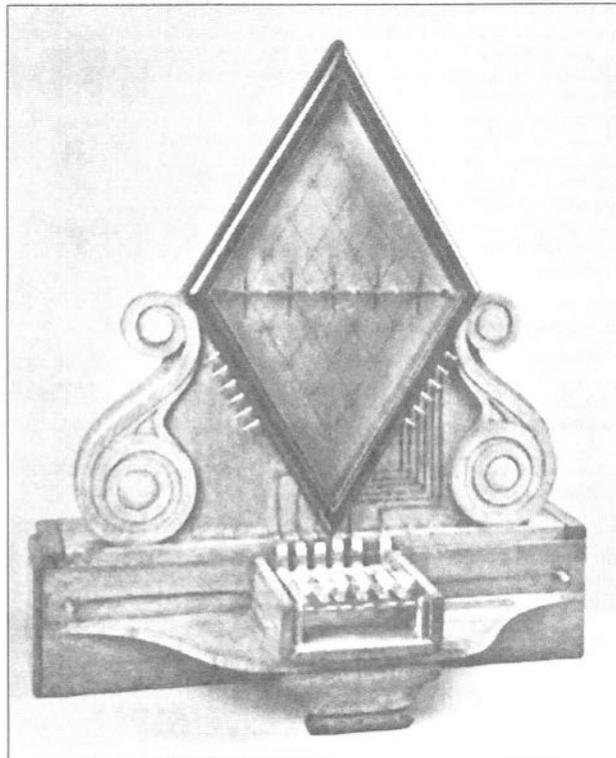
Replica of the Cooke and Wheatstone 5-Needle Telegraph

a specially trained operator: the simple lettering on the dial had been replaced by groups of coded symbols, which were indicated by various movements of the needles.

In 1840, a single needle telegraph was installed on the London & Blackwall Railway (an entirely cable-hauled line in north-east London), where the telegraph was used to pass on simple 'Start/Stop' instructions to the winding engine operator .

This was the first application of the electric telegraph to control the movement of trains.

Other installations soon followed. Later in 1840, telegraph was installed to control the passage of trains through the North Midland Railway's Clay Cross Tunnel. The system was refined the following year to show 'line clear' or 'blocked'.

In his 1842 publication entitled 'Telegraphic Railways', Cooke advocated the use of telegraph to control the movement of trains by intervals of space, rather than time as was then the practice.

The method was simple. The track was divided into sections or 'blocks'; if his block were clear, the signalman indicated that he could receive a train. The block system was adopted by single line railways - on the Norwich & Yarmouth in 1844 and the Norwich & Brandon in 1845. The London & Birmingham's single line branch from Blisworth to Peterborough also incorporated the block system in the same year.

In 1845, the partnership between Cooke and Wheatstone was dissolved after a long, shimmering row. Wheatstone's rights were purchased for £30,000 and assigned to the newly formed Electric Telegraph Company which Cooke, financier J.L.Ricardo and railway engineer G.P.Bidder had established to develop and install electric telegraph.

In 1846, the South Eastern and the London & South Western Railways were both equipped throughout with the electric
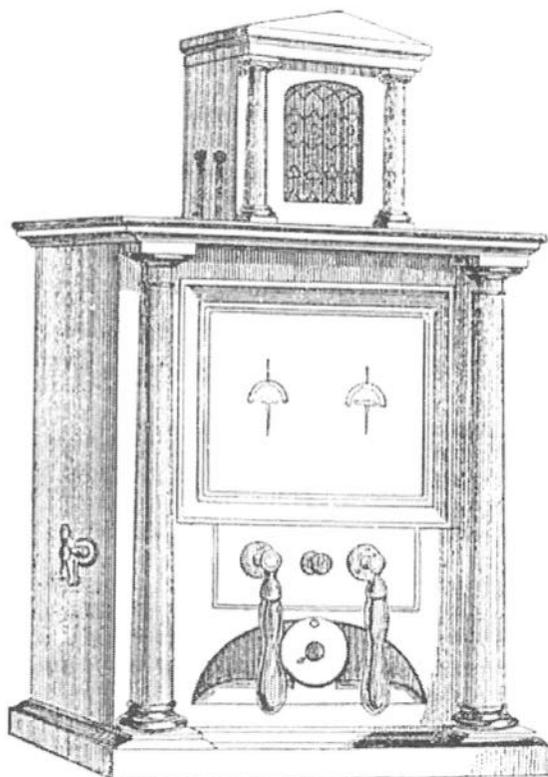
Cooke and Wheatstone 2-Needle Telegraph

telegraph (separate wires being provided on the latter for use by the Admiralty between London and Portsmouth). Telegraph was also installed on the London & Birmingham and the Midland Railways in the same year .

Up to this point, the electric telegraph had been used principally to pass messages and in this respect, was a great advancement in communications. However, its other major role of enabling the safe control of trains (as advocated in 'Telegraphic Railways' was, with only a few exceptions, not being developed. ...

To be continued *MM*

Joseph Junker and His Keys
by Thomas Roth, DL1CQ

The "Junker MT" Morse Key is a fine precision instrument, designed and manufactured by German Navy WWI radio operator and engineer, Joseph Junker. Junker passed away before the end of WWII, early in 1945 and his grave lies in Bad Honnef where the company is still located. He and his wife didn't have

JUNKER

PRÄZISIONS - MORSETASTE D.B.G.M.

mit Grundplatte aus Kunststoff. (Ausführung für Kniebügelhalter)

Type M.T.1

Feineinstellung von Tastdruck und Hubhöhe
Edelmetallkontakte
Funkentstört

Abmessung: 178 x 60 x 60 mm
Gewicht: 0,400 kg
Zubehör: Kniebügelhalter
Anschlußkabel mit Stecker in jeder gewünschten Ausführung

JOSEPH JUNKER
ELEKTRO-APPARATEBAU GMBH. · BAD HONNEF A. RHEIN · FERNRUF 2201

any children, so ownership of the company fell to his wife and the company was run by the Procurist (Deputy Managing Director) until the end of the war.

The Junker Key, type D.B.G.M. is about 1 Kilogram in weight and available in green or grey. The D.B.G.M. type is post-war manufacture. Pre-1945

models will have D.R.P. stamped on the side. These have become quite rare. The platform extends forward of the knob for stability. A filter network is located inside the base.

The Junker company also made a limited run of bug keys which were basically copies of the Vibroplex "Lightning Bug". They are quite rare and expensive. I myself have never seen one.

The photos are of Joseph Junker in the late 1930s, a 1960s leaflet for the D.B.G.M. MT model with leg clip, a 1960s leaflet for the Junker Bug key (*see back cover – Ed*) and a 1970s leaflet for the D.G.B.M. MT version with swivel cover.

The company still exists, but I don't know whether or not they still make the key. Many of them can be found on the surplus market. They were used by the police and German Army and all of us DL hams took our code exam with it.

I have still got mine stashed away somewhere...

Thomas Roth, DL1CQ
Hannover, Germany
th.roth@knuut.de

Joseph Junker

Elektroapparatebau · Fernmeldetechnik GmbH

Präzisions-Morsetaste Typ M.T.
mit Abdeckhaube und Grundplatte aus gezogenem Stahl
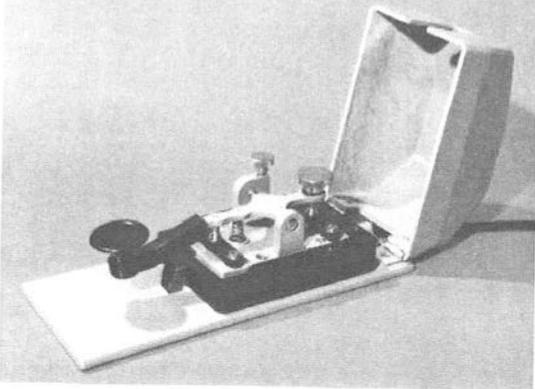
Feineinstellung von Tastdruck
und Hubhöhe
Edelmetallkontakte
Funkentstört

(A picture of the advertising leaflet for the Junker 'bug' key is on the back cover. For other information on Junker keys visit Clive Redfern's website at http://home.earthlink.net/~g4czr/ - Ed)

Showcase-Info Please!

Readers are invited to contribute any additional informationand 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: Wyn Davies
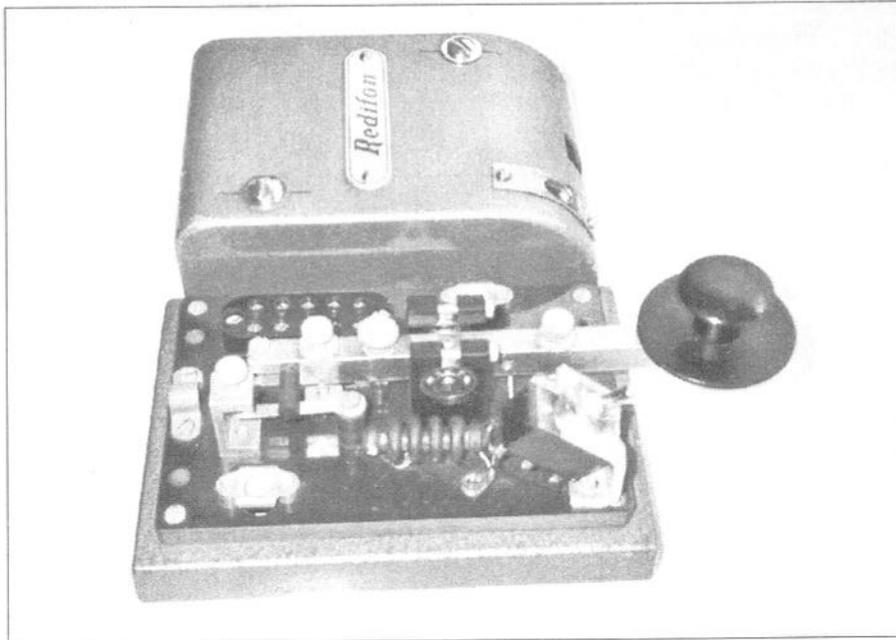
*Redifon marine key with send/receive switch. Note the similarity to the Marconi 365*

Photo/Collection: Wyn Davies
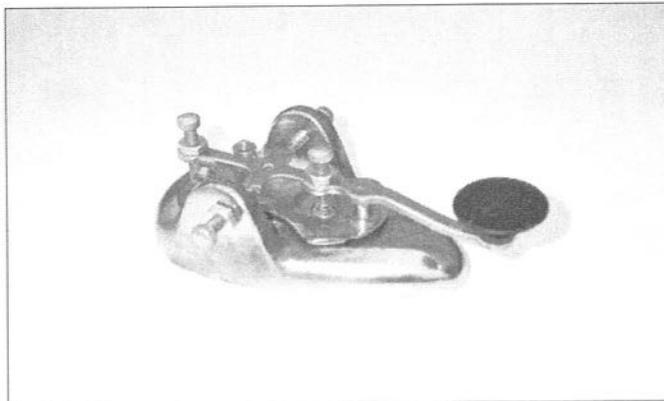
Redifon marine key with send/receive switch. Note the similarity to the Marconi 365
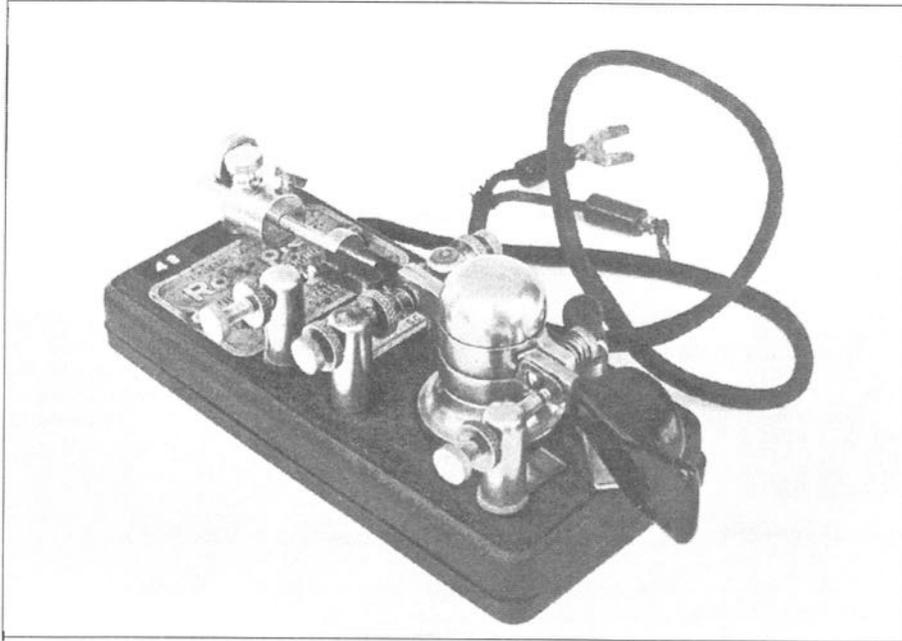
Horace G. Martin "Rotoplex" bug key.

From the collection of Henri Heraud, all the components of this key made of "German Silver". Information requested.

MM Bookshelf

Specialist Books on Telegraphy by Mail Order

ALL WORLD ORDERS ARE SHIPPED BY AIR MAIL UNLESS OTHERWISE STATED

The Victorian Internet by Tom Standage *(MM63)*

The history of the electric telegraph in the nineteenth century, from its beginnings, and the social impact of instant communication on the Victorian world. This book is about a technology that made the world a much smaller place. Enriched with examples and anecdotes of telegraph applications. Soft back, 216 pages.

£8.30 UK   **£8.40 EU**   **£9.30 World**

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

A book of exceptional quality produced originally to accompany a Brussels Exhibition sponsored by a Brussels bank. Illustrated with 240 high quality photographs, 140 in colour, including many rare telegraph instruments. The text includes the history and technology of electricity through to wireless and early television, but a large section of the book is devoted to telegraphy. Without sponsorship, a book of this size and quality could not have been economically possible for such a limited readership - 107 pages, 24.5cms x 29.5cms (9.7in x 11.6in).   **£16.95 UK - £18.25 EU - £21.00 World (US $36)***

Telegraph Collectors Reference CD-2000 *by Tom Perera*
(Also works on the Apple Mac)

An absolute mine of information for collectors compiled from variety of sources including important web pages (See MM70, p11 for details). Users need a PC running Explorer or Netscape web browsers to access the CD. The great advantage of using the CD is that the browser software is used off-line, which means that no phone connection is needed. As a result access is much faster and the CD includes the whole of 'Perera's Telegraph Collectors Guide' and his cyber-museum but with high resolution pictures, many in colour. A draft of the cumulative index of MM is included.   **£9.00 UK - £9.20 EU - £9.70 World**

	UK	EU	WORLD
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
The Best of MM Vol. 1. 77 photos/Illustrations, 60 pages.			
Wake of the Wirelessman by B. J. Clemons	£14.20	£14.70	£17.00
A true story of an early maritime wireless operator			
"Q41" and Beyond by Shirley Lawson	£6.20	£7.20	£7.90
The story of a Wren (Womens Royal Naval Service) telegraphist			

	UK	EU	WORLD
Railroad Telegrapher's Handbook by Tom French	£8.00	£8.30	£9.00
Old-time telegraphy on the American railroads			
Bunnell's Last Catalogue with notes by Tom French	£5.50	£5.70	£6.00
Illustrates and describes the company's many telegraph instruments			
History, Theory & Practice of the Electric Telegraph	£13.95	£14.95	£17.50
(facsimile reprint of 1866 edition) by George B. Prescott			
Watchers of the Waves by Brian Faulkner	£15.00	£15.50	£17.10
A history of maritime coast stations in Britain			
Keys, Keys, Keys by Dave Ingram	£8.50	£8.90	£9.80
A visual celebration of the Morse key			
Marconi's Battle for Radio (children's book) by Birch & Corfield	£5.85	£6.00	£6.80
Illustrated story book. A present for the grandchildren			
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
The Phillips Code - a facsimile reprint by Ken Miller *(MM61)*	£10.00	£10.20	£10.50
Telegraph codes for press reports			

Your Letters

Info Please MM69

The key at the bottom of page 34 appears to be the same as the one I queried at the top page 25 in MM51.

My query led to several replies in MM52 with a photo from Tom Arris showing the original packing, and a letter from Albert Heyes identifying it as being sold by Gamages. There was no mention of a manufacturer.

I have since found two more keys of a similar design but having solid bases and slightly superior brass-work and knobs. One has a round-shouldered contact bridge and the other a square-shouldered bridge.

The latter key has a novel tension control consisting of a screw with a disc at the bottom, which lifts or lowers the pin holding the spring (see photo). This seems rather an elaborate gadget for a cheap key – still no markings or manufacturer though.

Jack Barker
Surbiton, England

Eddystone Bug MM74 P.45

I have owned an Eddystone Bug key for years, a present from G3JCZ and had never thought about it having a serial number.

I turned mine upside down and found "Model S689" and "Ro No 853967" cast in the base-plate but no
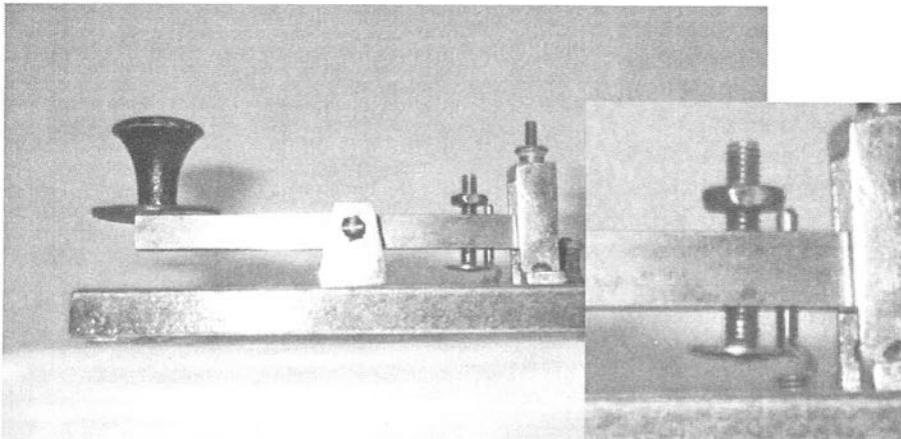
serial number. Then I noticed a number stamped into the strap connecting the dot and dash contacts. The number/letter combination is EZ0660. Perhaps the strap has been turned over on the key owned by the enquirer.

I found the first advert for this key in the magazine 'Practical Wireless', April 1948 p169 at £3-17s-6d but no model number. This was quoted in the May 1948 advert.

I use my Eddystone Bug on most days and being left handed, find it much easier to use than a Vibroplex.

M. Watson, G3JME
York, UK

(Owners of Eddystone Bugs with no serial number - Its worth checking that the strap hasn't been put on upside down. It could also have been dismantled at some time and put back incorrectly. – Ed)

Eddystone Bug Key

Thank you for placing my request for help in MM74. I received several replies mostly confirming that Chas H. Young sprayed the cases grey and not with a crackle finish. They were assembled with components obtained from Eddystone to produce complete bug keys which he sold from his shop. These probably had no serial number on the strip below the chassis.

It is also thought that the name Eddystone appeared on some of the strips below chassis and the Eddystone name on some cases was missing. I hope to hear from more readers perhaps someone can help with the missing bits on my key.

Andrew Humphriss
Leamington Spa, UK

Survival Heliograph

My son discovered the following advertisement for Survival Heliographs in "Shotgun News". They were issued to WWII RAF aircrew for rescue signalling purposes.

The advertisement is by a company called International Military Antiques, P.O. Box 256, Millington, NJ – 07946, USA. Phone +1 908 903 1200.

They have a web site at www.ima-usa.com

They may still be available but it would be best to check first.

John Elwood, WW7P
Phoenix, Arizona

BRITISH WWII PILOT'S HELIOGRAPH SURVIVAL SET

Found in a British Coast Guard Station on the south coast, these are the Original Heliograph Survival Sets issued to all WWII Air Crews for attracting the attention of rescue aircraft. Each set consists of Steel 2" square mirror with a hole in the center, a sighting post with aperture all attached by string to their original small canvas carry bag. Full use instructions printed on the rear of mirror. Bags water stained, sighting post some rust. mirrors excellent. Just what you need when the search parties are looking for you. Extremely rare original WWII British Pilot's Heliograph Survival Set $29.95 (BA1006)
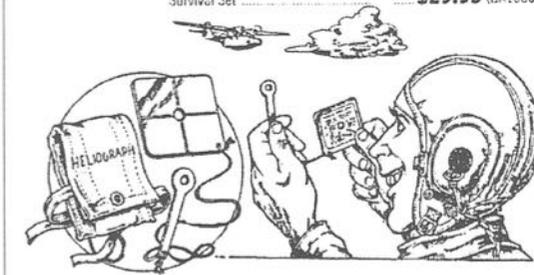
Marconi 365 and Other Keys – MM74

Following Wyn Davies' interesting article on Marconi 365 keys, I thought that readers may be interested in a document in my possession which lists the range of Marconi keys and the equipment with which they were used. I have had it a very long time and can't recall where it came from. In my opinion it's a page out of a stock list, an old catalogue or something similar.

The table has been modified by hand and I do not have an explanation for these changes, nor the meaning of some of the references, e.g. "A/C No."

Can any reader provide additional information?

Guido Roels, ON6RL
Hamme, Belgium

(The list has been retyped for publication. Deleted original entries are included but shown as cancelled. The word following a cancelled entry is written by hand on the original. A/C Nos. marked ** have been changed by hand but the original text underneath is unreadable. – Ed)

LIST OF TYPE NUMBERS RELATING TO MARCONI MARINE EQUIPMENT				
TYPE	DESCRIPTION	USED WITH	DWG No.	A/C No.
88	KEY, TRANSMITTING 5-10 amps in aluminium case with plain make &break for telephone sets.	Superseded by Type 316A	18281	
111	KEY, TRANSMITTING Plain make & break includes S/R switch.	¼ kW emergency set	33620	K.2011
111*	KEY, TRANSMITTING with pillar and arm on barrel.	341	Q.1794	K.2013
111A	KEY, TRANSMITTING with back contacts for operation of ¼ kW set from ship's mains.		34735	K.2011
111A*	KEY, TRANSMITTING Type 111* and 111A combined.	356	Q.2883	K.2013
316	KEY, TRANSMITTING Superseded by type 316A.	506, 503	SK.40999	C.2150
316A	KEY, ~~TRANSMITTING~~ MORSE ~~single make. Same function as type 316, but mechanically improved~~	~~TW.12, 727, 241C~~	D.17610	KEY.18**

TYPE	DESCRIPTION	USED WITH	DWG No.	A/C No.
316B	KEY, ~~TRANSMITTING~~ MORSE ~~as type 316A,~~ with insulated handle ~~for mains voltage~~.	~~For lamp signalling~~	N/D.4709	KEY.19**
365	MORSE KEY single main contact and two back contacts. Specification Z/MB.1113	360, 376, MC.6, MC.13, MC13A, 527/8, 309, 356, 369	D.12840	KEY.20**
365A	KEY, ~~TRANSMITTING~~ MORSE standard key designed as a cheaper edition of type 365 key. Single main contact and two back contacts. Includes one spare set of contacts.	550B, 386, 386A, 387/8/9, 533, 719, 558, 398/9, 381	N/D.1195	KEY.~~3A~~ 21
365B	KEY, ~~TRANSMITTING~~ MORSE similar design to type 365A. Single change-over contacts. Includes filter circuits for key click suppression. Includes spare set of contacts. Supersedes type 971.	"Oceanspan", "Trader", etc.	W.27588 Edn. "A"	KEY.~~3B~~ 22
365C	KEY, TRANSMITTING similar to type 365B but with back contact not connected. Includes circuit for click suppression.	"Albatross"	W.27588 Edn. "B"	KEY.3C
365D	KEY, ~~TRANSMITTING~~ MORSE single change over with filter circuit. Includes spare contacts.	1232	W.27588 Edn. D	KEY.~~3D~~ 23
365EZ	KEY, TRANSMITTING	G.P.	N/S.11313	KEY.27

Letters - continued

International Telegraph Conventions.

I am seeking more info to assist researching early procedures taken into radio usage. Can anyone help me with information on the following:

Regulations to the International Telegraphic Convention, St Petersburg, 1875. I have the Protocols, (the political bits) but the procedures are in the Regulations. These were taken into Wireless Telegraphy in 1903 at Berlin. and in1912(USA).

Regulations to the International Radio Telegraphic Conference, Berlin, 1903. Again the procedures are in the Regulations. The specific procedures and prosigns etc are listed in the Regulations which are at the end of the Conference resolutions etc.

I have the resolutions and protocols etc but the sources I've found haven't bothered to include the Regulations.

I'm sure the archives of St Petersburg, Berlin, London, Paris or Washington and many other locations will have them. It's simply a matter of finding them.

Please contact John W.Alcorn, VK2JWA, 33 Spring St., LISMORE, NSW. 2480, Australia. Phone: +61 02-66215217, Email : jalcorn@nor.com.au

ReadersAds

JUNKER

HALBAUTOMATISCHE MORSETASTE

mit Grundplatte aus gezogenem Stahl. System „BUG"
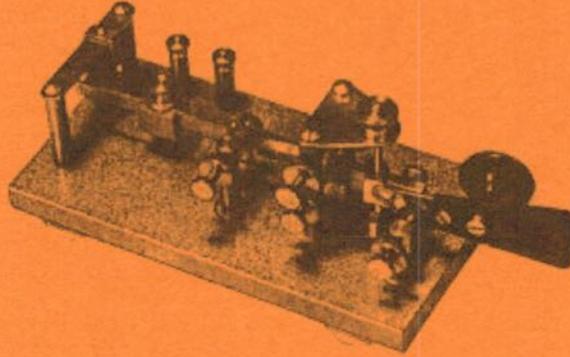
Edelmetallkontakte

Abmessung: 215 x 85 x 80
Gewicht: 1,520 kg
Zubehör: Anschlußkabel mit
Stecker in jeder ge-
wünschten Ausführung

JOSEPH JUNKER

ELEKTRO-APPARATEBAU GMBH. · BAD HONNEF A. RHEIN · FERNRUF 2201

A 1950s advertisement for the Junker semi-automatic bug key - see article on page 36.

A List of Marconi Telegraph Shore Stations in Great Britain.

Available for communication with Atlantic Liners carrying Marconi Telegraphs.

STATION.		BEACON.	TELEGRAPHIC ADDRESS.
Brow Head,	-	Ireland, South-West Coast,	"Care Expanse," Crookhaven.
Rosslare,	-	Ireland, South-East Coast,	"Care Expanse," Rosslare.
Malin Head,	-	Ireland, North Coast,	"Care Lloyd's," Malin Head.
The Lizard,	-	England, South-West,	"Care Expanse," Lizard.
North Foreland,	-	England, South-East Coast,	"Care Expanse," St. Peter's, Kent.
St. Catherine's Point,	-	Isle of Wight, -	"Care Expanse," Niton.

A List of Liners carrying Marconi Telegraphs.

The following Ships and Shore Stations are fitted with the Marconi System:—

Allan Line.—SS. Bavarian, SS. Tunisian, SS. Victorian, SS. Virginian.

American Line.—SS. New York, SS. St. Paul, SS. Philadelphia, SS. St. Louis.

Anchor Line.—SS. Caledonia, SS. Columbia.

Atlantic Transport Line.—SS. Minnehaha, SS. Minneapolis, SS. Minnetonka.

Belgian Mail Packets.—SS. Princesse Clementine, SS. Princesse Henriette, SS. Princesse Josephine, SS. Leopold II., SS. Marie Henriette, SS. Prince Albert, SS. Rapide, SS. Ville de Douvres.

Cie Transatlantique.—SS. La Savoie, SS. La Lorraine, SS. La Touraine, SS. La Gascogne, SS. La Bretagne.

Cunard Line.—SS. Campania, SS. Umbria, SS. Etruria, SS. Saxonia, SS. Ivernia, SS. Carpathia, SS. Pannonia, SS. Slavonia, SS. Caronia, and SS. Carmania (building).

Norddeutscher Lloyd.—SS. Kaiser Wilhelm II., SS. Kronprinz Wilhelm, SS. Kaiser Wilhelm der Grosse, SS. Grosser Kurfurst.

Hamburg-American Line.—SS. Deutschland, SS. Bülcher, SS. Moltke.

Red Star Line.—SS. Zeeland, SS. Vaderland, SS. Finland, SS. Kroonland.

White Star Line.—SS. Oceanic, SS. Baltic, SS. Cedric, SS. Celtic, SS. Teutonic, SS. Majestic.

Navigazione Generale Italiana.—SS. Sardegna, SS. Lombardia, SS. Liguria, SS. Sicilia, SS. Umbria (N.G.I.).

Holland-American Line.—SS. Potsdam, SS. Ryndam, SS. Noordam, SS. Rotterdam, SS. Statendam.

La Veloce Line.—SS. Città di Napoli, SS. Sud America.

A list of ships and coast stations fitted with Marconi wireless equipment - from the International Code of Signals, 1905