

summer 1990
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magazine for morse-telegraphy

nr 16

Morsum Magnificat



MORSUM MAGNIFICAT was first published in Holland, in 1983, by the late Rinus Hellemons PA0BFN. Now published in Britain, it aims to provide international coverage of all aspects of Morse telegraphy, past present and future. *MORSUM MAGNIFICAT* is for all Morse enthusiasts, amateur or professional, active or retired. It brings together material which would otherwise be lost to prosperity, providing an invaluable source of interest, reference and record relating to the traditions and practice of Morse.

SUBSCRIPTIONS: Issues Nos. 17 – 20 (Autumn 1990 – Summer 1991):

United Kingdom: £8.00 per annum, post-paid

Europe, including Eire: £8.50 sterling

Other countries: Surface mail – £8.50 sterling (or US \$14.00 cash)

Airmail – £10.50 sterling (or US \$17.00 cash)

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ISSN 0953-6426

Printed by Hertfordshire Display Company, Ware, Herts.

ON OUR FRONT COVER: A very early spark key built in France. Its make is unknown. In this key, the contacts were immersed in oil to suppress the spark and to provide better cooling. These were called oil keys; the French were apparently fond of this design, and a number of oil keys were built by them. Photo: Murray Willer. Description from 'Foreign and Military Telegraph Keys' by L. R. Moreau W3WRE and M. Willer VE3FRX, *AWA Review*, Vol. 3, 1988.

Hello...

...And may I say a special thank-you to the many *MM* readers who sent messages of greeting and goodwill following the announcement that I would be taking over the editing and production of the magazine.

You will notice some changes in the look of this issue, stemming from the introduction of a desk-top publishing system for typesetting and layout. Some more changes are planned for the next issue, the start of a new subscription year, including a redesigned front cover, but the content of *Morsum Magnificat* will continue in the same style as before, with Tony Smith continuing to play a vital role as Consultant Editor.

Several readers have asked me to tell you something of my background, so here goes. My first interest in radio came when I was about 10 years old, after reading a book called *How it Works and How it's Done*. I then built a succession of crystal sets and simple valved receivers, inspiring my parents to push me in the direction of the School of Marine Radio at Hamble, Hants to train as a seagoing operator.

I joined Marconi Marine in 1950 at the age of 16½, and after a couple of trips on a banana boat and a spell in a north-east coast collier, I spent three years in tankers, before leaving Marconi to join P & O, who had just begun to employ their own Radio Officers.

There I served for several years in cargo ships on the run between Europe and Japan, before moving over to the large and glamorous passenger liners. In 1960, I transferred to P & O shore staff, and continued to work in marine radio and electronics until 1973, when I became a technical journalist.

Whilst I was at sea, the prime mode of communication was manual Morse, though the use of telephony was gradually increasing during that time. Although I very seldom get on the bands nowadays as G3GSR, I enjoy listening, and was pleasantly surprised to discover a couple of years back that I could still pass the receiving test at 30 w.p.m. in the RNARS QRQ run at an RSGB HF Convention.

I collect Morse keys in a very small way – I have about half a dozen ranging from good old-fashioned pounding brass, through a 1950s Japanese 'bug' from my seafaring days, to an iambic paddle.

So, ladies and gentlemen, those are my credentials. I am honoured to be taking over *MM* from such distinguished forbears, and hope that we may all continue to share in our enthusiasm for the ultimate communications mode for many years to come.

Geoff Arnold

News...News...News...News...

UK Novice Licence Announced

On April 19, the British licensing authority, the Department of Trade and Industry, published a final draft of its proposed novice licence (based on suggestions made by the Radio Society of Great Britain) which aims to encourage more young people to take up amateur radio. Work is in hand to organise the training and examination of potential licensees. Training courses will be run by the RSGB.

The first licence is expected to be issued in early 1991. There will be no minimum age for novice licensees and it is envisaged that there will be no licence fee for those under 21.

There will be two licence classes. A Morse test of 5 wpm will be required for the Novice A licence, and licensees will be allowed access to limited frequencies on various amateur bands including HF. The Novice B licence, without HF privileges, will not require a Morse test.

Existing UK amateur class B licensees (VHF and above only) of at least one year's standing will be granted the HF privileges of the Novice A licence if they pass a 5 wpm Morse test.

Good News from the RSGB

The RSGB's experimental CW news bulletins from G3LEQ are now a permanent feature of the GB2RS news service. These are transmitted on Sundays, at 10.00 hrs UK local time, on 7.0475MHz, with identification for the first 5 minutes followed by bulletins at speeds ranging from 30 to 15 wpm.

World QRP Day

June 17 is designated annually by the International Amateur Radio Union as World QRP Day. It is not a contest. The idea is simply to try working with low power.

Many QRP stations will be heard using typical power levels from 5 watts output down to milliwatts. High power stations are asked to avoid interference to these QRP stations – or better still, to reduce power themselves and join in the fun!

Threat to USA QRP Frequency

QRP Amateur Radio Club International's *QRP Quarterly*, April 1990, reports that ARRL has filed a proposal to the FCC for automatic HF operation of RTTY and Data transmissions on frequencies between 7.035 and 7.045MHz. These frequencies are at present part of the USA CW band and include the US QRP frequency of 7.040MHz.

QRP ARCI's Board of Directors has approved a resolution objecting to any effort to earmark 7.040MHz or any other traditional or recognised QRP frequency for RTTY and data transmission. It also urges ARRL to modify its proposal to the FCC and seek frequencies elsewhere in the 40m band, namely in the 7.080 to 7.100MHz region which is 'already a known and used area for RTTY transmissions.'

The Board is concerned that '... the League has taken this action without consulting this or any other group whose members have a well-known history of use of the frequencies which would be adversely affected by the proposal now before the FCC,' and states that it 'will make its feelings known to the FCC, including filing testimony opposing the League's proposal in its present state.'

The ARRL is actually proposing automatic operation in 10kHz sections of all HF bands below 28MHz and in a 20kHz section on 10m (plus '6m and shorter wavelength bands'). According to the *W5YI REPORT* however, the proposal has attracted some strong opposition from the amateur radio data communications community itself, which feels that ARRL should have polled amateurs likely to be affected by the proposed changes.

Comments received by the FCC include the following. WA6PJR wrote: '...The proposal in effect "assigns" exclusive frequencies to the automatic stations. They do not monitor before transmitting.' While other CW sections could also be affected, the greatest concern by US CW operators clearly relates to the 40m proposal. K8KEM commented: 'While there is a need for digital communications... opening up 7.035 to 7.045 in the 40m band to RTTY/AMTOR would totally disrupt CW communications.'

The Morse Telegraph Club (MTC) agreed with this view: 'MTC amateurs maintain daily CW schedules on 7.040MHz... We believe there is incompatibility between the CW mode and that of automatic data transmissions in the same segment of the 40m band... The proposed Rule Making is so patently unsound that it would be a waste of time and effort for all concerned.'

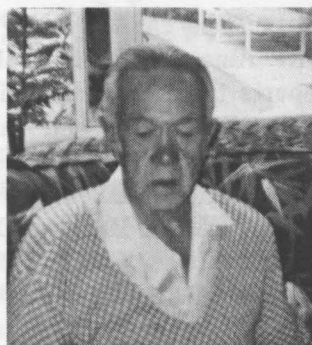
More News on page 35

**Stop
Press**

The latest issue of the W5YI REPORT contains the news that, in response to strong opposition, the ARRL has withdrawn the above-mentioned Rule Making petition.

Morse in the NZ Post Office

by Aubrey Curry



I joined the Post & Telegraph Department as a message boy in 1921 at a small country post office at Rawene, in a harbour north of Auckland, New Zealand. Auckland was our chief Telegraph Office. Our own office was classified as suburban.

There was plenty of telegraphic work. The County Hospital was in Rawene and there were two Australian owned timber mills. Ships from Sydney called regularly to carry timber to Australia so we handled many incoming and outgoing international cables for the company. We handled our own traffic and that of twelve small country post offices, one of which was Hokianga Heads where the Harbourmaster, Collector of Customs, was resident at the Signal Station at the harbour entrance.

Every morning, Monday to, Friday, just before 9 a.m. his urgent weather telegram (UWT) took precedence over other telephone calls to us. The telegram was for 'Weather Wellington' and if it was delayed Auckland would want to know why.

Weather Reports

From this telegram, and many others around the country, weather reports for New Zealand were compiled in the Weather Office at Wellington. We received the current NZ weather report from Wellington soon after noon each day in 4-letter cipher. The report was deciphered and exhibited on the public notice board in our office. There were no radio reports. The telegraph and telephone were the main means of communication in those days.

The Morse line to Auckland was always busy and this provided plenty of scope for me to learn to read the code. We handled a wide variety of procedure messages such as ordinary telegrams (OT), money order telegrams (MOT), British money order telegrams (BMOT), radio telegrams, ordinary overseas cables (cable), Savings Bank telegrams (SBT), all to Auckland.

Coming from Auckland were night letter telegrams (NLT), service telegrams (ST), reply paid telegrams, urgent weather telegrams (UWT),

extra-ordinary telegrams (XOT), press telegrams (PT), and greetings telegrams (GTG). During the Christmas period the lines would be jammed with the latter. When received, these types of telegram were written on different types of special pads, with carbon copies for the record, so we had to keep a fair variety of pads available for use. Incidentally, we also received coded bank telegrams and many telegrams in the Maori language.

Easier to Read the Relay

The long lines to Auckland over rough country, in wet weather, presented us with poor signals at times, making reception of the Maori language difficult and the lines wouldn't stand up to a 40 wpm man. On many occasions we would call Whangarei, our intermediate station, to adjust our signals which were sometimes easier to read off the relay than the sounder.

The Chief Telegraph Office in Auckland, and other Chief Offices throughout New Zealand, sent LS (calling all stations) on all Morse circuits at 3 minutes to 9 a.m. every morning, Monday to Friday. This was sent for 3 minutes then right on 9 a.m., the word TIME, and from this signal all Morse offices in New Zealand set their clocks. Once, when on holiday in Auckland, I visited the Chief Office before 9 a.m. and experienced the absolute din of many Morse keys pounding out LS, and TIME, all in excellent rhythm with each other.

First Live Telegram

So started my introduction to Morse which always fascinated me. Hearing all these good operators made me strive to learn to send copper plate code. Sometimes we were allowed to go back in the evenings to practice with chaps at other offices. I learned message procedure and with constant practice on my own rough outfit at home I soon became proficient. How thrilled I was when one day I was allowed to send and receive a telegram on the live circuit.

Around this time I became really interested in wireless Morse signals. With a simple crystal set, some excellent Brown's 10 000 ohm headphones and a 40ft high 7/22 copper wire aerial I spent many happy evenings learning radio procedure. Once my headphones were on I was in another world – the world of Morse!

I picked up VIS, Sydney, VIB, Brisbane, various stations across New Zealand, and from across the Pacific, such as VPD, Suva, and VLC, Chatham Islands. In those days many ships sailed to and from NZ and I learned many of their calls. On one occasion I heard a radio telegram from a ship en route

for Auckland sent to a family at one of our country post offices. Sure enough, after 9 a.m. the next morning we received the radio telegram from Auckland.

The Hard Way

At that time I was still a humble message boy with an annual salary of £52. I gained my Morse Cadetship the hard way, not by going to a Morse school but by passing the exam in the suburban office, later being promoted to Telegraphist, then Senior Telegraphist.

Working in suburban post offices involved a wide variety of work in addition to telegraphy. This included telephone connections, savings bank and money orders, postal and counter work, office accounts, telephone equipment and stores, births deaths and marriages, motor registration, census, and so on, all requiring a knowledge of the appropriate rules and regulations.

Aubrey enlisted in the Second New Zealand Expeditionary Force in July 1940, serving in the army until June 1945. He had an eventful war through several campaigns, including escaping from Greece to Crete by boat with a handful of others to evade capture by the enemy. He operated a variety of signal equipment during his service, including the ubiquitous Fullerphone which often got through in the North Africa campaigns when the teleprinters failed. – Ed.

Postmaster

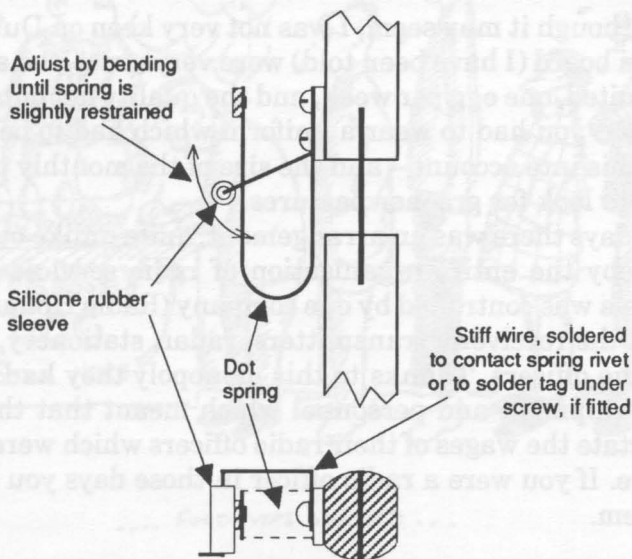
I rejoined the post office as a Postmaster on my return from the army although in the event I didn't make a career of the post office moving on to other things within a year. One of our staff was interested in Morse so I practised with him for some months and he became an excellent operator. He then went to London to join the Marconi School of Wireless, becoming a ship's radio operator. It seems strange, my dearest wish was to have become a ship's operator. I never made it, but it was some small consolation that my friend did succeed with my help.

In 1978, a post office line faultman came to reside next door to me. He heard I had been a Morse operator and asked me to help him increase his speed so that as an amateur radio operator he could work overseas stations. He failed his exam through nervousness, sat again and passed without trouble. I still have a key and sounder and still listen to Morse from around the world at 84 years of age. ■

Bug Dot Damper

by Noel T. J. Bevan GW8IH

In 1946 I produced a pivotless bug that used a vertical torsion spring, and this key was used constantly until going QRT in the 1950s. It was finicky to set up, but once adjusted to suit the user was perfect for long periods, with very light touch and small gaps. The other unusual feature about this key was the provision of a dot contact spring damper, consisting of a short length of wire and a piece of rubber sleeving. This damper was a very effective method of preventing the scratchiness of the dot contact often associated with traditional bugs.



The dot contact spring arrangement used in traditional designs, together with the weight of the dot contact, forms a vibrating spring and mass assembly and many people, including myself, have stuffed pieces of sponge rubber in the contact spring elbow to try and damp out this effect. My wire and sleeving arrangement was much more effective. ■

REFLECTIONS

from Uncle Bas – 11

My Last Voyage

by *Bastian van Es* PA0RTW



I have not spent a lifetime at sea but nonetheless I spent a good many years on the decks of various small and large vessels. Beautiful fast bauxite carriers as well as small rusty Norwegian freighters, old Liberty-ships from WWII and Greek derelicts which did not deserve the title of sea-going vessel.

Strange though it may seem, I was not very keen on Dutch ships. The rules on board (I have been told) were very strict, the amount of food was limited, one egg per week, and the quality not outstanding. On top of that you had to wear a uniform which had to be spotless. Taking all this into account – and the size of the monthly pay-check – I decided to look for greener pastures.

In those days there was an arrangement, quite unlike other countries, whereby the entire organisation of radio services on board Dutch vessels was controlled by one company (Radio Holland). They took care of the receivers, transmitters, radar, stationery, etc., and also the radio officers. Thanks to this monopoly they had complete control of equipment and personnel which meant that they could, and did, dictate the wages of their radio officers which were actually very meagre. If you were a radio officer in those days you could not get past them.

No Vacancies

There were two other companies who had radio operators of their own, in the towing and salvage business. However, they paid so well their officers stayed on for ever so vacancies were very rare.

Despite this situation not many youngsters had the courage to embark on a foreign ship. Strange things were told of these foreigners, quite apart from the strange things they ate.

The usual Dutch dinners, potatoes, meatloaf and cabbage, were as well-known on these ships as snowballs in the Sahara. Personally I did not have any problems with foreign habits and the exotic food they consumed came as a delicious surprise to me.

Languages

So far as languages are concerned you got used to them. Besides, every seaman knows, more or less, 'thee Eenglieesh'.

Greek is another matter altogether, although as a radio officer you are not expected to give lectures in that language about complicated



.... FOOD WAS LIMITED ...

economic or social theories on a regular basis. Admittedly, if you can it is a point in your favour!

The ship in which I made my last voyage was Greek although registered in Panama. The details of this journey are still clear in my memory, quite naturally, because they were my last days at sea – and during this trip I had more operating practice than I experienced in all my previous years as a radio operator.

In Greek

We took on coal at Norfolk, Virginia, and were expecting to discharge it in Rotterdam. Almost immediately after leaving US territorial waters I received a cable of over a hundred words from SVA (Athene Radio). In Greek, of course.

My knowledge of that beautiful language never got beyond 'Alpha and Omega' so the contents of the cable were completely secret. However, my capacity to copy Greek Morse was not at all bad because to the captain the story was crystal clear. Which was hardly surprising, he being a Greek from Athens. When I handed him the message form he read it. He began shouting and foam appeared around his mouth. I assumed I was the cause of his bad temper!

My Fault?

What was it? Errors in copying? Badly written Greek? Tremendously frightened, I edged behind the operating table in the radio shack. The captain, however, noticing my nervousness, burst out laughing. He explained in broken English that I was not the cause of his outrage but the man in Athens, the owner of the ship.

The message contained the information that the ship had been sold to a Chinese owner in Singapore. If the crew were willing to stay on board and sail the ship to Singapore they could do so for half-wages.

The Greek captain loved Chinese food, which by the way was served quite frequently on the *Georgios Siederatos*, but after receiving this cable he would have gladly put all Chinamen in a bowl of 'Peking Soup'.

Heavy Traffic

For the entire voyage to Rotterdam, where we had to get rid of our cargo before leaving for Singapore, I was almost constantly in the radio room, receiving and sending bundles of cables to and from London, Athens, Singapore and New York. All of this in either Greek or English.

Anyone who is familiar with the Morse code knows that it is easier to send than receive. Another handicap was the radio station in Singapore. At that time propagation conditions between the Atlantic and the Far East were quite poor. On top of that, the operator in Singapore was not a genius. He had a poor knowledge of the Morse

code and it was almost impossible to get him to change frequencies or bands.

After an exhausting voyage and plenty of rough weather, the Dutch coast came into view. Then, one hour before entering port, we were told to proceed to Hamburg.

One More Trip?

By now the captain was satisfied that his 'sparks' knew the difference between dots and dashes and tried to persuade me to stay on for the trip to Singapore. He even offered me higher wages while the rest of the crew had to make do with lower pay. It must be said, however, that in those days radio operators, beginners or experienced, were hard to come by.

I did not accept the captain's offer and went home as quickly as I could. It had been my last seagoing voyage. ■

Veldt Jynx Grimps Waqf Zho Buck!!

A pangram or holoalphabetic sentence is a sentence containing all the letters of the alphabet. Probably the most well known is the 35 letter sentence 'The Quick Brown Fox Jumps Over The Lazy Dog' which is often used in teaching keyboard operating and the Morse code.

The Guinness Book of Records quotes the shortest possible pangram, i.e., using all 26 letters of the alphabet once only, as that shown in the heading of this article. It purports to describe the situation in which 'a wryneck woodpecker from the grasslands of Africa climbed up the side of an ox which is grazing in Muslim-owned land'.

However, no mention is made of an equally short pangram devised by Claude E. Shannon, the father of Information Theory and a major contributor to the concepts of structuring digital computers. Shannon's pangram is 'Squdgy Fez, Blank Jimp Crwth Vox'. All these words can be found in the *Oxford English Dictionary* and, when used in the correct context, produce a meaningful statement.

You could spend a quiet weekend just trying to determine which of the many interpretations of 'blank' and 'jimp' (jump) apply in between using the pangram for CW or computer keyboard practice. (Tom Mansfield G3ESH, in *Groundwave*, journal of Wimbledon and District Amateur Radio Club.) ■

I Learned my Morse With a Knife and Fork

by Tom Lloyd G3TML



The scout master was impressed and asked me where and how I had learned my Morse. I replied 'At home with a knife and fork.' For some seconds he did not reply and then said 'Well – it's very good'. I had a sneaking suspicion that he thought I was pulling his leg. In fact it was perfectly true and until I joined the scouts I had neither seen a Morse key nor heard a 'buzzer'. Today there are many aids to assist the aspiring amateur operator to learn the Morse code. Apart from direct instruction under a tutor armed with key and oscillator the pupil has a selection of excellent practice transmissions on the amateur bands and, if the cost can be met, there are the black Japanese boxes which produce perfectly formed Morse at predetermined speeds.

'You Can Read Anything'

When my father 'took the Queen's shilling' and enlisted in Queen Victoria's army, volunteering for the Royal Welch Fusiliers towards the end of the last century, only the first of the above options was available and even that was modified by the absence of an oscillator. Instead, the receiving instrument used was the 'sounder', a device remembered by many an old timer but which is rarely, if at all, used today. Many who trained with and used this device devoutly affirm that 'If you can read a sounder, you can read anything'.

For those who are unacquainted with the sounder it is basically a pivoted horizontal bar which rocks about its fulcrum in response to the incoming signals. As each end dips it hits a metal stop and so produces a click. Each Morse character produces two clicks and the

time interval between them differentiates the dots, dashes, and character/word intervals.

Initial Training

One of the earliest army trades for which my father trained was that of signaller. This meant learning the code and using it with sounder, flag, lamp and heliograph. The initial training was indoors with key and sounder. This was interspersed with outdoor drill and 'fatigues' and at the end of each day's training the recruits were usually very tired and ready to take a rest before beginning the routine of polishing and pipeclaying in preparation for the rigorous inspections of the following morning. Nevertheless, there were those keen chaps who wanted to practice their code even in their spare time. But in those days the scarlet coated peasants were not trusted with government property and all equipment was securely under lock and key in the stores to where it was returned after each training session. So the enthusiasts used apparatus which was always available, and in every soldiers' knapsack. They used their knives and forks.

Simple Method

The method itself is delightfully simple. Starting with a fork lying on a table, with its tines pointing to the right, it is rolled with the left hand a quarter of a turn so that the tines now lie one above the other, and the fork held down firmly against the wooden table top with the left hand. Finally a table knife is placed with its blade between the tines of the fork with the right hand. Lifting and dropping the knife blade now produces the same clicks as those generated by a sounder and the table top acts as a sounding board.

Many years later, long after my father had ended his military service, he was seated at his dining room table with his children of whom I was the youngest. My brother, seven years my senior, was telling him how he was learning the Morse code with the local scout troop which he had recently joined. With a view to helping my brother to obtain some practice in the home my father recounted the above tale and demonstrated with his own utensils. I was fascinated by this if not completely understanding what it was all about. On the other hand, my brother was not impressed as the sound was different from the 'buzzer' that the scout master used.

Not Taken Seriously

By pestering my brother I eventually obtained a copy of the characters for the letters and numerals, but found that there was a lack of co-operation from my family – they didn't take the baby of the family seriously. Not until my father, some time later, found that I had learnt most of the characters did I find someone to send to me and to correct my faulty rhythm.

My brother never mastered the code: he lacked the necessary patience and drive. I never lost my enthusiasm although it was some years before I was old enough to join the scouts and to embarrass the scout master, albeit unintentionally. ■

Tom Lloyd would be pleased to hear from anyone else who learned the code in the same way. His address is 6 Gladstone Road, Spondon, Derby DE2 7JJ. Tel: (0332) 666181.

Readers Write...

The Walters Key

I was interested to see the Walters key in MM15 (page 27). During 1936/37 the Liverpool RSGB Group used to meet at the Territorial Army Centre in Mason Street, which was the HQ of 55th (West Lancs) Divisional Signals, TA. The P.S.I. was the (then) Sgt Major Jack Drudge Coates, G2DC, now a silent key. The room in which we met contained a number of the Walters keys, which were quite good. There are also examples of these keys in the Royal Signals Museum at Blandford.

Gus Taylor G8PG

Vibrator Key

The key (Fig. 4) on p.27 of MM15 is part of a British Army (WWI vintage) field telephone Type D, Mk III or MkIV. The buzzers are not electrically independent but form a polarised buzzer and a microphone transformer combined.

The unit illustrated fitted into the top of a small metal (original model brass) or ebonite case which also held batteries, and this plus a telescopic handset and separate watch-type earpiece fitted into a leather case. The buzzer was used for calling the distant end, and for Morse telegraphy through broken or leaky lines when the loss was too high for speech. *John Packer, Porthcurno Telegraph Museum.*

SHOWCASE



Marconi keys and other collectors' items

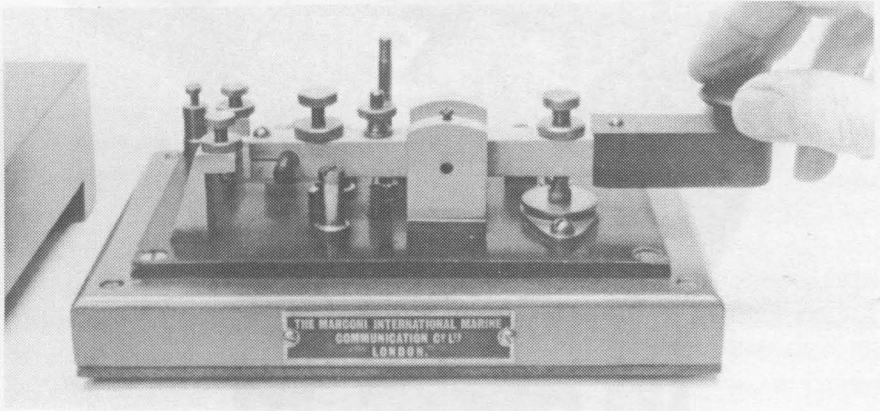
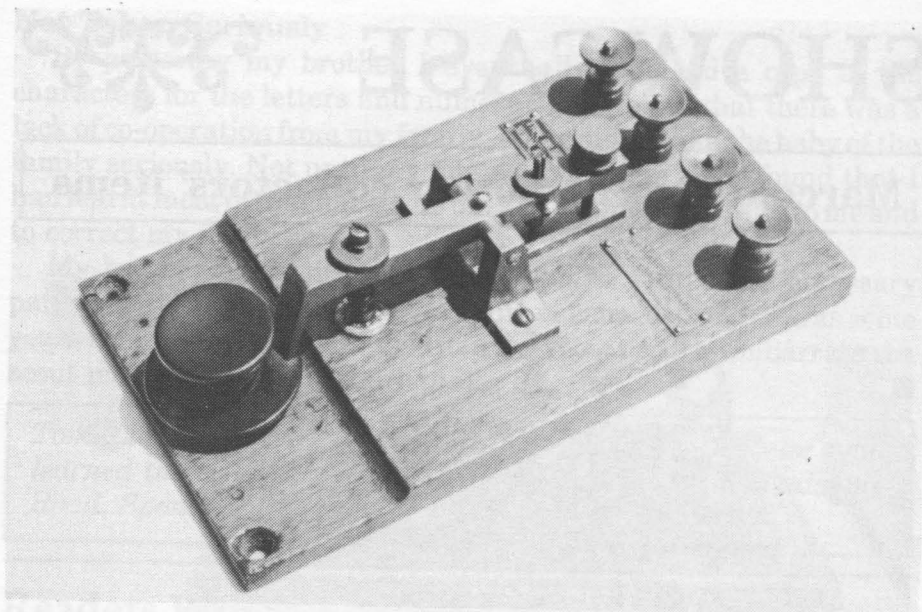


Fig. 1. Marconi, model 365. (Classic Marconi). Insulated cross bar at rear of lever operates make-break contacts. Collection/Photo: Murray Willer VE3FRX



*Fig. 2. Marconi key used at Drummondville, Quebec, 1926-1963.
Collection/Photo: Murray Willer VE3FRX*



Readers will
The Walters key
I was interested to see the Walters key in MM15 (page 27). During
1936-37, I had access to the Walters key, and I was able to
determine that it was a key of the type used by the
Jack-in-the-box cipher machine.

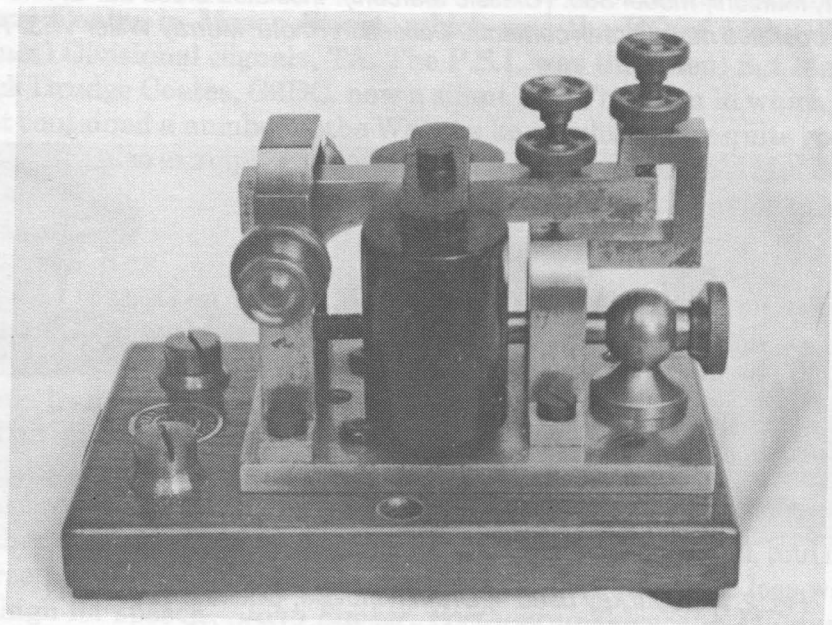


Fig. 3 (Facing page, top). Canadian Marconi key used on the Great Lakes in the 1920s and 1930s. Collection/Photo: Murray Willer VE3FRX

Fig. 4 (Facing page, (bottom). Sounder, A.T.M. Co. Ltd, Year ? Used on Palestinian Railway system. Collection/Photo: Alex Vilensky 4X1MH

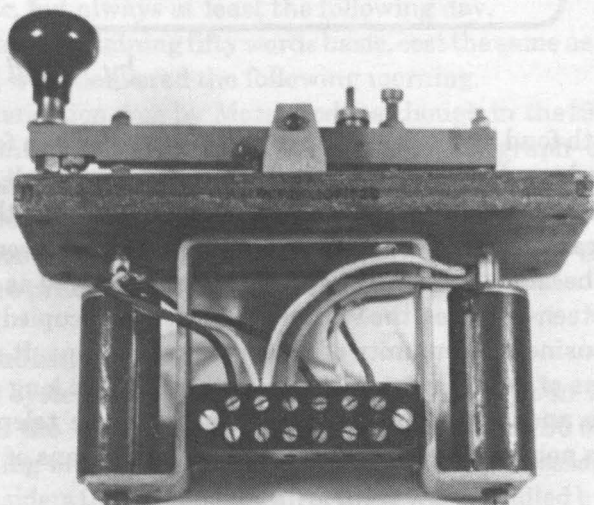


Fig. 5. Air Ministry combined key and sounder. Information wanted on this instrument. Please contact T.S. if you can help.
Collection/Photo: Tony Smith G4FAI

Egyptian Telegraphs

There are two telegraph-systems in Egypt, the Egyptian and the English. Messages within Egypt may be sent only by the former, which has 200 stations, of which about 30 are open day and night... Telegrams may be sent in any European language, except from the smaller stations, where Arabic messages only are accepted. – Telegrams to Europe should be sent by the English Eastern Co., via Malta... A telegram from Great Britain to Alexandria costs 1s. 7d. per word; to other parts of Egypt 1s. 10d., 2s., 2s. 3d., or 2s. 6d.

(from Baedeker's Egypt, 1902)

Memories of



by Alfred C. Stevens

I look back with fond memories to the day in 1919, when as a fourteen-year old, I was hired as a Western Union messenger boy in a small city in lower New York State, starting me on a ten year association with the telegraph business. I became fascinated with Morse telegraphy, and through constant practice soon became sufficiently proficient to be employed as an operator.

In the nineteen-twenties, the Western Union office occupied a prominent place in the business community of most cities and towns. It provided the primary means of rapid communication, both short and long distance, for both business and private citizens. The long-distance telephone, while available, was not widely accepted as a dependable means of communication.

Two Companies

Several classes of telegraph service were rendered by one of the two companies in the USA who competed for the business – the Western Union and the Postal Telegraph. The former, and by far the larger, by agreement with most of the nation's railroads, utilised the railroads' rights-of-way for their telegraph lines, and their railroad stations for their offices, in many cases utilising the same facilities and employees for handling railway and commercial traffic. As a consequence, Western Union was able to have an office in any community having a railway station, thus making their service almost universally available. Western Union, of course, also had their own offices in most cities.

The Postal Telegraph Company, on the other hand, was restricted to having their own offices and wire facilities, and thus principally served only the larger cities. Postal Telegraph also had rather extensive submarine and wireless facilities which were not generally available through Western Union.

Short Telegrams

Telegraph service was generally available to the public in the form of fast telegrams and day letters. Telegrams were usually short, ten words basic, and were delivered within a few hours of filing. Their cost for the first ten words varied from ten cents to \$1.20, depending on destination within the USA. Day Letters, basically 50 words in length, cost one and a half times the telegram rate and were usually delivered the same day, depending on priority traffic, but always at least the following day.

Night Letters, containing fifty words basic, cost the same as the ten-word telegram and were delivered the following morning.

All communication was by Morse code, although in the 1920s, Teletype and page printers were beginning to appear. Telegraph circuits were maintained not only between telegraph offices but in all newspaper, stock-broker and major commercial centres. These were usually operated by Western Union or Postal Telegraph, but in some cases the telegraph operators were privately employed.

Massive Handling Capacity

Telegraph systems involved tremendous investment in facilities and manpower. In the 1920s, there were in the USA about 30 000 telegraph offices, handling in the neighbourhood of 200 000 000 messages per year. When one considers that practically all of these were handled by Morse code, one cannot fail to be impressed with the importance of the system and code invented by Samuel F. B. Morse in the nineteenth century.

The basic telegraph system was of course the simple one-wire arrangement using ground return, with battery, key and sounder in series at each end of the system. Since this simplex system permitted only one-way communication between two operators, it limited the capacity of each circuit to what two operators could handle. Therefore, in 1853 a system of Duplex telegraphy was invented and by 1868 came into practical use.

Basically the Duplex System utilised the reversal of current in one direction, and the control of current density in the other direction. Thus one operator, when sending, caused the flow of current to be reversed in accordance with the position of his key, actuating a polarised relay on the receiving end, but not affecting the current value in the line. The operator on the other end caused the current to increase and decrease between limits, depending on the operation of his key. On the receiving end of this circuit, a differential relay, actuated by the changing current, would cause the sounder to respond.

Thus transmission could be maintained in both directions simultaneously without interference and the telegraph line could then accommodate two operators at each end, doubling the capacity of the line.

Quadruplex

In 1874, Thomas Edison devised the Quadruplex System, which in effect combined two Duplex Systems, thus quadrupling the capacity of a single telegraph circuit. For long-line operation, repeaters were introduced at intervals, and this system was widely used right up until the advent of electronic systems of signalling.

Incidentally, Thomas Edison in his younger days was a Morse operator, which prompted his early interest in inventions relating to telegraphy (see *'Tom Edison, Telegrapher'*, MM1 – Ed.). He was an expert operator himself to which I can attest since I attended a dinner in his honour in New York City when he demonstrated his ability as an operator, and when I had the privilege of meeting and talking with him.

While these systems required an amazing multiplicity of polar and differential relays, all actuated electromagnetically, and requiring careful and constant adjustment to accommodate varying weather and line conditions, the Duplex and Quadruplex Systems were widely employed and were eminently practical.

To give some idea of the extent to which one railroad alone employed the Morse telegraph, the Northern Pacific Railroad, which operated over 6000 miles of track in central and western USA, maintained circuits over its entire system, employing Simplex, Duplex and principally Quadruplex systems throughout.

Press Work

My own experience as a Morse operator was largely gained in connection with the transmission and reception of press dispatches. Although I worked at Western Union's main telegraph centre in New York, handling commercial telegrams, I was more frequently assigned to one of the New York newspaper offices, receiving press from throughout the USA, originating with the Associated Press, International News Service or United Press organisations.

Also I was frequently sent out to the scene of newsworthy events, such as major sports, court trials, golf tournaments, prize fights, football games, political events, etc.

Press work was always very challenging to me. Most of those press

circuits were operated at rather high speeds, employing liberal use of the Phillips Code of abbreviations, making it feasible to maintain speeds of over fifty words per minute hour after hour. On the receiving end, in the newspaper office, the receiving operator usually copied the dispatch on a typewriter, cutting a wax stencil, and making six carbon copies, all assembled in a 'book' in his typewriter, or 'mill'.

Elite

Stockbrokers' wires were also the scene of very high speed transmission, requiring specialised knowledge of the stock market and its operations. Broker operators, as well as the best press men, were often considered the elite in the fraternity of Morse operators.

Also, in the handling of commercial telegrams, some circuits, notably in the Postal Telegraph, maintained what were termed 'bonus' wires, where operators were paid on a bonus basis for high speed handling of commercial traffic.

Until the advent of semi-automatic keys, such as the Vibroplex 'bug', hand sending was a highly developed art, and was generally employed right up to the 1920s. Good hand senders could attain remarkable speed, but over time, most developed what was known as a 'glass arm', eventually partially crippling the sender's hand.

Correct-time Service

Before I leave my reminiscences as an operator, I hark back to the local telegraph office where I started as a messenger boy. It provided a number of services in addition to the handling of hundreds of telegrams daily. For one, it provided a correct-time service by installing in many local business establishments clocks rented by Western Union which, by electrical connection with the local telegraph office, were kept synchronised with a large Master Clock. This was regulated by a one-second pendulum, and was usually electrically wound.

Each noon, time signals from the Washington Naval Observatory were received by telegraph. The local Morse operator would compare his local Master Clock with the time signal and correct it if necessary. Periodically the Master Clock would energise a correcting signal to each of the rented clocks in the community, assuring their correct time. This service was popular with business establishments and served as a reliable source of income to the Western Union Company. It continued until the advent of the telechron motor and regulated electric power frequency.

Special Services

Another service, not remembered by many people today, was Messenger Service. This was available to anyone who might call Western Union and ask for a messenger boy to run any kind of errand. At about this time Western Union sought to advertise its various services, such as ordering flowers by telegraph, sending money, singing Birthday and Anniversary greetings, etc. As a part of this advertising effort the Company devised a series of stickers which were to be applied to telegrams to carry a thought appropriate to the telegram.

Among the advertised services, of course, was the Messenger Service. On one occasion we received a telegram congratulating a young couple on the birth of a baby girl. In the spirit of the advertising effort the clerk in the telegraph office applied to the telegram what he thought was an appropriate sticker, which read 'When you want a boy, call Western Union'.

Wireless Memories

Enough of my Western Union days. I also worked as a wireless operator, using the International or Continental Code. At that time, equipment was, by today's standards, very crude. Transmission for ship-to-shore traffic was largely by spark, utilising rotary spark gaps or quenched gaps. In the case of rotary gaps, the synchronous gap was the most desirable, producing a clear tone of the frequency of the power source. In many marine applications, this was 500 cycles per second.

For long-distance transmission, the so-called continuous wave system was usually employed, using as the power source either the Alexanderson alternator or the Poulsen arc. These systems produced a continuous sine-wave signal. Keying was accomplished by changing the frequency of the outgoing signal (see *'The Arc Transmitter'*, MM7. — Ed.). Reception was effected by beating the incoming signal against a local oscillator, sometimes by the use of a mechanical interrupter and later by means of an electronic circuit.

Most transatlantic communication was conducted by very long-wave transmission on 17 000 metres. Stations well known to us in America were POZ at Nauen, Germany, and the one at Caernarvon, in Wales.

In the realm of Ham Radio, the American Radio Relay League was very active in promoting the developing art, and conducting international tests of DX. I well recall the successful attempts at transatlantic ham transmission around 1923, when spark transmitters on both sides of the Atlantic were successful in establishing contact. ■

Morsum Magnificat

INDEX TO ISSUES Nos. 1 – 16 (Autumn 1986 – Summer 1990)

We hope that you will find this index of assistance when you are trying to locate that half-remembered article from some past issue of *Morsum Magnificat*. In future, we plan to bring you an annual index in the Summer issue each year, which will make it a rather more manageable size.

In order to get sixteen issues-worth of index into this magazine within a reasonable number of pages, we've had to print it in a much smaller type than we would wish. We realise that this will pose a problem for readers whose eyesight is not what it used to be, and to them we offer our apologies. If you would like a larger copy of the index, printed on A4 size pages instead of the magazine's A5 size, please send your name and address and two 15p postage stamps (or two International Reply Coupons for overseas addresses) to cover costs, to Morsum Magnificat, 8A Corfe View Road, Corfe Mullen, Wimborne, Dorset BH21 3LZ, England, marking your envelope 'INDEX'.

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Forbidden Bugs

by Stan Williams G3LQI



The article in *MM13* by Colin Waters G3TSS, about the Eddystone bug key brought wonderful memories flooding back. Between October 1954 and January 1957 I was an RAF Telegraphist II stationed on Gibraltar. My ham call was ZB2Q, but the RAF callsigns were GFG and MLU (I'm not too certain about the MLU, it might have been MLJ). The W/T cabin on Gibraltar was I believe, the largest one in the RAF at that time. A number of the point-to-point links were with civil stations, and one in particular was with Seville (ECE), Lisbon (CSZ), and Tangiers (CNC). They all sounded, then as now, lovely callsigns to send, including GFG. Virtually all the traffic on this network were aircraft movements or weather reports. The other stations were of course civil operators, and I seem to remember they were paid by the amount of traffic that they transmitted. Consequently they all used bug keys, but we RAF operators were forbidden to use such things. Something to do with the transmitter relays not being able to cope with the speed, we were told. It is easy to imagine how frustrating it all was having these other guys belting messages out to us at 30+ wpm, and us having to pound the brass type 'D' key in reply.

No Repeats!

This link was special and different in every way, and therefore only the senior operator of each watch (A, B, & C) would be allowed on it. An example of the procedure would be Seville calling GFG simply as 'G'. The response from Gibraltar would be 'dit', and away Seville would go with the message, with Gibraltar receipting with another 'dit'. That was the procedure used by all the stations on that net. Lord help you if you requested any repeats! After a while I became the senior op on my watch and therefore the operator on this net. The W/T cabin comprised some twelve operating positions,

complete with R1475 receiver, 310 control unit, and type 'D' key. The 310 was used to switch the T1509 or SWB8 transmitter keying line ON at the top of the rock at Middle Hill, where the TX antennas also were sited. This keying line had to be switched on before the operator could send, and then would be switched off again when he had finished. I well remember one occasion a sprog operator coming on watch and insisting that he relieve me, telling me that he had been the top student operator at 3 Radio School, Compton Bassett. All this was in spite of my advising him not to try this particular net to start with. He sat down and made himself comfortable whilst I gave him various bits of information. During this time one of the other stations began calling 'G'. I told the op that the 'QRM' was in fact one of the stations calling us with a message, so he switched on the 310. Some of these units had a habit of sending a 'dit' when being switched on or off. This particular one sent a 'dit' when being switched on. Away went the other guy with his message. You will no doubt be able to imagine the rest, suffice to say our sprog operator wasn't on the net when I returned for the night duty!

Enter the Bugs

After some time we three operators found out about side-swiper keys, and I remember making one for my own use, with a hacksaw blade, and parts of a relay from a T1509 transmitter. However, this was still a long way from what we all really wanted in order to be on equal terms with ECE, CSZ and CNC. One of the other operators had a Vibroplex, which he bought from one of the Seville operators when on a visit to ECE. I managed to get hold of an Eddystone bug from somewhere, and after some practice, converting from the side-swipe, began using it on the circuit during the evening and night duties.

Everyone Happier

All the rubbish about the relays not being able to take the speed proved to be unfounded. The operators at the other end of the link were happier, and we certainly were because we could now operate on equal terms with our civil counterparts. Incidentally I remember that they, the civil operators, were most surprised at the young ages of us RAF operators. They were all around 50'ish, whereas we were only about 19 or 20 years of age, and most were National Service. Eventually, our Signals Sergeant became aware of us using these

bug keys. He insisted on testing our ability, which still amuses me when I know he couldn't have been anywhere near as capable as us at the speeds we operated at. After testing us we were given permission to use our keys on that specific net at all times, and no longer just on the evening and night duties. I remember cleaning all the paint off the domed cover, and polishing it until it shone like chrome.

Regrets

When I returned home in January 1957 I brought my key with me, and kept it until around 1966, when I foolishly swapped it with GWM in Worthing for a J36 key, which I still have. I now possess two Eddystone S689 keys, one of them kindly given to me by Colin G3VTT, which had unfortunately been modified for use as the paddle of an el-bug. The other, in excellent condition, I bought through fellow *MM* reader John G0FSP. I wouldn't part with either of them now, but really do regret ever letting that first one go, on which I once sent real traffic. ■

Readers Write...

Very Much Alive!

I feel that it is important that Morse code is seen as a valid, modern means of communication, not a relic of the past. After all there is still a great deal of Morse used on the short wave bands, and even VHF and UHF (meteor scatter and moon-bounce, etc.).

On the subject of Morse usage on the short wave bands, I recently did a slow scan across the 20m band on a Sunday afternoon counting the number of QSOs in progress in each mode. The results were:

SSB	58
CW	42
AMTOR	7
RTTY	4
SSTV	2
FAX	1

plus an indeterminate number of packet stations, and 6 intruders! These figures would seem to suggest that Morse code is far from dying out.

Stan Barr G0CLV, Moreton, Wirral

ADFGX

by Gerald Stancey G3MCK



Most amateurs are familiar with some extensions to the basic Morse code, for example the accented French characters, but few seem to be aware of the use of a contracted character set namely ADFGX. The origin of this lies in the bloody year of 1918. The death toll of the preceding years had caused a chronic shortage of trained CW operators in the German army. The solution was to train new operators to read only a few Morse letters.

The inspiration behind this was Colonel Fritz Nabel. He knew from experience that certain letters, A, D, F, G, R, V, and X, were more easily recognised than the others and accordingly selected A, D, F, G, and X. That decision by itself would have had little utility had not he also invented a cipher which used only these five letters. The cipher was based on a five by five square in which 25 letters of the alphabet were randomly scattered. I and J were not distinguished from each other. For example:

	A	D	F	G	X
A	x	l	t	q	z
D	i	p	y	b	m
F	g	k	a	h	r
G	c	n	s	v	f
X	e	o	u	d	w

Each letter of a message was therefore represented by two letters, e.g. 'h' was represented by FG. Conceptually a message was enciphered by selecting the matching pairs of letters for each letter in the text.

The ensuing string of letters was then broken into five-character groups for transmission. For example the text 'send more guns' would first be translated into code as:

'GFXAGDXG DXXDFXXA FAXFGDGF'.

This would then be reformatted into five-letter groups, thus:

'GFXAG DXGDX XDFXX AFAXF GDGF'.

Numbers were spelt out in full. Deciphering was the reverse process and the cipher clerk would have little difficulty in splitting the resulting 'sendmoreguns' into meaningful words.

Of course there was more to it than that! As described the cipher is trivial. A further stage of jumbling the letters, between selecting the pairs of letters and breaking the text string into five-character groups, was incorporated. For clarity I have omitted this stage as I only wanted to illustrate the method and not the detail of the ciphering system. After a little time the letter 'V' was added and this enabled a six by six square to be constructed which allowed the full alphabet and all the numbers to be enciphered. However the principle was just the same. It is instructive to look at the letters used in the light of receiving good copy.

The five-character enciphered groups must be received 100% correct or else there will be problems in deciphering the message. However, the receiving operator does know to expect five-character groups, except for the last group which may be less than five characters. None of the selected characters, if either run together or broken, gives rise to a valid Morse character in the subset used. Hence the chances of getting either good copy or at least known incorrect copy are very high. The code was finally broken by George Painvin a French cryptanalyst. The result was that the Allies were able to prepare themselves for the final offensive of the German army. The offensive failed and Germany lost the war.

I think this is an interesting example of the solution of an operational problem, namely to obtain trained CW operators very quickly. It also illustrates the role of ciphers and their impact on history. The above is a brief account and more details of how the code was constructed and broken can be found in *Secret Warfare* by Bruce Norman, published by David and Charles. This book also contains details of other famous codes, how they were broken and the effect on history. ■

The 'X Code' That Went Wrong

by Gus Taylor G8PG



This story was told by an ex-RN Petty Officer Telegraphist who I worked with shortly after World War II. In the piping days of peace (Mid-1930s) he had been Leading Telegraphist in a river gunboat on the China station. His best friend was also a Leading Telegraphist, and by coincidence was serving in another gunboat of the same flotilla. They liked to meet up ashore, but often missed each other through arriving at different times.

One evening they sat drinking local beer and mulling over this problem. Then my friend had a great idea. Any unofficial wireless signalling was forbidden, and would lead to swift disciplinary action, but ships usually made daily communication checks to ensure that their W/T was working properly. Such checks could be used to agree a meeting time!

The system they worked out was very simple. My friend would call his friend and give the X signal for 'report the strength of my signals'. If the reply gave 'strength 3' this would indicate that his friend would meet him on the jetty at 3 o'clock. If this was acceptable only 'R' would be given, but if it was not a return signal report such as 'strength 5' would be given, indicating that a meeting could not take place before 5 o'clock. Our two heroes put the system into operation, and for a week it worked perfectly. Then on the following Monday morning retribution struck.

Both of them were ordered to report to the flotilla Signals Officer (who was based in the same ship as my friend) and bring their logs for the previous week. The Signals Officer examined the logs, then announced that he was very, very concerned. How was it that there could be such a big and varying strength difference on signals between two ships moored only a mile apart? And why was it that signals at such a short distance were never strength 9?

Our two heroes admitted that they too were puzzled. There could only be one answer, the officer announced; there must be a serious

fault somewhere in one or both of the stations. As keen and competent chaps his Leading Telegraphists would of course want to rectify it immediately would they not? The only possible answer to that was 'Yes, Sir.'

'Good' said the officer. 'For the next five evenings you will no doubt want to stay aboard and overhaul every bit of your stations, starting at the masthead insulators and finishing at the earth bolt. I have no doubt you will find and rectify the faults, but to make sure I will inspect both stations next Saturday morning.'

For the next five days the two friends spent every spare moment scrubbing, polishing, tuning and adjusting. The Saturday morning inspection went well, with, of course, signals strength 9 in both directions. As he finished the inspection the Signals Officer remarked, almost as an aside, 'There is only one trouble with these strong signals; they keep on breaking through on my broadcast receiver.'

As my friend put it, 'Then we knew that he knew, and he knew that we knew! But he was a marvellous bloke. He could have had us up officially and we would have lost our killicks (*rank - Ed.*) and our good conduct badges, but instead he was so clever that he got us to agree to five days stoppage of shore leave without anything even going on paper!

Word got round the flotilla, and for the rest of the commission all us communication ratings used to bust our guts to back that particular officer. ■

<p><i>Would any reader having a list of the old X-codes please contact me.</i></p> <p style="text-align: right;"><i>Tony Smith G4FAI</i></p>
--

Lost Ability

A CW enthusiast from Leeds, Found a keyer that met all his needs,
But one day it broke, And he could not but cope, So for a new key he
now pleads.

Ian Poole G3YWX

'Old Soldiers' and Young

An army officer declares that the laziest creature on earth is the regular soldier. It is plain to be seen that this man has never made the acquaintance of the district telegraph boy. *Philadelphia Press.*

From The Electrical World, Nov 1, 1884

Last PO Morse in the UK



The Outer Hebrides have recently become front-page news because of the Government proposals to install a rocket range. Opposition to the scheme comes from a section of the population who wish to retain the old way of life, but the old way continues to vanish. Motor cars, tractors, aeroplanes and telephones have come to stay, and progress and development in these things are inevitable.

There are many on the Long Island who will regret the passing of the last inland Morse telegraph circuit operated by the Post Office. A decision has been made to recover this circuit, which linked the islands of the Outer Hebrides. Records of its early history have been lost, but the linking of Barra to South Uist by submarine cable in 1884, and, two years later, the laying of the Harris-North Uist submarine cable, probably caused as much stir as the proposed rocket range does today.

The importance of the circuit can be judged from the traffic carried. Twenty years ago, when Castlebay had a flourishing fishing fleet, it was not unusual for the local Post Office to handle between four and five hundred messages a day. Decline of the herring fishing industry and the introduction of the telephone in 1938 caused a gradual reduction in telegraph traffic.

It became more and more difficult to find staff who could be trained as competent telegraphists and, eventually, in October, 1954, a fault in the Benbecula-South Uist submarine cable put the circuit out of use. The faulty cable was not repaired, telegrams were passed by telephone, and now the apparatus is to be recovered and the lines used for other purposes.

The circuit has been used for various systems, Wheatstone, simplex, duplex, and ABC. The line throughout the length of the Long Island consists of 40 miles of very exposed overhead route interconnected between the islands by submarine cable having a total length of 18 nautical miles. This served the Post Offices at Castlebay, Lochboisdale, Grogarry, Creagarry, and Lochmaddy. A further length of 11 miles of submarine cable connects North Uist with the island of Harris.

The old Morse telegraph had its advantages. In small offices, consisting perhaps of a general shop with no space for a silence cabinet, secrecy was ensured, and the telegraphist could even attend to other matters while taking a message.

A transmission standard much lower than that required for telephone circuits could be tolerated. The nests of hooded crows, salt spray from the Atlantic, and other maintenance hazards were not as harmful to simplex telegraph as they would be to a complex country satellite. There is perhaps something to be said for the old way of life.

Reprinted, with permission, from the Post Office Electrical Engineers' Journal, Vol 48, January 1956, now British Telecommunications Engineering.

Can You Help?

A correspondent in the USA is seeking information on the radio equipment fitted in the ss *Titanic* for her fateful maiden voyage. In all the articles and books which have been published about the disaster, that particular aspect has been totally ignored, and the only known photograph of the radio room is so poor as to be of little help. Any information, please, to the Editor.

News...News...News...News...

EUCW Straight Key Day

The European CW Association's Straight Key Day, organised on behalf of EUCW by the Scandinavian CW Activity Group (SCAG), will be held on Saturday 23 June 1990, and is open to all amateur CW operators who enjoy working on the hand key.

This is not a contest. Just put aside the electronic keyer for the day and use a hand-key for relaxed QSOs! Call CQ SKD on frequencies between 3540 and 3570; 7020 and 7040; 14050 and 14070kHz, or 'anywhere in the 10MHz band.

Participants having at least 5 contacts with other straight key stations may vote for the best hand-style or 'fist' worked, one vote for each of the three considered best. A 'Straight Key Award' will be sent free of charge to every operator who receives at least two votes.

Logs and votes should be sent to the SKD Manager, SM7SWD Hans Nottehd, Tessingsvag 17 A, S-217 58 Malmoe, Sweden, before July 17, 1990. (New Manager).

More News on page 41

Late News...

Israeli Proposal Defeated

The voting on the proposal by the Israel Amateur Radio Club to the IARU Region 1 Conference (MM15, p9) in April, that the amateur Morse test be replaced by a test of computer skills, was 30 countries AGAINST and 9 countries IN FAVOUR of the proposal.

The following is a summary of the minutes of the meeting which discussed this matter.

The IARC (Israel) delegate introducing the proposal referred to emergency communications by amateurs, saying that AMTOR surpassed CW and that in a few years time ships would be equipped with SPECTOR. He felt that the Morse examination was only a bench mark in order to gain access to the HF bands.

SSA (Sweden) - A meeting in Helsinki in February had voted against the Israeli paper. A letter had been received from the Scandinavian CW group protesting against the paper's conclusion.

NARS (Nigeria) - CW was considered very honourable amongst radio amateurs and was very important to African societies.

REF (France) - France's PTT had recently sought the views of REF on the need for a Morse test for amateurs. The REF board of directors had agreed that no Morse examination was necessary. The PTT were surprised by this view but had accepted it and were prepared to give access to frequencies below 30MHz without the need for a CW test.

PA0LOU, Chairman of IARU Region 1, said that the paper did far more than deal with the question of Morse code on the HF bands. It dealt with the very future nature of the amateur service. The proposal almost reduced the amateur service to the nature of the Mobile service. More young people were needed in the amateur service but they must attain a certain level of achievement. He hoped that amateur radio would continue to provide the sort of challenges that made good radio operators rather than computer operators.

VERON (The Netherlands) - Amateur radio is all about encouraging self-training, building the equipment and technical investigations. The nature of CW meant that communication could be achieved with very simple equipment, ideal for beginners. Thus a knowledge of Morse was required. In addition, CW was efficient and used the narrowest bandwidth of any mode or transmission, allowing more stations to use a given amount of spectrum space. It would be very unwise to remove the Morse examination as an amateur radio requirement, and if it was removed it would be very dangerous for the future of amateur radio.

W1RU, President of IARU, said that he was supposed to be impartial, however, 90% of his operating was on CW. He described some of the history of the amateur service and concluded by saying that the amateur service and the Mobile service were not considered to be similar.

URE (Spain) - Felt that there would be no Morse test in 3 years time but did

not wish to discourage CW as an operational mode.

REF (France) - Was not against CW but against the Morse examination. So far as bandwidth was concerned, if the existing bands became crowded then new bands should be proposed.

The votes cast were as follows:

For the proposal:

CARS (Cyprus), FRA (Faroe Islands), IARC (Israel), MRASZ (Hungary), REF (France), REP (Portugal), SRAL (Finland), URE (Spain), AGRA (Gabon).

Against the proposal:

ARI (Italy), ARAS (Senegal), ARM (Monaco), DARC (FRG), EDR (Denmark), FRR (Romania), IRA (Iceland), IRTS (Ireland), LRAA (Liberia), MARL (Malta), NARS (Nigeria), NRRL (Norway), OVSV (Austria), PZK (Poland), ROARS (Oman), RSF (USSR), RSVDDR (G. Dem. Rep.), SARL (South Africa), SLARS (Sierra Leone), SRJ (Yugoslavia), SSA (Sweden), UBA (Belgium), URA (Andorra), USKA (Switzerland), VERON (Netherlands), RSGB (UK), ZARS (Zimbabwe), BARS (Bahrain), AFVL (Liechtenstein), LARS (Lesotho).

QRM? – Send GTH!

by D.C. Prout G8FEX

My wife is a keen collector of Art Deco glassware which means that the whole family regularly spends hours at car boot sales and flea markets. As all sorts of junk tends to turn up at these places I always keep a sharp look-out for anything radio related.

Although old domestic radios are common, but surprisingly expensive, communications equipment seems rare. I have only come across one Morse key, and that was a very battered and disreputable 'Key WT 8 Amp No 2 Mk III' priced £8 that I had no trouble resisting! Books are a different matter and I have been lucky enough to come across some very interesting items.

One such is *SOS* by Karl Baarslag, published in 1937 by Methuen but probably originally from the US. The book is mainly about early disasters at sea where radio played a part. The stories of the *Republic* and *Florida*, *Titanic*, *Empress of India* and *Storstad*, *Antinoe*, *Vestris*, *St Cuthbert*, *Templemore*, *Volturno*, *L'Atlantique*, *Georges Phillipar* and the *Morro Castle* are all told.

The bravery of old time operators was not new to me but the revelations about the anarchy that prevailed, at least in the US, before radio regulations were introduced in 1912 was a real surprise. I had always thought that bad behaviour on the air was a modern phenomenon, but I was wrong! Indeed operating then seems to have consisted of fighting through a continual pile-up caused by a man-made electrical storm. The book puts the position better than I could: 'Every operator was king; his domain bounded only by the range of his set. No operator yielded precedence to another, especially to a "Lime Juicer". Bitter personal feuds raged over the air, enlivened by highly seasoned and unprintable invective, which often led to fist-cuffs in New York, when two doughty and truculent antagonists of the air met each other face to face for the first time in some West Street saloon or along the waterfront.'

The radio companies, engaged as they were in ruthless commercial warfare did little to ameliorate conditions. Small wonder that profanity was freely employed to relieve frayed nerves, and that the axiom arose: 'You can't be a radio operator and remain a Christian'.

Now abbreviations are essential to communicating in Morse and it will be no surprise to find that there was a long list of abbreviated invitations, imprecations and obscenities which every operator had at his fingertips. SOS gives only one example – GTH (Go to Hell!). I am intrigued to know what the others were. Can any MM readers help? ■

May Sowter ('Post Office Telegraphist', MM15), tells us that exasperated British PO operators after sending 'TRI THE OTHER FOOT' when receiving poor quality signals would finally resort to 'PQ', meaning 'go to the devil!' The only printable example I can recall from my seafaring days is 'GS' meaning 'get stuffed!' We would like to receive other examples, but cannot guarantee to print them! – Ed.

Readers' ADs

EXCHANGE

Key Telegraph 5805-99-580-8558 (Navy) exchange for Post Office or Type D Key. D Wyn Davies, Pen-y-Maes, Halcog, Brymbo, Wrexham, Clwyd LL11 5DR.

'Wattie'

by John I. Brown G3EUR

Following 'Untitled Story' (MM8, p28) we included a few notes about its author. John Brown now describes the remarkable career of a man who lived and worked through both the 'Early Marconi' and the 'Transistor' eras.



Major H. E. Watterson in 1945

Harold Edward Watterson was born in February 1883, educated at St Mary's Basingstoke, later at Finsbury Technical College, and took C&G London. He was fluent in French and could 'get by' in German, Arabic and Mandarin Chinese (acquired later). In 1900 he got a job as a telegraphist in the Post Office, London, and when proficient moved on to the Eastern Telegraph Co as a Submarine Telegraph operator.

In 1902, he joined the sea-going staff of Marconi International Marine Co., in charge of the first wireless installation in the North Atlantic liners *Parisian*, *Etruria*, *Campania*, *Ivernia* and *Caronia*. During this time the gear moved from ten inch induction coils and coherers to magnetic detectors and 5kW dischargers.

In 1904 he was promoted to Wireless Inspector, North and South Atlantic liners, with the *Amazon*, *Asturias*, *Araguaya*, etc.

In 1905 he was assistant Engineer with Marconi's Wireless Telegraph Co., and in Amsterdam was i/c Wireless Press service to London during the Russo-Japanese war.

In 1906 he erected a chain of Marconi wireless stations for the Mexican government. Then back to sea to organise Ocean News services on North Atlantic liners.

In 1907-8 he was in the west of Ireland for the erection of the Clifden 150kW transatlantic station and the opening of the Marconi transatlantic radio service. During 1908-9 he installed radio gear in German and Italian liners and sailed on commissioning trips in the *Kaiser Wilhelm der Grosse*, *Kaiserin Augusta Victoria*, *Principessa Mafalda*, etc.

He had three months service on the Spanish royal yacht, for which he was awarded the Spanish Order of Naval Merit, and then on to install MWT gear in the Greek navy. He then took part in the construction of the Poldhu transatlantic station, followed by the Porto Velho 150kW station.

Then, as a 'sabbatical', he paid to become a Premium Apprentice for an up-dating course with W. Mackie & Co in current electrical engineering, leaving when WWI was declared. He returned to MWT to be seconded to Russia for construction of W/T stations at Tsarskoe Seloe (500kW), Petersburg and Nikolieff (150kW).

Recalled in September 1915, he was transferred to the RNVR as a Sub Lieutenant and went to Gallipoli in charge of anti-submarine DF (Bellini-Tosi), serving in *President*, *Iron Duke*, *Egmont* and *Hannibal*. Then, until 1917 he set up MWT anti-submarine DF stations around the Mediterranean, including Alexandria, Port Said, Malta and others, and organised operator training. He was promoted to the staff of Admiral Commanding Red Sea and Egypt, and was i/c Naval DF Intelligence until the Armistice.

Demobbed in 1919 as a Lt Commander, he returned to Egypt, as a Telecomms Engineer, on Ship/Shore services, Coast-Guards, and the establishment of training schools. After the assassination of the Sirdar, he was instructed to resign by the British Foreign Office but Egypt asked for his return and he continued until 1930, overseeing many developments up to the first three-channel telephone system, Cairo/Alexandria.

Returning to Marconi, he was sent out to India and Burma to establish the high-speed network linking the railway termini of India with Delhi and Simla, negotiating contracts with several Rajahs.

He rejoined Marconi in 1932 in a new development, the Marconi Sounding Device Company, until 1940 when he was released on 'leave without pay' to take a commission on the War Office Staff.

Then via Radio Security (MI 8), MI 6, MOS (ES2) to MEW; as GSO

to Intelligence (J) Middle East HQ for special duties with ISLD and Force 136. In 1942 he took part in the building of a multiple-service station for Force 136, going on to be Telecomms Adviser to the British Embassy in Chungking. He became Commercial Secretary, Allied Supplies Executive for UK and, in 1945, First Secretary, British Embassy, China.

After the war he spent nearly three years in service with UNRRA in China, mainly on rehabilitation and the restoration of civil telecomms. In addition to a budget of 3.3 million dollars, there was the disposal and employment of about 10 000 cases of American electronic and signal equipment intended for the invasion of Japan.

Much more could be said about the career of one who may justly be called 'Pioneer/Old-timer', who remained mentally active (taking an examination in German at 72) and who could still copy Morse faster than most, while making comment on the traffic.

When he died, aged ninety-two, after a fall and a thigh fracture, most of his contemporaries had preceded him, but many younger admirers felt real loss. He bequeathed to me a collection of neckties of which his Marconi tie is the most valued, together with his sun-faded copy of Terman's *Radio Engineering*, replacing the one I lost during the war.

Few people can have had the unique experience of living through the inception of a new era of communication, two world wars, and the progress from Spark to Transistor technology, meeting and working with many famous people in wireless in the process; Marconi himself, Eckersley, Capt Round and others. He is truly worthy of memoriam in *Morsum Magnificat*. ■

News...News...News...News...

GB2CW Slow Morse Transmissions

From 1 June 1990, all accredited RSGB slow Morse practice transmissions will be made under the callsign GB2CW.

Up-to-date schedules of transmissions can be obtained by sending a stamped addressed envelope to the Morse Practice Co-ordinator, Mike Thayne G3GMS, 14 Tynesdale Avenue, Monkseaton, Whitley Bay, Tyne & Wear NE26 3BA

CW Crazy

by Alice Mitchell G0EEJ



When I hear people discussing the possibility of CW being phased out I am apt to react with the thought 'not in my day' or, more drastically, 'over my dead body!' I cannot imagine a day when CW will be obsolete.

OK – most people use phone these days, even the Services, but there is a dedicated group of enthusiasts who will forever use CW in preference. And what about the future?

The first thing to happen when the next world-wide hostilities commence will be nations knocking out the communications satellites of their opponents. If the worst happens and we have a holocaust, ground communications will be devastated everywhere and most people will probably be nearly deaf. What will happen then? To find the components to make SSB, AM or FM transceivers will be quite a task – it will be much easier to make a simple CW transmitter. And Morse will be so much easier to hear with cracked ear-drums...

But perhaps I am more than prejudiced. My love for CW stretches way back to the day I became a Guide. As a Brownie I was hooked on signalling – semaphore in those days – but my interest in visual signals became deeper when I learned the Morse code and began communicating to friends with flags. It was then a short step to using a torch to reach my girl friend living opposite. After our respective families had retired for the night the two young Guides signalled to each other by flashlight. The day our Guide Company acquired an oscillator my passion flamed.

High Standards

When WWII began I was a Sea Ranger. Our crew, SRS Thames, had been taken under the wing of the Gravesend Sea Training School, all

their equipment and instructors being made available for our use. There was just one snag – instead of sticking to our own training syllabus we had to adhere to those standards taught to the merchant navy trainees. Everything, from handling a whaler to splicing wire, knotting to memorising pages and pages of the *Manual of Seamanship*, had to be of a much higher standard. In fact any member of our crew could have qualified for a berth on any sea-going vessel! And this applied to CW.

I simply HAD to join the Wrens – it was, at that time, my ambition. If I waited for the call-up I would have been directed into the WRAC so it was imperative I volunteered. This took some doing as Dad had to be won round to the idea but I eventually made it. Off I went to Mill Hill clutching an important piece of paper in my sweaty paw – a certificate stating I could read Morse at five words a minute!!!

Scrubbing Floors

Even so, things were not easy. As a trainee Wren I had to spend two weeks scrubbing concrete floors, sitting short exams on Naval knowledge, attending lectures on the structure of the Navy and the WRNS in particular. During this time I was informed no W/T course was available, either now or in the future. Had I not lost my voice and ended up in the sick bay I would have meekly given in and become a ‘messenger’. (And, incidentally, probably ended the war with a commission.)

The small ward in which I found myself was full of girls due out on draft in a few days. On a W/T course! And not one of them was interested, in fact some were trying hard to remain indisposed and to miss the draft. I discharged myself from sick-bay and hurriedly put in a request to see nobody less than the Chief Officer who was amused to be faced with a trainee in such a temper and very little voice. Threatening to go home if not included in the draft I didn’t know how to hold back my tears of anger. To cut a long story short I followed the draft which had left two days previously and started six months of intensive training.

Certificates

Did I say I could read Morse at five wpm? Ha, ha! And I wasn’t the only one under the impression my qualifications were better than they actually were. Our instructor’s desk was strewn with certificates from most of the members of my class – the top class because of our supposed speeds. The PO gave up and started from scratch – except she didn’t need to actually teach us the code.

Each day, for the next six weeks, we sat a test on the previous day's speeds – anyone less than 95% was OUT. At the end of six weeks every one of us could copy 25 wpm with 95% or more accuracy. It was then we discovered why the only key in the room was that belonging to the instructor. (*See 'We had to keep Mum' MM4 – Ed.*) We began to learn our way round the HROs, etc., listening-in to foreign traffic, learning to copy through whatever QRM and QRN there was on the bands until we could winkle out a reliable message from the weakest signal. This is where I learned never to guess at a word or letter – better for the code-breakers to be faced with a blank in the message than an incorrect letter.

To this day I automatically use the same method, never reading my copy as it comes and my fist refuses to guess at a letter as I receive it. In fact I take down WHAT I receive – if someone sends 'spe caagm' for 'hpe cuagn' that is what I write down on my pad. After I was demobbed I tried to get into Cable and Wireless but they weren't interested in female operators so I ended up with a completely different career, pushing wireless to the back of my mind.

Forty-one Years Later

As I explained in my previous article, in 1986 I received the call G0EEJ and went back on the air for the first time in forty-one years. There was one snag to overcome before I took the Morse test – I had to teach myself to send!! Since then I have joined the RNARS and SOWP, making many friends along the way. I love DXing – though not actively working for awards I set my own goals – one day, who knows, I might have a certificate up on the shack wall.

Luckily the OM is very interested in my radio activities. Sticking to CB himself, he is very occupied inventing antennas for me to try out. With no immediate neighbours to complain our small cottage is being rapidly surrounded by masts and antennas, they shoot up like mushrooms overnight. He has built me a shack in the garden where I can spread my equipment, maps and QSL cards and I even have a corner equipped for coffee making. As much as transmitting and receiving I enjoy marking-up all my contacts on the map of the world and, on my National Geographic Map of Russia, I plot my oblasts. You see, I still revert to my initial training – even to the fact I do much more listening than transmitting.

So, as you might imagine, I am biased towards CW – especially as a hearing disability makes SSB sound like goobledgook. It has to be a very clear SSB signal for me to understand. I for one intend to keep the CW flag flying. ■

A Tale of a Snake's Tail

by Paul Flowers

Here is the tale of the rattlesnake that mastered the Morse code, back when telegraphy and pounding brass was a fine and noble profession. It was soon after I first went to work for the road with which I am still employed, the Illinois Central, than which there is no finer.

I was sent to Way, Miss., as night operator. The name was about all there was to the station, except a water tank and day and night operators. Way is back in the Big Black River bottoms, where the nights get the blackest, the bullfrogs croak the coarsest and hoot owls hoot the lonesomest of any spot in creation. It is only about 4 miles from Vaughn, where Casey Jones of song and fable pulled his last throttle some 40 years ago.

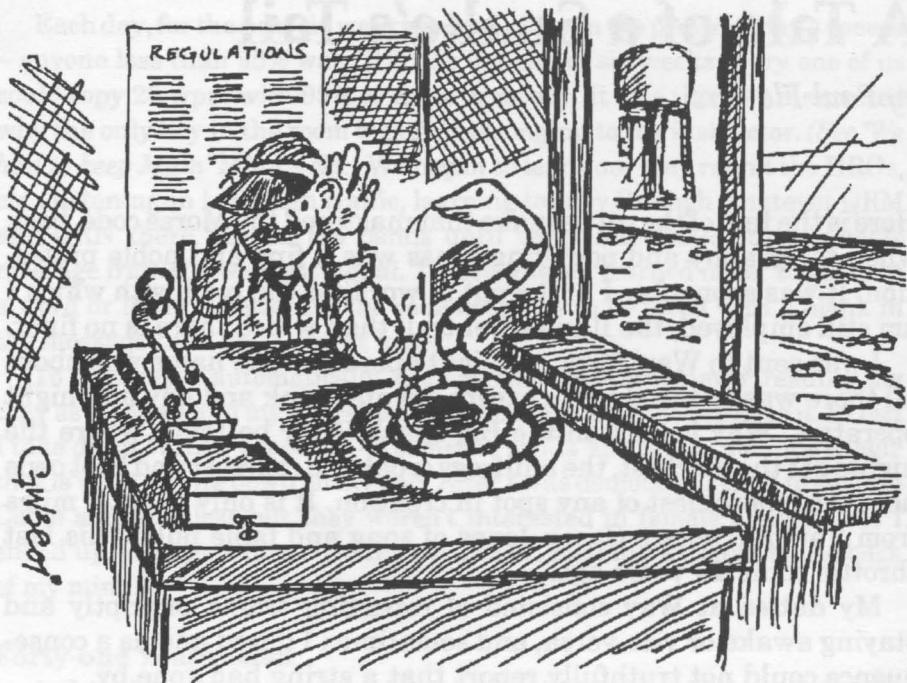
My duties at Way consisted of reporting trains promptly and staying awake or vice-versa, and sometimes I dozed and as a consequence could not truthfully report that a string had gone by.

When I failed to get enough rest during the day and was unusually sleepy when I came to work, I would find out when the next train was due to pass and then go out and pour a handful of cinders on the rails. If the passing train did not awaken me, when I did come to I could go out and see if the cinders were swept off, and if so I knew the train had gone. This system had its disadvantages in bad weather.

I tried another old one, that of tying one end of a string to the coal scuttle in the office, stretching it across the track and tying the other end to a stick. When the train came along, it hit the string and rattled the coal hod. This was not entirely satisfactory either, because a wandering mule or cow was liable to come before the train. But fortune brought a happy solution to my problem.

One night as I sat reading a detective magazine and had just reached the point where the villain was about to push the heroine over the cliff, I happened to glance toward the door and was amazed to see a good-sized rattlesnake crawling in the door.

As it lay there on the floor, I noticed a marked resemblance to our porter, Leander, who was long and svelte too. Well, I sat there, paralysed with fright, while the snake coiled, moved his head from side



... MORSE WAS A JOY TO LISTEN TO ...

to side like the pendulum on a grandfather clock, his beady unblinking eyes taking in everything in the office. I had used all my snake medicine the night before, so I was just where Moses was.

All at once a complete calm came over me. I rose, strode boldly to where the snake was and poured some milk out of my lunch box kit into a fruit jar lid, and set it where the rattler could see it. He took the hint and lapped it up greedily. After he had finished with the milk, we eyed each other for a moment, and seemed to reach a complete understanding.

I had a practice telegraph set in the back of the office, and I went over and began tapping out slowly the alphabet in Morse code. Leander, as I called my visitor, crawled onto the table and was all attention – finest and most apt student I ever had. Soon as I would make out a letter I'd pause, and he'd raise his tail and try to imitate the dots and dashes and spaces with his rattles.

In an unusually short time he knew the entire alphabet. He had a little trouble with the letter 'P' which consists of five dots (*American*

Morse. – Ed.). He seemed to lose control of his tail muscles on that one, and I thought he'd never quit making dots. But finally he mastered the 'P' and his Morse was a joy to listen to.

We spent many otherwise lonely hours, I with brass key and sounder, tobacco can and all, and Leander with his natural sounder. He told me that he was one of twenty children, but that his brothers and sisters had been drowned in a flood.

Leander was a handy creature around the office; he could grab up a broom with his tail, hump his back, put his nose to the floor and do as good a sweeping job as you ever saw.

But the biggest lift he gave was in helping me report trains. As you know, a snake's tongue when extended from his mouth is sort of like a radio antenna. Leander would crawl on the telegraph table in the depot's bay window (still there), stick his head out, poke his tongue out some more and get the vibration of a train 35 miles away.

Then he would come over to the table where I was sleeping, touch my face tenderly with that sensitive tongue of his and I knew it was time to rouse up and exchange signals with the train crew and report their passing.

All good things come to an end. I got word that I was to be transferred, so one evening, as Leander and I were having our little chat in Morse, I broke the news to him, gently as I knew how. I told him how much I had enjoyed knowing him and how much he had done to keep me from being lonely, in his cordial ophidian way, and I invited him to go with me to my next station.

But Leander, after thinking it over for a while, tapped out 'No' and explained that Big Black River bottoms were his home, where all his folk had lived since the Ice Age, and he was considerable of a homebody, and didn't think he'd get adjusted to unfamiliar scenes. He thanked me for teaching him Morse, and we had a parting of the Way. As he slithered out he paused, looked back, transfixed me with those soulful and unblinking eyes and tapped out '73', which is the telegrapher's traditional symbol for good-bye.

I felt no shame as I stood there alone, with the shades of night falling fast, as tears trickled down my cheeks and Leander disappeared. He was a pal.

This story originally appeared in the Illinois Central Magazine, February 1944, and is reprinted in MM by kind permission of the Illinois Central Gulf Railroad.

Just rambling...



Thanks!

My thanks to those who wrote expressing appreciation of my involvement with *MM* over the last few years, following the announcement about new arrangements for the future. In response, I can only repeat what I have said previously – while there is a lot of (enjoyable) work involved in producing it, *MM* would not be the unique publication that it is without the fine contributions and encouraging support it receives from its readers. It really is a joint enterprise.

With Geoff Arnold's timely arrival, *MM* now moves into a new phase and I am sure that he will receive exactly the same support that I did. As you can see, however, I haven't actually left the ship. My 'ramblings' are continuing and I am still researching and collecting material for features for the magazine. For the time being please continue to send all items for publication to me at 1, Tash Place, London N11 1PA. In particular, *MM* still needs 'fillers', short items ranging from a few lines to half a page or so.

Remember Gamages?

I am preparing a feature on items of Morse interest which Gamages used to sell under their own name. I would welcome photos of any items which readers have. Also, please look back in your old magazines or handbooks from the early 1900s onwards and send me copies of any advertisements you can find. Reminiscences also welcome!

Case shift

An interesting query came up recently. Was there ever a 'case shift' symbol in International Morse, to change a letter (or letters) of a message from lower case to capitals? (I believe there is, or was, a 'capitalised letter' symbol in American Morse). If a received message is entirely written in capitals there is no need for a change of case. If written in lower case a word following a full stop obviously needs a capital letter, but what about other words needing capitals?

Can anyone comment on this? If you have any old reference books or operating manuals, especially pre-1900, please check back and let me know if you can find anything.

73, Tony G4FAI.

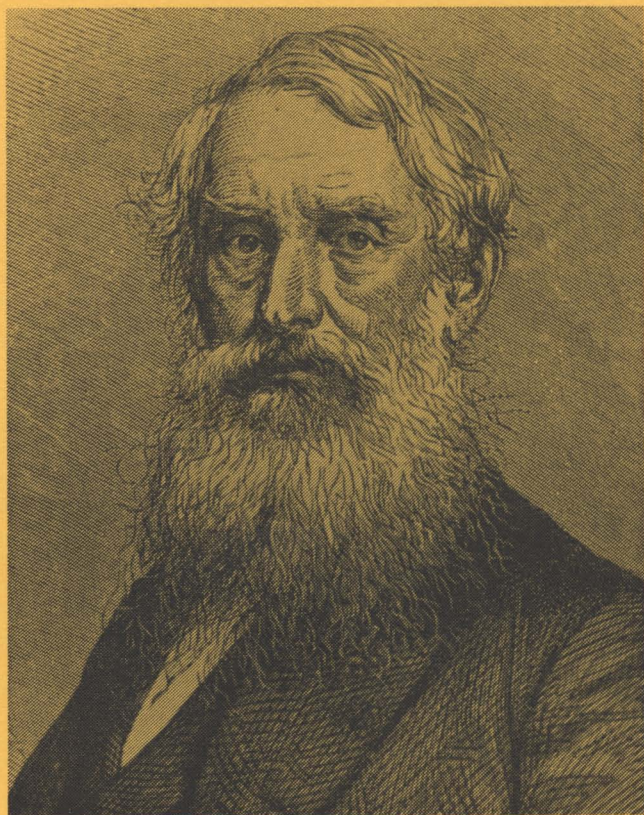
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Sam. F. B. Morse..