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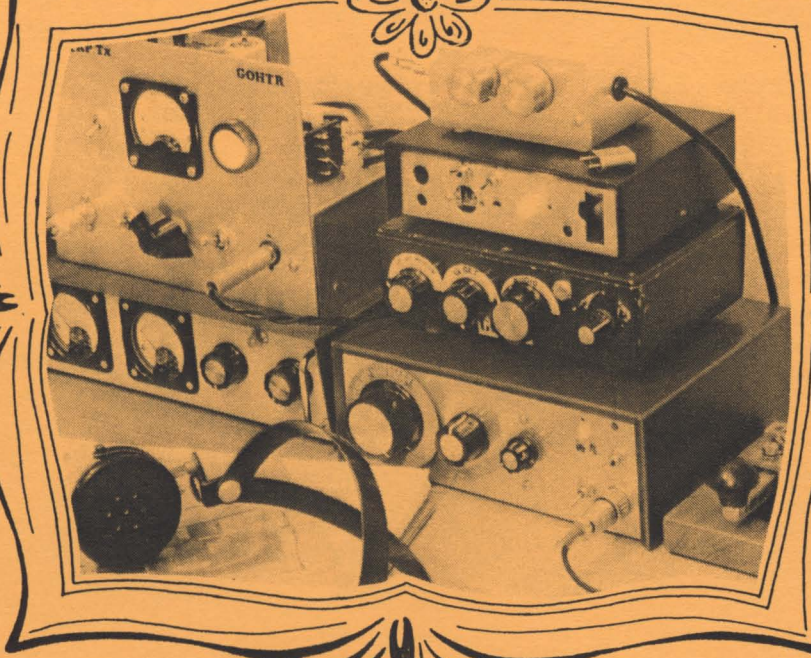
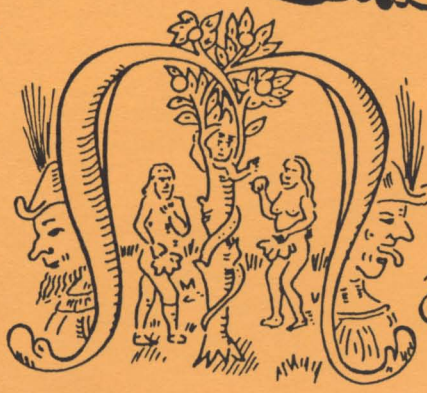
SFB MORSE 1872





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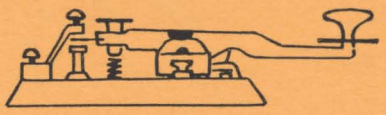

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MORSUM MAGNIFICAT is for all Morse enthusiasts, amateur or professional, active or retired. It brings together material which would otherwise be lost to posterity, providing an invaluable source of interest, reference and record relating to the traditions and practice of Morse.

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Cover photo: "QRP Corner" of Larry Robinson GØHTR's shack. All homebrew on 80m, with the G3SYC (much modified) "One Valver" tx on left.

EARTH CURRENT TELEGRAPHY

OR THE HISTORY OF THE POWER BUZZER

by LOUIS MEULSTEE, PAØPCR.

Early discoveries and historical development

From the earliest days of the electric telegraph scientists directed their attention to dispensing in part, or entirely, with connecting cables. In 1838, Steinheil in Munich, acting on a suggestion made by Gauss, demonstrated that the earth could perform the function of return for a telegraphic circuit. He anticipated that in time improvements might be effected by which the need for any metallic circuit at all would be removed.

The first recorded experiments of signalling without wires, by conduction, were those of Samuel F.B. Morse. In 1842, he demonstrated telegraphy using underwater cables from the coast to a small island. By accident (a vessel weighing anchor) the lines were broken, and this incident led to Morse's idea that possibly water itself might be employed as a conductor.

In the same year, on December 16th, 1842, he successfully signalled without wires across an 80 ft wide canal in Washington. During 1845 he established communication by the same method across the Susquehanna River, a distance of nearly a mile.

The arrangement he used is shown in fig. 1c. The transmitter consists of a battery and Morse key (his own invention), connected by long cables to two copper plates, a and b, immersed in water. The receiver was a galvanometer similarly connected to two immersed plates, c and d. Later experiments showed that the best results were obtained when the length of the wire base along each shore was three times the range from shore to shore. The ratio of base to range, however, is quite different when using the earth as a conductor.

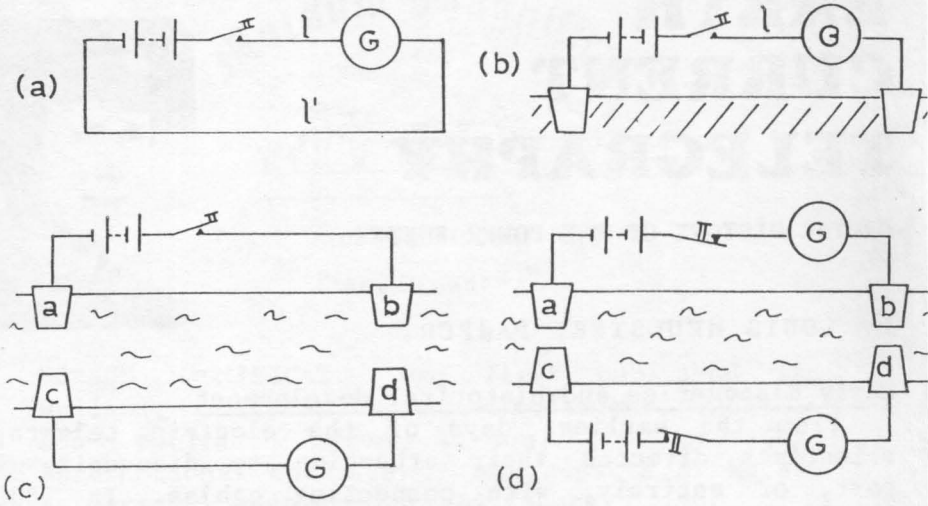


Fig. 1. Development of earth current telegraphy.
a) Two wire telegraph. b) Single wire telegraphy with earth return. c) Arrangements for Morse's telegraph across a river. d) Similar arrangements devised by Lindsay.

Numerous scientists experimented with this system and in 1882 Alexander Graham Bell, inventor of the successful telephone receiver, adapted a suggestion by Professor Trowbridge of Harvard University to employ an interrupted current at the transmitter and a telephone receiver at the receiving end. This method was also employed by Sir William Preece of the British Post Office who carried out experiments in signalling by earth and water conduction for many years.

In 1889, F.W. Melhuish of the Indian Telegraph Department demonstrated the superiority of signalling by buzzer and telephone, compared to the old battery and galvanometer method. These experiments were, indirectly, the forerunners of the vibratory, or buzzer, telegraph used extensively by the British Army because of its great ability to signal through leaky or broken lines.

The long ranges rapidly attained by radio telegraphy at the end of the century stopped all serious experimental work on methods of earth current signalling. Due to the necessities of warfare, however, where lines and wireless aerials could not be maintained under shell-fire, earth current signalling came into practical use

again. And the invention of valve amplifiers made possible ranges and results quite unattainable before the war.

The Power Buzzer

The development of earth signalling by the Allies in WW1 was largely due to the work of the French Central Bureau de Telegraphie under Col. Ferrie. This method was called T.P.S. (Telegraphie par le Sol) and was soon adopted by the other allies. In this article we will follow the developments in the British Signal Service.

Experiments were carried out in 1915, but the first practical use of earth current signalling was at Vermelles in January 1916. Two French hand-driven alternators were installed in the forward trenches and their high-pitched notes were picked up by a two-valve listening set, also borrowed from the French Army. Due to difficulty in working, the absence of experienced operators, and the likelihood of being overheard, the results were not very promising.

Fig. 2. The Power Buzzer used for one-way signalling from an advanced observation post back to H.Q.

Late in 1916, the French "Parleur", or "Power Buzzer", a heavy duty instrument, was introduced to the British Army. A proportion of the available British three-valve listening sets, normally used for both intercepting enemy messages and controlling British signalling, were set aside to receive messages sent by this means. They showed good possibilities in action, but were still unfavourably reported on.

Signalling was one-way only, and as the sender felt no conviction that his message was getting through, it was used only as a last resort. Special amplifier sets were then designed, and these overcame the problem of one-way working to some extent. Large quantities were provided and operators were selected for training on Power Buzzers in the winter of 1916/17. In January 1918 the situation was further improved by the issue of combined Power Buzzer/Amplifier sets, making two-way stations more compact and portable.

The opening of the 1917 campaign thus found the earth induction set in a much stronger position than it held the previous year. In his book, "The Signal Service", Priestley reports:

"..... This was soon reflected in the reports of the signal officers. Again and again it was recorded that, when communications had gone, power buzzer and amplifier sets had bridged the gap until better communications returned.

"At Bullecourt, in May 1917, during attacks on the Hindenburg Line, the shelling had been so intense that no cable or wireless communication was possible between Australians in the Hindenburg Line and their supports. Wireless aerials would not stand up; lines were blasted off the face of the earth, runners left the trenches only to be blown to pieces and the supply of pigeons could not be maintained.

"Deep down in the tunnels and caverns beneath the line, however, were installed two power buzzers and amplifiers. With their bases securely hidden in the tunnels and with the sets themselves under many feet of headcover, they remained inviolate. For several days after the line was occupied these sets kept up constant communication with other sets further to the rear, and gave warning of several impending counter-attacks which were successfully repulsed.

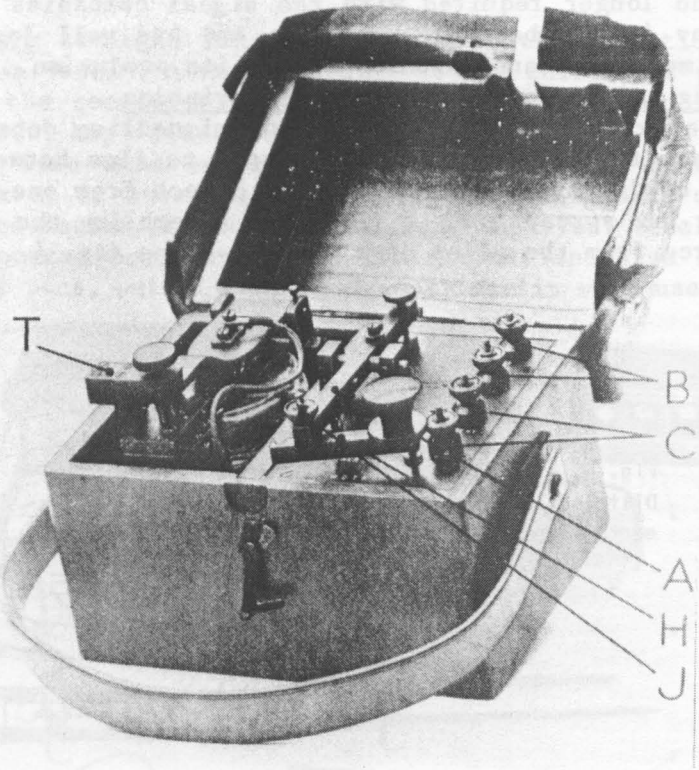


Fig. 3. BRITISH ARMY POWER BUZZER (initial model, 1917, copied from the French "Parleur"). Range: 2000 to 5000 yards. Can only transmit and needs an additional amplifier if two-way working is required. Weight, 3.5 lb. Up to 14 hours continuous working from a standard 10 volt, 12.5 a.h. battery.
The earth base is connected to B, and the battery to terminals "C". The instrument should be used with the case shut. To enable this to be done, the knob of the Morse key, A, is carried on a hinged extension, H, to the outside of the case. To prevent the key projecting during transport, the thumbscrew, J, is loosened and the key extension turned to the right when the lid can again be closed.

"After this and many other less dramatic but useful successes, the power buzzer achieved some degree of popularity and was used to a great extent as part of the normal intercommunication system. During 1918, the "forward" wireless sets (loop sets) replaced it in the affections of many units, including the Australian Divisions with which it scored its most notable success. With the

passing of position warfare the earth induction set became no longer required with the signal companies but in its day it had been of vital use and had well justified the time, money and labour spent on its evolution...."

Working principle and technical description

The principle of earth current signalling depends on the fact that if a current is caused to flow between two earth conductors it does not pass direct from one to the other, but spreads over a wide area resembling the lines of force from the poles of a magnet. See fig. 4. The

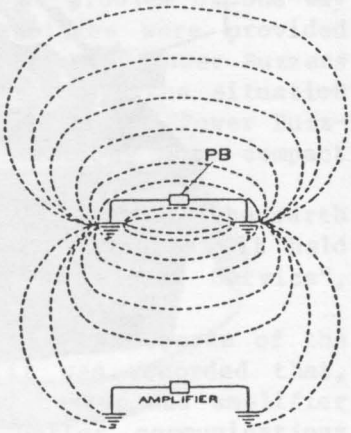
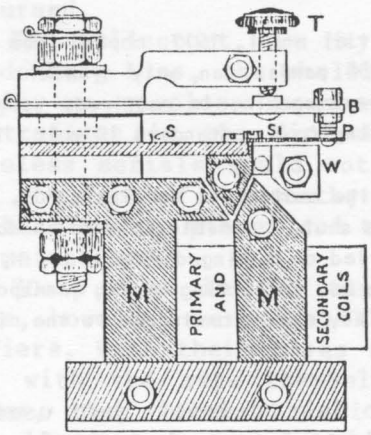


Fig. 4.
Distribution of earth currents.



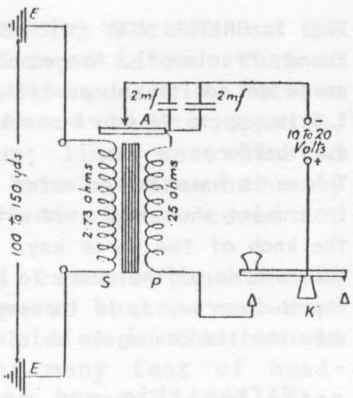


Fig. 5. Drawing and circuit of the French "Parleur" power buzzer, model "2 ter". Initially, British power buzzers were made to this design.

imaginary straight line joining the earth connections is called a "base". A small portion of the current is picked up by the receiving base, connected to a two or three-valve l.f. amplifier.

The base lines were laid out in a definite direction to pick up as much current as possible. All sorts of improvised earths and connections were employed. Steel pins or bayonets were driven into the ground, and also buried biscuit tins, petrol cans, and empty shells were used.

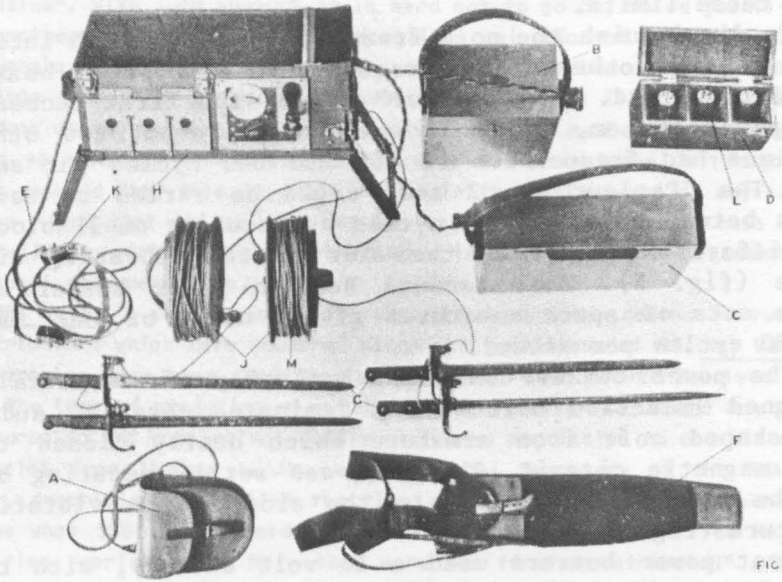


Fig. 6. Combined Power Buzzer/Amplifier. Complete station.
A = headphones bag; B = 4 volt battery for valve heaters; C = 10 volt battery for power buzzer; L = spare valves (type "R") in container D; F = holster for earth pins; G = earth pins (unserviceable bayonets); H = power buzzer/amplifier (this instrument comprises basically a standard power buzzer with a C MK III amplifier in one case with the addition of a send/receive switch, folding Morse key and ammeter); J = reels with base wires; and K = low resistance headphones.

The longest ranges were recorded over country without fences or intervening roads, where the surfaces consisted of a comparatively thin layer of light soil on a chalk sub-strata. Under such conditions, ranges of 5 kilometres were quite usual between a 20 watt "Parleur" power buzzer and a three-valve amplifier. Under war conditions, how-

ever, 2 km was considered a maximum range when no local information was available.

Choice of frequencies

Although an alternating current provides a greater signalling range than direct current (which can only be read by galvanometer), the usable frequency of the a.c. is limited. High frequency currents do not penetrate to any great depths or spread so far from the base. Experiments showed that frequencies between 500 and 800 cycles per second were very efficient, and that both the ear and the telephone receiver were most sensitive between these limits.

To distinguish the note from one buzzer through interference from others, the frequency of the power buzzer could be varied. The "Parleur" No. 2, the first successful power buzzer, had only one frequency but two other versions had frequencies of 500 and 800 cycles per second. The "Parleur No. 2 ter" could be varied in seven steps between 300 and 800 cycles by securing small blocks of different weights to the side of the vibrating armature (fig. 5). The standard British power buzzer had three sets of spare armatures giving notes of 540, 640, or 730 cycles per second.

The power buzzer consisted basically of a specially designed induction coil with a laminated core, M, and a "v" shaped soft iron armature which nearly closed the iron magnetic circuit. The note was set by securing one of the special blocks, W, to the side of the vibrating armature (fig. 5).

Most power buzzers used a 10 volt battery, with the secondary coil delivering about 70-100 volts, depending on the model. Incoming signals were amplified to a high degree by special amplifiers. It was entirely due to the invention of the high vacuum valve (tube) that signalling by power buzzer became practicable.

ACKNOWLEDGEMENTS

Photographs by courtesy of the Royal Signals Museum Historical Library, with special thanks to Major Alan Harfield, Deputy Director of the Museum.

REFERENCES

For those interested, a list of 34 references relating to this subject is obtainable from the editor. Please send an s.a.e. (UK) or 1 x IRC (outside UK).

Just rambling....

TWO YEARS OLD! With this issue, the English language version of MM reaches its second birthday. There have been some problems along the way but for the moment, at least, its nice to look back on our successes. There is a solid core of totally supportive readers of MM around the world who write fine articles, research information, dig out old magazines and books, or help in other ways, and who greatly appreciate the existence of "their" magazine". With such support it is hard not to go on, so we jointly embark on another year with a further marvellous selection of Morse literature to entertain and educate us, maybe even helping us to become better operators! Strange though it may seem, however, not everyone likes MM! Some 20% of readers do not renew their subscriptions, and the number of new subscribers in a year barely equals the losses. Its a fine balance, although I have been assured that this is quite common in the early years of any such magazine - and that things will get better! In the meantime, please continue to tell your friends about MM - there is no better advertisement than a personal recommendation.

SILENT KEYS. I am very sorry to have to report the deaths of two valued contributors which have occurred since the last issue of MM. Roy Walmsley's Key-tronics have been very popular. Before I ever became involved in MM I had the idea of producing my own Morse magazine in the UK and Roy was most encouraging and supportive, gladly giving me permission to use his original material from 'Mercury'. He became General Secretary of the RSARS last year, describing himself at the time as "a CW DX orientated operator who knows what SSB is but seldom uses it!" There are still a few Keytronics awaiting reprinting in MM - they were the first "contributed" articles I ever received and will always remind me of a fine CW operator, and a very nice man.

Chas Claydon's first article, 'The Arc Transmitter', appeared in MM7, and I have several others on file. As you will see from his tale of the 'Underwater Phantom' in this issue, he had a highly developed sense of humour. I had a lot of correspondence with him and he would sometimes telephone me from Scotland for a chat. He wrote some marvellous poetry and had a great fund of stories, some of which were quite outrageous and, unfortunately, outside the scope of MM! He was a great character! Although I never met him personally, I thought of him as a good friend, and I miss receiving his letters and his phone calls.

Mark Brownfield. I must also mention the tribute to Mark which appears in this issue. His story of incredible achievement should inspire any Morse operator. Some MM readers will have already read it in RADIAL earlier this year, but if there is another magazine where such a story should be recorded, it must surely be Morsum Magnificat. 73, Tony.

HALCYON DAYS

THE STORY OF AMATEUR RADIO IN VK4, QUEENSLAND, AUSTRALIA.

Alan Shawsmith, VK4SS, has written a fascinating book describing, against the general background of the development of amateur radio in Australia, and with some reference to world developments, what happened specifically in his home State of Queensland from the earliest days up until 1939.

The story of amateur radio does of course cover other modes apart from communication by means of Morse code, although in the early days Morse was the principal, if not the only, means of communicating. There is therefore, much in Alan's book of interest to the modern Morse enthusiast who wants to look back to the "roots" of today's hobby. The following (condensed) "snippets" have been taken at random from "Halcyon Days".

The first recorded wireless communication in Queensland was between two Navy ships, "Gayundah" and "Paluma", anchored 1½ miles off shore, in April 1903. Next day Gayundah worked Brisbane, 37 miles away, "loud and clear both ways". The response of the Chief Electrical Engineer of Posts and Telegraphs was that wireless would never replace communications with wires or by sea cables.

In 1908 two enthusiasts, one in NSW and one in Victoria, applied to the Navy (the then authority for wireless) for a licence to transmit. The Navy refused and the Crown Law Department had to be involved before permits were legally allowed. Until 1925, in fact, the Navy, and later the Postmaster-General, resisted rather than encouraged experimental wireless transmissions in Australia, so many experimenters never bothered to apply for a licence at all.

In 1914, Marcus Brims, call-sign XQA, built a spark station which he did not re-assemble after WW1. It remained in storage for 70 years and in 1987 was found to be still in usable condition.

Alan quotes the 1930 ARRL Handbook...."the New Zealand amateurs... reported logging many US stations early in

1923. Hard behind the Kiwis came the Aussies in mid-summer of the same year. They too began hearing endless American callsigns. In those days it was just a bit bewildering to keep up with developments."

In 1935 "Teleradio" magazine described Madeline MacKenzie, VK4YL, aged 12, as the youngest radio operator in the British Empire. She passed the full ticket at her first attempt, including code at 12-14 wpm and by the time she was 15 had acquired an impressive list of rare DX QSLs, all on the key. She earned meritorious placings in the contests of her day, including an outstanding 6th place, again on the key, in the Senior Section of the 1938 BERU which was a major contest in those days.

Alan describes the equipment used in the early days by Australian amateurs; he outlines the development of QSLing in the 20s and 30s; he describes the introduction of the Amateur Operators Certificate of Proficiency (AOCP) in 1925, and gives some interesting examples of early examination papers. There are profiles of old-timers; details of early contests and awards; details of a number of magazines and journals, from home and abroad, available to radio amateurs in Australia pre-1939 (over 250 at one time or another); a chronological list of events 1905 to 1940; a glossary of amateur terms, and much more.

There's humour too, for example:

Frank, VK4JU, known for his pride in the perfection of his sending, was showing his rig to a friend. He gave a local a call in his best code. The local came back with a dreadfully "sloppy" fist. "Just listen to that", said Frank in disgust, "that's an insult to Samuel Morse. He's sending with his bloody left foot! The only way to teach these mutilators a lesson is to give em a dose of their own medicine."

He tore off his left shoe and sock, leapt up onto the rig table, placed a big toe on the key and proceeded to send an even sloppier reply, finishing with "How did ya copy?" "Good", was the reply, "you did better than the first over. Have you changed keys?"

One final story from this interesting and absorbing book. This concerns the Rev. R.J. Delbridge - Del, VK4RJ. He was Queensland's first amateur DJ parson with a regular Sunday morning Sacred Service on 200 metres, MW, which swamped out reception of all other stations for a mile around. Despite vociferous complaints from his

neighbours he privately believed there was a lot of "soul saving" needed in the locality, and continued his transmissions undeterred until 200m was lost to the amateurs.

"Eventually he fell ill and suffered a stroke. The family at his bedside could raise no response from him. In desperation they called upon one of his old friends, Frank VK4FN. Frank gently held the old man's hand and tapped with his fingers on Del's palm in Morse, the query "QRK". The response was immediate as VK4RJ tapped back an "R" (Roger). Encouraged, Frank tapped out the words, "Love and Pray". Again it was acknowledged before the Reverend quietly slipped away.

CW had achieved what voice could not."

Copies of "Halcyon Days" can be obtained from the Librarian, Wireless Institute of Australia, Box 638, Brisbane, Queensland, Australia. Copies autographed by the author can be obtained from Alan Shawsmith VK4SS, 35 Whynot Street, West End, Brisbane, Qld. 4101, Australia. The price in both cases is (Australian) $12.00, postpaid.

REGRETS

I once owned two items which other readers may be able to comment on. The first was a 78 r.p.m. gramophone record of Marconi's first transatlantic communication, with the "B" side containing a Morse practice section which could be played at different speeds.

The second was a large varnished wooden box containing a metal rimmed dome on which sat a three-pointed metal clip. This sat on the perspex top of the dome. There were key terminals and headphone terminals, and it was designed to teach telegraphists to receive Morse signals through QRM/QRN conditions.

I can't remember if it was mains or battery-powered, but the principle was that when power was applied the metal vibrated on the dome, causing an atrocious noise in the 'phones resembling static through which one could send Morse signals.

The degree of interference could be regulated and, although crude in design, worked well with the buzzer. How I wish I had kept it! I believe it was designed for Royal Navy use. I wonder if any readers trained on it?

73, Paul Fry, GØFUS.

EUCW NEWS

FISTS CW CLUB, now a member of the European CW Association, celebrates its first anniversary with a Straight Key Week, from 0001z Sunday 4th September to 2359z Saturday 10th September. Use a straight key and work as many FISTS members as you can! Contacts made during the week also qualify for the FISTS Century Award. Details from Geo Longden G3ZQS, 119 Cemetery Road, Darwen, Lancs, BB3 2LZ.

THE ANNUAL EUCW FRATERNISING CW PARTY is on Saturday and Sunday, November 19th and 20th. There are four classes: A - members of EUCW organisations using more than 5W output; B - the same, using QRP (up to 5W); C - Other amateurs, using any power; D - Short-wave Listeners.

Frequencies	Nov 19		Nov 20	
	1500-1700z	1800-2000z	0700-0900z	1000-12000z
3520-3550		x	x	
7010-7030	x	x	x	x
14020-14050	x			x

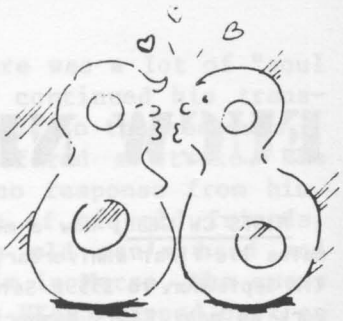
Exchanges: Class A & B - RST/QTH/Name/Club membership number. Class C - RST/QTH/Name/NM (NM = "not a member"). Class D - to claim points the exchanges of both stations must be logged. Scoring: Classes A, B, C - 1 point with own country, 3 points with other countries. Class D - 3 points for each logged QSO. Multipliers - 1 for each EUCW member organisation worked or logged per day and band. Logs, must show date, time, band, callsign, info sent and received, and points claimed for each contact. Summary Sheets to show name, address, own call, score claimed, rig used, including power, and the signature of claimant.

Send logs, by 20th December 1988, to the Contest Manager, Guenther Nierbauer DJ2XP, Illingerstr 74, D-6682 Ottweiler, West Germany.

Certificates are awarded to the first three stations of each class, but it is not a formal contest - it is for fraternisation and enjoyment! Even if you don't make a high score, please send an entry or a check log to DJ2XP, especially the G-stations who, despite a strong membership of EUCW, have not made their presence felt in previous events.

EUCW PROTESTS! The G-QRP Club, a member of EUCW, has learned of an application to the RSGB/DTI for a special licence to be allocated for an AMTOR semi-automatic station to operate on 7030/7031 kHz. This is within the CW section of the IARU Region 1 bandplan, and could seriously affect operation on the international QRP frequency of 7030 kHz. EUCW has alerted all member organisations to this threat to CW operation on 40m and IARU Region 1 and the RSGB have been inundated with protests. The formal position of both organisations is that no variation of an agreed bandplan can be sanctioned, but EUCW remains alert to further threats!

THE LANGUAGE OF MORSE



ANGIE SITTON, GØHGA.

On 16th April 1987 Angie, G1XEO, was calling CQ on 2m SSB when the postman arrived with her new "A" licence. She went straight back to the rig and carried on calling CQ Europe as GØHGA. She didn't stay on SSB for long however - she describes her first few days with CW, and how she then became addicted to it.....

I lost little time in getting on 2m CW. Most operators were helpful and would QRS, letting me send faster. If their CW was good I didn't need to ask for QRS anyway. The h.f. rig was an HW9 on loan from my club, maximum 3 watts, so very QRP. I was dubious about getting contacts with it, but was proved wrong.

What a thrill to hear MY call-sign coming back from another amateur in another country! I had worked ON/PA/F on 2m SSB, but this was different. This was h.f. and CW. It was such a thrill when I heard HA8KUX calling CQ with such beautiful CW. I decided to give him a call; he heard me first time, gave me 559 and we completed with no problems. I wanted to tell my husband John, but it was 2 a.m. and he was asleep!

After one week of QRP CW I had 12 DXCC countries behind me. It was great fun! Working an ON I did not realise the rig was still on 150 mW from a previous qso. I got a 599 and told him I was using 3 watts!

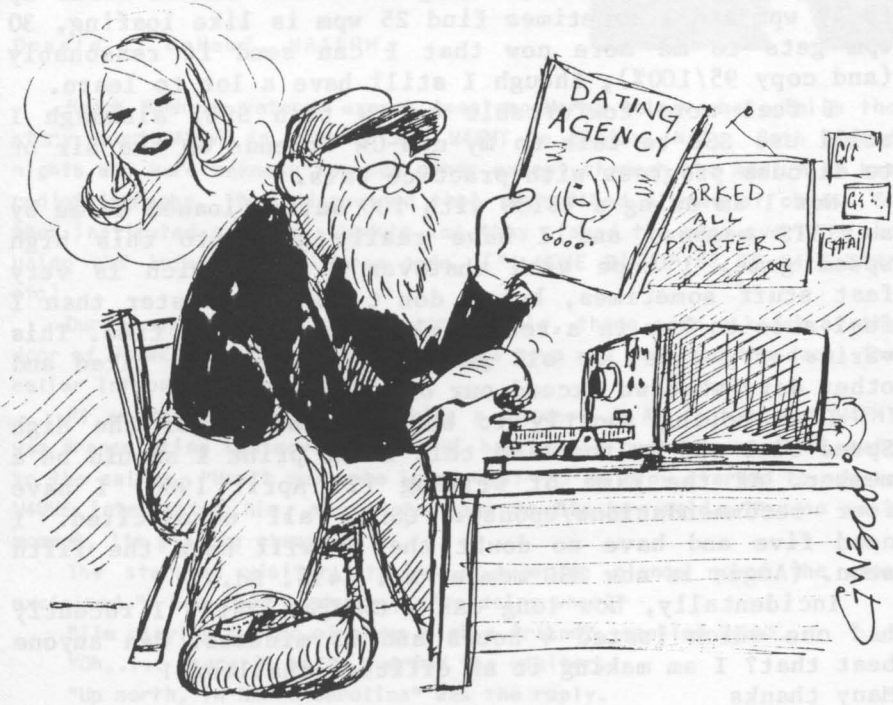
Sri QRM!

I don't send QRP or YL or anything like that unless desperate. I prefer to work them par for par. If at all possible I try to cope with their speed. It is good for me. I called a PA who insisted on knowing my age! I tried all sorts of ploys to get out of telling him, QRM/QSB/QRS etc, but he sent "ur age?" so many times and so slow I had to tell him. He was 70 by the way!

With non-G stations I use my full name, Angela, because with "Angie" I was being called "dr OM Angie"!

Now they send "dr YL Angela", or "is ur name YL?", and give me 88s too!

But with G-stations I do use "Angie". What I cannot stand is poor sending, pecking at it, or joining up all the words without proper gaps. I'm not perfect myself, but I do sometimes get asked if I am using a paddle. I'm told that's a compliment if I am using a straight key.



---INSISTED ON KNOWING MY AGE---

Funny looks

I have also used the key in the car. With my class B variation I worked 2m CW from a layby, and while John was driving. I called /P while John was getting something from a scrapyard and got some funny looks as I used the key on the car bonnet! I did the same thing at the Cambridge junk sale, in the car park. This time, rather than getting funny looks, the hams were coming over and saying hello. A G4 sent my G1 call on 144.050 and said I would have to reply if anyone called! I had already passed my

Morse test by this time, and was awaiting my certificate.

Time has moved on - and now, a year later, I have well over 1400 CW QSOs in my log, plus contest QSOs. I want to be able to send good Morse at any speed; to help newcomers as I was helped so much, and I want to be able to chat with anyone at any speed.

Still learning

My speed goal is about 40 wpm, with an ability to work very high speeds now and then partly for fun and experimentation. I can already recognise some common words up to 40 wpm and I sometimes find 25 wpm is like loafing. 30 wpm gets to me more now that I can send it reasonably (and copy 95/100%), though I still have a lot to learn.

I feel more comfortable on CW than SSB, although I still use SSB to talk to my non-CW friends on the air or to discuss progress with practice pals.

Now I am using a TS130 with 100 watts (loaned to me by a FISTS member) and I have really got into this high speed game. I cope with whatever I get, which is very fast stuff sometimes, but I don't go back faster than I feel able to key in a reasonable manner at the time. This varies of course. We all get days when we are tired and other days when we exceed our own abilities.

I am hoping shortly to become a member of the High Speed Club and by the time this is in print I should be a member. At the time of writing (27 April 1988) I have four recommendations/sponsor QSLs, all unsolicited. I need five and have no doubt that I will have the fifth soon. (Angie is now HSC member No. 1496. Ed.)

Incidentally, how long can a CW QSO last? I recently had one which lasted 4 hours and 22 minutes. Can anyone beat that? I am making it an official challenge!

Many thanks

I find the HSC operators, and indeed all the boys down on HF a great help, great fun and great company. I must thank the old-timers and FOC's for their endless patience and advice; for giving me practice and, above all, for the pleasure of their company - may I please have the pleasure of yours?

As you can see, I am now a CW addict - maybe one of the nuttiest! For me it is like another language. If you hear me, give me a call. Fast or slow, I would love to talk to you in the language of Morse!

73, Angie.

THE INVISIBLE CHESS PLAYER

Donald K. deNeuf, WA1SPM.

Ralph Graham, veteran expert American Morse telegrapher, tells the story about W4UWE in Atlanta and W4FMT in Shelby, N.C. Both worked nights and were unknown to each other except through the medium of ham radiotelegraphy. They discovered that each liked a game of chess. So they instituted a daily schedule and they played the game over the air using the International Morse code. ("I MOVE BISHOP G2 TO C4 CHECK" etc).

During one of these games over the air, there came a knock at the door of W4UWE. He transmitted his chess move and answered the door. The caller introduced himself.

"I am Joe Blow, and I'm making a survey..." At that moment W4FMT was transmitting his move, and W4UWE hearing it over the speaker, said to the caller, "Won't you come in please?" As Mr Blow started to speak, W4UWE interrupted him, and as he went to his key said, "Pardon me a moment, I'm playing chess".,

The startled visitor, taking a sweeping glance round the room exclaimed "I beg your pardon - you're doing what?"

"I'm playing a game of chess with a friend", replied W4UWE.

"Oh,.... where is he?", queried the visitor.

"Up north, in North Carolina" was the reply.

With a hurried glance round the room Mr Blow jumped to his feet and mumbling as he made for the door said, "I'm sorry - I've gotta go. I'll come back some other time.

Who could blame the poor guy?

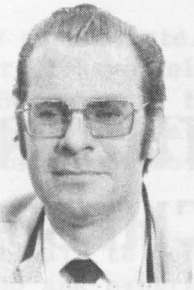
(from Dots & Dashes, journal of the Morse Telegraph Club)

ooooOOOoooo

As this issue went to press I received the sad news that Don deNeuf died on July 27. A good friend of MM, his entertaining and informative articles have been very popular. There are many more awaiting publication and I hope to be able to continue using them. His most interesting life and achievements were described in an article in MM7, which now serves as a tribute and a memorial to him. T.S.

Simple Pre-selector

for the H.F.bands.



by FRANS KLINKER, PA3DDN.

During the process of designing and building my HF receiver I came to the problem of RF selectivity. An article in the professional literature (ref. 1) indicated which way to go, making the bandwidths as small as possible consistent with an acceptable insertion loss value. Consequently, to cover the amateur bands, fixed tuned filters were out.

In a preliminary attempt to build tunable four-resonator bandpass filters, two-resonator filters, as shown in fig. 1, were constructed for the frequency ranges 3.45-3.85; 6.5-10.4; 13.8-21.5; and 20.0-30.0 MHz. Source and load impedances were assumed to be 50 ohms. Inductive shunt coupling was chosen to preserve pass-band shape with tuning.

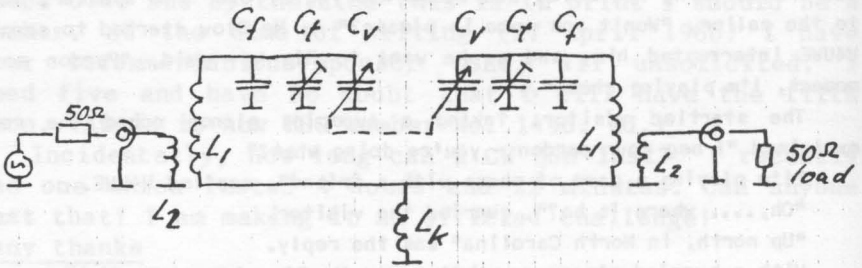


Figure 1. Filter configuration.

Component values are given in table 1. Measured results for each filter, tuned to the amateur bands (except 12m) within its range, are shown in table 2.

Alignment is simple: First, the coupling coil Lk is set to its required value, eg by using a GDO and a known capacitor. For this procedure the suggested value of the capacitor and the resulting resonant frequency are shown in brackets in the Lk columns of table 1.

TABLE 1: (Cv = 10-40 pF.)

Tuning Range (MHz)	Cf (pF)	Ct (pF)	Lk	L1	L2
3.45 -3.85	82	80	6t 1mm CuE on slug-tuned 6mm former. (0.21uH) (100pF = 34.7 MHz)	54t 0.25mm CuE on T50-6 toroid. (12.3uH)	2t 0.5mm CuE on cold end of L1.
6.5 -10.4	-	40	5t 1mm CuE on slug-tuned 6mm former. (0.19uH) (100pF = 36.5 MHz)	50t 0.25mm CuE on T50-6 toroid. (11uH)	2t 0.5mm CuE on cold end of L1.
13.8 -21.5	-	25	Air coil 3t 1mm tinned wire spacing 1mm Coil dia 0.6 mm. (50nH) (100pf= 71.2 MHz)	27t 0.5mm CuE on T50-6 toroid. (3uH)	1t 0.5mm CuE on cold end of L1.
20.0 -30.0	-	25	Air coil 3t 1mm tinned wire spacing 1.5mm. Coil dia 0.6mm (40nH) (100pF = 79.6 MHz)	16t 0.5mm CuE on T50-6 toroid. (1.32uH)	1t 0.5mm CuE on cold end of L1.

The trimmers Ct are then set for maximum output at the highest frequency, with Cv set at minimum capacity. Some experimenting with the alignment frequency, for example using the mid-band value instead of the highest one and setting Cv accordingly, may prove advantageous in terms of smaller insertion loss over the filter tuning range.

Finally, if you decide to construct a band-switched unit, be sure to short-circuit the resonators not in use. Otherwise, considerable pass-band distortion may occur.

What about the band-switched four-resonator filter? Well, I made one, but despite having access to a spectrum analyser/tracking generator, and not being afraid of some mechanical labour, it proved to be a difficult job. However, if you are interested let me know, either by mail* or by CW on 3553 kHz where I'm QRV almost daily from 1800 to 1900 GMT.

Ref. 1 R.A. Barrs: "A Reappraisal of HF Receiver Selectivity". IERE Conference on Radio Receivers and Associated Systems, July 1981, Leeds. IERE Conference Report No. 50.

73, Frans.

*Prof. ter Veenstr. 66,
8302 GD Emmeloord
HOLLAND.

Filter tuning range (MHz)	Filter tuned to (MHz)	3dB band-width (MHz)	Attenuation in dB at frequency listed below in MHz. 1.8	3.5	7.0	10.1	14.0	18.0	21.0	28.0
3.45-3.85	3.5	0.090	>70	2.5	55	55	>50	>50	>50	>50
	7.0	0.180	>70	>70	2.0	50	53	53	52	>50
6.50-10.4										
	10.1	0.250	>70	>70	65	3.5	44	48	50	>50
	14.0	0.350	>70	>70	>70	65	2.0	45	52	55
13.8-21.5										
	18.0	0.450	>70	>70	>70	>70	58	2.5	40	50
	21.0	1.000	>70	>70	>70	>70	45	34	1.5	36
20.0-30.0										
	28.0	1.200	>70	>70	>70	>70	>70	40	30	1.5

TABLE 2: MEASUREMENT RESULTS.

STRAIGHT KEY DAY

This year's RSGB SKD will be held on 80m (3515-3555 kHz) from 0800 to 2100 GMT on Saturday October 8th.

Normal QSOs should be held, using a manual key. Exchange the usual information plus details of the key being used.

After the event, send photographs, comments, and nominations for the "best fist heard", to Colin Turner G3VTT, Hurley, Weavering Street, Maidstone, Kent ME14 5JJ. An award will be made for the best fist.

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readers' ads

FOR SALE

Handbook of Practical Telegraphy, R. Culley, 6th edn, 1874. 443pp + 48pp pubs cat. 9" x 6" ex-library copy. £25, plus post. Alan Williams G3KSU, 11 Grange Ave, Ryde I.O.W., PO33 3LS. Tel: 0983 65551.

WANTED

Vibroplex Original or McElroy Bug Key. S.P. Shackleford G2HAX, 20 Coniston Drive, Tilehurst, Reading, Berks RG3 6XS. Tel: 0734 410235.

J38 Steel Key. Jim Harrison, 43 Churchfield Court, Walton, Peterborough, PE4 6GB.

Speed-X 501 bug key: C. Waters G3TSS, 1 Chantry Estate, Corbridge, Northumberland, NE45 5JH.

[These advertisements for Morse related items are accepted from subscribers free of charge. General ads, eg "old Morse keys wanted", not accepted. Deadline for next issue 15th October 1988. Space is limited and there can be no guarantee that an advertisement will appear in a particular issue. Advertisements are carried as a service to readers and MM accepts no responsibility for transactions arising from them.]

REFLECTIONS from Uncle Bas - 5

Those dark blue uniforms, with gold stripes on sleeve and collar, inspired dreams of distant shores and shining white beaches, urging me to pack my suitcase and depart for the unknown.

I was brought up near the general cargo docks in the western part of Rotterdam. My friends and I spent all our spare time there, with its sea-going ships, loading and discharging vessels, foreign sailors and angry watchmen.

From just after the second world war until about fifteen years ago these docks were always occupied by big sea-going freighters from exotic sounding countries. Their impressive names, painted on their bows, seemed like a fairy tale from ancient times. Their places of origin, Bombay, New York, Hong Kong, Sydney, gave me the most beautiful dreams. From that time on, it was clear to me that my future was going to be at sea; there was no doubt about it.

Obvious choice

I was already mad about radio, especially the construction of receivers and transmitters, so my maritime profession was obvious from the start. I would become a radio officer. But there were still a good many years of study and growing up ahead; to my boy's eyes these years were too many and too long, especially for studying the subjects I detested but which were nevertheless required. In the end, however, the certificate was obtained and I was ready for the sea.

Those beautiful uniforms never came through though. I had one on my first ship, a Norwegian freighter. I was the only member of the crew who had one so, obviously, I never wore it.

This uniform was the cheapest money could buy. My

mother, a very smart lady, considered me expensive enough and told me to look around a bit before spending excessive amounts on paraphernalia; and if that was what I really wanted I could buy everything with my own earned wages. She was a very sensible woman. She had never been to sea but she had a very clear sense of reality.

One exception

In the various ships I served on, uniforms were looked down on. One could not see the purpose of them. One exception, however, stands out clearly in my mind. This was the captain of a rotten, old, rusty, rundown Liberian freighter tramping regularly between ports in the Eastern United States and various places in the Caribbean and Central America, in the great days of United Fruit and the bananas. When entering a port he was always in grand gala with hat, white shirt, gloves and so on. Rumour had it that this show was to impress the "ladies of the town" in order to get a special rate but, as we all know, on ships gossip stands high on the menu.

The only time I wore uniform officially was in Havana, Cuba. A member of the crew slipped on the gangway during the night, probably after having had too many Cuba Libres; nobody noticed the accident and the poor fellow drowned. It was a tragic accident, but it was a long time ago and I have forgotten the man's name.

Some of the crew and several officers attended the funeral. The service was conducted by a Cuban priest, attired like a bishop, and assisted by the Norwegian Consul in Cuba. Although the ship was under the Liberian flag, it was Norwegian owned and the majority of the crew members were Scandinavian. Apart from the Cuban priest it was, therefore, a completely Scandinavian affair.

No shade

Havanna in summer time is a very hot place and this year the weather situation was exceptional. The temperature in the graveyard was more than 30 degrees centigrade, and with no tree in sight there was no shade whatsoever.

Most crew members attending were dressed in light clothing, shirts with short sleeves, slacks, no socks and simple shoes. The officers were all in uniform but there was a significant difference between those of the captain and the mates, who wore tropical uniform, and that of the radio officer (me), who wore a heavy dark blue suit (as advised by my mother, who used to say "Always be prep-

ared"), a heavy cap and everything else that goes with such uniform. Looking back, I can now say that I was perfectly dressed for a winter in Greenland.

The Cuban priest was a speaker who could not stop, or did not know how to; this kind of event did not come his way often so he made the best of it. The Consul, obviously, took his time to deliver an even better and longer monologue and after this the captain did not want to be considered ignorant, so he kept everyone on their feet for another thirty minutes.

Situation unbearable

So far the service had taken almost two hours. The sun was burning red hot, the men were bone dry and longed for beer and shade. For me, in my heavy suit, the situation was even more unbearable. The temperature inside the uniform had risen devilishly high and I was getting very uneasy.

Afterwards it was clear that the temperature had become too high for my well-being because when I came to I was stretched out on a bench in the office of the graveyard.

...THE CAPTAIN WAS GREATLY AFFECTED..

The captain was greatly affected by my passing out during his sermon. I never dared tell him that my collapse was due to reasons other than the effect of his words since following the funeral, and for many years after, I could do no wrong in the man's eyes.....

Bastian van Es.

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DATA PROTECTION ACT 1984

To facilitate record-keeping, mailing issues of MM, and addressing correspondence relating to MM, it is my intention to put details of subscribers on computer.

The information will consist of a subscriber's name and address and a code group of letters and numbers to indicate the type of postal despatch applicable and the number of the issue to which subscription has been paid. For example, UK12 = standard UK postal rate, subscription expires with issue Nr 12. All the information held on computer will be that shown on the address label.

Address labels for UK destinations are in course of preparation. Labels for destinations outside the UK are already produced under this system. For example, AB12 = Airmail, postal rate B, subscription expires with issue Nr 12.

Use of data for this purpose is exempt from registration under Section 7 of the Data Protection Act 1984, provided the individuals whose information is recorded have no objection. If an individual does object then the personal data relating to that individual must be held and processed manually or the Data User must register under the Act. In view of the cost of registration, I will take the former course.

Information held on computer will not be given to any other person for any purpose without the consent of the individual concerned. Will any existing subscriber who objects to his or her personal details being recorded on computer in the manner described please contact me as soon as possible.

Tony Smith, Editor, Morsum Magnificat.

The Soviet RED MOON

RAY HUNTING, G3OC.

On Monday, 7th October 1957, I was listening on the 20m CW band, and by chance heard a QSO between two Australian stations in Perth and Sydney. The amateur in Perth stated that he had heard a broadcast from Radio Moscow when it had been announced that the first artificial earth satellite had been launched by rocket from Central Asia. Details of the anticipated orbit were given, and amateur enthusiasts were invited to listen for the signals on the satellite's lower frequency of 20 megacycles. It was believed that it could be heard as it passed over Western Australia. The ham in Perth had picked up the signals on that frequency and described them as sounding like "bleep-bleep".

As the news had not yet been broadcast to Europe, I decided to try to be the first amateur to hear the satellite when it passed over England in its North-west to South-east orbit. Using an Eddystone 640 receiver, I tuned to the frequency at 21.45 hours, but that orbit was out of range. I made a second attempt sixty-five minutes later at 22.50, when it was due to pass over Leicestershire where I was living.

The frequency was silent until the satellite came over the horizon, and the easily recognisable "bleep-bleep" signal was heard at S9 over the loudspeaker. I gathered the family to listen to the first signals from space, as the tiny object passed overhead at a height of 400 miles and a speed of 18,000 mph.

The transmission continued until 22.58. As the satellite sank towards the horizon, an echo was heard, caused by the signals being reflected from the launching rocket which was in the same orbit and trailing 620 miles behind. This was the only opportunity I had to listen to the signals. After it had passed over the English Channel and reached the Paris area of France, a fault developed in the transmitter and it was not heard again.

Local and national newspapers took an immediate interest in the story and published accounts of the "Amateur achievement". The first press reports referred to the Soviet satellite as the "Red Moon", but later in the week they were using the Russian name "SPUTNIK". I have often wondered if any other amateurs in Europe managed to pick up signals from the first Red Moon before its transmitter ceased to function.

Pioneer Wireless

Our thanks to the Niton Women's Institute for permission to reprint the following extract from their fascinating booklet, "Niton Calling", which tells the story of their ancient and historic village on the Isle of Wight.

****

It is not generally known that in 1900 Signor Marconi did a considerable amount of experimental wireless work at Niton. He came in the autumn of that year to call on Mr Kirkpatrick, of "Windcliffe", to ask for permission to set up his "station" at Knowles Farm. Mr Kirkpatrick's daughter writes:-

"I well remember Marconi calling on my father in the autumn of 1900 to ask for leave to put up a mast on our land; he said he had been all round the coast, and this point was the most suitable for his experiments; also there was an empty cottage there for the use of his men. So the first main wireless began at Knowles Farm, and some time after I received what must be one of the first private messages by wireless. My future brother-in-law was experimenting in wireless for the Navy on board HMS Vernon, and sent me an invitation to lunch to see if it 'got through'. The Marconi operator was so thrilled that he wrote me a covering note and sent me the original tape with the Marconi message. My father said 'Keep that, it will be very interesting some day'; so I put it into a cabinet in the drawing room, where it slept peacefully through two wars, and from whence I extracted it 50 years later; and I have sent the papers to the Science Museum in London for preservation. I have had a stone cut with the following inscription and put at Knowles Farm:-

> This is to commemorate that Marconi set up a wireless experimental station here in A.D. 1900."

The mast used by Marconi was one which had been taken out of the Royal Yacht 'Britannia'. Some people in Niton still remember that walls had to be pulled down in order to get the mast round one or two of the sharp corners on the way down to Knowles Farm.

ROY WALMSLEY, G3IBB.

Key-tronics, 4

Readability-Strength-Tone

How many of us, with our hands over our heart, can honestly claim to give a considered report? When did YOU last refer to the R-S-T code before pronouncing judgement on a signal? Indeed, check your log and see if you have EVER given other than "T9".... Granted, a lot of the tone reports listed have little bearing on today's signals, but we must make the best of what we have. A "T8" report will at least alert an operator to the fact that something is wrong. Its amazing how grateful most are to get an honest report.

Dare I mention "Readability"? It appears that "R4" has taken on the meaning "an odd character readable now and then". If poor readability is not due to band conditions or your own inability to say "QRS", it is generally due to the poor quality of the other fellow's sending.

Would you dare to imply in your report that his code is so bad as to be almost unreadable? Perhaps you wouldn't be so popular, but at least you'd be honest.... This aspect of reporting has to be considered rather carefully - maybe the operator is physically handicapped and can't improve his sending. But more often it is a question of ignorance due to never being told!

Make a conscious effort to give an honest report. Unless you're sure, don't base your report on the two or three call-signs preceding a QSO; wait until you've heard an over. Listen for, and report on, clicks, chirp, drift and last, but not least, keying characteristics.

For instance, a poorly adjusted mechanical bug will invariably suffer from contact bounce on the dot side. It is not uncommon to hear the same key transmitting one frequency for dots, and another for dashes; enough to make you demented by the end of a QSO! A maladjusted elbug may obviously clip or slur - report it.

Netting

The majority of transceivers have been designed primarily for SSB. If a distant signal is tuned in correctly with the IRT (Clarifier) off, the operator can be pretty sure that he is correctly netted in this mode. However, when switching to CW it is usual to transmit carrier by switching the carrier frequency into the passband of the transmit filter, resulting in a change of frequency of some 800 Hz or so. Some transceivers with narrow CW filters arrange it that if you can hear a signal in the passband of the filter you're automatically netted (when the IRT is off). With others it is left to the operator to decide for himself where to net.

If you are not sure, the next time you contact a station using "separates" ask him to net exactly on to your frequency. Then, leaving the main tuning control of your transceiver alone, zero-beat his signal using your IRT. Put a mark on the IRT control for future reference then use it to obtain a comfortable pitch. THE MAIN TUNING CONTROL SHOULD NOT BE CHANGED. The next time you want to exactly net on to a signal, put the IRT to this mark and zero-beat using the main tuning control. Then, using the IRT, adjust the pitch as before.

The next time you work a station which is not properly netted on to you, why not offer the "helping hand of Amateur Radio", and pass on the advice offered here!

xxxxXXXxxxx

DUTCH RAILWAY KEYS

I recently visited the railway museum in Utrecht and was pleased to see two Morse keys exhibited. They were good quality keys in "GPO" style but they had two unusual features. Firstly, both front and back contacts were cushioned. I have previously only seen the front contacts cushioned, eg, on the RAF type D key.

The other oddity was the means of adjusting the tension. It was a coil spring which connected to a small cylinder which slid into the arm and was locked by a slide screw, ie, there was no fine adjustment of tension as is the norm. This latter feature was rather crude but otherwise the keys were of really high quality. Perhaps Dutch railway telegraphists didn't see the need for a fine control of the tension!

Gerald Stancey, G3MCK.

The Fessenden Oscillator

Chas Claydon, GM4GNB.

Back in the years between the two World Wars some British submarines were still equipped with Sound Telegraphy transmitters. These featured the Fessenden oscillator, so-called after its inventor, Professor Fessenden, a Canadian and one time colleague of Thomas Alva Edison.

The device was similar, in its essentials, to a large moving-coil loudspeaker. In place of a cone however, it had a flat circular steel diaphragm about three feet in diameter. Attached centrally to this was a soft iron core which carried the energising coil. There was a keying circuit and a generator which supplied a.c. at a frequency of 256 cycles. That's about Middle C, if memory serves me correctly.

An oscillator was fitted on each side of the hull, well forward, and below the waterline when the boat was surfaced. The diaphragms were flush with the hull and each had a rubber flange which made a watertight seal.

Reception was by hydrophone. A hydrophone usually had a carbon microphone attached to the rear of a cased watertight diaphragm which was mounted on the hull. There were three hydrophone positions, Port, Starboard and Aft. At the hydrophone panel in the control room an operator could switch to all positions singly, or listen to the combined output in the "Search" position.

Range-finding

Since the speed of sound in sea-water is a known constant, sound telegraphy could be used to establish the distance apart of submarines operating in company. This process was known as Radio Ranging, an ingenious Morse procedure by means of which each operator in turn measured the time-lapse of a dit travelling between them.

"Special issue" stop-watches with their dials show-

ing multiples of yards rather than seconds were used. The two readings were compared and the mean taken as the true distance apart. This made allowance for the difference in human reflexes and tests had shown it to be quite satisfactory for all practical purposes.

The limitations of sea-water as a transmission medium precluded the use of high-speed Morse. This was of no great moment as communication consisted mainly of X-code operating signals or short coded groups.

Underwater Phantom

In one boat in which I served, the First Lieutenant was a noted nitpicker. I fell foul of him in my capacity of hydrophone operator. The hydrophone panel was close by the after periscope, at which he was usually stationed for Diving Stations, and there he could sometimes catch the muted musical note of sound telegraphy in my headphones.

.... A NOTED NITPICKER ....

I had, of necessity, to enter what I heard in the W/T log before I reported it to the Captain at the forward periscope. The First Lieutenant, however, would break in and demand to know who was calling us. Something therefore had to be done about him.

Now, with the lips closed, it was possible to simulate the muted Middle C Fessenden note. I tried it out one day at Diving Stations by giving out with a few sotto voce "V"s. His Nibs fell for it. Hearing the faint sounds and seeing that I wasn't writing in my log, he called out sharply "someone calling Claydon".

This I meekly and respectfully denied. He wasn't pleased but things simmered down again. I let him stew for five minutes or so before the Underwater Phantom struck once more. A slightly longer transmission this time. Again I wrote nothing in my log. He was sure he had me now and took me to task for apparent dereliction of duty.

No more trouble

By this time the Captain joined in the argument. He wasn't happy at the interruption to a routine dummy attack on an unsuspecting tramp steamer chugging past at six knots or so. I claimed that there was no-one calling us. Did the Captain wish me to enquire if anyone was calling us? He did. The Phantom remained silent.

The Captain informed the First Lieutenant, a trifle coldly I thought, that we would continue with the aborted attack.

I had no more trouble with the Middle C Morse expert.... not in the sound telegraphy field at least, although relations between us were never what you might call cordial.

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AMEND YOUR Q/Z CODEBOOK!

The 15th Edition of the Handbook for Radio Operators, (1985), now produced by BTI Maritime and published by Lloyd's of London Press, contains a new Q-code:

Question.... QUZ? - May I resume restricted working?
Answer..... QUZ - Distress phase still in force, restricted working may be resumed.

(Contributed by Bruce Morris GW4XXF.)

THE FIRST OKAY?

By ANTHONY HOPWOOD, adapted from the LONDON ANECDOTES of the ELECTRIC TELEGRAPH, published by David Bogue, London, April 25, 1848.

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One Saturday evening, June 6th, 1846, Professor Samuel Morse, inventor of the code that bears his name, and his assistant Alfred Vail were in Morse's Washington laboratory setting up a test of the extended telegraph line from Washington to New York, a distance of 260 miles.

Also involved were operators at Baltimore, 40 miles out, Philadelphia, 150 miles, and the end of the line in Jersey City, across the Hudson River from New York. We join them as they set up the lines for the test.....

MORSE. "Baltimore - are you in connexion with Philadelphia?"

"Yes"

"Then connect me to Philadelphia."

BALTIMORE. "ay, wait a minute..... Go ahead, you can now talk to Philadelphia."

MORSE. "How do you do Philadelphia?"

PHIL. "Pretty well - Is that you Washington?"

MORSE. "Ay. Are you connected with New York?"

"Yes"

MORSE. "Put me in connexion with New York."

PHIL. "Ay - wait a minute.... go ahead. Now for it."

MORSE. "New York, How are you? How's your mother?"

No answer.

PHIL. "Hallo New York, Washington is talking to you. Don't you hear him? Why don't you answer?"

NEW YORK (to PHILADELPHIA) "I don't get anything from him."

MORSE. "I got that from New York!"

PHIL. "New York, Washington says he got that from you."

BALTIMORE. "How is it that Washington hears New York, and New York does not hear Washington?"

PHIL. "That's where I'm floored."

BALTIMORE. "What's the reason, Washington?"

MORSE. "Because New York has not properly adjusted his magnet."
PHIL. "I've been hard at work all day. I feel like bricks. Had no supper. I have had a stiff evening's work; there have been so many messages to-night - one alone gave us seventeen dollars. I want to go!"
MORSE. "Philadelphia - be quiet! Tell New York to ask me to write dots so he can adjust his magnet."
PHIL. "Ay, ay, sir, wait a moment. New York, ask Washington to write dots."
NEW YORK. "Ay, ay - Washington write dots; (Washington begins to write dots) That's it; O.K. Now I have got you - Go ahead."

Was that the real origin of the expression OK? Simply the way a test sequence of dots distorted as the inker came into adjustment, forming the letters OK. In American Morse code . . — . — with the dot in the K showing the correct setting. The signal would then change to dots thus . . — . — . . . . . .

It's possible this visible proof of correct adjustment proved an irresistible mnemonic to laconic American telegraphers, and later the world, long after the original Morse "register" and its idiosyncrasies were forgotten.

I suggest that the Morse code origin of OK is more likely than the "Oll Korrect" or "Old Kinderhook" derivation favoured by most dictionaries.

oooo000oooo

Klaxon Morse

This story concerns an ex-GPO telegraphist who, at the outbreak of WW1, was assigned to the Royal Flying Corps. He sat in the observer's seat spotting enemy positions.

The plane then flew back to HQ and, while the pilot circled, the telegraphist's job was to relay the information to the ground by sending Morse on an old car-type klaxon horn fixed to the side of the cockpit.

HQ acknowledged by placing letters on the ground. Whether these were actual letters or Morse symbols I never found out. As is usual, once the conversation got interesting we had to part.....

Geoff Arrowsmith, G4XSY.

The story of The Key-4

GOOD GUYS, BOOTLEGGERS, AND BASTARDS.

by LOUISE RAMSEY MOREAU, W3WRE.

No matter how carefully we try to cover all eventualities an opening usually pops up somewhere. And so it was with Horace Martin's semi-automatic key, for there were two exceptions that sneaked past his almost blanket patent.

In 1906, just two years after the Vibroplex appeared, W.O. Coffe of Cleveland, Ohio, invented the Mecograph, and in 1909 J.A. Hulit of Topeka, Kansas, received a patent for a third style of semi-automatic key. The Hulit instrument (fig. 1), was a two-lever spring driven key. As with Vibroplex, the dashes were made manually with one lever, while the dots were created by a second lever that activated a key-wound spring. Thus, by winding and rewinding like a clock the dots were produced. These keys were marketed by the Hulit Company until 1911.

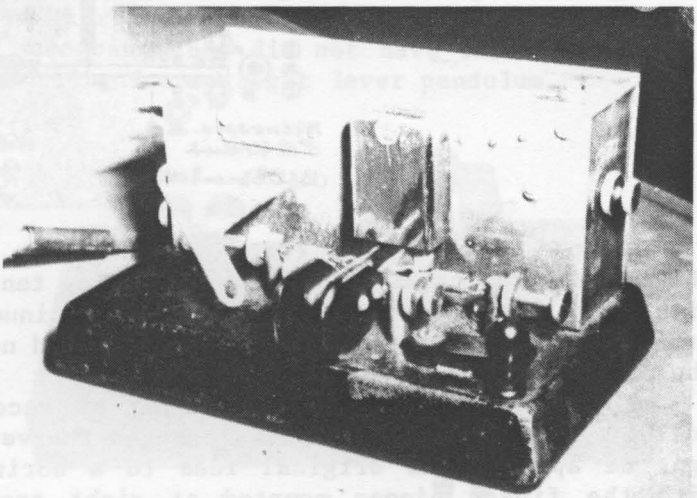


Fig. 1.
The Hulit
Transmitter.
(1909).

The Coffe invention, manufactured by the Mecograph Company in Cleveland, used a vertical design so that the pendulum, or vibrator, swung freely (fig. 2). But, as with Hulit, there was a loophole; in this case it was the spring action that by-passed the Martin patent rather than the physical design.

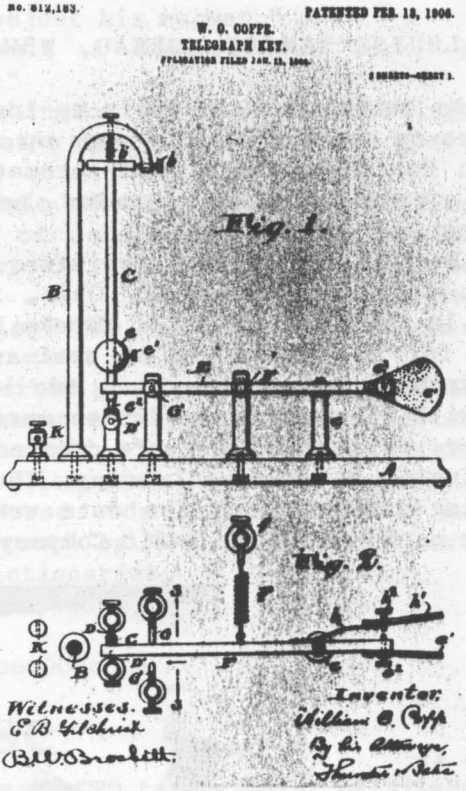


Fig. 2.
Mecograph-Coffe
Patent (1906).

Vibroplex made dots by creating tension in the spring, while Mecograph utilized release of spring tension. Thus, with that principle they were able to continue the commercial production of semi-automatic keys and not infringe the Martin patents.

The Coffe idea was the beginning of Mecograph. The following year Benjamin Bellows changed the vertical design. He applied the original idea to a horizontal base with the finger pieces mounted at right angles to the pendulum and Mecograph Number Two (fig. 3), popularly called the "Right-Angle Bug", was born.

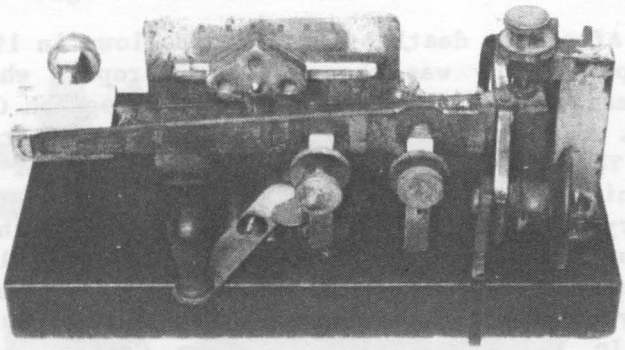


Fig. 3.
Mecograph-
(Bellows)
(1907)

The dot speeds were controlled by a speed indicator in the center of the base to govern the movement of the vibrator.

In 1908, Mecograph marketed a combination key with both a hand key and a semi-automatic on a single base. The entire mechanism was enclosed in a case with only the key knob and the two finger pieces exposed for operation. The style was produced so that the operator could easily switch to either type of operation with a minimum of arm movement.

Then, in 1909, they came back with a smaller version of the Number Two model (fig. 4) that changed the speed control from arbitrary settings to an adjustable slide mounted on the vibrator to control the dot speeds. 1910 saw the only Mecograph that did not have the right-angle principle but utilized a straight lever pendulum.

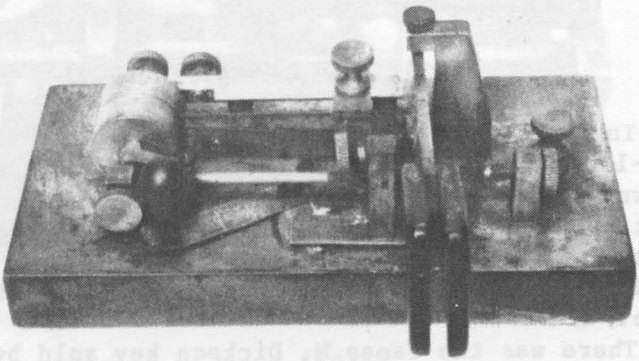


Fig. 4.
Mecograph-
(Bellows)
(1909)

After the death of Benjamin Bellows in 1913, the Mecograph Company was absorbed by Vibroplex who then listed themselves as the "Vibroplex and Mecograph Company", with J.E. Albright as sole agent for several years.

The semi-automatic key was very popular and obviously turning into quite a financial success, so just about everybody with an idea tried to get into the act despite those all-covering Martin patents. From 1912 on, several manufacturers began making and selling semi-automatics. They couldn't break the Vibroplex control but they tried.

In 1909 the Thomas J. Dunn Company advertised the "Dunduplex" (fig. 5), a dual purpose instrument, a two-lever semi-automatic with plunger type knobs mounted on the bridge that permitted the operator to operate by "drumming" on them to produce the code. Automatic dots were produced by either method of operating.

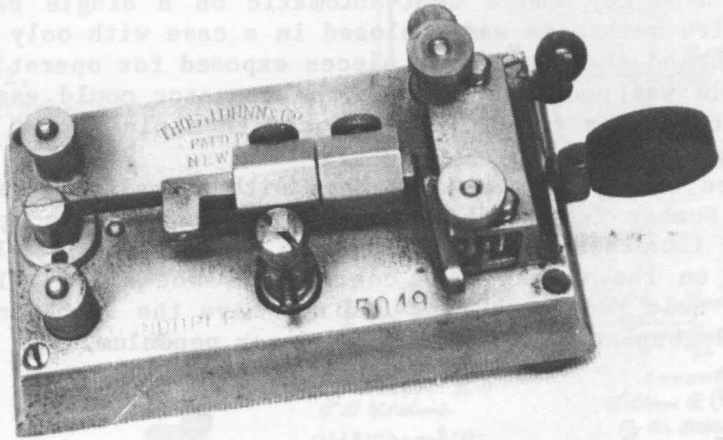
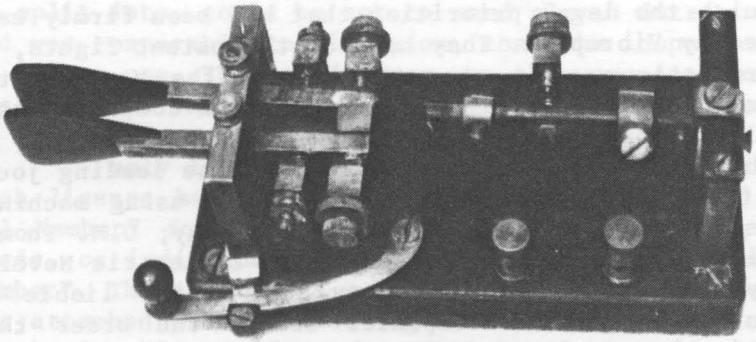


Fig. 5. Dunduplex (1909)

In 1912, the William MacDonald Company was selling a two-lever key (fig. 6) of all brass working parts using a brown dielectric sub-base mounted in a heavy metal base that very much resembled Martin's 1911 Vibroplex. Others also had that same type base with a four-leaf clover style logo containing the letters D.T.Y.G. stamped on the base.

There was the James M. Dickson key sold by the Mt. Auburn Specialty Company, and the O.M. Thomas Electric Company sold keys made by Oliver Thomas. But the most flag-

Fig. 6. MacDonald (1914)



rant carbon copy came from the A to Z Electric Novelty Company of Chicago (fig. 7). This key was a copy of the Vibroplex "Original" right down to the black Japanned base with gold "carriage trim" markings, bearing the name plate "The Improved Vibroplex".

All these instruments were being commercially sold and the telegraphers who bought them were using them even though the Vibroplex company had knocked their makers out of business because of patent infringement. A favourite key that worked well and suited the operator was all they wanted, so although the bootleg companies were no longer in business the keys were still being used in many offices across the country.

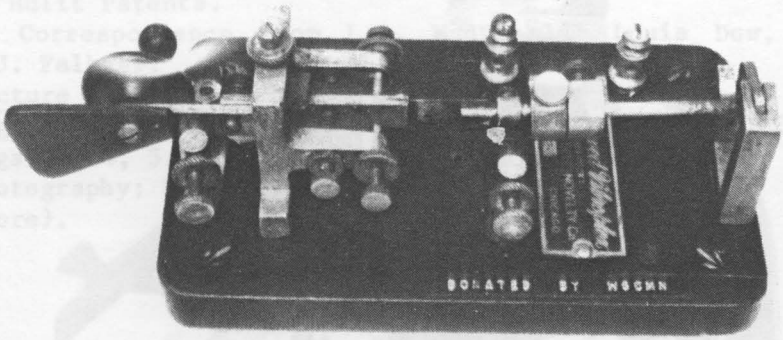


Fig. 7. A to Z (1914)

But J.E. Albright and Horace Martin weren't about to relinquish the legal priorities that had been firmly established by Vibroplex. They had won the patent fights, so the next step was to stop the use of the keys in the industry. Albright convinced the telegraph companies that Vibroplex was the only legal key. Going even further, he published a warning to the operators in the leading journals of the profession: "All who are now using machines purchased from Mt. Auburn Specialty Company; O.M. Thomas Electric Company; Max Levy of the A to Z Electric Novelty Company; Thomas J. Dunn Company, are daily liable to prosecution." And the companies issued the order that independently manufactured bootleg keys could not be used on their wires by the operators.

Now a great many of these keys were excellent instruments, in some cases equal to Vibroplex in operating performance. And from the beginning it had been the policy of the railroads and the commercial telegraph companies to permit the telegraphers to work with the keys to their operating comfort thus, of course, producing more efficiency and greater output.

The telegraph fraternity are a hard-headed independent group of skilled professionals. When the order was received they refused to accept it, and attempts to enforce it almost caused an operators' strike. Then, just before the irresistible force of this order and the operators' intransigent stand met head-on, a compromise was reached.

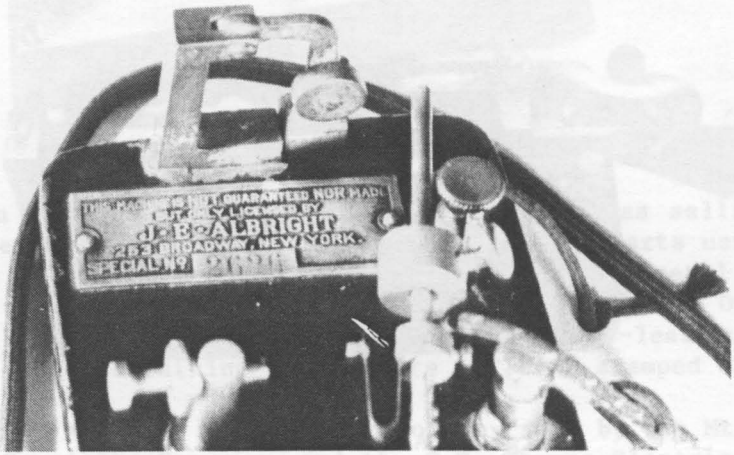


Fig. 8. Albright License (Close-up).

All the semi-automatics that had been blackballed through legal action were to be inspected. If an instrument met Western Union requirements of clean sending with no split dots, could be set to send eleven dots a second, and was comparable to Vibroplex, then the inspector passed it for use. The proud owner was then permitted to purchase a "license", a brass plate (fig. 8.) that read -

"This machine not made nor guaranteed but
only licensed by the Albright Company."

Each license had a serial number, identified as a "Special Number" for keys used by Press Associations, Railroads, or individual owners; or a "Special Western Union Number". These licenses cost two dollars. As soon as one was attached a key became legal. The semi-automatics that received a licence from the Albright Company were informally nicknamed "The Albright Bug", "The Legal Bug"; but most often "The Bastard Bug", by the operators.

During the First World War the inspectors from the Albright Company were asked by the War Department to inspect and approve the semi-automatics that were purchased by the Signal Corps for military use to ensure efficient operating on their circuits.

When the exclusive manufacturing rights were relaxed in the early twenties, there was no longer a need for the so-called "Albright License" since by then many manufacturers were producing semi-automatic keys.

References used

1. Telegraph and Telephone Age.
2. The Journal of the Telegraph, October 1914.
3. Mecograph Patents.
4. Hulit Patents.
5. Correspondence from L.R. MacDonald, Louis Dow, and P.J. Falkner.

Picture sources

Fig. 1 - Henry Ford Museum; fig. 2 - U.S. Patent Office; figs. 3, 4, 5, 6, 7, 8, 9, 10 - W3WRE Library. Photography: Ralph Williams, N3VT, and (fig.8.) C.S. Moore).

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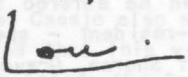


Louise Ramsey Moreau, W3WRE
99.99%cw

Mark Brownfield GØEMZ

A TRIBUTE

Reprinted from RADIAL, the journal of the Radio Amateur Invalid and Blind Club, January/February 1988.

FOREWORD: Mark Brownfield, GØEMZ, died suddenly on November 10th 1987 at the age of 24. Backed by his family, the staff and friends at the Seven Springs Cheshire Home, and the West Kent Amateur Radio Society, he surmounted what appeared to be impossible hurdles in order to obtain his Amateur Licence. He went on to use his hard-won expertise in order to raise money to help the Cheshire Home where his dream of being once more able to communicate had come true. Sadly though he died before the extent of his success was known.

This is a tribute to him; to Daisy Fletcher without whom none of this would have been possible; to the members of the team from the WKARS who undertook the seemingly hopeless task of teaching him and getting him 'On the Air'; and to the many others without whose help and support his dream would never have become reality. My thanks go to Bob Smith, G6TQ, for writing the basic story and for supplying the additional material.

Shirley Hesketh, G4HES, Editor, RADIAL

Mark was born into a close-knit and caring family, a normal healthy child, who had one sister, Sarah. Coming up to the age of six, the first signs of illness began to show. It proved progressive, but until he was eleven years old he attended a council school, played normal games and even rode a bicycle. then, when it became evident he needed extra care, he was sent to Valence School in Westerham, a school for disabled children.

His education continued and he showed particular aptitude for intellectual subjects. There too he met David Lurcock, G4ERW, who taught him the Morse code which was to prove of such value later on. At the age of about seventeen he entered Seven Springs Cheshire Home, Tunbridge Wells, as a part-resident - spending alternate weekends and holidays with his family at Shorne, Gravesend. There he remained until his death at the early age of 24.

I first met Mark at an 'Aflex' Exhibition for the disabled, where WKARS were manning a stand to demonstrate the suitability of Amateur Radio as a hobby for the disabled. Naturally Mark found us - and of

course there was an immediate call for help both from Mark and from Seven Springs with the question, "Could we make Mark a Radio Ham?"

Mark was confined to a wheelchair, unable to write, possessing only a little tunnel vision. In addition he was profoundly deaf and, as a result, his speech had become so impaired that I could not understand him at all. He was at the Exhibition to demonstrate how he was able to communicate using a specially programmed computer from Seven Springs.

All computer input was output in Morse at about 12 wpm, the speed he could copy at the time. His reply could only be in Morse or very distorted speech. At this time, too, Mark was awaiting the result of an 'Affiex' competition for the disabled which he had entered. He had been required to write an essay of 1000 words entitled "What would you do with £650 if you won it?" His essay had been written on the theme "I WANT TO COMMUNICATE". He won first prize.

****

Method used to "write" the essay.

Mark used the computer in the computer room at the home, spurred on by the knowledge that if he won he could buy his own computer and it could then be adapted to be 'wheelchair portable". He needed the help of an able-bodied volunteer and this was Daisy Fletcher, who was both a patient and a helper at Seven Springs. It was she who had first discovered that Mark was able to understand Morse code - which she had learned as a Girl Guide. It was the start of a long friendship between them.

To describe the scheme to him she had to input the information into the computer via the keyboard - her input appearing on the VDU. On pressing the ENTER key her input was transmitted in Morse by high-powered vibrations to Mark's headphones - at the same time again appearing on the VDU screen. Thus the accuracy of the transmission was ensured. Mark could then reply - Daisy being one of the very few who could understand his speech.

For the actual essay his words were taped and then typed up on paper by Daisy. This was necessary as the work sessions could not be too long as Mark found the effort of concentration through the headphones very tiring. At the start of each session Daisy would, through the computer, recall to Mark his previous words - and he could then go on. The whole essay took about thirty hours to complete.

****

After winning the competition, a computer designed by Cassio was fitted to his wheelchair, thus enabling him to 'speak' with anyone in the vicinity inside and outside the Home. Cassio also sent him a back-up machine free of charge when it was found that this was necessary. The next step was to place the whole matter before the Committee of WKARS, with the suggestion that the teaching of Mark be made a Project for the winter of 1984.

It was no easy task convincing the Club that it was feasible when Mark's only language was Morse. However a team of four believers was formed to carry out the project. They were Eric G4SLD who took on the practical side - and built a suitable console to house the equipment; Bill G3LMS, an "up-the-pole PO man", who had obvious duties; Peter G4GTN coped with all computer problems and applications; and Bob G6TQ who undertook the instruction for the Radio Amateur's Examination.

In addition an aerial rigging party was formed, headed by Alex G4FDC. Next it was decided that a transceiver, powerpack and associated gear should be purchased so that Mark could become a shortwave listener and get an idea of how to tackle contacting. A KW Ten-Tec Century 22, with powerpack, was purchased from KW communications (Chatham) and Rowley Shears (prop.) kindly threw in one of their multi-band trap dipoles, which was quickly rigged by the antenna party. The finances were made possible mainly by donations.

The stage was set - Mark was delighted and was soon logging much DX on the 28MHz band. He fixed his computer to give himself a printed record for reference. For the next two years it was just hard slog by all of us - with Mark growing from strength to strength. He was full of ideas, one of which was a cross-over network with which we could use two auto-keys and double earphones (his early attempts with a straight key had been a failure, but his skill with the auto-key was magic).

I was kept busy making taped lessons at home in Morse, visiting him once a week to collect one tape for marking and correction and to take out a fresh lesson.

Daisy, in the meantime, retyped the whole of the RAE Examination Manual for transcription via the computer to Mark, a task necessitating many patient hours of work. The system, though very tedious, worked well. Mark - at last able to communicate - became much more alive. He had a very alert and responsive brain and, too, his Morse speed increased very rapidly so that he could now both send and receive at about 30 wpm.

At long last the day dawned when we felt that Mark was ready to attempt the RAE. The RAIBC, City & Guilds and the DTI were all contacted and arrangements were made for an invigilator to attend Mark at Seven Springs. At that point, the normal time to complete the exam was about 3 hours. It took Mark two whole DAYS. All the questions had to be sent to Mark via the computer and, with Multiple Choice, you can imagine what that meant when Mark would request "Please repeat the question", or "Please repeat answers A & B, as answers C & D have nothing to do with it".

At the end of the first day the computer broke down and I was called in to finish off with my auto-keyer. I did 6½ hours straight off, and poor Mark was exhausted. Then came the frustrating delay for Mark wait-

ing for the results. Eventually, however, his licence arrived and he went on the air the same day - launching a CQ call and raising an ON4 station. He was so excited that he emitted a great YELL, threw up his arms and knocked off his head-set!

With his computer output now set on 50 wpm, rapid communication with Mark was now no problem. He continued to go on the air daily, and began to collect in the countries. He worked most, if not all, of Europe; got DX with UA9 and Asian countries; he made contact with both South and North America, and with an American warship somewhere in the middle of the Indian Ocean (being somewhat annoyed when the operator refused to give his location); and also he had contacts with the West Indies.

In all I think he reached a total of nearly 40 countries. His operating speed was fantastic, you could not go too fast for him, and remembering that he had to operate without recourse to any notes, it was even more of an achievement - yet he never omitted any point in his replies. His sending was ultra-perfect, his attention to correct spacing at speed being a great asset. Although I continued to visit him every week we did now have a regular weekly sked and this used to go on for a long time, his Morse being such a pleasure to read.

He was by now becoming quite well-known around the world and was being featured in both the national and international press as well as in medical publications. He was the subject of an article in a Canadian radio magazine; the South African Z.S. Radio Association not only devoted one issue of their magazine to him, and made him a Life Member of the Z.S. Amateur Radio Union, but also instituted an Award called "The Mark Brownfield Shield" for the ZS station having the most contacts with Mark.

On another front there happened to be an international conference involving doctors, nurses and workers for the deaf-blind in Brussels. Mark was invited to attend by Moorfields Eye Hospital in order to demonstrate his skills. Accompanied by Daisy Fletcher, he was whisked off to Brussels where he spent a most enjoyable ten days doing just that.

It is hardly surprising he made such an impact - being that rare person, both deaf and blind but still able to communicate! His wheelchair computer did wonders in Brussels - and what a boost for the Morse code! Far from being obsolete, because of Mark I think it very likely that it will be used more and more - especially among the disabled. Mark and Daisy also travelled around the country to exhibitions where he was able to both learn and demonstrate his skills.

A Memorial Service was held at Seven Springs where the Chaplain referred to Mark as "the Conqueror", which he surely was - overcoming his multiple disabilities to enter once more into the world at large.

As the Chaplain also said, "He went out on a wave of triumph!" -

because shortly before his death Mark had instituted an "ON THE AIR" sponsored Marathon to raise money to help Seven Springs build a new wing in line with government regulations concerning safety. Sponsored at so much per contact, he went out on the 80 metre band for a marathon eight hours, working a grand total of thirty- two stations. He did not live to learn the result of his efforts - which raised £700. What a note to go out on! GOD BLESS HIS SOUL!

Bob Smith, G6TQ.

(This moving obituary would not be complete without hearing how Mark himself felt about his excursions on the air. The following article from the WKARS Magazine also appeared in RADIAL.)

A SHORT RADIO RAMBLE

as dictated by MARK BROWNFIELD, GØEMZ.

Since becoming a Radio Ham (amateur radio operator) a whole new world of interest has opened before me. It is marvellous being able to communicate with people on other parts around the globe and it gives me a grand feeling to be able to do so. I find Morse a great way of communicating, and thoroughly enjoy sending and receiving via my KW Century 22 transceiver - fully transistorised for Morse operation only - and whether the operator at the other end of the station I am calling is in Argentina (my furthest contact to date) or just down the road does not matter one little bit. It is just smashing having a raconteur on the air.

Being partially deaf and unable to hear speech, radio telephoning would be of no use to me! However I feel that CW (Morse code) would still be my favourite mode of transmission even if I could hear RT (radio telephone). Yes its great fun sending Morse with a Morse key (previously keyboard) and CW can be more useful on a crowded frequency band. After some practice speeds can be attained that make communication almost as fast as straight speech. It is like an ordinary vocal chat to me when I meet operators who send and receive at my own advanced speed.

One contact that stands out in my memory is the one I made with an American Naval ship in the mid-Indian Ocean. The operator would not give me the ship's name for security reasons but what a great thrill it was - an ambition fulfilled - I have always wanted to contact a ship but the distance of about seven thousand miles made it extra special.

Another great moment was the night I made my first contact with Brazil. (My first contact with a station outside Europe). I was calling CQ DX which is the general invitation for any far distant station to reply. Having called for a few minutes I started twiddling the receiver

control and listened for a reply. Suddenly I picked up a signal - or was it? I could hardly believe it! It was like a ghost coming out of the night - an absolutely wonderful moment full of excitement.

When the signal said "GØEMZ DE PY1EGI BRAZIL" I thought what a thrill. Conditions were not at their best and as he reported and gave his name "Edson" and location as "Rio" his signals began to fade. I must not let him go, I thought - not this great contact, it is just too marvellous! Quickly I darted at the receiver dial and tried to "peak" his signal to a higher volume.

To my relief his signals rose again and I was able to read his information. I then gave him my report and location and after exchanging good wishes closed down. So now I could work DX to Rio. I went to bed feeling really proud and pleased with myself. Everyone was stunned when I broke the news on the West Kent Radio Club net two days later. My friend Daisy, who comes from Brazil, almost did a "Samba" when I told her the great news. It was a remarkable achievement contacting Brazil after being on the air for just over a month.

ooooOOOoooo

THE SEVEN SPRINGS CHESHIRE HOME where Mark Brownfield lived is part of the Leonard Cheshire Foundation, a charitable trust set up by Group Captain Leonard Cheshire, the famous WW2 bomber pilot. The aim of the Home is to provide care, in a homely environment, for 32 severely disabled residents and to enrich their lives by providing them with a wide range of activities organised by both staff and voluntary helpers - exactly the environment and setting that encouraged and enabled Mark to achieve what he did.

The building project that Mark was helping to raise funds for is a major redevelopment scheme to meet the requirements of new legislation and to provide the maximum possible single room accommodation. Phase 1 of the work is currently being carried out. Apart from meeting new safety requirements etc, this will provide nine additional single rooms with en suite facilities. Its estimated cost is £400,000, of which over £200,000 has already been raised.

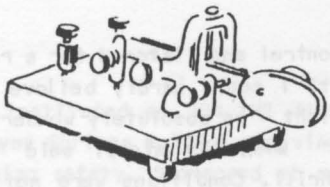
Readers of Morsum Magnificat, who must surely have a special understanding and admiration of Mark's story, may like to make a donation to the Fund which he was working for just before he died.

There can be little doubt that Mark himself would have been enthusiastic about such an idea!

Tony Smith.

Donations can be sent to: Seven Springs Cheshire Home, Pembury Road, Tunbridge Wells, Kent TN2 4NB. (Cheques, etc, payable to "Seven Springs Cheshire Home Redevelopment Appeal Fund".)

HIGH SPEED Record Claims



The record claims set out opposite appear in the June 1988 issue of IARU Region 1 News, signed by the Chief Judge of the 1983 Championship, A. Razumov; A. Maleev, a member of the International Jury, and by Victor Efremov, Secretary of the Radio Sport Federation of the USSR.

The following is an extract from the current rules concerning the use of keys in the Championships:
"A competitor is entitled to transmit with a conventional key or an electronic one, as well as to transmit one text with a conventional key and another with an electronic one... The electronic key used by a competitor shall reproduce short and long signals in proportion 1:3.

Electronic keys equipped with any additional adjustments, logic units and storage devices providing the semi-automatic or automatic transmission of a message text or separate marks are not allowed."

The Second Region 1 High Speed Radio Telegraphy Championships will be held in November 1989 - during the Deutscher Amateur Radio Club's Interradio meeting at Hanover. Previously, all entrants have been teams, but a new individual class is being created for 1989. More information will be given in MM as it becomes available.

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in brief....

Newsflash, Australia - Official World Expo 88 Amateur station is up and running. Station call is VI88XPO. [Contributed by Bill Horner, VK4MWZ].

Warning! The Irish Department of Communications has issued a warning against the over-use of Morse tutors and other computer based training aids. They find that while operators' test speeds are high, they are deficient in receiving plain language (with word-lengths not equal to five characters). [Contributed by Gerry Butler, EIØCH.]

Heard on 20 metres. "Every Italian station I work on CW seems to be called 'Ciao'". [Tom Mansfield, G3ESH, in 'Groundwave', Newsletter of Wimbledon & District ARS.]

RECORD CLAIMS

For record achievements in receiving and transmitting radio messages made at the 1-st IARU Region 1 High Speed Radio Telegraphy Championship 1983 in Moscow.

RECORD CLAIMS FOR ACHIEVEMENTS IN RECEIVING RADIO MESSAGES:

Type of record	Reception Speed	Number of errors	Achievement	Claimant	Country
Reception of radio messages of groups of random letters (men and juniors).	320 characters per minute.	0	320 characters per minute.	Stanislav Zelenov	USSR
Reception of radio messages of groups of random letters (women and girls).	280 characters per minute.	4	280 characters per minute.	Zhaneta Mania	Romania
Reception of radio messages composed of figures (men and juniors).	500 characters per minute.	0	500 characters per minute.	Oleg Bezzubov	USSR
Reception of radio messages composed of figures (women and girls).	360 characters per minute.	0	360 characters per minute.	Elena Sviridovich	USSR

RECORD CLAIMS FOR ACHIEVEMENTS IN TRANSMITTING RADIO MESSAGES

Type of record	Duration of transmission min/sec	Transmission speed	Quality factor	Achievement	Claimant	Country
Transmission of radio messages of groups of random letters (men and juniors).	1.21	219.87 characts per min.	0.83	219.9 characts per min.	Stanislav Zelenov	USSR
Transmission of radio messages of groups of random letters (women and girls).	1.25	212.65 characts per min.	0.8	212.7 characts per min.	Zhaneta Mania	Romania
Transmission of radio messages composed of figures (men and juniors).	1.31	294.28 characts per min.	0.9	294.3 characts per min.	Oleg Bezzubov	USSR
Transmission of radio messages composed of figures (women and girls).	1.45	255.17 characts per min.	0.8	255.2 characts per min.	Zhaneta Mania	Romania

Samuel Finley Breese Morse