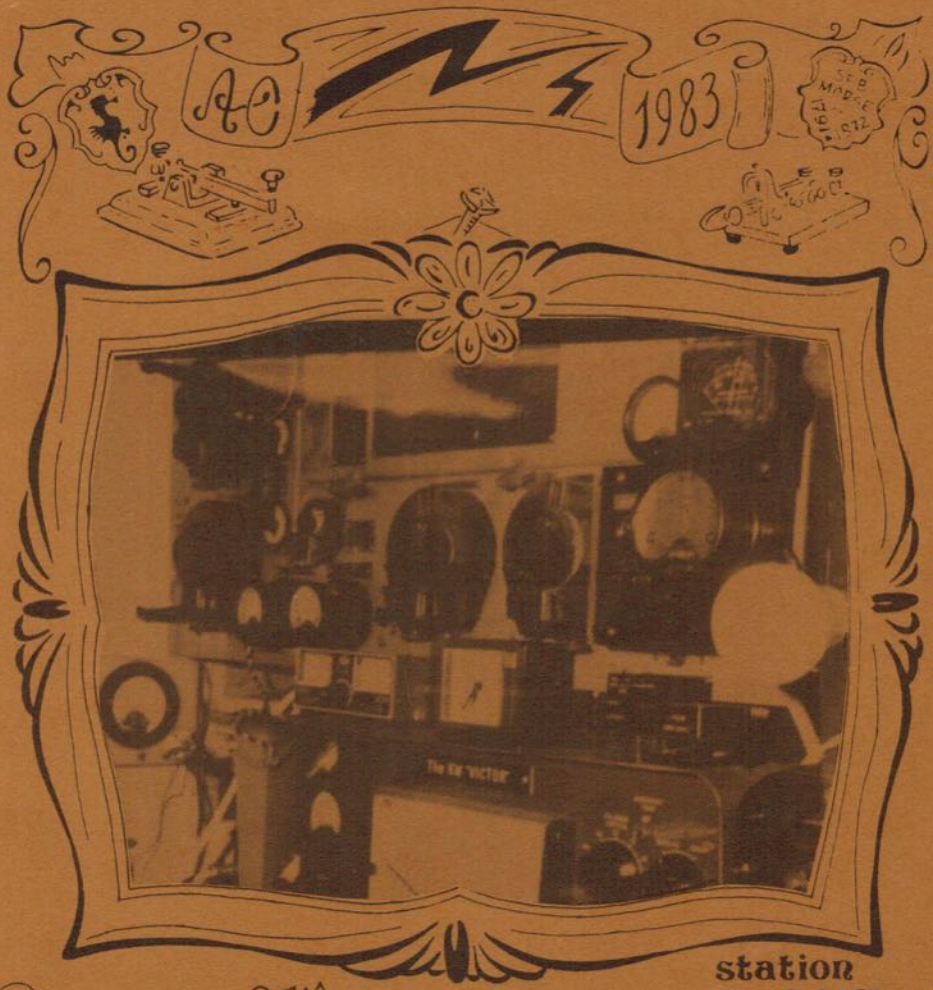

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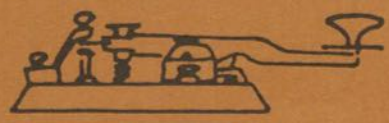
nr 4
summer 1987

Morsum Magnificat



Holleweg 187
01640 - 58707
4623 XD Bergen op Zoom

MORSUM MAGNIFICAT is published quarterly to provide international in-depth coverage of all aspects of Morse telegraphy, from its earliest concept to the present time.
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.
MORSUM MAGNIFICAT is produced by:

PAØBFN, Rinus Hellemons, Holleweg 187, 4623 XD Bergen op Zoom, Holland. Tel: 01640-58707.

PA3ALM, Dick Kraayveld, Merellaan 8, 3145 XE Maassluis, Holland. Tel: 01899-18766.

G4FAI, Tony Smith, 1 Tash Place, London, N11 1PA, England. Tel: 01-368 4588.

SUBSCRIBTIONS

UK & Eire - £6.00 per annum. Cheques etc. to G4FAI, payable to MORSUM MAGNIFICAT, or Girobank transfer to account No.57 249 3908.

Outside UK & Eire -
1) a sterling draft (international cheque) for £7.00, drawn on Londonbank or an International Postal Order also for £7.00.
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We had to keep mum

by ALICE MITCHELL
GØEEJ

I became a 'Morse Fanatic' in my Guide and Sea Ranger days and in 1943 proudly presented myself to join the W.R.N.S. as a radio operator, bearing in my sweaty hand a 'certificate' from the Gravesend National Sea Training School stating that I could read and send Morse at 5 wpm! I wasn't the only one to be disillusioned when our training commenced - everyone had to start from scratch as 5 wpm was beyond us. Nevertheless, full of enthusiasm we battled on, increasing our speeds every day; every day taking a test on the previous day's speed. If one didn't get 95%, one was drafted next morning!

Everyone was puzzled as to why we should be concentrating on 'receiving', the only keys in the classrooms being those used by our instructors. At the end of three months we were enlightened - our destiny was to become W/T S/O's (Special Operations) and to spend the rest of the war intercepting enemy messages. We became experts and very proud of our work.

Some of us eventually became H/F D/F operators and our work appeared even more important to the war effort. In those days, of course, everything was very hush-hush and many times we would have liked to explain our duties but dare not. For instance - when we were sent for 'recreation weekends' to Scapa Flow and attended the Saturday night dances. Invariably one or other of us

would be dancing with a 'sparks' from one of the ships just returned to the anchorage and would be accused of muffing our signals, bad sending and sleeping on duty - it was infuriating to have to hold our tongues, not daring to say we had never in our lives touched a key.

Our work was even more exciting after passing the H/F D/F course, when we plotted the positions of U-boats and other sea traffic. One watch I shall never forget was the night watch on the 5th June 1944. There were so many U-boats and E-boats using the key in the Channel I was quite prepared to hear the south coast had been invaded - and as my family lived in Kent I came off duty very worried. But on the station no-one had heard a thing. It wasn't until I went to see the M.O., in this case a civilian doctor, did I hear that the Allies had invaded Europe. It was an elderly woman in the waiting room who supplied the news, and I was the first to inform the station!

I loved my work and was bitterly disappointed to discover that YL's were not wanted in peacetime operating. So I started another, completely different career which kept me absorbed for the next forty years.

In 1985 my step-grandson returned from New Zealand for his first visit in 22 years. He was a C.B. addict and was working hard to get an Amateur licence. He bought his grandad a C.B. set and changed my husband's life, and when Kevin discovered I could still read Morse at 25 wpm he suggested I study for my licence.

Study electronics again at my age! Never in a thousand years. But my husband thought otherwise; I was dragged by the scruff of my neck to enrol for classes. Yes, I became hooked, once I mastered my decimal points again. Fortunately we had a very patient instructor who drilled the basics into our heads and was not averse to going over and over again any point not understood.

The class was working towards taking the May 1986 examination but when, halfway through the course, most members decided to sit in December (for the experience) my husband thought it a good idea and I sent off my cash. But having coughed up the cash the class decided to really 'have a go' and settled down to study ahead of our

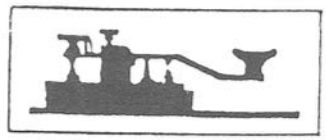
instructor. Leaving the examination room in December we were shattered, never for one moment did we think anyone stood a chance. But our instructor had taught us to think, and he taught us well - the January results showed that nobody had failed!

Then I settled down to teach myself to use a key and, very much to my surprise, became a GØ in February 1986. Since then I have been enjoying myself so much on the air I don't know why I never did this before. Think of all those wasted years. Of course, I am 99.9% of my time on C.W.

Now I wonder if any other W/T S/O's of war-time era ever became amateurs. Are there any around who remember those days at Winchester, Scarborough, Lands End, or Bower? It would be nice to catch up with them again.

Alice Mitchell (nee Axon), GØEEJ.

Spark-gap 9



BRONTO-KEY.

Every time I see an old side-swiper I am reminded of an old shore-side marine operator at KPH (I once sailed with him as RO on the Matsonia) and his home-built huge side-swiper. It looked like some prehistoric monster metal replica, but he used to send the most beautiful stuff you ever heard. He was a nut. He once got fed up with the coastal station housekeeper giving him egg sandwiches for his midnight lunch.

He told her if she didn't change to something else he'd nail egg sandwiches all over her apartment door. She didn't. He did. On his birthday his associates dolled up his huge pet key with feathers and what not and stuck a big sign on it "BRONTOSAURUS - DON'T TOUCH - private property of Jack Hyams. Happy Birthday".

Don deNeuf, WA1SPM.

What happened to the sounder?

When early telegraphers first realised they could "read" the clicks of a self-recording Morse instrument, the sounder was born. This beautifully functional instrument evolved round about 1856 and remained in use for line telegraphy in North America far longer than in Europe.

The British Post Office abandoned it in 1931, but it remained in use for Morse communication in the armed services and elsewhere for a surprising number of years after that. If readers have memories of the last years of the sounder - anywhere in the world - please write to G4FAI.

J.T. Blackwood, G3TG, starts the ball rolling.....

I first met one of these things as a member of the Signals Section of Glasgow University OTC, where we had a few to play with, but as our Morse instruction was through a key and buzzer combination we had no real experience with them. This was in 1937, so I imagine they were still in use in Royal Signals regular units and in the Supplementary Reserve Units, which were mainly staffed by Post Office personnel.

When I was actually pulled into the army in August, 1940, I was selected to go to India for officer cadet training, and was sent to the Operators Training Battalion to be held waiting passage, and where I received a minimal amount of training. By that time operators were certainly not being trained to read sounder but buzzer and CW. An operator, wireless and line, was trained to receive Morse either via radio with CW or MCW, or by land-line equipment known as the Fullerphone. This sent a d.c. signal to line to produce a "buzz" in the receiving equipment, the idea being that d.c. signals could not be picked up by enemy

listening equipment.

Antique

However, our training in India was on rather antique equipment. As potential officers we were not supposed to be expert operators but were supposed to know a little about it. Thus we were taught to read, albeit slowly, flag, lamp, heliograph, buzzer, and sounder, although I can't quite remember how we were taught to read the "clicks" which it produced.

As to usage, I know that in 1941 the sounder was certainly in use in the Indian Posts and Telegraphs Administration and on some, if not all, the railway networks. In 1942, I was in the Signal Office at HQ PAIFORCE which was then being operated by 4 GHQ Signals, with one of the land line circuits into Baghdad using sounders. This circuit could certainly move traffic as all the operators were Indian Posts and Telegraphs employees dressed up in uniform and wearing ranks appropriate to their Post Office grading. I was serving with this unit and I think we had about 30 WO1's some of whom were just telegraph operators.

We also had sounder circuits operating from the Baghdad Signal Office to Mosul, Kirkuk, and Khanaquin. I found that the operators preferred to amplify the signals by connecting an empty pilchard tin to the side of the machine.

Owing to illness, I ran out of operators at Khanaquin and had to borrow a couple of British operators from another unit. They had not been trained to read sounder, but we found that by connecting a Fullerphone across the sounder terminals the make and break of the sounder operated the internal buzzer of the Fullerphone and provided reasonably readable MCW - so until 1943 the army was certainly using sounders in Persia and Iraq.

From April 1943 to mid-1944 I sat on the banks of the Suez Canal. Land line communication (Army and RAF) was by teleprinter, but I know that in certain areas the Egyptian State Telegraphs and Telephones were still using sounders.

Turkey

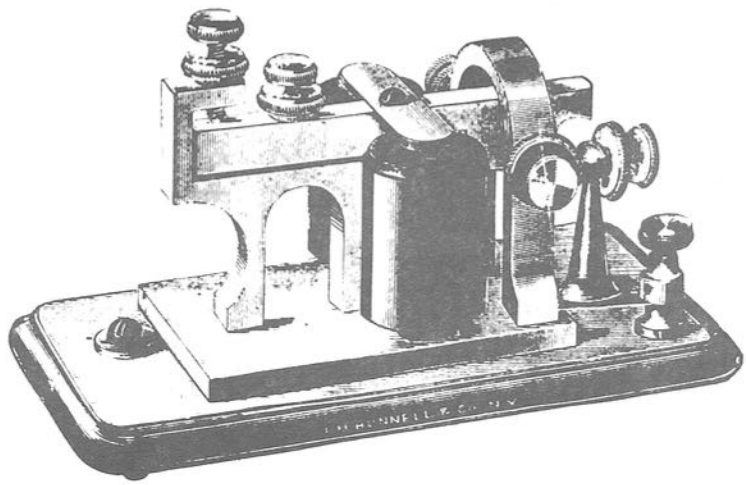
In July, 1944, I was posted to the Chief Signals

The Giant Sounder.

J. H. BUNNELL'S

PATENT, FEBRUARY 16th, 1875,

WITH IMPROVED ADJUSTMENTS.



We call attention to the fact that our original Giant Sounders, as shown above, have become, since their first introduction in 1875, the standard of excellence throughout the United States, and have also been adopted exclusively upon the Government Telegraphs of England.

They give a loud, clear sound, with just half the amount of local battery generally used on other forms of Sounders.

Price, ... $3 50

Giant Sounders, wound with fine wire to 20 ohms resistance for Main Line use (without relay), on lines up to 15 miles in length. 4 00

Officer's staff of Force 438, which was intended to provide assistance to the Turkish Forces if, as seemed possible, Turkey joined the war on the side of the Allies.

We were not sure if there would be a "fifth column" within Turkey which would damage the existing land line circuits, which in themselves were a bit ropey. I had to plan for the immediate replacement of some or all of this network by field cable which, although substantial, was of fairly high resistance, normally carrying teleprinter or carrier telephone circuits over limited distances.

There was, however, the possibility that by increasing the d.c. voltage to line one could operate sounder over much longer distances than these other modes. I therefore proposed the sounder/Fullerphone combination which I had seen working in Iraq and which would enable British operating staff to work the circuits. However, as Turkey did not join in, the Force HQ was disbanded in December 1944 and I was posted to Tripoli where all telegraph traffic was by teleprinter.

While in Turkey, I had some contact with the Syrian PTT staff, and I understood from them that they were still using sounder for telegraph traffic in certain areas, as was the railway administration operating the Turkish/Aleppo railway route.

Tripoli

At the end of 1950, the Foreign Office shipped me back to Tripoli to act as Deputy Director of Posts and Telegraphs for the Libyan government. Our telegraph traffic went from Tripoli or Benghazi to Malta by Cable and Wireless using high speed Morse read off an undulator, but I think the Tunisian PTT were still operating a few sounder circuits.

I'm not sure, but it could be that the sounder lasted much longer as a means of communication than we imagine, especially in undeveloped countries. This is surmise, but it would be easier to train relatively uneducated staff to use low technology equipment rather than try to use equipment such as a teleprinter.

Morse test

Looking back, if I remember rightly, you used to go for the Amateur Morse test to the local Post Office, which for many years used Morse with sounders. I was living at

Dulwich when I got my ticket in 1938, and the test was at Herne Hill Branch Office, half a mile away.

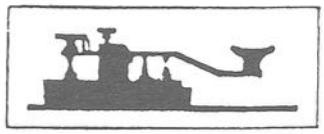
I remember it well as the examiner sent me that dreadful song, "Sister Susie sits sewing shirts for soldiers, such nice soft shirts for soldiers Sister Susie sews. Some soldiers send epistles saying they would rather sleep on thistles than on the nice soft shirts for soldiers Sister Susie sews", a song I had never heard of, but by the time he had finished it had me sweating. Just try it and see what you make of it. What he said finally was that if I could read that, which I did, I could take anything they could throw at me. Hi.

I don't think I can be of more help, but I think that some of the dope could be with the rather older members of the services radio clubs, or somebody who served with a Colonial Postal or Railway Administration which I did not. Although over the years the various jobs that I did brought me peripherally in touch with some of them.

73 de G3TG

Spark-gap 10

Morse marked money

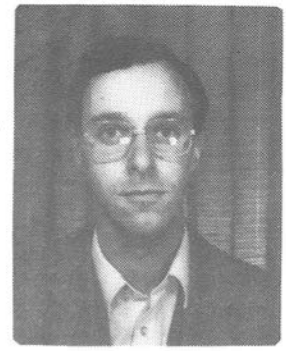


Probably the only coin ever minted which embraces a telegraph code is the Canadian five-cent piece of 1943 issued during WW2. On the reverse side, instead of the usual continuous bead of small dots forming a frame, a message in International Morse code reads "WE WIN WHEN WE WORK WILLINGLY".

The inscription is so minute that many people are unaware of it, and a magnifying glass is really required to read it. It also features in the centre a large "V" (for "victory") which in WW2 was a Morse code interpretation of the first bar of Beethoven's Fifth Symphony - dit, dit, dit, dah. It was often called the "Victory Symphony".

Don K de Neuf. (Monitoring Times)

A few statistics !



by Steve Muster, G4UOL.

1986 was a good year for me. I seriously entered 19 contests, including CW-WPX, when I had 625 QSOs in 30 hours of operating, and worked the following DX: UF, NP4, VP2V, C3Ø, KI6 (Calif), TF, ZS6, SN, UM, LU, TK, RD, 3G, HK, HBØ, JW, JA, VP9, TA, and YV. My score was 390,852 and I had 31 dupes (5%).

During the year I had 12 SSB and 5818 CW QSOs, representing 99.97% CW. This averages out at 112 QSOs a week, and yes, I do work full time, not on the air, but in the Civil Service!

Since coming on the air in September 1983, I have had 10,385 CW QSOs, and have worked 133 DXCC countries, with 102 confirmed.

In 1986 I gained 20 new countries:

3.5	7.0		14.0	21.0
OJØ	VQ9	5T5	3C	SB4
3V8	HK	OA	UA1(FJL)	OJØ
	J28	FP	SB4	5T5
	PYØ(FdN)	3V8	VU	3B8
	SB4	TA	6Y5	VP2M
	J3	CX	OJØ	YK
	VU		5T5	TA.
	6Y5		VP2M	
	OJØ		TA	

It was quite a bumper year. Are we really at the sun-spot minimum? (In 1985, I only had 2083 QSO's!).

I use a Bencher paddle key (non-iambically), plus a Star Masterkey MkII keyer; a TS930S, with lovely QSK; an AT230 ATU; and a longwire antenna. The 43ft antenna

runs down the garden to the top of a washing line pole. It goes down the pole about 5ft and then wraps itself round the 6 inch diameter post for about 200 turns. It slopes from about 15ft to 12ft. It performs best on 7 MHz, causing no t.v.i., but one needs to exercise a bit of common sense on the other bands! I run the full 100w on 7MHz where, apart from contests, I remain, as I need to work lots of DLs and other EU stations for the various awards (over 20) I am currently working for.

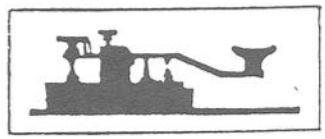
Without CW, I doubt if I would be on the air very much at all. At 3 a.m. living with my parents in a small house, I could hardly use SSB could I?

I love using CW and am currently trying to improve my copying speed. Most days I can manage a QSO at 30 wpm with ease, and can also manage 80-90% at about 33 wpm. But I still tend to write things down. If I can just drop my pen, I could probably copy up to 37-40 wpm!

I hope some of this is of interest to MM.

73, Steve, G4UOL.

Spark-gap 11



DX with a DIT!

Dan O'Brien, W6PB, ... had a marvellous sense of humor... and he was a pure genius at practical jokes. Dan used to play a trick on Bud Bane, W6WB, every so often. It seems that once in a while Bud would call some rare DX someplace and Dan would try to put a "DIT" right after the "W" in "WB" - making it sound like "PB".

It worked sometimes, and the station W6WB was frantically calling would come back to W6PB, when all Dan sent was one "DIT" ! When Bud found out what was happening he left less space between the "W" and the "B", and to this day he seems to rush his call, leaving a minimum space between the W and B.

(Rich Lawton, N6GG, ex-W6MVQ, K6QZ, looking back to early Club days in the 40th Anniversary issue of "The DXer", monthly bulletin of the Northern California DX Club, October 1986.)

Excuses!

by U.D. ERNST DK9KR.

Present day amateur bands, ever smaller, using ever increasing powers, and featuring ever increasing bad manners, call for special operating skills.

As the short-waves bring us the slightest whisper from the other side of the world, the diploma hunting ham is obliged to sit behind his set, day and night, in order not to miss the "Smoking Transistor Contest", or the "Popo Island DXpedition".

Amateur radio has changed from a hobby to a nerve-racking job. Despite heroic efforts, however, the man-behind-the-key needs some time each day for eating and sleeping. We must not neglect, therefore, the need for survival techniques in the world of transmitting.

But how do we get away from the rig?

While not exhausting every possibility, here some excuses to avoid taking part in every net or contest.

First favourite is the "pile-up" syndrome, bringing out the cold sweat of fear. When it gets to this - close down! Inexperience adds to the chaos known as a pile-up, a phenomenon as old as the laws of Maxwell. Few will admit they are infallible, and these, particularly, should be ashamed of themselves when they come back after an RST 599 report with PSE QTH ES NAME?

Then there is the role of the head of the family, with his many responsibilities. In avoiding operating these represent a very important element. There is a danger however, that marriage can prove fatal to amateur aspirations.

That small, lovely, YL, always bringing cookies to the ham-meeting, even taking care of the QSL bureau, suddenly

changes, so we hear, into a despotic discontented Xantippe who looks at the veteran amateur in his shack with disdain.

His presence in contests or nets becomes rarer, and as soon as the "second harmonic" is lying in the cradle he is rarely seen or heard again. A few put in an appearance at the odd meeting, or can be heard in occasional QSO representing, however, but a shadow of their former selves.

As soon as a QSO begins, they indicate that the XYL has called them for a meal, to run an errand, or take a walk, and therefore they can't stay on too long, if you don't mind? This is effective, no-one dares joke about it, and experienced ops refer to these difficulties as "conditions".

Pile-up!

"Murphy's Law" can supply us with an excuse too. Using such phrases as "auroral absorption", or the "Mugel-Dellinger-Effect", no-one will challenge us. Those remaining should not be misled by bad conditions however. The proverbial superiority of CW is such that in spite of QRM, QRN, or QSB, we can rely on it to accept the challenge of difficult communication.

The "Abraham-method"...

Apparently only old men know their onions. It sounds like this. "When I hear these young fellows today, they are real mains-socket amateurs! No-one wants to build his own station anymore. It is not an achievement to buy everything in a shop. I built my straight receiver and two-valve transmitter in the kitchen".

Looking in the junkbox, he continues, "Here is an RS134 from my O-V-1 days... Time doesn't stand still, but I don't want anything to do with this moral decay! - so here is yet another excuse!

To qualify for the O-V-1 brigade it is not sufficient to have an RS134 in the drawer. You have to create an air of wisdom too, and you must have the right choice of words.

For example:

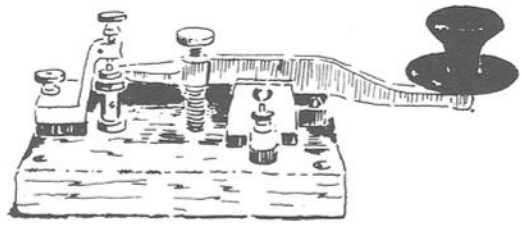
Mains-socket amateurs	=	the present generation
Banal nonsense	=	digital techniques
Good old days	=	spark transmitter days
A real amateur	=	an old amateur
Good signalling	=	slow signalling
Impossible	=	not so easy
Totally impossible	=	a little difficult

Dear reader! Do you recognise yourself anywhere? Do you feel slightly embarrassed? You may even laugh, but it doesn't change anything. How about sitting down at the Tx and taking part in the action again?

You will discover that CW is still fun!

We are waiting for you!

DK9KR



Solar powered telegraphy

by Don de Neuf, WA1SPM.

Today one hears and reads much about the use of energy from the sun. Solar powered watches, computers, space satellites, and remote unattended transmitters and receivers, wherein their batteries are electrically charged by energy from the sun have become commonplace. The number of solar heated homes is growing rapidly.

Long ago a communication system called the Heliograph using the rays of the sun was employed for communications. The name Heliograph is derived from the Greek "helios" (sun) and "graphein" (to write).

The heliograph, a device for sending signals by means of a series of flashes of sunlight reflected in a movable mirror, was believed by some to have been used throughout Algeria nearly a thousand years ago. The signalling at that time doubtless was based on a pre-arranged simple code, since alphabetized codes do not seem to have appeared in history until the early 1600s.

History reports that Xerxes, when he invaded Greece with his Persian forces in 480 B.C., had his signalmen mount a steep hill near Athens and from there flash the news of the Salmis battle from the side of burnished shields tilted to pick up the sun's rays. Certainly at that time only some pre-arranged meaning designated by a certain number of flashes must have been employed.

The first European nation to seriously take up the heliograph as a signalling device was Great Britain in connection with her Indian Army. As a matter of fact the English scientist Mance is credited with inventing the heliograph in 1870. In any event he probably developed its use of the international alpha-numerical code.

The instrument generally consisted of a circular movable mirror, 10 or 12 inches in diameter, mounted on a small tripod. A sighting vane was employed to properly direct the reflections to the distant point. Flashing was usually accomplished by manipulating a screen device, often in the form of "shutter blinds", by means of a key lever. In some instruments, instead of shutters, the mirror was rotated slightly out of line by the key movement.

The heliograph was extensively employed 100 years ago in Arizona and New Mexico by US troops under the command of Gen. Nelson A. Miles.

Although limited to daytime use, the heliograph was not vulnerable to constant interruptions as were the wire telegraph lines, caused by the Apaches chopping down the poles. The Indians apparently did not understand the "singing wires", but quickly saw a relationship between them and the activities of the troops.

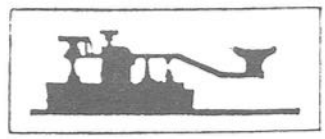
The clean, dry, cloudless air of the Southwest was ideally suited for heliography, using the Morse code, and General Miles employed it extensively for reporting the movements of Geronimo and his warriors. A large network of some 50 "circuits" and "relay points" on Arizona mountain tops, manned by telegraphers and troops, ranged from Fort Huachuca in the South to Whipple Barracks in the North and to Fort Stanton in New Mexico to the East. Some of these legs were as much as 100 miles in length.

The simple heliograph, with its bright flashes of Morse code, brought about the end of the Apache wars on September 5, 1886, when Geronimo, Natchez, and their warriors capitulated, realising that further fighting was futile. With sabotage of the poles and wires eliminated, the wire line telegraph rapidly expanded and almost overnight the heliograph went into oblivion.

One small remnant remained, even as late as World War II, when the emergency equipment of a life raft usually included a small pocket-sized mirror device, with a small hole in its centre for sighting or aiming the reflection. This was used to draw the attention of search planes and ships, but was of course inoperable if the sun was not shining.

(MTC - Dots and Dashes)

Spark-gap 12



The ECHO.

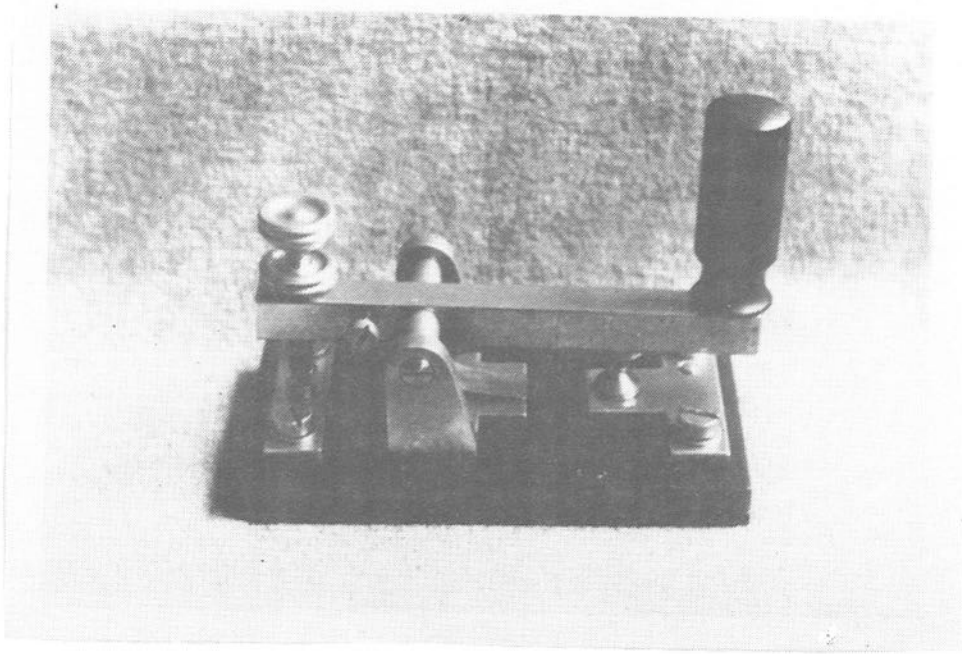
One evening in the early autumn of 1938, I had a strange experience on the 40m CW band. There was unusual sunspot activity, so the entire band was silent. Out of curiosity, I put out a Test call. In those days, British stations were forbidden to call CQ. As I anticipated, there was no response to the Test call and, removing my headphones, I was about to switch off the receiver when I heard someone sending on the frequency.

Replacing the headphones, I was astonished to hear my own transmission, which continued until the final K. The incoming signal was about 559. I do not know the length of time that elapsed between the Test call and the echo, but it must have been about ten seconds.

Recently, I tried to work a W7 station on the 20m band. He had a delayed echo on his signal, which made his c.w. unreadable, apart from his call-sign. It is not often we hear a station obliterated by his own QRM!

Ray Hunter, G30C.

Showcase



22

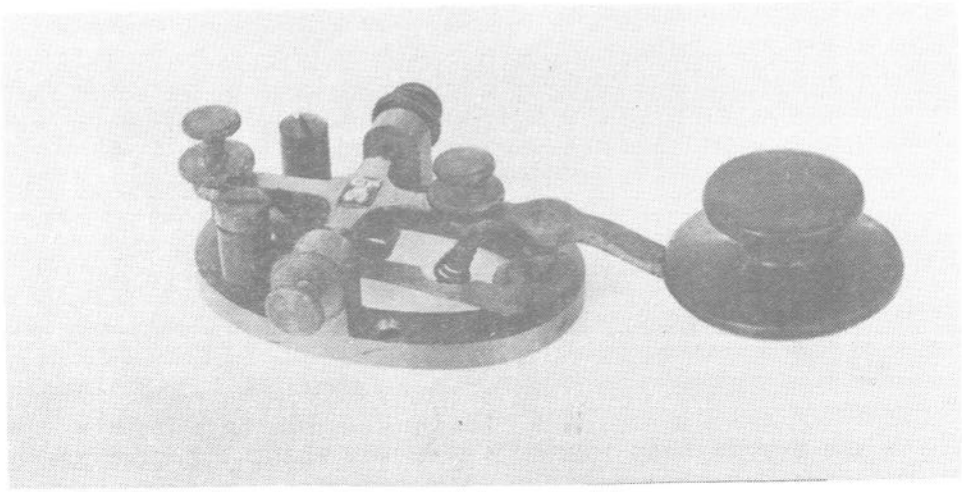
Can anyone help identify this key which belonged to the late Ken Alford, G2DX? Ken originally obtained an experimental licence with the call TXK in 1912, and was one of the earliest members of the Wireless Society of London which eventually became the Radio Society of Great Britain.

The key is now in the possession of Dud Charman, G6CJ, President of RAOTA, who says that G2DX claimed it came from a Zeppelin in the 1914 war...."the spring is a wide spring blade which makes it very stiff to use. The base is ebonite and there are no markings on it".

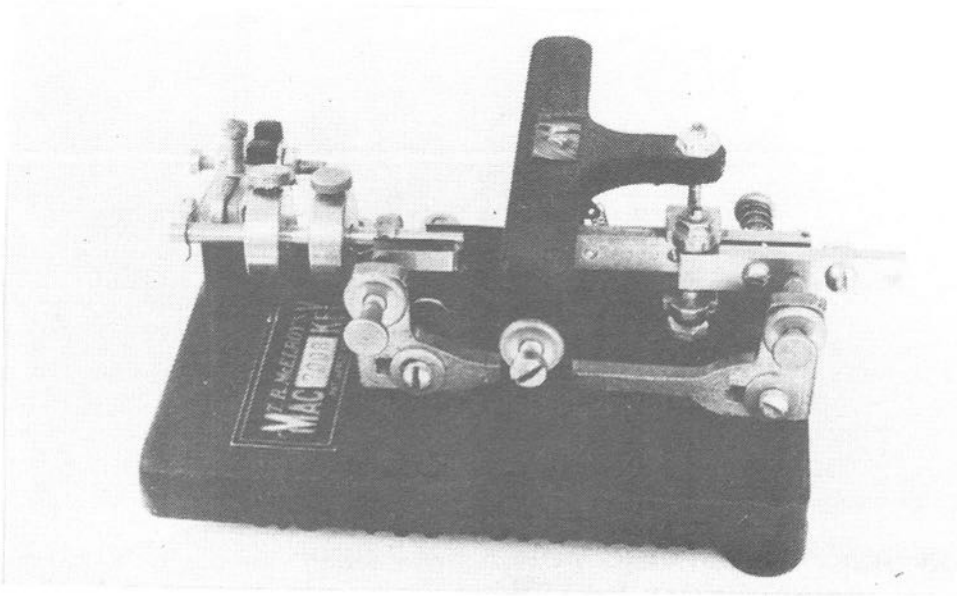
Dud would welcome any information about this key. His address is - The Firs, East Stour, Gillingham, Dorset, SP8 5JR.

THE KEYS ILLUSTRATED hereafter are part of the collection of John N. Elwood, W7GAQ, who kindly sent the photographs from the U.S.A.

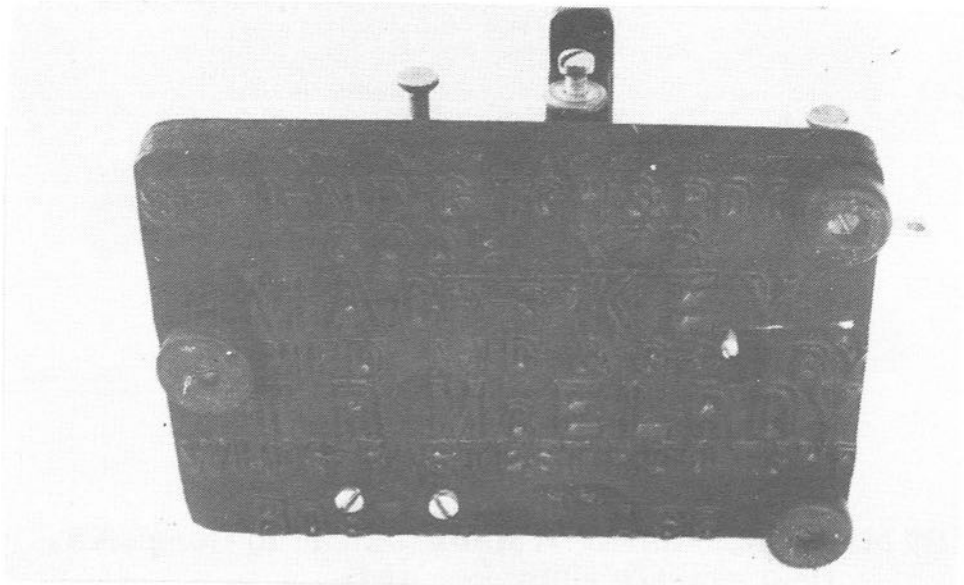
These were taken by Ray Nelligan, USA.
If anyone can provide additional information about any of the keys, for example details of manufacturer, or the type of key, where this is not shown, we would be pleased to hear from you.



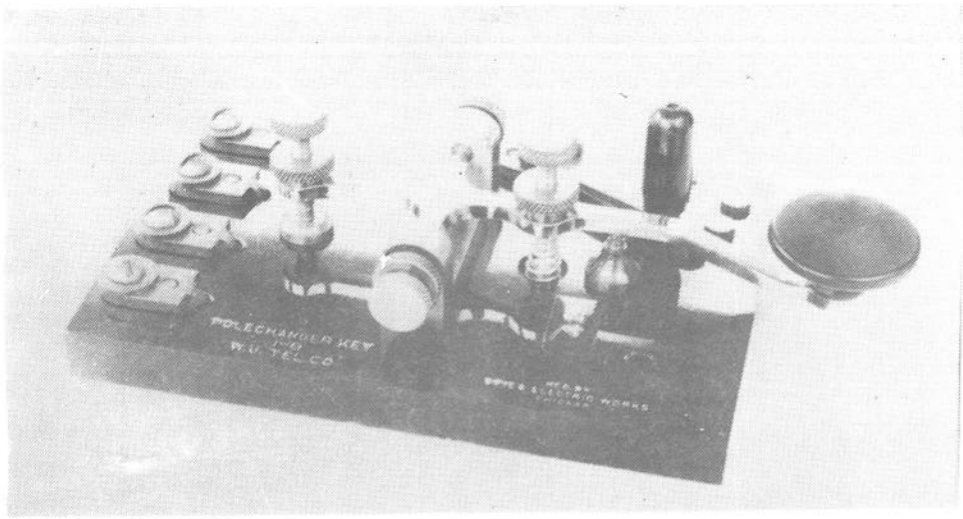
23 J.H. Bunnell & Co - New York USA



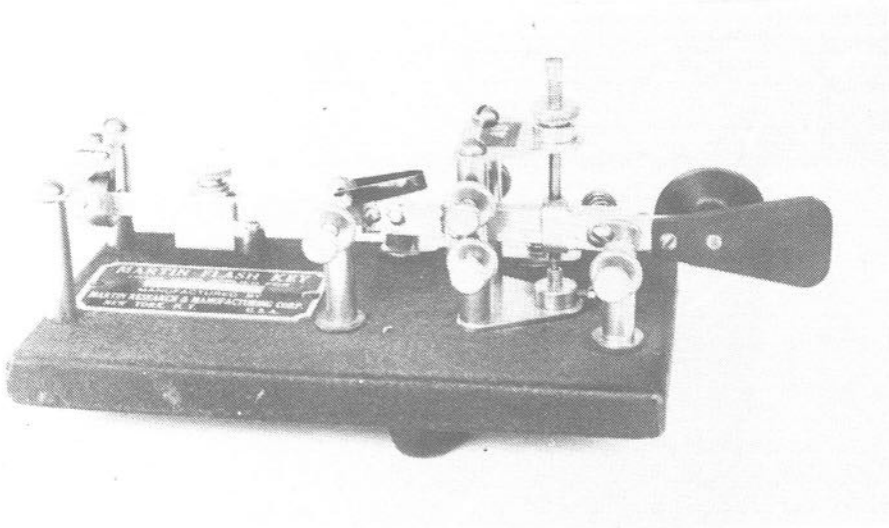
24 T. R. McElroy - "Mac key"



25 Underside of base Mackey



26 Spies Electronic Works - Chicago -
Polechanger key 1B



27 Martin Research & Manufactoring Corp., NY,
USA Martin Flashkey nr.6

American morse mystery ?

Tony Smith.

In researching material relating to the origins of Morse, I was intrigued by Prof. Morse's famous original notes showing the quantities of type found in a printing office, from which he and/or Alfred Vail determined the most frequently used letters of the alphabet, giving these letters the shortest symbols in the code.

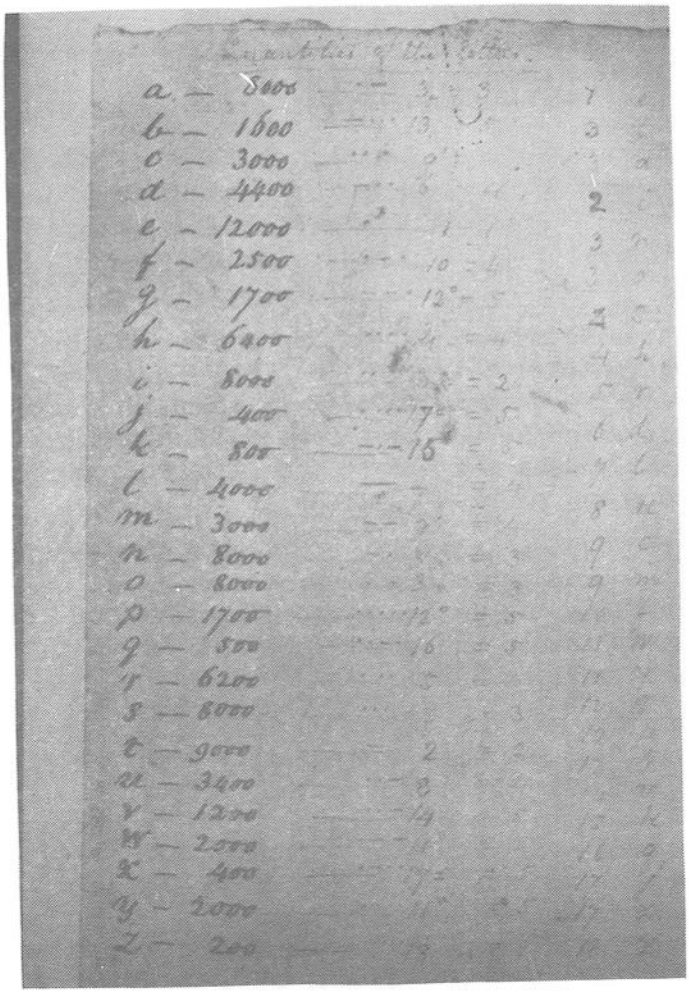
Each symbol was weighted by counting a dot as 1, a dash as 2, a space between groups of dots as 1, and a long dash as 4. No letter exceeded a count of 5 and, with one inexplicable exception, the code shown in these notes became American Morse.

The exception was the letter J. It is shown as . ... which counts as 5 and fits in logically with the pattern of symbols used for the other letters. The symbol finally used for J, however, was — . — . counting as 6 and contrasting strangely with the process used to select the rest of the alphabet. The discarded symbol was, in fact, allocated for use as ampersand (&), surviving to this day as "es" (and) in International Morse.

This does not explain, however, why the particular substitution took place. There is not a lot of research material available this side of the Atlantic on this aspect of the Morse telegraph, and it may be that for researchers in the United States there is no mystery at all! Can anyone offer an explanation in this matter please?

G4FAI.

American morse mystery ?



I am sure Louise can explain this Tony-

PAøBFN

A hanging matter

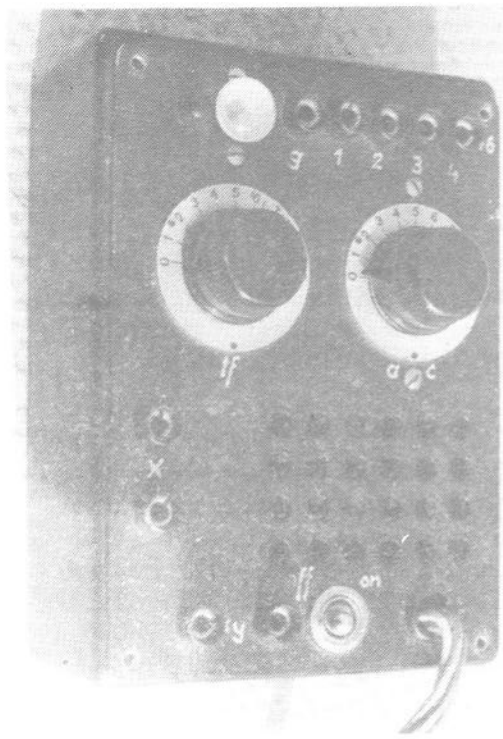
Harry Matthews, Curator of the Museum of Communication in Edinburgh, has told us about an interesting and unusual project he has been involved in. He has been "tidying-up" a world war two CW spy-set for Leith police, who are setting up their own museum.

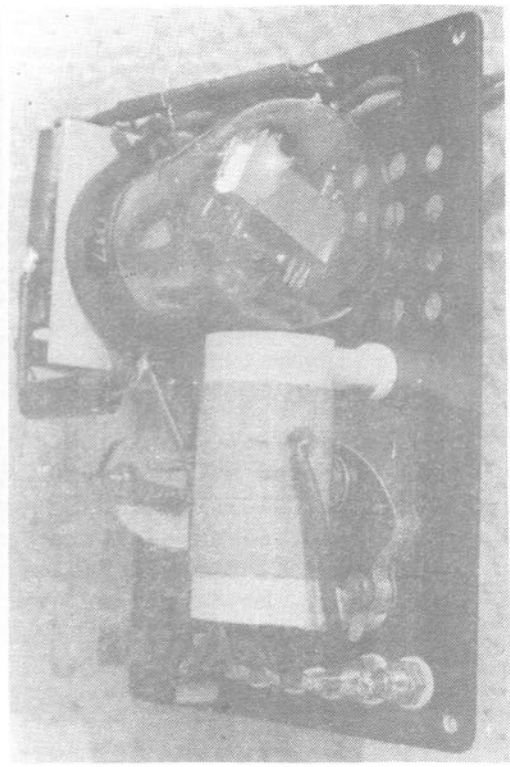
The set was found in the luggage of Werner Walthi, who was arrested at the left-luggage office of Waverley Station, Edinburgh, in September 1940, by police officer Willie Merrilees disguised as a railway porter. Walthi was tried at the Old Bailey, and was subsequently hanged as a spy. Mr Merrilees, who later became Chief Constable of Lothian and Peebles, kept the set after the war, and his widow has now donated it to the police museum.

The code used by the Germans was found in Walthi's luggage, and decoy messages were transmitted to Germany with the radio, giving false information on the movements of British shipping, resulting in a number of U-boats being destroyed.

Harry has drawn out the circuits of the transmitter and receiver, from which it can be seen that the tx is a simple crystal-controlled single stager, and the rx is a 1-v-1 regenerative type. Perhaps someone with an interest in vintage circuits would like to try making these up? If you do, let us know how you get on!

The Museum of Communication is in the James Clerk Maxwell Building of Edinburgh University. Housed in the Physics Department, it is open daily from 0900 to 1900, admission free. Harry Matthews can be contacted on 0506-824507. There will be more about the museum in a future issue.

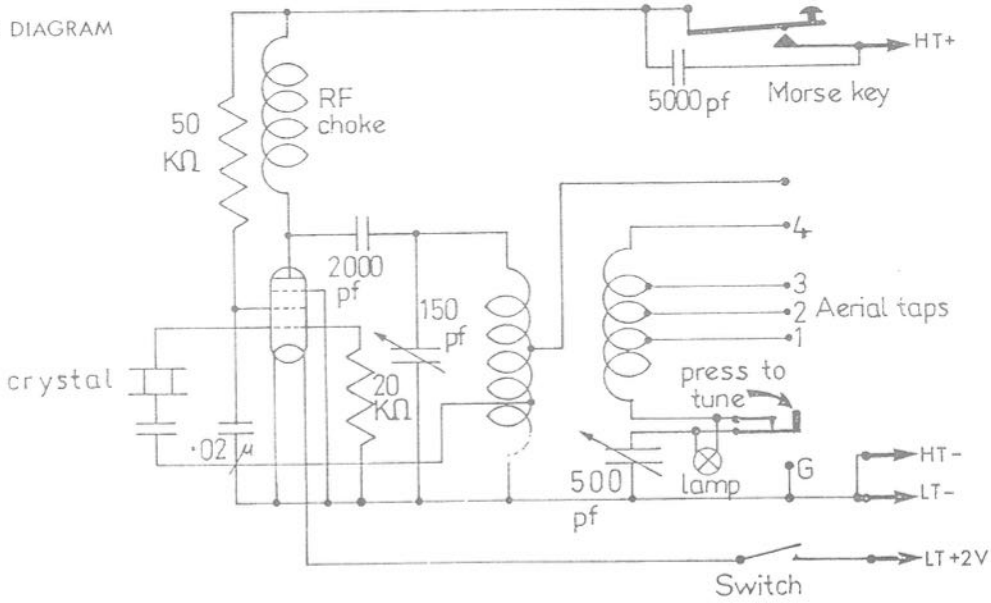




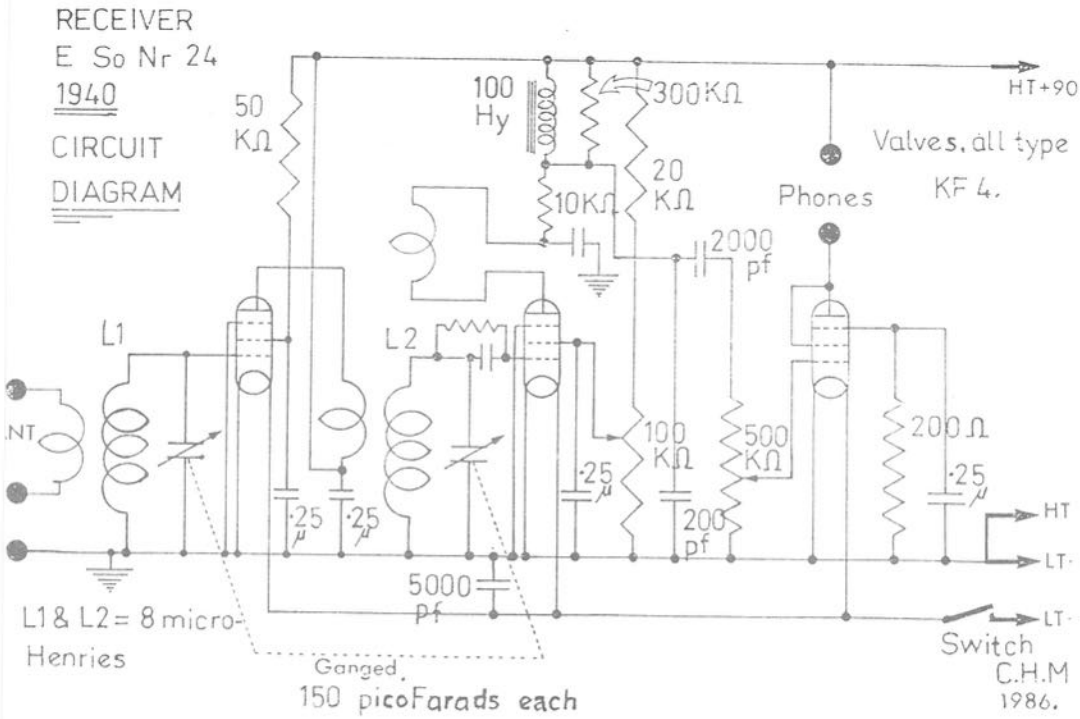
NSMITTER

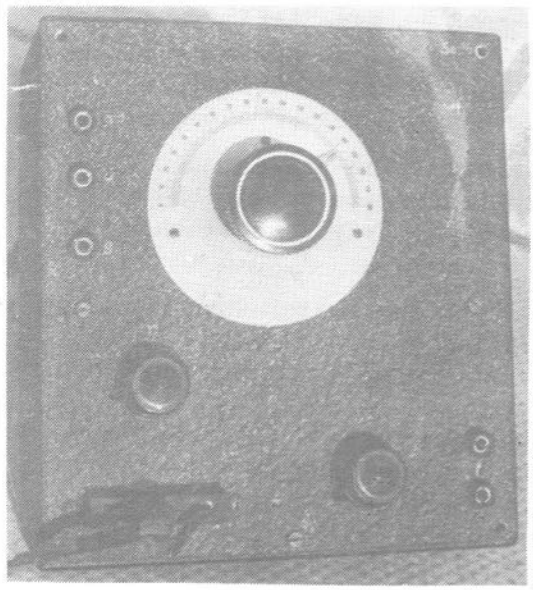
RCUIT DIAGRAM

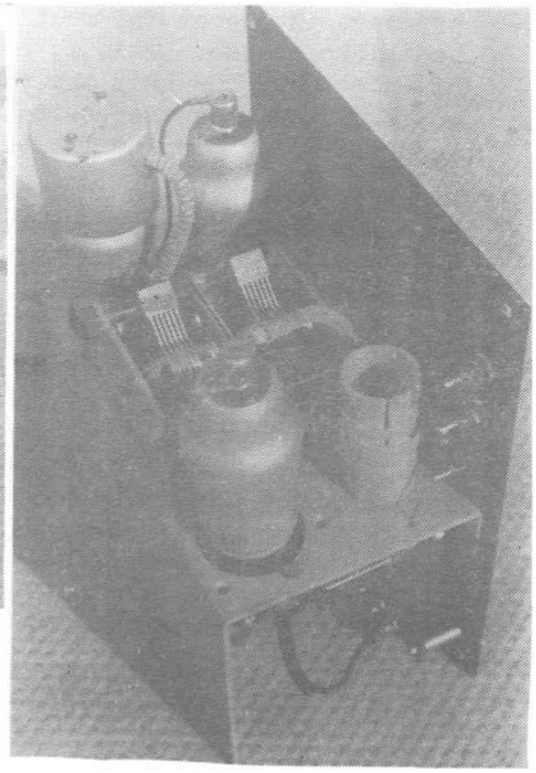
40



C.H.M. 1986.







German spy-set.

Photos Museum of Communication

Reflections

from Uncle Bas

3

MARCONISTS

A dying race, if the panic stories are to be believed, but reality may be a little different. It may be some time yet before every ship leaves harbour without a "sparks" on board.

Any rate, about 40 years ago they were new members of the family of a ship's crew, and they behaved like it....

"The Marconist or, as he is officially known, the radio-officer, is one of the most important members of the crew. He thinks so too. This is because he maintains communication between the ship and the rest of the world, once the coast has sunk on the horizon. He feels himself to be (and this is where the trouble starts) rather superior.

As telegraphists do not perform watch-duties, but have an independent existence in their private cabin, they appear regularly on deck in somewhat frivolous clothing at the most irritating moments.

A young seaman's face will begin to twitch when he sees a Marconist in a flowered dressing gown and Arabian slippers, with towel and toothpaste, sauntering to the bathroom.

He gets the same feeling at breakfast in the mess, when the Marconist declares that only fools take up a seaman's life. The mate, freezing on the bridge, experiences a similar reaction when loud music and roaring laughter comes up from the radio-room. On enquiring about this he learns that "sparks" is testing...

As the only one who can confirm this is the telegrapher himself, this becomes a further element in the secret dam

of hostility building up against this quasi-intellectual who always looks spick and span, and who always wants - and usually gets - the last word.

Of course, there are nice telegraphists, but even these, no matter how likeable, have great difficulty in letting the sun of their charm shine through the surrounding clouds. They insist, for instance, in explaing the unexplainable in simple terms.

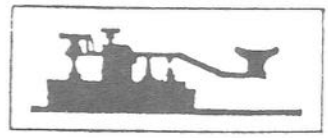
'You see, it is dead simple, radio waves are like concentric circles forming on still water when you throw a stone in. But not quite like a stone, more like a potato masher with a constant frequency, moving up and down. These waves then....'

At this moment he is struck by a look of undiluted hatred from the second mate, who never learned the difference between a volt and a hole in the ground, and would therefore like to strangle him. Rumour says it happened once.... not on a British ship however.

Its a good thing that telegraphists are at sea in the interest of safety, just like life-boats and lifebelts.

Otherwise they would have been thrown overboard long ago...."

Spark-gap 13



PSE QRS !

The article by GØCGB ("Dah dit dah dit dah"), in the first issue of MM reminded me of the need to remember that while 12 wpm to me is just crawling, it may be cardiac condition at the other end.....

I had a QSO last night with a GØ. I remembered GØCGB and made a great effort to QRS. We both enjoyed the QSO, and he thanked me for my patience.

The moral is obvious.

Gerald Stancy, G3MCK.

Readability

The major factor in communication?

by Wm G. Pierpont, NØHFF.

It seems to me that readability, the first number of the three RST figures, is the most important. Is that why it comes first? Of course signal strength (S) and tone (T) play a part in it, but only a part. Isn't readability another term for intelligibilty, understandability?

Five degrees are listed in the RST tables:

1 - unreadable (zero intelligibility)
2 - barely readable: occasional words distinguishable
3 - readable with considerable difficulty
4 - readable with practically no difficulty
5 - perfectly readable

Three factors appear to combine to promote readability:-

A) First and foremost is the quality of sending: lack of or degree of distortion. A defectively modulated signal already suffers in intelligibility. For the code, perfect modulation means precision of timing: well proportioned characters with proper spacing between letters and clear word boundaries, so that words stand out as words.

B) Environment of reception comes next in importance. This includes the amount of QRN and QRM present to the receiver: disturbing or blotting out the transmission to varying degrees when present. Letters or words or whole sections are blanked out or so obscured that there is serious uncertainty as to what is being said. This is the "radio" aspect of environment.

But there is a second interference potential - that is the acoustic environment: local noise competing with the incoming signals: loud talking, music, aircraft noise, machinery or crowd noise, etc.

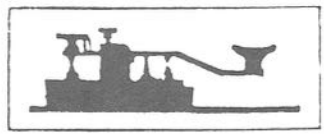
C) Speed of transmission relative to the ability of the recipient is a third factor. Too rapid or too slow speech or CW signals can diminish readability. (Dialectical, speech defects or "foreign accent" factors belong with defective modulation, not speed of transmission.)

If this analysis is reasonable, how should one go about making a composite rating of a signal's readability? It seems to me that the heaviest weighting ought to go to item A), quality of sending. After all, it is the sender who is being evaluated primarily isn't it? We all know that well-modulated signals (including properly proportioned code signals especially) are much more readable through static and interference than poorly modulated ones.

The sender cannot help the interference present. Yet readability does involve the recipient, and his rating must play a part in it. This means that a readability report (to a ham who knows he has good modulation) refers mostly to factors which may be beyond his control. He should be sensitive, however, if he is sending too fast for the recipient to follow with his present skills, and should take a look at that aspect of the report.

Readability contains both objective and subjective factors, but it is of crucial importance for communication. Is not readability virtually identical with QRK?

Spark-gap 14

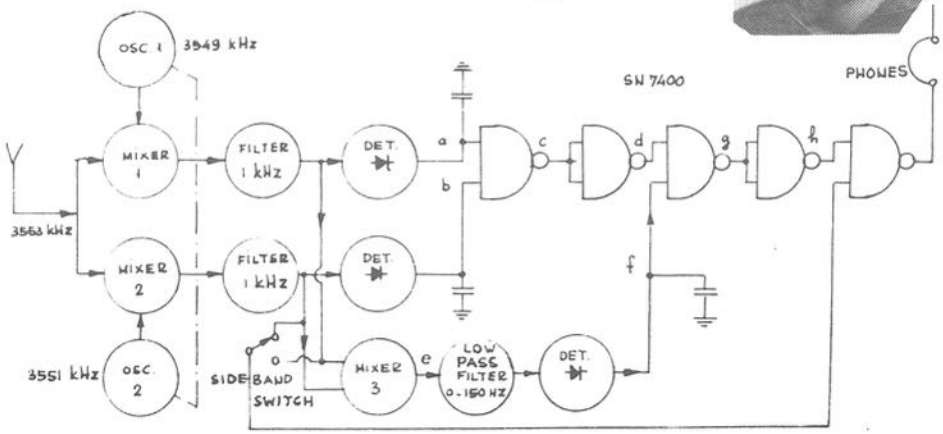


I think the best high-speed operator in Europe is Unal Akbal. I have worked him both as TA1A and TA1UA. He hits you with 40 wpm, and if you go back with "solid copy" you had better mean it, because he returns with one or two questions to test how "solid" it is! My own sending speed is limited by my Japanese straight key, but we have had one or two good QSOs. I admit I am perspiring freely when we sign off.

Ray hunting, G3OC.

Just an idea

by Lex



= Direct conversion reception without the disadvantage of hearing the signals both sides of the beat frequency =

After some thinking, and scribbling on a number of sheets of paper, the following idea was born.

Use two oscillators, both tuned by the same twin-ganged capacitor. The frequencies indicated are examples.

With correct tuning, inputs "a" and "b" become a "1", while "c" becomes "Ø", and "d" becomes "1".

The frequency of the difference-signal, "e", will be zero Hz (or very low), resulting in "f" being "1" also, and making "g" a "Ø" on or around the correct tuning. (The termination of a nand, as applied here, will be "1" when one or both inputs are "Ø", and only "Ø" when both inputs are "1").

I am not a digital expert, and there may be a simpler way. It is just an idea, and there may even be an error in it. Would anyone like to try it, to see if it works, or if it is just nonsense?

73 de Lex, PAØDW.

Sunken key

The Museum of Communication in Edinburgh has acquired a Morse key linked with an event unique in Naval history - the sinking of the German High Seas Fleet at Scapa Flow, on 21st June 1919.

Among other things, the Armistice agreement, which ended the 1914-18 war, required named German warships to be dis-armed, and to be interned, with small "care and maintenance" crews left on board.

Seventy four ships were designated, including battle-ships, battlecruisers, light cruisers, and destroyers. These arrived at Scapa Flow at the end of November, 1918, pending the signing of a formal peace treaty, which would decide their ultimate fate.

The German sailors were not prisoners-of-war. Under international law, internment meant that German skeleton crews were to remain in possession of their ships, and no British guards were allowed on them as they still belonged to Germany.

Some 20,000 men were involved in bringing the fleet to Orkney. Most were subsequently sent home, leaving about 4,800 to keep the ships in good order. Shortly before the sinking, this number was reduced to 1,700. Matters were complicated by the fact that the fleet had mutinied before leaving Germany, and a revolutionary Soldiers' Council, with representatives on all ships, constantly challenged the authority of the officers.

When the fleet arrived at Scapa, the British Navy banned all wireless transmissions, and to give effect to this order all transmitters and, later, all receivers, were either disabled or removed. Of course, no competent wireless operator would be deterred by such an order. There is record of at least one illegal home-made receiver, on the light cruiser Cöln, and there were probably more.

Strict rules were laid down for the exchange of visual

signals between the German ships, and between the German and British fleets. All messages from Rear-Admiral Reuter, the officer in charge of the interned fleet, to his superiors at Wilhelmshaven, were relayed by wireless from the British flagship supervising the internment.

The British provided drifters, with civilian crews, for traffic between the German ships themselves, and between the two fleets. Reuter used these drifters to visit his ships, and to bring his captains to his flagship whenever he wished to see them.

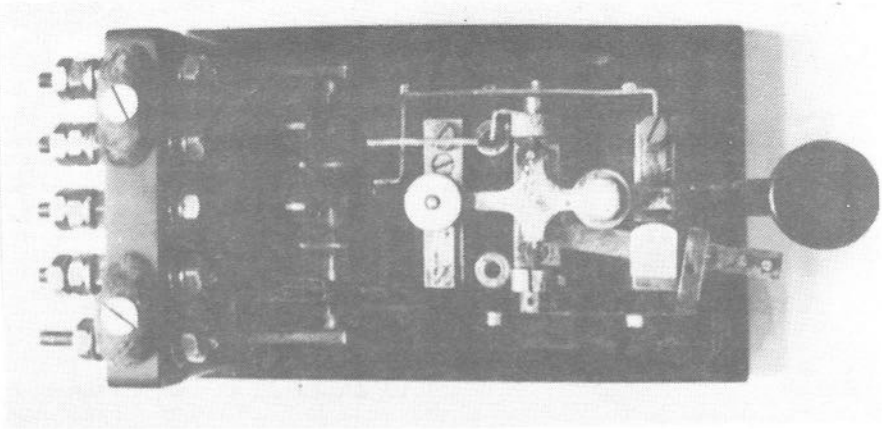
On 17th June, 1919, believing his fleet was about to be taken over by the British, he prepared detailed instructions for the sinking of all German ships, and the British drifters, unknowingly, took these orders round the fleet for him. The paragraphs in the orders were numbered, and any subsequent signal referring to these paragraphs was to be acted on.

On 21st June, the code flags,"D G", were raised on Reuter's flagship, the Emden - "all ships to man their bridges and watch for further signals".

At 10.30, he sent "Paragraph eleven. Confirm", the code for immediate scuttling. This was repeated by semaphore and by Morse code signal lamps, relayed from ship to ship around the fleet, taking an hour to reach all ships.

All responded, "Paragraph eleven is confirmed", and shortly after a bell sounded on the battleship Friedrich der Grosse ordering its crew to abandon ship. At 12.16 she rolled over and sank, the first to go on that momentous day. Others followed, and at 13.30 the Grosser Kurfürst, a battleship considered by Reuter to be the most slovenly of his mutinous ships, went down - taking with it the illegally retained Morse key which is now in Edinburgh.

That afternoon, fifty two ships sank completely, comprising 95% of the total tonnage of the German fleet, and they were left undisturbed in their watery grave until 1922, when one of the destroyers was salvaged by a local company. The following year, contracts were given by the Admiralty to another firm to raise four more destroyers, and in 1924 Cox and Danks Ltd were contracted to bring up the remainder of the fleet.



"Grosser Kurfürst key"

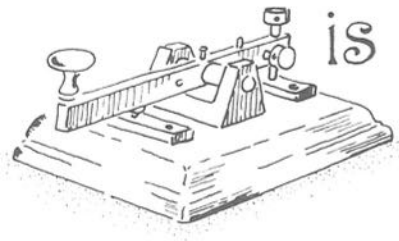
Metal Industries Ltd took over the contract in 1932, and they brought up the Grosser Kurfürst some years later. At that time, the salvage operations were being reported for the Scottish Daily Record newspaper by James Ferguson (who also happened to be a radio amateur), who is said to have been the first photographer to work underwater at 60 fathoms.

When the Grosser Kurfürst was scrapped, the manager of the salvage company presented Ferguson with the Morse key found on the ship and Mr Ferguson later gave this to a Mr Hunter, GM6ZV. When Harry Matthews, curator of the Museum of Communication, appeared on Radio Scotland recently, talking about the museum, Mr Hunter's wife contacted him and offered the key to the museum.

Having been neutralised to stop further corrosion, dried, cleaned and polished, this historic Morse relic is now on display with other exhibits of interest to communications enthusiasts. If you have occasion to be in Edinburgh, the museum is in the James Clerk Maxwell Building of the city's university. Housed in the Physics Department, it is open daily from 0900 to 1900, admission free.

Footnote: If any reader knows of the existence of other surviving wireless equipment from the High Seas Fleet, or can add to this story in any way, please write to G4FAI.

Samuel F.B. Morse



is alive and well, thank you

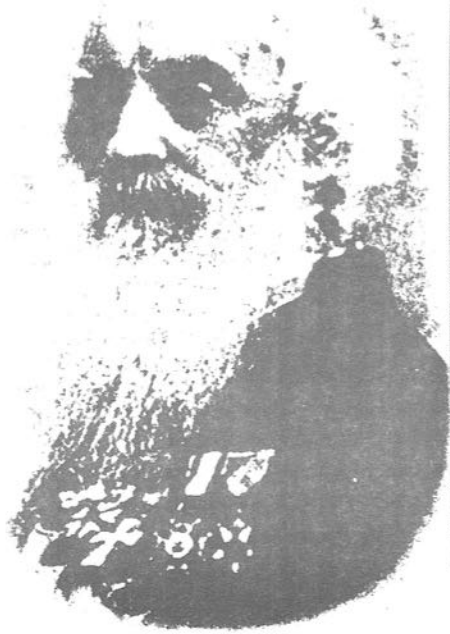
In March, 1982, "QST" published the following from W6FZZ. "I was born 26 July 1902, my father, George W. Morse, was born 9 May 1851. By word of mouth my father said that his father was Samuel Francis Barracks Morse, whose father was Prof. Samuel Finley Breese Morse, a famous portrait painter and inventor of the Morse Telegraph code. I am quite satisfied that these statements were true and correct. I am also a telegrapher and frequently boast at being much more proficient than was my great-granddaddy."

On 9th October, 1986, in response to a request from a reader of Morsum Magnificat (Frank Williams, IV3WFK/KA8PIV), W6FZZ wrote substantially as follows: "We did not inherit an interest in telegraphy. My two full brothers tried, but lacked either talent or motivation. However my half-brother, James Taylor, was a newspaper wire operator and betimes manager of the local Western Union. Some twenty years my senior, he stimulated my interest while I was of pre-school age. Hence I began telegraphy at the same time I began Reading, wRiting and aRithmetic.

My intense interest and high motivation made learning the code dead easy. When I was 10 years old, James got me a job with the Southwestern Bell Telephone Company in my home-town of Waco, Texas. The wire chief put me at the

telegraph practice table for several months, to see if I really had the talent claimed for me by James, whom he'd known for several years.

I enjoyed every minute of learning. In several months I was reading the fast newspaper wire repeaters, not well enough to copy, but well enough to judge if the repeaters were passing clean and acceptable signals. My elders were pleased that I could detect the slightest deviation from correct marking and spacing sounds. Being so young with sensitive ears and nimble fingers, learning quickly to properly adjust the repeater machinery, I was soon earning journeyman's pay while still of a tender age.



S.F.B. Morse I

S.F.B. Morse III

No breaking

At age 17, I worked for the Associated Press in San Antonio, Texas. The Big Round Table in Chicago sent on a circuit to our area, to some 60 receivers. I manned one of them. The wire moved an average of 18,000 words per

8 hour shift, during which time we had a 30 minute lunch period, two 10 minute breaks, and two 5 minute rests. During the active 7 hours, traffic came in at slightly over 45 wpm. With so many receivers on the same circuit, question breakers were not only frowned on, but three breakers marked against you in one week could put your job in jeopardy.

During the San Antonio days a big golf tournament was held in that region and for about a month it fell to my lot to transmit the sports file, plus the Mexican consel copy. At the end of this period, the telegraph editor of the Big Round Table wrote me a fine letter in which he approved of my transmitting style, rhythm, and judicious use of the Phillips Code; and offered me a job there in Chicago. In the event, I didn't take that job. The very thought of being tucked into the Big Round Table with 12 or 15 grey haired owlish old-timers filled me with fright.

Go West young man!

Besides, youth will have its fling. California called. I'd long heard of the wonders of Los Angeles. In those days, before the word 'smog' had been invented, the climate was delightful. After a year on the job in San Antonio I was put on vacation relief, which entailed travelling all over Texas to sit in for a chap off on vacation. That tipped my hand, I resigned and went to L.A.

Hindsight indicates that even a modicum of inquiry would have told me that all the seniors clustered in L.A. However I blundered into town to find no good newspaper wire job, and ended up for starvation wages at the Postal Telegraph Company on the Flagstaff, Arizona - Los Angeles wire. A hick set-up of sloppy operation and imperfect manner.

One day in L.A. I was bored to tears, not paying much attention, I'd turned the task over to my sub-conscious mind. A message came in, "Send me twenty dollars to get home". Either from bad wire function, or malice on the part of the sender, the first dit was omitted from 'home'. I tossed the message on the retaining hook for the message girl. The traffic chief was an old lady hag, she soon brought the message back and asked if I could fix it. I shyly said I could. Some hour later, when not busy, the chief looked over her horn-rimmed spectacles and said, 'sounds mighty expensive to me!'

Starting on the code so early, and continuing for many many years, one could not help but be proficient. I know, at age 84, I am still an expert telegrapher, boastfully good, but I once worked beside a fellow who put me to shame. It was when I was 17, I worked in the same room with Frank Renchler, who I reckon was one of the best in the world.

He could copy code just as fast as anyone could send it, provided it was clean (no electronic keyers in those days). He was a bit of a 'show-off' but deserved every bit of fame because he was gifted with an extraordinary memory bordering on the fantastic.

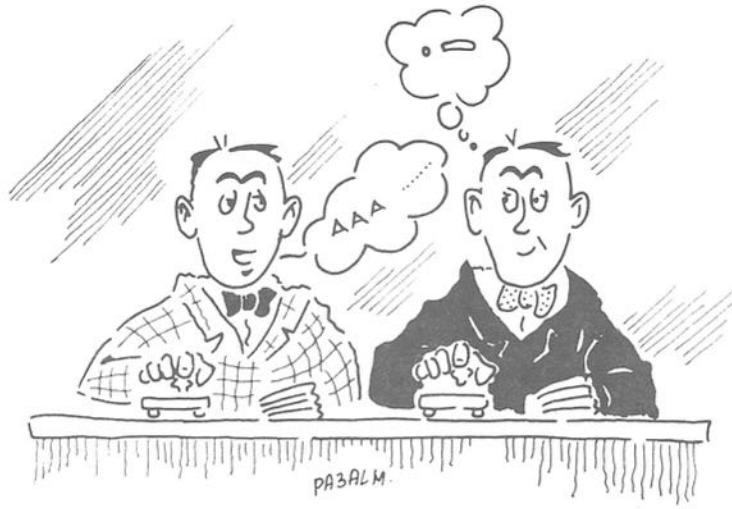
He would wait until the Chicago grain market report was offered on the wire. This was in five tabulated columns. After the headings were correctly placed, the rest of the report was one very long series of numbers and fractions of numbers that had to be placed in exactly the right position, else the entire report went askew. It ran to 3 or 4 pages.

As his wire started spewing out figures and fractions, this 23 year old chap would pick up the daily **newspaper**, walk past several clattering desks, about 15 meters to my desk where I was copying at 45 wpm. He'd turn to the sports page and read aloud to me about the latest game, then loudly voice his opinion of some of the players. When the grain report finished, he'd casually stroll back to his desk, sit down, and write the entire 3 page report without a single digit wrong or misplaced. Its hard to believe, but I saw him do it half a dozen times!"

W6FZZ disclaims authorship, but says scuttlebutt had it that some messages went awry due to faulty punctuation, indeed Western Union eventually required all commas, etc, to be spelled out fully.

A Denver produce broker sent a Dallas buyer an offer for a carload of potatoes. The reply came back, "No. Price too high for the present market". The receiving operator omitted the period after the "No"; it was said that Western Union ended up buying the potatoes.

An ailing gentleman let his wife visit her relatives, when he felt fairly well. But when he took a turn for the worse his telegram read, "Not getting any better, come home at once." The receiving operator moved the comma one word forward.



And finally a message which caused consternation, and some service messages, read, "Come home at once, Betty has broken her leg near the shoulder". It turned out that Betty was the family cow!

(Our grateful thanks to Samuel F.B. Morse III, W6FZZ, for sharing some of his memories with us, and to Frank Williams, IV3WFK/KA8PIV, who contacted W6FZZ on our behalf)

Contributors' guidelines

Morsum Magnificat wants anything about Morse telegraphy, past, present, or future, ranging from anecdotes to zero-beat; from actual articles to suggestions for articles; from photocopies of old publications to photos of recent events.

Just rambling

Welcome to yet another issue of MM. In working on the mag the months seem to fly by and it hardly seems possible that we have reached the fourth issue.

For those of you who started with Nr 1, can I remind you that your subscription expires with this issue? UK & Eire subscribers please send me your cheques, etc, for £6 payable to MORSUM MAGNIFICAT.

From some other countries it may be possible to send a sterling draft (international cheque) for £7.00, drawn on a London bank, or an International Postal Order also for £7.00.

The best way however, from outside UK & Eire, is to send US $10 to PAØBFN, Rinus Hellemons (address on inside cover). Please do not send cheques, etc, in any currency except Sterling or US dollars. Sterling to London, dollars to Bergen op Zoom.

Articles are continuing to come in, covering an amazing variety of subjects within the world of Morse, which will entertain, inform or surprise you in the issues ahead. But we still need more to keep MM going in the months and years that follow!

Send us your articles, ideas, suggestions etc. Liven up our pages with your amusing experiences! Tell us about books and articles you have read which might be of interest to our readers. Tell us about your interesting acquisitions in the field of telegraphy; share your special knowledge with others. I look forward to hearing from you!

73 Tony

SCAG - Activities

The Scandinavian CW Activity Group, SCAG, was founded in 1974 by Swedish amateurs having a great interest in CW communication. SCAG's purpose is to support and encourage amateur radio telegraphy and to work for good operating behaviour on the amateur bands. SCAG aims for good co-operation between the Scandinavian countries, and also for good international relations. While most members come from Scandinavia, there are quite a few in other parts of the world. Any amateur having an interest in telegraphy can become a member.

SCAG activities, as shown below, are open to non-Scandinavian amateurs, who are also welcome to check in on the different SCAG nets. The SCAG NEWS LETTER is issued four times a year. The language is Scandinavian, but some articles in English are also published.

General sked frequencies: 3555, 7030, 14055, 21055, 28055 kHz
Sked times: 1730 and 2130 MEZ.

Nets and Bulletins:

High Speed Net	Fridays	1730 MEZ	3578 kHz
Rag Chew Net	Saturdays	1600 MEZ	3555 kHz
SCAG Net	Sundays	1030 MEZ	7030 kHz
SCAG Nord Net	Sundays	1800 MEZ	3557 kHz
SCAG DX Net	Sundays	1430 UTC	14055 kHz

Awards and other activities:

Rag Chew Award

Issued by SCAG members to anyone who has shown excellent CW-skill in QSO with a SCAG member for more than 45 minutes (EU) or 30 minutes (DX). This award can be given only once to the same station. There is no charge.

Worked Scandinavia on CW

This award is open to all amateurs. Contacts after 1st

October, 1986, count. For further information on this new award write to SCAG Award Manager, OZ5RM, R. Meilstrup, Bavnestien 6, DK-2850 Naerum, Denmark.

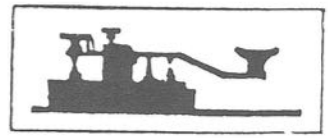
Straight Key Day - SKD

SKD is arranged every New Year's Day and Midsummer Day. Only straight keys are allowed. An award is issued to the five participants who get the most votes for good CW, and the winner on New Year's Day gets the SCAG HONOUR KEY for one year. Rules are obtainable from SCAG Contest Manager, SM7GXP, Lennart Fälth, Rågvägen 12, S-288 00 Vinslöv, Sweden.

For more information about SCAG, write to SCAG Secretary, SM7KJH, Christer Karlsson, Jacob Pers väg 3, 4v, S-232 00 Arlöv, Sweden.

Spark-gap 15

How!

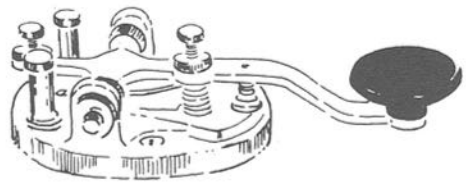


I remember reading once that in WW1 the US Army trained a small group of Choctaw Indians for front line telegraph operations in the art of Morse telegraphy.

Apparently their language was visually readable in signs, and to these were designated certain Morse combinations.

The story went that the German "line tappers" were really confounded and on the threshold of a nervous breakdown when they heard this stuff being sent!

Don deNeuf, WA1SPM.



Key-tronics

by Roy Walmsley, G3IBB. 2

I spend a lot of time "earwigging" around the bands and what strikes me most is the amount of time it takes to say 'goodbye'! To some extent I can understand the use of a "standard QSO" when working a foreign station who is non-English speaking; it's hardly likely that many of us could conduct an intelligent conversation in Mandarin for example.... But is it really necessary when working another English speaking station?

It seems to me that few pause to consider what they really mean when they say, "73, 73, best wishes and vy 73" not just once, but several times at the end of a QSO. Would many of us be offended by a simple "TU"? Perhaps one day we'll have a code number which means "Goodbye with all the trimmings".....

What speed?

A basic "word" in Morse code consists of 50 elements, an element being a dot period. The common test word is "PARIS" followed by the inter-word space of seven dots length. For example, 'P' is 11 elements, 'A' is 5. Together, and including the 3 element space between them they total 19 - and so on. Thus, if you send PARIS 5 times in 15 seconds, your speed is 20 wpm.

Weighting

This is the name given to the ratio of a dot to the inter-element spacing, nominally one dot. If an "unweighted stream of dots is generated the time interval between the dots should equal one dot period for a "dot-space ratio" of unity.

There is a limited range of speeds where such a ratio is ideal. Fortunately, this range lies in the band of speeds from about 18-28 wpm. At speeds slower than 18 wpm it is often easier to both send and receive code if the ratio is made "heavier", that is, with the dot period

greater than the space following it. Similarly, at speeds greater than 28 wpm a "light" ratio, or clipped dots, is desirable. Clipping can be advantageous under noisy band conditions even at slower speeds; the more precise nature of the code often makes it cleaner and easier to copy.

Experiments have shown that three distinct dot to space ratios form a good compromise over the entire speed range of 10-50 wpm:

Heavy - 9:7, speeds up to 18 wpm

Normal - 1:1, speeds from 18 to 28 wpm

Light - 7:9, speeds above 28 wpm or noisy band conditions.

(Note that the dash to space ratio is less affected by weighting, being 3:1 for Normal, 25:7 for Heavy, and 23:9 for Light weighting).

Electronic keyers designed with a continuously variable ratio control suffer two main drawbacks. Firstly, this control is almost the most mis-used control in the shack - second only to the microphone gain control - and unless the proper ratio is set up by measurement the results are often poor.

Secondly, the ratio varies with the speed setting of the keyer - invariably in the wrong direction. The faster the speed, the heavier becomes the ratio. Clearly, the best <u>average</u> ratio is unity - thus a fixed ratio keyer gives good average results. Ideally, what is required is a digitally derived ratio control where the optimum ratio can be set up with a three position switch and be exact every time.

If you have an SWR bridge, keyer weighting can be checked or set up quite easily. Transmit a constant stream of dashes (into a dummy load, PLEASE) and adjust the SWR meter to read a number divisible by 3, ie 90 if the meter is calibrated 0-100. The keyer speed should be adjusted to give a fairly constant reading. Now change to dots. The meter should fall to a reading $\frac{2}{3}$ of the original - 60 in this example- for unity ratio. Readings below this value indicate light or clipped keying, readings greater indicate heavier keying.

(from MERCURY, journal of RSARS, 1978)

Marconi- DXer or Con-man?

by A.D. Taylor, G8PG.

At approximately 12.30 hours local time (16.30 GMT) on Thursday, December 12th, 1901, Marconi, operating a receiver at St John's, Newfoundland, claimed that he had heard the first trans-Atlantic radio signals from a transmitter located at Poldhu, Cornwall, England. These consisted of the Morse letter "S" sent repeatedly. The reason for choosing this signal was that the Poldhu transmitter was of higher power than any previously operated, and there was concern that it might blow up if an attempt was made to send slow dashes on it.

This event proved to be the start of a controversy which still continues. Put simply, this involves not the question of whether it is possible to transmit WT signals across the Atlantic - we all know that we can - but whether it was possible to transmit and receive signals at that time of day on the particular frequency used, bearing in mind the simple, non-amplifying, receiver at the St John's end of the link.

What frequency?

The first argument is about what frequency actually was used! 1901 is a date 9 years before the introduction of even the simplest wavemeter, and finding a frequency was very much a matter of "tune and hope". The frequency of the Poldhu transmitter has been variously claimed as 150 KHz (2000m), 300 KHz (1000m), and 750 KHz (400m). The latter claim requires serious consideration, as it is made by someone who should have been in a position to know, namely the well-known Marconi Engineer, H.M. Dowsett, who was also a highly respected author of radio text books.

In his "Wireless Telegraphy and Broadcasting", published

in 1923, he states on page 96, "the transmitting power was 12 kw; wave-length 400m, height of aerial 200 ft". Poldhu had been designed for 20 kw, but may well have been run below maximum power to give a safety factor, and we know that the aerial, a temporary structure erected after the original larger array was blown down, was 200 ft high.

This leaves only the question of the frequency/wave-length. Dowsett is known to have spent considerable effort in calculating the likely output frequency from the physical data of the components used in the transmitter so, allowing for some degree of error, it does seem likely the frequency was somewhere between 700 and 800 KHz as far as the fundamental was concerned.

"Fundamental" may be the crucial word when we consider the likelihood of successful trans-Atlantic working. Although the Poldhu station was at that moment the most advanced transmitter in the world, what was used was a comparatively crude high power spark transmitter. As any of us who used such transmitters in their last days in the maritime mobile service know only too well, only part of their energy was radiated at the fundamental frequency, a considerable amount of it being radiated as harmonics. As we shall see later, this point may be vital.

Standby or Tune?

There also seems to be controversy about the receiving equipment at the Newfoundland end. We know that the antenna was a long wire raised to a height of about 400 feet by means of a kite. This would provide an excellent receiving antenna. Immediately following on from his description of the Poldhu transmitter, Dowsett says, "At St John's he employed a kite flown aerial, a tuned receiver circuit, and a coherer developed by the Italian navy..."

Yet in his carefully researched book, "Syntony and Spark", Professor H.G.J. Aitken states that the receiving equipment was simply a coherer connected between aerial and earth (and note that he is a trained radio operator as well as an academic). It is possible that both these authors are correct. Any old-time "Marconiman" will remember that older Marconi receivers always had facilities for "Standby" and "Tune". The former for general search purposes, and the latter for increasing selectivity once a desired station had been selected. Bearing in mind

that Marconi had to search for his Poldhu signal, he would certainly have used an equivalent to the "Standby" circuit while doing so, and may or may not have changed to "Tune" once he found it.

Which path?

As far as propagation conditions are concerned, 1901 was a sunspot minimum year, with a count of only 3 in December. This would mean very low D-region attenuation, and also at 16.30 GMT the UK station would be beginning to enter the sunset peak. Many authorities claim that even under these conditions the path could not have been open in the vicinity of 700 KHz, particularly in view of the crude receiving apparatus.

Personally, I feel it might just have been possible, but that the odds were much against it. This negative view is supported by later tests between Poldhu and a ship, where the maximum range obtained was only 700 miles. On the other hand the ship's receiving antenna would not be so effective as that used by Marconi, and the operator may not have had the same intimate knowledge of the receiving equipment that Marconi possessed.

So was Marconi, perhaps desperate to prove his point, less than truthful about his results on that day? I personally doubt it, and the whole slant of the question was changed by a suggestion put forward by radio history researchers from the Science Museum, London, some years ago.

This suggestion pointed out that (a) Marconi was almost certainly searching for Poldhu on what was virtually an aperiodic antenna circuit and (b) that Poldhu would be radiating powerful harmonics up into the h.f. spectrum. There certainly would be h.f. paths open across the Atlantic at that time, and it may well be that what Marconi heard was not the fundamental transmission at all, but a harmonic, possibly in the 8 to 10 MHz range.

What signal was it?

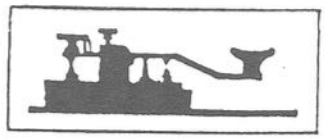
At first sight this may seem unlikely, but some years ago when experimenting with a 1923 vintage crystal set I own, I came upon an unexplained signal. This turned out to be Radio Moscow, operating on 6 MHz. The receiver has no tuning capacitor, only a tapped coil with a slider, and I soon realised that the coil, wound for medium frequencies,

was in fact acting as an r.f. choke, possibly with a resonance around 6 MHz, and thus providing an aperiodic receiving circuit around that frequency. Substituting a good 6 MHz tuned circuit made the signals much louder, but they were still identifiable in the original condition. (And note that my simple, back yard, antenna was nothing like the 400 foot high monster Marconi used!).

So did Marconi really hear 3 dots at 12.30 hours on 12th December, 1901? I believe that he did. BUT even if this were proved irrefutably, there is another school of thought that believes what he heard was actually the well-known "three crash" burst of atmospherics which sounds very similar to the letter "S" sent on a spark transmitter. As they say, "you can't win", and the controversy is likely to continue as long as radio itself!

The bored operators

Spark-gap 16



In the middle of July 1948, I called CQ on the 20m CW band, and was surprised to hear a station calling me, using a five-letter call-sign. As he was not an Amateur operator, I asked for identification, and was even more surprised to discover that he was a Wireless Operator on one of the numerous cargo planes engaged in the historic Berlin Air-lift.

He said that the problem with the endless round trips from England to Berlin was monotony and boredom, so he had tuned to the 20m Ham band for relief. We had a long chat on the key until he was far across Germany. He must have told other operators about our contact on my fixed cryatal-controlled frequency, because during the following days, other aircraft came back to my CQ calls. These QSOs must have bent the rules of Ham Radio, but considering the splendid and arduous work of those aircrews, the least I could do was to give them some of my spare time.

Ray Hunter, G3OC.

A Sparker's "If"

(with apologies to Rudyard Kipling)

If you can keep your head when all the buntings
Are losing theirs and blaming it on you;
If you can read through atmospheric crashes
With signals fading down to near "R-2";

If you can send and not get tired sending
And when you stumble, make a neat erase;
If you can read without the old complaining:
"His bloody Morse is just a damn disgrace";

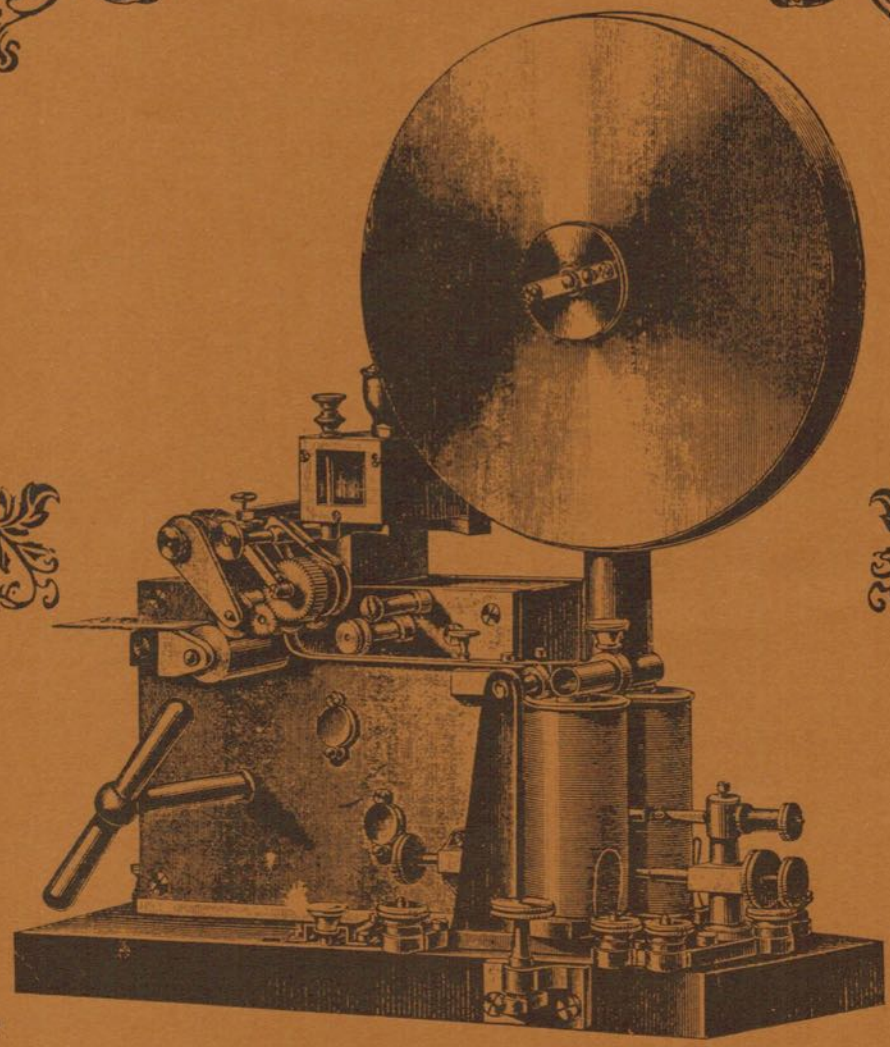
If you don't fill the unforgiving minute
With sixty seconds worth of IMI's
And if you always use correct procedure,
But still don't talk too much, nor look too wise;

If you can live with buntings, jeeps and stokers
And tolerate both Pusser's rum and stew;
And copy when reliefs are in their hammocks
And never miss a group with every spew;

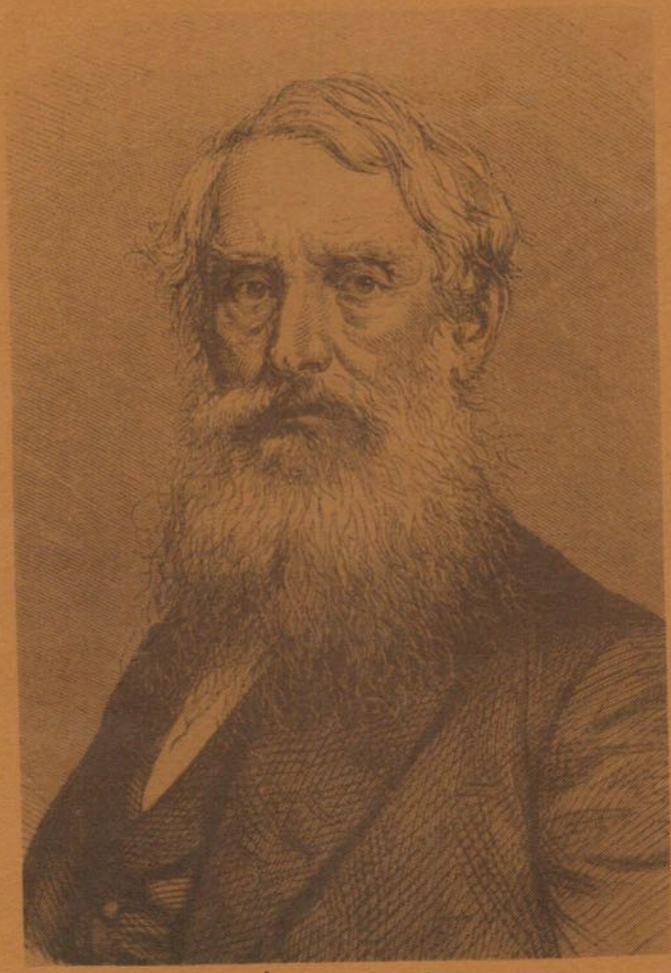
If officers and Chiefs and drunken Yeomen
Can heckle you and still your nerves won't fray;
Then you're a damn good sparker, son—you've made it!
You're earning every penny of your pay. . . .

MUL

Sparks Journal



"Syphon-Recorder"



Samuel Finley Breese Morse