Flying
the flag
for
Morse

Morsum Magnificat

The Morse Magazine
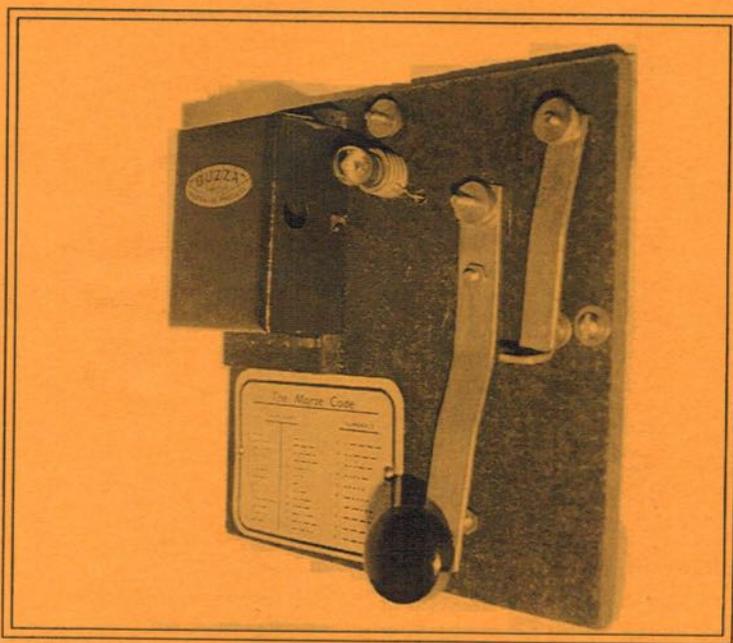
Buzza Morse Code Apparatus No. 2

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

ON OUR FRONT COVER
Buzza Morse Code Apparatus No.2, made in Australia, possibly in the 1930s. Base, 'Masonite'; key and switch lever 0.05in (1.3mm) steel strap; pressure required to close key 800 grams (!); contacts are steel nuts and washers; buzzer appears to be a commercial item of average quality. An example in poor condition seen in an antique shop recently was priced at A$100 (about £50).   *Collection/Photo: Colin MacKinnon VK2DYM*

(Buzza also made more professional-looking keys and further information on this company and their products will be welcomed. – Ed.)

Comment

ONE OF MY GREAT DELIGHTS IN LIFE is browsing through old books and magazines. Not just those which deal with telegraphy or wireless, but any which describe the then 'state of the art' in other mechanical or scientific topics, too. In the process, I never cease to be amazed at just how true the old saying 'There's nothing new under the sun' turns out to be; for just how many years the cunning ideas of today have actually been in use.

The scale may be different, and the way in which the ideas are implemented will no doubt have changed considerably, but many of the principles used in today's high-tech equipment were actually thought up a century or more ago.

I came across just such an idea whilst I was searching for an interesting illustration for the back cover of this issue of *MM*. The idea is that of a printer based on the principal of pressing a piece of paper against a rotating type-wheel at the precise moment that the desired character is facing the paper. The same basic idea has been used, in either a mechanical or electronic medium, in typewriters, computer printers, even in early photo-typesetters. Were you to include applications where the printed image is 'rasterised' – transmitted and reproduced as a pattern of dots, rather than in 'solid' characters – even television, video and modern printers of the laser and ink-jet varieties could be said to owe something of their existence to that same idea.

And where did our back-cover illustration come from? A book published 99 years ago. Truly amazing!
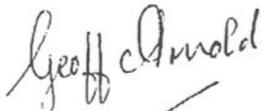
Geoff Arnold

G3GSR

Contents

Advertisement Index

News

Operation Maquis 1994

Readers are reminded that over the weekend of 11–12 June 1994, special event stations in France, England, Belgium, Holland and Martinique, will be on the air to honour the memory of the radio operators who risked, and often suffered, death or torture while maintaining the clandestine radio links between France and England during WWII.

Many of the commemorative stations will be using low-power wartime equipment on the 40m amateur band and modern equipment will be used on other bands. All radio amateurs are invited to contact them, and those using B2 or other clandestine sets will be especially welcome.

The stations will be active mainly on CW on the HF bands, but also in other modes and with some limited operation on VHF. Contacts will be confirmed by special QSL cards specific to each station, and special diplomas will be awarded as described below.

Stations (QSL managers in brackets) taking part will be: TM5OAM (F5SMR), TM5OCA (F6HPX), TM5OCR (F5OZX), TM5OLF (F5MXH), TM5OLR (F6DTU), TM5OMM (F1NYO), TM5OND (F1SIU), TM5ORB (F1HNU), TM5OSO (F8WA), TM5OVR (F6AXX), TM5OYO (F3NV), TM5OBR (F5MYW), TM5OSM (F6IPS), TM5OMN (F5XX), TM5CD (F2FX), TM5OMA (F5AM), TM5OHG (F5HJM), TM5OHA (F5IDA), TO5ORC (Martinique) (FM5CW), ON4WAR (ON7YO), PA6JUN, GB2IWM (G4HXH), GX4ARE (G4ARE), GB5HCR (or G0FSP/P) (G0FSP), GX3YRG/P (G3OEP), G0JNP, G4NXN.

On Sunday June 12, from 0630 UTC, on 7.025MHz, a net will be activated in communication with GB2IWM at the Imperial War Museum's Duxford airfield. During these communications, stations on the continent (some using wartime equipment) will transmit in telegraphy a sentence in French similar to those sent by the BBC during WWII, and the sentences will be sent back in English by GB2IWM. A diploma can be applied for by radio amateurs or SWLs who copy at least five of these sentences, together with the calls of the stations which sent them.

Additionally, station TM5OMA will be activated from June 7 to 12 from a different location each day. A further diploma will be available for amateurs who contact, and SWLs who hear, this station and report its different QRA locator on each day of operation.

For more information send a self-addressed envelope and IRC to Jean-Jacques Legrand F5SMR, 5 chemin du Cambarnier, Villa Mi Lou, 06560 Valbonne, France.

(Reports from participants in this special event will be welcomed by MM. – Ed.)

Danish Liberation Celebrations

The Danish Freedom Fighter Museum station OZ5MAY (see MM31, p.7) plans to be on the air on May 4, on 14.038, 14.043 and 14.046MHz (±) to celebrate the Danish liberation message.

UK stations are particularly asked to stand-by for this station, for normal QSOs and 'chat', because many WWII resistance people come to the museum that day and like to see the station working.

Torben Dahl, OZ5ABN, writes 'please be patient when calling us as we are sometimes speaking to the visitors and it is not possible to key at the same time. There are also two short ceremonies in the evening, at 1930 and 2030, when we may have to shut down for 10–15 minutes.'

IARU Morse Committee

A meeting of the Administrative Council of the International Amateur Radio Union was held in Brussels, Belgium, on 26–27 September 1993. During this meeting, its chairman, IARU President Richard L. Baldwin W1RU, announced his intention to appoint several new *ad hoc* committees, including one to be concerned with 'Morse code: the issues, and a proposed position'.

There is no further information at this time, but the recommendations of this committee could, potentially, have a considerable impact on the large numbers of radio amateurs who still use Morse code around the world.

MM will report any further news as it becomes available. At the same time, readers having any knowledge or information about the work of the IARU *ad*

hoc Morse committee, or its members, are asked to contact *MM* immediately.

ZRO Test

The ZRO Memorial Technical Achievement Program, otherwise known as the 'ZRO Test', may be of interest to readers of *MM*. Basically, it is a series of CW numeric code groups transmitted at 10 wpm through the AMSAT-OSCAR-13 amateur satellite with each successive group transmitted at a lower power than the previous group.

The participating listener monitors the downlink signals from the satellite until the numbers can no longer be copied. Those who can hear the beacon can qualify for the basic award by copying the code group heard at that level (designated 'Z0').

The challenge is to improve home-station reception performance to a point where the lower-level downlink signals can also be copied. Endorsements, in the form of attractive stickers to affix to the basic certificate, record each successive level heard and accurately copied.

At the beginning of the run, uplink power from the control station is set to match the general beacon downlink strength. This is level 'Z0'. After sending and repeating the first random five-digit number at this level, the control operator lowers his uplink power by 3dB (half power) and repeats the procedure with a new random number (level 'Z1').

This continues through successive stages to level 'Z9', 27dB below the beacon level, and a new level, 'A', is −30dB. At the time of writing, only one station (Darrell Emerson AA7FV) has successfully copied level 'A'.

The 27dB decrease from 'Z0' to 'Z9' is the result of cutting output power in half nine times. At the control station for Mode 'B' tests (two-metre downlink), it is typically the difference between 25 watts out at Z0 and 50mW out at Z9 to a 13dB gain antenna.

A typical test sequence resembles the following:
00000 00000 00000 72518 72518 72518
11111 11111 11111 94220 94220 94220
22222 22222 22222 31965 31965 31965
etc., etc., with the first three five-figure groups of each line representing the level number of the transmission.

Tests are performed once or twice a month depending on satellite orientation and availability. To provide consistency between transmissions, the 25-minute test sessions are scheduled for periods when the satellite is positioned for optimum spacecraft antenna pointing angles with respect to all earthbound listeners. Announcements of the test schedules are made through the various AMSAT information channels.

A ZRO brochure containing the rules, and reprints of various articles about the ZRO Tests in English, German and Dutch, is obtainable for an s.a.s.e. (A5 size), with two units of postage, from Andy MacAllister WA5ZIB, 14714 Knights Way Drive, Houston, TX 77083, USA.

He will also send such details of forthcoming transmissions as are currently available, including the areas of the world covered by each transmission.

(Information from Andy MacAllister WA5ZIB, AMSAT Award Manager and AMSAT Vice-President, User Operations.)

QRP Convention & FUNRUN 1994

In conjunction with its 10th QRP Convention, to be held on Sunday, May 8 (see page 5), the Yeovil Amateur Radio Club is organising FUNRUN 1994. Details are as follows:

Stations: GB2LOW (at QTH of G3ICO), G3CQR and G3GC (both QTHR).

When: Monday, May 2 to Friday, May 6, 2000 to 2200 UK Clock Time (UTC+1) each evening.

Frequencies: 3.560 and 7.030MHz both ±10kHz. **Call:** 'CQ FR'.

Contacts: Must be between QRP stations, max 5W output. Stations may be worked once only on each band during the FUNRUN, but FUNRUN stations (all operating each evening randomly for one hour on each band) may be worked once each evening on each band.

Scoring: Each QSO with another QRP station scores 10 points. Each QSO with G3CQR or G3GC scores 20 points. Each QSO with GB2LOW scores 50 points.

The score for each band will be the total of the four best evenings. The overall score will be the sum of these two.

All duplicates must be marked and no points claimed. Points will be deducted for unmarked duplicates at twice the QSO value.

Exchange: RST, Serial Number (see below), Output Power, G-QRP Number.

Serial Number: The 3-figure serial number should start at a random number of your choice not less than 100, and must then be incremented by one for each QSO. However, the three Club FUNRUN stations listed above will all commence at 001 in the usual way.

Entry Sheets: Separate log sheets for each band, with sub-totals for each

evening, preferably in RSGB format. Also a separate signed RSGB-style cover sheet stating output power, rig and aerial used.

Convention Entry: Bring your entries to the Convention by 1pm on Sunday, May 8. Certificates for the highest score on each band, the highest total overall score, and to the station consistently using the lowest power will be presented during the afternoon.

Postal Entry: Separate certificates will be awarded to the top postal entries.

Logs should be sent to G3CQR, 9 Quarr Drive, Sherborne, Dorset DT9 4HZ, by 17 May 1994.

NB! There are 540 extra points to be won by working the three FUNRUN stations on each band each evening. Good luck and have fun!

Straight Key Evening

The 13th annual SKE organised by the Edgware & District Radio Society will be held on Friday, 20 May 1994.

Time: from around 1900hrs BST 'for as long as you like'.

Band: 3.5MHz, particularly around 3.550MHz.

Call: CQ SKE. Special Event Club Station GB2SKE will be operational in the evening on 3.5MHz and in the afternoon on 7.0MHz, making it a straight key afternoon also.

The E&DRS normal Club Station, GX3ASR/P, will also be on the air during the evening and, to encourage Novice participation, one of the two club stations will operate above 3.560MHz.

SKE is not a contest. Its purpose is to encourage everyone to plug in their straight keys and indulge in some re-laxed and friendly operating. This invitation extends to operators of all abilities, 'from the newest and most hesitant of new licensees to the high speed paddle merchants who may care to return to their roots and show they can still hand pump with the rest'.

Further information may be obtained from the SKE organiser, John Bluff G3SJE, 52 Winchester Road, Kenton, Harrow, Middx HA3 9PE, who will welcome reports and comments after the event.

(Information from John Bluff G3SJE.)

IRA Morse Transmissions

According to CQ-TF, the IRA (Iceland's national radio society) is now 'sending QTC' on 3.579MHz at 1830Z daily. These transmissions are also meant to aid those learning the Morse code.

(Information from Reynir H. Stefansson, Reydarfirdi, Iceland.)

World QRP Day

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

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

For Your Diary

YEOVIL: QRP Convention, doors open **9am, Sunday, May 8**, at the

Preston Centre, Monks Dale, Yeovil, Somerset. Talks on 'Low-angle Propagation', 'Converting TXs into Transceivers', Variable Frequency Crystal & Ceramic Resonator Oscillators', 'A National Radio Society'. Displays of home-made QRP equipment, vintage radio equipment. Trade stands orientated to QRP components, etc. See also FUNRUN details above. GB2LOW talk-in on S22. Admission £1.50.

BIRMINGHAM: The **National Vintage Communications Fair, 10.30am – 5pm, Sunday, May 15** in the Pavilions Hall at the **National Exhibition Centre**. Hundreds of stalls selling vintage radio, TV, audio, gramophones and records, telephones, telegraph equipment, magazines and books, etc. Plus collectors' clubs. Admission £3.

SOUTHSEA: The organisers promise a strong radio communications interest at the **D-Day 50th Military Vehicle Show** (over 1200 vehicles expected) to be staged on **Southsea Common, Hants**, over the May Bank Holiday weekend **Saturday – Monday, May 28–30** inclusive.

SPALDING: An **Amateur Radio Exhibition & Rally** will be held at the **Springfields Exhibition Centre**, Spalding, Lincs on **Sunday, June 5**, from **10.30am**.

FAREHAM: The **RNARS Annual Mobile Rally** will be held on the **Sports Field at HMS Collingwood**, Fareham, Hants, on **Sunday, June 12**, from **10am to 5pm**. The venue is located on the B3385 Fareham – Lee-on-Solent road.

LONGLEAT: The 1994 **Longleat Amateur Radio Rally** will be held at its usual site in the grounds of **Longleat House**, near Warminster, Wilts, on **Sunday, June 26**, commencing at 10am.

STAFFORD: Hamfest-UK will be held at the **County Showground**, Weston Road, Stafford, on **Saturday and Sunday, July 2 and 3**, from **10am to 5pm**.

WIMBORNE: The Flight Refuelling ARS are staging **Hamfest '94** at the **FR Sports and Social Club**, Merley, Wimborne, Dorset, on **Sunday, August 14**, from **10am to 5pm**.

Morsum Magnificat/Radio Bygones will be in attendance at each of the above shows.

ONE BIG ADVANTAGE to a non-alphabetized written 'symbol' language is that irrespective of the limitations of widely different spoken dialects, communication is quite effective. A Chinese whose spoken language is only Mandarin may not be able to orally communicate with another Chinese who speaks only Cantonese. But if both are literate they can communicate with ease through the written Chinese characters which are really the equivalent of pictures.

When the Danish Great Northern Company introduced the Telegraph in China at the turn of the century it was well aware that a Morse code to accommodate some six thousand ideographs was simply impractical. To overcome this, the so-called 'Chinese Telegraph Dictionary' was devised which provided a system involving a series of four digit Arabic numerals assigned to the various ideographs.

Although somewhat time consuming to find the required numbers in composing a message (and to 'unpack' them when received), it was perfectly workable and the Chinese immediately adopted it

Excerpt from a page of the 'Chinese Telegraph Dictionary'

Chinese Dit-Dahs

by Don deNeuf WA1SPM (SK)

for their telegraphic communications.

US Navy operators who were attached to SACO (Sino-American Cooperative Organisation) during WWII recall that the Chinese used the foregoing system over telephone circuits (wire and radio) by vocally spelling out the dictionary numbers in 'dits' and 'dahs'.

Even though two speakers with different dialects could not understand each other, the voiced 'dits' and 'dahs' required them only to have one of the dictionaries at hand and to know the International Morse code for the numerals zero through nine ('di-di-di-di-dah being the numeral 4, etc.).

This was far better than trying to stumble through some foreign language translation full of difficult accents. I remember one triple conversion test we ran using the phrase 'Out of sight – Out of mind'. It came back as 'Blind Idiot'.*MM*

			0073	0044	0040	0024	0022	0021	0021	0000		
明	5907 衰	1704 弈	3764 率	1987 慶	7874 齋	0073 亢	0021	0000		四
密	5922 褒	0060	4545 章	0026	2455 方	1299 羸	7773 鹿	0071 ⊥		角
碼	5924 襄	6056 言	0586 卒	0781 唐	1579 市	5858 嬴	7238 麿	0010		號
電	5923 袠	7299 音	0043	0028	1593 帝	5035 贏	1690 龐	0031 主		碼
報	5905 衷	0071	1150 奕	0075 亥	1598 席	6366 贏	0339 充	4547 童		難 字
會	5946 襃	0072 亡	0044	0029	0794 商	7529 贏	7621 麾	4539 立		檢 查

THE FIRST TIME I SAW PARIS was in the simmering, high summer afternoon heat of Sunday, 27 August 1944. Our two-jeep convoy, that had left Juaye in Normandy early that morning, sped past the armoured column of the French Leclerc division drawn up under the trees along the boulevards; they had had enough fuel to reach the city, but not farther.

From well beyond Versailles, it had become a regal procession; crowds in Sunday best outside the cafes, waving and cheering this token arrival of British uniforms, photographed, shaken by the hand, kissed by the girls on that first heady Sunday of Liberation.

To avoid the continuing battles of the Falaise 'gap', we had swung in a wide arc south-west through the battered and totally destroyed Normandy villages of Flers, Villers and Conde back in the *bocage* countryside where the unmistakable sweet smell of death hung heavy in the air.

Convoluted Wreckage

Then fast along the straight poplar-lined avenues of a countryside unmarked by war until we came to the tangled remains of the railyards outside Paris where every square foot was littered with convoluted wreckage and pitted with

The First Time I Saw Paris

Life as a wartime radio operator for Special Communications sometimes offered more than just key pounding. Pat Hawker G3VA recalls one very special occasion when he witnessed history in the making

bomb craters. Alençon, Chartres, Rambouillet, Versailles…

Paris itself seemed almost untouched… a splatter of vicious marks from rifle-fire or grenades, the occasional burnt-out tanks and overturned vehicles still forming now-deserted barricades.

Those waving smiling crowds fed one with the sense that we were witnessing history that week-end. Paris was not the only capital city to have been occupied for four long years by the enemy, but it was the one that symbolised most strongly the German domination of Europe that Hitler had boasted would last a 1000 years.

Missing Operators

Paris had reason to celebrate; here none of the wanton destruction of Warsaw. The citizens in rising against the Grey Mice (the French term for the Occupation troops) could rightly take a share in the credit. Few who experienced the welcomes of Liberation will ever forget them, though it was soon to become obvious, in the ferocious and score-paying '*epuration*' (cleansing) in which thousands died, that the scars of occupation run deep and ugly.

Our first stop was at the Hotel de Ville to deliver an urgent, overdue, message for Charles de Gaulle. My brief,

however, was to find out what had happened to the two radio operators with our 'Eskimo Nell' signals vehicle that had left Juaye a few days before and whose 30-watt MkIII (6V6co-807pa) radio transmitter had remained inexplicably silent during every subsequent sked (schedule). If they had come on air, as expected, that diplomatic message for de Gaulle would have gone by radio, and I would have lingered for days at Juaye.

Snafu or Fubar

It was a typical 'snafu' – that then vogue GI expression for 'situation normal all fouled up' (or words to that effect). One had learned by then that most Secret Service operations

The author (right) and another SCU operator at Brussels, June 1945

tend to fall into one of two categories; 'snafu' or 'fubar' – 'fouled up beyond all recognition'.

On Monday, 21 August 1944, *The Times* carried a promising story that the Americans, following their dramatic break-out from Brittany, were near Paris and announced that there had been a 'revolt in Paris'.

German sources admitted that 'irresponsible elements in Paris have taken up arms' and the curfew had been extended from 9 pm to 7 am. In fact, the prime mover in this 'revolt' was not organised Resistance but the French police who, with exceptions, had until then done little to support the underground fighters but now clearly recognised an urgent need to jump on the Allied bandwagon.

Military Euphoria

That Monday, General Montgomery, ever anxious to be one step ahead of the Americans in public esteem, had told the war correspondents: 'The end of the war is in sight... any enemy units that manage to get away from the Normandy pocket (Falaise gap) will not be in a fit condition to fight again for months'.

How fatal it was to underestimate the staying powers of the German army and so create the military euphoria that led directly to the 'bridge too far' disaster of Arnhem in September's 'Operation Market Garden'.

By the Wednesday, Radio France (Algiers) was breathlessly announcing that Paris had been liberated from within. 'Paris is again a free city' thundered *The Times* the following morning.

The BBC was similarly premature and had caused our intelligence 'masters' to despatch a party with instructions to make their way to the city.

Changed Headlines

But Algiers was wrong, or playing some devious game. By the Friday morning the headlines had changed dramatically.

No longer was Paris free but engaged in 'a desperate fight' with the insurgents
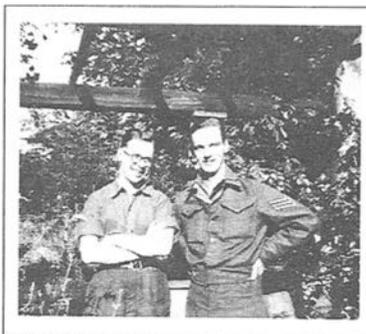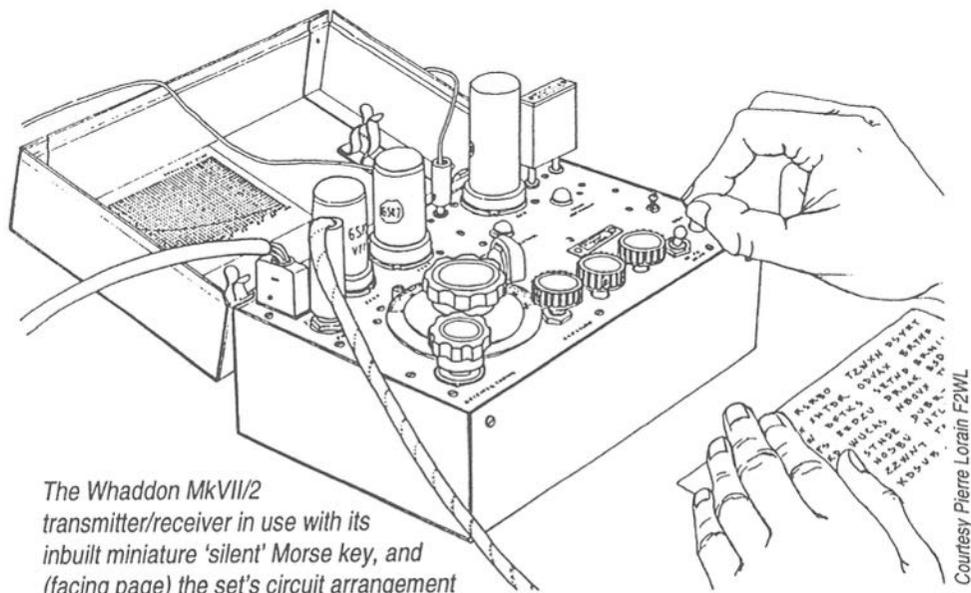
The Whaddon MkVII/2 transmitter/receiver in use with its inbuilt miniature 'silent' Morse key, and (facing page) the set's circuit arrangement

Courtesy Pierre Lorain F2WL

facing defeat. 'The French patriots are fighting an unequal battle against the Germans in Paris, and the allied forces endeavouring to link up with them are still some miles from the city... The French fighters are in terrible danger... The Germans have material superiority... history on a tremendous scale is being made in those few square miles of France', as *The Times* put it.

Seldom, even in wartime, had the press been made to change its words so quickly.

Passage Blocked

My friends in the small advance party had expected an easy journey into Paris. Their passage was firmly blocked... but there were secret negotiations going on in the city; the Germans recognised that they would be unable to defend the city against the advancing Americans and Leclerc's column that had been chosen for political reasons to head the advance on Paris.

There was a further reason; many of the Germans had become deeply attached to the city they had occupied in comfort. They were more than willing to ignore Hitler's orders to hold on to the city at all costs.

Did the Resistance liberate Paris from within? The answer must be both yes, and no. A secret Armistice was signed late on Friday.

Celebrations

Saturday and Sunday the Parisians celebrated, welcoming not only Leclerc's Frenchmen but anybody in Allied uniform. They believed that THEY had driven out the Germans and were anxious to establish their own part in the Liberation.

REGENERATION (REACTION)

Courtesy Wireless World

The 'underground', the swelling 'French Forces of the Interior' (FFI) and those who had genuinely worked for the Intelligence *reseaux* and the 'escape lines', were soon to be swamped by the 'September resistors'.

My two colleagues, I discovered, had finally got into Paris on the Saturday and were immediately caught up in the celebrations.

Who thinks of radio skeds at such a time? THEY did not know of the message for de Gaulle that was causing so much embarrassment in Juaye! One of them, incidentally, (Watson Peat CBE, GM3AVA) was a Governor of the BBC in the 1980s!

The other, a former rum-runner radioman from the American prohibition era, finished the war in a military 'glasshouse' for black-marketing in Brussels.

Radio contact had finally been made on the Sunday but too late. The senior NCO was soon ordered back to Normandy. GM3AVA, more happily, going forward to Brussels, then on into Holland.

In Paris, several MkIIIs, and a 150-watt MkX (813pa) transmitter, together with a clutch of HRO receivers were installed in our comfortable 'home' in the plushy XVIth *arrondissement* and links with Whaddon, Juaye and then Brussels were soon busy handling cipher traffic.

Assassination Attempts

That first Saturday, de Gaulle marched steadfastly through Paris, his tall angular frame remaining erect when rifle fire rang out opposite the Louvre and again as he strode up the steps of Notre Dame.

A fortnight later, on September 10,

another attempt was made to assassinate him while speaking at the Trocadero when an unknown marksman fired on him from the Eiffel Tower.

That afternoon, finding the tower re-opened for the very first time, and un-daunted by the '*non marche pas*' of the lifts, I was painstakingly climbing the narrow spiral iron staircase towards the

self what a military sham I was – a 'special duties' toy soldier who had never fired his Sten in anger, had not even received basic military training, and was being paid adequately.

In the 'racket' we had done what the French often accuse the British of doing – fighting bravely to the last Frenchman working the clandestine radios!
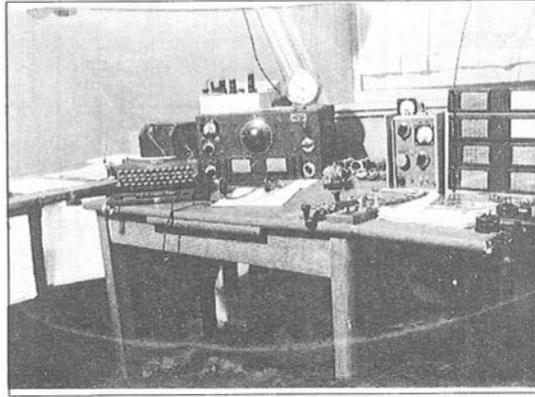
An SCU9 station at Eindhoven, late 1944. Equipment includes HRO receiver, SCU MkIII (6V6-807) transmitter and (atop the HRO) the MkVII/2 ('Paraset') agent transmitter-receiver (see previous page)

first platform when a young Frenchman came rushing down.

Politely, I squeezed aside, little guess-ing then that he must have been the would-be assassin.

Night-Fire

Paris, as ever, was not like other cit-ies. At night the rooftops continued to echo with the sound of rifle fire, as col-laborators and the *milice* (police collab-orators) made final efforts to help their friends.

I found it necessary to remind my-

Support for 'Sussex'

I had come to Normandy to provide support services for a secret British/American/French intelligence operation called 'Sussex' which had been set up to place 50 two-man teams in a wide sweep from Brittany to the Belgian bor-der to report enemy troop movements by radio, using Frenchmen recruited in Algeria by the redoubtable 'Remy' (Gilbert Renault-Roulier of the French film industry).

In 1941–42, Remy had organised ef-fective France-UK radio links for his

CND intelligence group working on behalf of de Gaulle.

The teams were originally meant to operate independently of the Resistance and Intelligence networks, some of which were known to have been penetrated. It was also a concession to the Americans who had been demanding the right to put agents into France.

Each team comprised an organiser and a radio-operator equipped with the low-power, battery-operated, MkXXI (3S4pa) transmitter-receiver and 'Ascension' R/T equipment to speak to an aircraft with wire-recorder.

Exploration

By Tuesday, August 29, another radio operator (the late John Bowers G4NY had arrived. Together we decided to explore central Paris although, since the Metro was still not running, this involved a long walk to the Trocadero, the Etoile and then down the Champs Elysees. The wide boulevards, the stately squares and the neat parks were virtually untouched by the fighting except for the pock marks of small-arms fire.

The department stores along the Boulevard Hausseman, the fashionable gift shops, the *modists* of the Rue de Rivoli and the Rue de la Paix were all soon displaying luxury goods virtually unknown in wartime Britain. Only the food shops were empty.

The weekend euphoria had subsided but the people seemed genuinely glad to see British uniforms.

Parade that Never Was

Returning to the Champs Elysees, we were surprised to see an enormous parade of American troops marching perhaps twenty or more abreast, military vehicles interspersed by half-a-dozen French military bands, coming from the Etoile, clearly conceived as a Victory Parade.

Absent from the parade were any British or French troops and, when reports of the parade began to appear in the British press, a row soon blew up with harsh criticism of American political insensitivity.

This had the curious result that the parade was soon declared never to have happened!

Had our eyes deceived us? To 'lie like a communiqué' is a phrase almost as well-known as that the first casualty of war is truth!

The authorities insisted that there had been no parade, only a few American troops passing through Paris on their way to the Front!

Apparently we had witnessed the most curious advance into battle of World War II. But I notice with the passing of years that photographs of that parade continue to be published, usually without caption.

In the Champs that afternoon some Frenchmen, noticing the absence of British uniforms from the parade, insisted on Johnny Bowers and myself adjourning to a nearby cafe. *Vive l'entente cordiale*!

No Buses

In those early days of the Liberation, this was still a Paris without buses, without the Metro, with electricity switched on only fitfully. Bicycles were in vogue, including bicycle-taxis. Civilian cars,

many taken over by the FFI, trailed '*gaz du bois*' wood burning stoves that helped to relieve petrol shortages in France during the occupation. We depended on our Onan petrol-electric generators.

When the Metro finally reopened on some routes on September 11, we became almost the centre of a riot when in any way denigrating the work of these people, the reality was very different.

It was the extreme left-wing, the Communist-led FTP, who from 1941 onwards provided the most active and most ruthless Resistance.

They had already experience of clandestine organisation and had the sup-
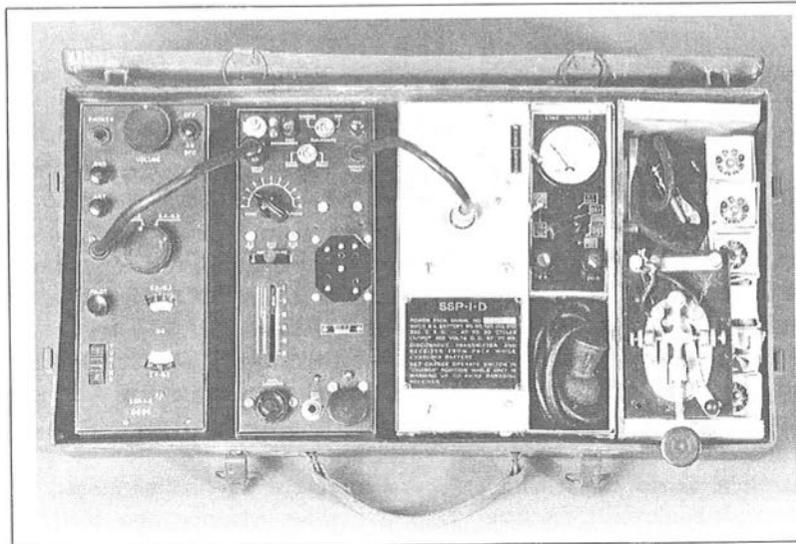
The OSS suitcase set developed from information supplied by SOE on the A-2. It comprises the SSR-1-G receiver, SST-1-E sender and SSP-1-D power supply

we attempted to buy tickets. For four years the 'Grey Mice' had not used tickets. Parisians were determined that the Allied troops should fare no worse.

The FTP

Most people associate 'French Resistance' with the Free French supporters of General de Gaulle and the agents sent in by 'F' section of the Special Operations Executive. Without port of tough veterans of the Spanish Civil War who had escaped into France in 1939. Whereas London frequently urged the Resistance to prepare, but wait, for the opening of the Second Front, Moscow called upon its supporters everywhere to engage in active resistance, regardless of the consequences.

The FTP mistrusted – and in turn were mistrusted by – both de Gaulle and the British.

In the aftermath of the Paris Liberation, two fears brought the Foreign Office closer to de Gaulle's provisional government; fear of a power grab by the FTP; and fear of an incursion into Spain by the Civil War veterans to attack Franco.

Politics of the Resistance

To understand the confused situation in Paris and France during and immediately after the occupation demands some appreciation of the tortuous politics of what may loosely be called the Resistance.

These had evolved in a unique manner as a result of the existence of a 'legal' Vichy government. 'Free France', grouped around the proud figure of de Gaulle, had emerged only slowly and painfully.

Paradoxically, in view of later events, de Gaulle in the early years drew most support from those whose politics were left of centre. Most of those to the right at first supported Marshal Petain, backed by the French armed forces.

Petain was not an Anglophobe. In 1940 he made several secret diplomatic overtures to the British government, both by emissaries and through the Canadian and American diplomats who remained in Vichy.

The French army and the French air force also sought to aid their former allies.

French naval officers, with some notable exceptions, were hostile to Britain after Mers-el-Kebir, the attack by the Royal Navy on the French fleet off Oran in July 1940 that resulted in heavy loss of French lives.

Vichy Collaboration

At Vichy, Laval argued in favour of close collaboration with the Germans, convinced of their ultimate victory.

In the succeeding years, Vichy followed a strongly anti-Semitic, anti-Communist line – and aided the Germans by hunting down those prepared to act on behalf of de Gaulle.

The French 'special services', equivalent to our MI-5 and MI-6 (SIS) continued to operate undercover on behalf of Vichy in both the occupied and non-occupied (ZNO) zones, as the Bureau des Menees Antinationales (BMA) and the Enterprise General de Travaux Ruraux (TR).

They were under Colonel Rivet who obtained Vichy agreement that certain categories of Intelligence, including Gustav Bertrand's important signal intelligence, could secretly be passed to the British by radio and other means. SIS drew heavily on these sources, with their connections with the Inter-Allied, Alliance and their own Jade intelligence networks working in France on behalf of the Allies independently of the Free French movement or SOE 'F' Section.

With so many conflicting interests and mixed loyalties, it is perhaps not surprising that Churchill was later to express the opinion that of all the wartime crosses he carried the Cross of Lorraine was the heaviest.

This article has been adapted from one that appeared in the IBA Newsletter in 1984, to mark the 40th anniversary of the Liberation of Paris.

W HERE DOES OUR standard definition of Morse speed come from? In the *ARRL Handbook* we read, 'Ten dots per second equals 24 words per minute'. This comes from an old telegraphy convention of the last century that a 'standard five letter word plus a space' was 48 'dot-time' units long. (A 'dot' is TWO 'dot-time' units – the 'mark' and the 'space').

'PARIS', followed by the '5 dot-time' word-space used by telegraphists, was exactly this long and could be sent repeatedly for a minute to estimate sending speed. However, the '7 dot-time' word-space is now defined by the ARRL. Hence 'PARIS' becomes 50 units long. To send at 24 wpm requires 24 times 50 over 60 units per second; or 20 units per second, or 10 dots per second, as defined.

What is intriguing is that 'PARIS' is NOT the same length as an average word in written or spoken English. This is easy to check. In 1949, Claude Shannon and Warren Weaver published an enormously influential book called

WORDS,
Words, Words...
by Dr Gary Bold ZL1AN

If a keyer is set up to send at 12 words per minute (10 dots per second) and English text is sent for five minutes, one will expect, on average, to send 60 words, but will always get more like 70 words! Gary Bold discusses this phenomenon and, by implication, concludes that if the 'average word' used to measure Morse speed had been defined in terms of four standard letters rather than five there would be almost perfect agreement between our definition of Morse speed and what actually happens.

The Mathematical Theory of Communication. This founded the discipline of Information Theory. They carefully analysed English text and gave a table showing the probability of occurrence of all characters.

Average Four

They simply counted how many times each character occurred in pieces of 'standard English', and divided the total for each character by the grand total. Here are the first few entries in their table:

Wordspace	0.2
E	0.105
T	0.072
O	0.0654
A	0.063

This means that on average every fifth character (the reciprocal of 0.2) will be a wordspace, so average words are four characters long (not five as in PARIS). The commonest letter, E, occurs about once in every ten, and so on. The least common letters, J, Q, and Z, occurred about once in every thousand.

I was interested to know whether MY text had the same probabilities, so I wrote

16

a basic program to analyse all the 'Morseman' columns written so far. The probabilities were very similar except that my words average between 3.99 and 4.32 letters long, with an overall average of 4.17. I must use obscure words.

They Got it Right

Interestingly, Samuel Morse and Alfred Vail were quite aware that some letters were more common than others, and in issue number 4 of *MM* (p.22) there is a photograph of what is effectively a probability table in longhand compiled by Morse, which he and Vail used to assign American Morse symbols to letters. To see how their probabilities compared with those of Shannon and Weaver, I constructed a spreadsheet. It turns out that the probabilities are, again, almost identical!

So Morse got it right. Apparently he wanted all letters to be a maximum of 10 dot-time units long, and this is the reason for the strange 'dots with embedded spaces' codings of American Morse. However, these were rationalised by an Austrian *(Gerke, see MM19, p.6. – Ed.)*. For example, the American Morse coding for 'O', two spaced dits (or e e), was changed to three dahs. This has led to an anomaly, since 'O', on the average, is the third most common letter in English yet it now has a much longer coding than T, A, N and I, which are roughly as probable.

If we were starting from scratch, we would assign 'O' the Morse symbol for 'I' and rearrange some others as well. (Fortunately, nobody contemplates doing this.) This raises the intriguing possibility that a 'better' assignment of symbols would result in a faster Morse code!

Faster Code Possible

I added to my spreadsheet to check this out and found that it is indeed possible to design a faster Morse code but it is, in fact, only 5.3 per cent faster. The reason for this is that space, E, T, and A, account for 40 per cent of all characters between them and if you get these right a few bad choices in the assignment of the rest make hardly any difference! Not worth it. We can breathe again. American Morse, however, is perceptibly faster by 21 per cent.

A question remains. Both 'O' and 'R' had to have their American codings changed anyway. WHY did Gerke assign a LONGER symbol to 'O' than to 'R'? 'O' is about 20 per cent more common than 'R' in English. Is 'O' less common in German than in English, or did he just get it wrong? (Remember, these probabilities are language dependent.)

Can anyone with a probability table for German text enlighten me? And why was 'PARIS' defined as the 'standard word'? Any ex-telegraphers know?

(From 'The Morseman', Gary Bold's regular column in Break-In*, journal of NZART, December, 1987.)*

More wise words and thought-provoking discussion from the pen of Dr Gary Bold will be appearing in future issues of *MM*

IN 1843, WITH FUNDS EXHAUSTED, Samuel F.B. Morse petitioned Congress for a second time, and waited two months in Washington for a bill to be approved to allocate $30 000 for tests to evaluate the merits of his electro-magnetic telegraph.

On the last day of the session, 3 March 1843, disappointment seemed inevitable. Any business not completed before the adjournment could be delayed for up to a year and, as evening approached, senatorial friends told him they thought the bill would not go through. In the depths of despair he returned to his room and made arrangements to leave Washington the next day.

At breakfast next morning he was interrupted by Annie Ellsworth, daughter of an old friend, the Commissioner for Patents, who told him that the bill had been passed unopposed just before the adjournment at midnight. He could hardly speak at first, and when he did he promised her that she should choose the words for the first dispatch on the line from Washington to Baltimore which was to be built with the money from Congress.

Challenging Task

Morse was 52 years old. Behind him were years of disappointment, frustration and poverty. Ahead of him was the construction of a 40-mile telegraph line along the railroad from Washington to Baltimore. This challenging task would require techniques, equipment and materials which, in some cases, did not yet exist.

Morse was appointed Superintendent of Telegraphs at a salary of around $2000 a year. Professors Fisher and Gale were assistant superintendents at $1500, and Alfred Vail an assistant superintendent at $1000. Gale and Vail were two of Morse's partners in the project.

Fisher, who had helped with earlier experiments, was to supervise the manufacture of the wire, and its insulation and insertion into lead pipes. Gale's scientific knowledge was to be placed at the disposal of the project whenever

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What Hath God Wrought!

The First Inter-city Telegraph Message

by Tony Smith

24 May 1994, will be celebrated in the United States as the 150th anniversary of the first inter-city Morse telegraph message. On that date in 1844, using the newly devised American Morse code and the very first hand key, Samuel Morse and Alfred Vail publicly demonstrated that Morse telegraphy was a practicable means of communication. This article describes the trials and tribulations leading up to, the success of, and the events following, 24 May 1844. It was the beginning of the great telecommunications revolution. The world would not be the same again

required, and Vail was to be responsible for the instruments and setting them up, as outlined in the following agreement which he signed on March 21:

'PROFESSOR MORSE, – As an assistant in the telegraphic experiment contemplated by the Act of Congress lately passed, I can superintend and procure the making of the Instruments complete according to your direction, namely: the registers, the correspondents with their magnets, the batteries, the reels, and the paper, and will attend to the procuring of the acids, the ink, and the preparation of the various stations. I will assist in filling the tubes with wire, and the resinous coating, and I will devote my whole time and attention to the business so as to secure a favorable result, and should you wish to devolve upon me any other business connected with the telegraph, I will cheerfully undertake it.

'Three dollars per diem, with travelling expenses, I shall deem a satisfactory salary.

'Very respectfully, your ob't ser't,
ALFRED VAIL'

Cable Failure

Superintending the trenching for a contractor was Ezra Cornell, later founder and chief benefactor of Cornell University. He is reputed to have invented the plough, pulled by eight mules, which dug the trench, laid the cable and filled the trench again, all in one operation. He was able to lay the line so quickly the wire-makers could not keep up with him.

Morse had planned the underground line believing that Cooke and Wheatstone's system in England had successfully used buried conductors. After nine miles had been laid, however, it was found that the pipe-encased wire had faulty insulation caused by heat in the manufacturing process.

In order not to reveal this problem publicly, work was stopped by Cornell 'accidentally' breaking the trench plough against a rock in the ground, thus giving time for a solution to be sought. Professor Fisher, responsible for supervising manufacture, and for testing the finished cable, was dismissed and at the same time Gale resigned due to ill-health.

Overhead Wires

With just himself and Alfred Vail left to superintend the work, and $23 000 of the $30 000 allocation spent, Morse was in despair. Vail chose this moment to ask for a $250 raise in salary and confided to his diary, 'I am at a loss to decide whether or not to remain in the employ of the government... I fear if the appropriation is spent without a trial, that utter disgrace will follow all concerned.'

Vail and Cornell urgently read all the literature they could find about the European telegraphs and discovered that the English underground wires had also been a failure and had been replaced by overhead wires on poles. Cornell was then appointed as a mechanical assistant to Morse at $1000 a year, taking responsibility for constructing the line, and his enthusiasm, energy and ability became a major factor in its final completion.

By April 1844, poles 24ft high, 200ft
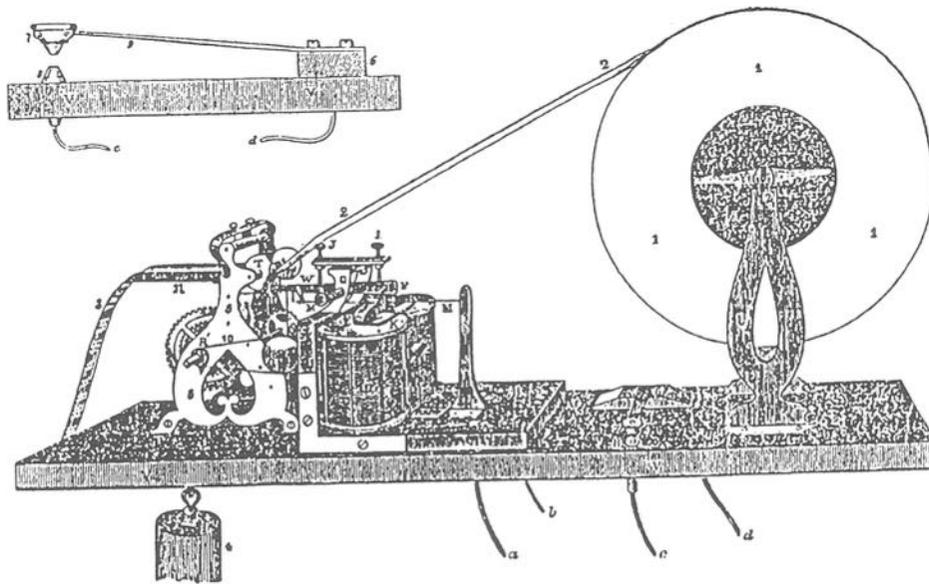
THE 1844 INSTRUMENTS – Morse register and key as used on the first line between Washington and Baltimore. Alfred Vail's first hand key is located between the paper roll and the register mechanism. A clearer view of the key is shown top left. In 1845 terminology, V and V is the platform. 8 is a metallic anvil and 7 a metallic hammer attached to a brass spring, 9.

Vail wrote, 'The key or correspondent is used for writing upon the register at the distant station, and both it and the register are usually upon the same table' (i.e. baseboard). From this description it appears that the term 'key', as an alternative to 'correspondent' (i.e. sending instrument), may have been used from the time this predecessor of the conventional hand key appeared in 1844

apart were extending along the railroad. Good progress was again being made, with Morse telegraphing his assistants and receiving replies 'within seconds'. The insulation of the overhead wires where they were attached to the poles caused problems, but Cornell devised an economic solution using readily available glass doorknobs.

On May 1, the wires reached Annapolis Junction, 22 miles from Washington, in time to pick up news from the railway of the proceedings of the Whig national convention at Baltimore. News of the convention's nominations for president and vice-president were flashed to Washington an hour before the train bearing the news reached the city, giving an early demonstration of the potential of the new telegraph.

Things Went Well Today

On the day before the Whig convention Morse wrote to Vail, 'Get everything ready in the morning... When you learn the name of the candidate see if you cannot give it to me... before the (rail)cars leave you...'

Next day, he wrote, 'Things went well today. Your last writing *(i.e., sending. – Ed.)* was good. You did not correct your error of running your letters together until some time. Better be deliberate... I may have some of the Cabinet tomorrow... Get from the passengers in the cars from Baltimore, or elsewhere, all the news you can transmit...'

There were still difficulties with the new hand keying technique and again he wrote to Vail, 'Make a longer space between each letter and a still longer space between each word.' Finally, with everyone working under great pressure, the line from Washington to Baltimore was completed within the congressional allocation and, on 24 May 1844, all was ready for the first official demonstration of Morse's invention.

What Hath God Wrought!

Invited observers gathered in the chamber of the United States Supreme Court. Morse kept his promise to Annie Ellsworth, and she chose the first words to be transmitted, the phrase 'What hath God wrought!', taken from the Old Testament, Numbers, ch.23, v.23.

A contemporary account, in the *Journal of Commerce*, records that Morse transmitted the sentence, 'letter for letter in one minute', to Alfred Vail in Baltimore, 'and the same sentence was again received from Baltimore in another minute... Nothing could have been more appropriate than this devout exclamation at such an event, when an invention which creates such wonder, and about which there has been so much scepticism, is taken from the land of visions, and becomes a reality...'

Incredulous

Two days after the demonstration, on May 26, the Democratic convention met in Baltimore and Morse was able to relay news direct from the convention to Washington. Vail and Cornell had their instruments at the railway station in Baltimore, while Morse was in a room below the Senate chamber in Washington.

There were nine ballots for the presidential nomination, all reported instantly by Vail. Excitement rose to a crescendo in Washington as the news came into Morse's office and a little-known outsider, James K. Polk, finally received the almost unanimous support of the convention for his candidature.

The same procedure followed the vice-presidential nomination, but this time the nominee, Senator Silas Wright was not at the convention, but in Washington. Vail telegraphed details to Morse who passed them to the senator. Wright declined the nomination and asked Morse to send his decision to an incredulous convention which received his reply only minutes after nomination.

First Conference by Wire

They telegraphed again, received the same reply and, unsure of the accuracy of the new telegraph, sent a delegation by train to Washington to make sure they had received the message correctly.

In Baltimore, having received confirmation of the accuracy of the message, a committee of the conference sat with Vail at his instrument while Wright joined Morse in Washington in private session. Via the new telegraph, the committee told Wright the reasons why he should accept the vice-presidential

nomination. In return he explained his reasons for declining and this first long-distance telegraphic conference continued until the committee was finally convinced that Wright would not accept.

Lines Across America.

With a practical Morse telegraph in operation and carrying traffic daily, the immediate plan was to extend the line to New York and Boston, using a single wire and earth return instead of the metallic circuit (double line) used so far. Morse wanted the government to take control of the system and its future development, believing it far too important to be left in the hands of private companies.

Negotiations took place along these lines, but finally all that Congress would do was vote a further $8000 to support the line already built. Morse, Gale and Vail placed their business affairs in the hands of Amos Kendall, former Postmaster-General, and in 1845, various private companies came into being with plans to erect Morse lines across America.

Soon the wires and facilities of the Morse telegraph would spread across North America and then around the world, overtaking or replacing nearly all other contemporary systems. Annie Ellsworth's choice of words was indeed appropriate.   *MM*

This article is enlarged and adapted from material which originally appeared in MM19, Spring 1991

Short Breaks

Testing and Context

Under normal situations, unless the text is coded, the receiving operator expects it to make sense. The expert operator will normally correct minor spelling errors, etc., as he goes. Sometimes in testing for code proficiency the tester resorts to purposeful miss-spellings, etc.

A serious question is in order here; is this a legitimate test? The less skilled are likely to be 'thrown' by the irregularity, while the skilled will overlook it; so if the tester is using it as a criterion of proficiency he may be making a serious mistake. If he wants to check accuracy of character identification a far superior way is to send mixed text.

Wm G. Pierpont N0HFF

A Round Trip with a Key

In the summer of 1943 I was a trainee Telegraphist/Air Gunner in the Fleet Air Arm. During a reconnaissance exercise in a Lysander, and prompted by Stonehenge coming into view, I composed and started to transmit a dummy sighting report of an aircraft-carrier surrounded by a protective fleet.

However, at the same time, my pilot decided to salute the circle below by looping-the-loop above. So it was against the varying forces of 'G' that I arm-wrestled the key to deliver my message.

I do not recall if the response included the advice to 'try sending with the other foot' but I probably deserved it. But, who would believe that a Westland Lysander could loop-the-loop?

Stan Garner G3WSL

Showcase

Collection/Photo: Alex Vilensky 4X1MH

Modern Soviet key (German style), marked with Soviet Star and Russian text equivalent of MRTP and SSSR. 'Feels good and is comfortable to operate.'

Collection/Photo: Alex Vilensky 4X1MH

KOB (key on base) combination key and sounder set on Bakelite/ wood base, date unknown, by E.F. Johnson Co, Waseca, Minn., and carrying the Johnson 'Viking' logo
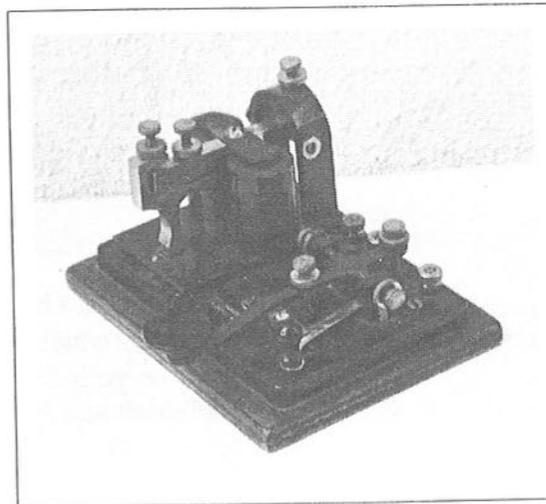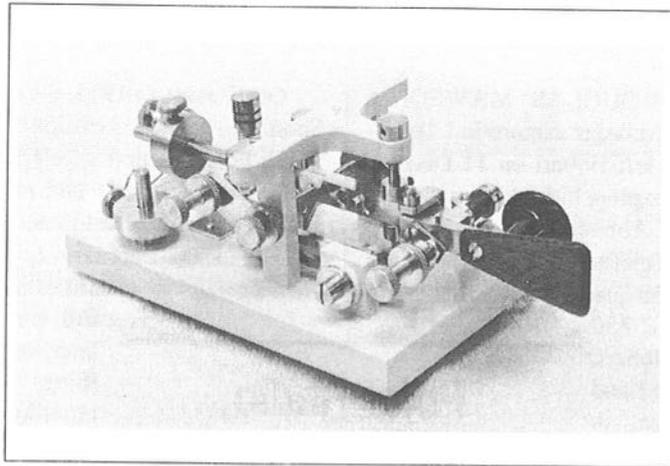
Reproduction Mac-Key, based on a 1938 original and made by Dennis Goacher G3LLZ. This is the biggest project yet attempted by Dennis and comprises 112 separate parts
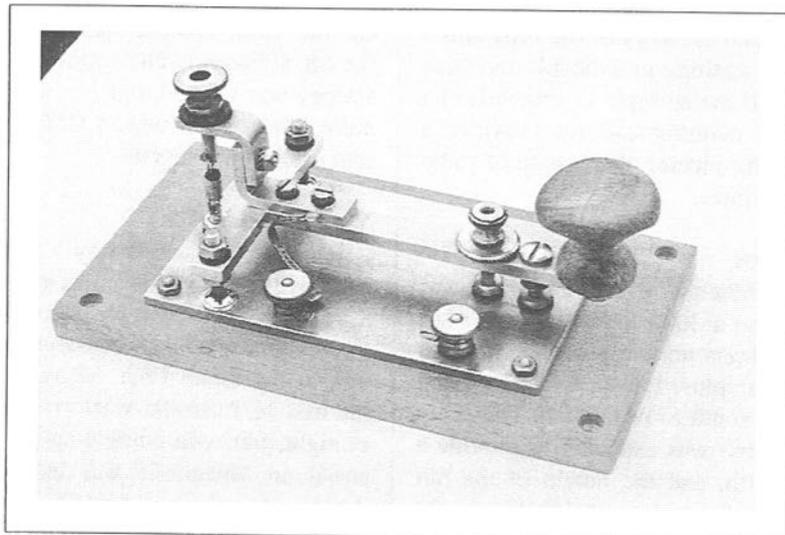
The latest creation from Francis Marinesco F6EQC. The lever is held down on two pivot pins by the tension of the spring and the adjustable stop near the anatomically shaped knob. Francis asks if readers of MM know of other keys made to a similar design?

IR DOUGLAS MAWSON's Australasian Antarctic Expedition left Hobart on 11 December 1911, to explore hitherto unsurveyed areas of the Antarctic coastline. They established Telefunken 1.5kW wireless stations on Macquarie Island in the South Pacific, some 850 miles from Hobart, and in Adelie Land in Antarctica. A further station on the Shackleton Ice Shelf, 1500 miles to the west, was to be equipped for receiving only.

These were probably the earliest experiments in polar radio communications, and the story of the installation of these stations in a hostile environment, and the struggle to establish and maintain communications, provides a fascinating picture of the state of radio in those times.

First Tests

The Macquarie Island station was located on a 300ft-high flat-topped hill with an open northerly aspect (towards Australia) plus, it was hoped, a good 'set-off' south to Antarctica. The peaty wet ground was expected to provide a good earth, and the height of the hill allowed a shorter mast (90ft) than would otherwise be required. The only apparent disadvantage was the need to man-handle the masts, petrol engine, induction generator, dynamo and other equipment up the steep hill from the beach.

Polar Radio, 1912 Style

by Tony Smith

On 17 January 1912, the day Captain Scott's ill-fated expedition reached the South Pole, the first wireless tests were made on Macquarie and signals were satisfactorily received in another part of the island. On February 2, Wellington, New Zealand was heard calling Suva, in Fiji, and three days later, as a taste of things to come, a howling gale brought the newly erected aerial crashing down.

After another two days, the wind abated and it became possible to climb the mast, re-erect the aerial and tighten the stay wires. On the 13th, contact was made with the SS *Ulimaroa*. The following night Sydney was worked together with three more ships one of which, HMS *Drake*, sent useful time signals.

News of Amundsen

On March 10, a two-way contact was made with Suva, 2400 miles away, and the next day news was received over the air of Amundsen's successful expedition to the South Pole. Many ships to the east of Australia were now calling at night, but with continuing gales the aerial on Macquarie was in constant danger of collapse, requiring frequent checking and adjustment of stay-lines.

On April 1, it came down again and a chain was substituted for the rope which had previously secured it to the mast. The average humidity was 93 per
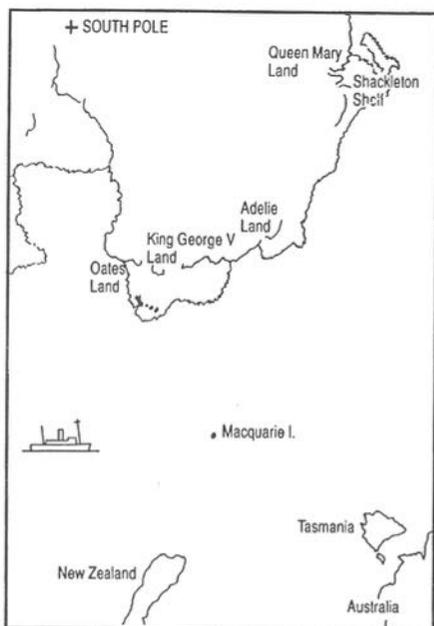
The area of the expedition

From a contemporary atlas

cent, and much of the equipment had to be shellacked for protection against excessive condensation.

Weather reports were sent nightly to Wellington, 1000 miles away. HMS *Drake* continued to send time signals and the Macquarie station eventually re-transmitted these to Antarctica where they resulted in the fixation of a fundamental meridian in Adelie Land.

Antarctic Struggles

The party in Adelie Land had set up camp in January but because of blizzards were unable to start erecting their wireless masts until mid-April. Twenty holes were dug in the ice to provide anchorages for the stay-lines. Dynamite

was used to clear the site and to make holes for the three 90ft Oregon pine masts.

The masts were in sections, and were assembled aloft during many hours work, in 50–60 mph wind gusts, in temperatures below zero. It was August before the aerial could be hoisted between the three masts, when it was immediately blown down!

By September all was ready. The engine and the dynamo turned, the note of the spark reached a crescendo and the operator, Walter Hannam, keyed a message to the world at large. Disappointingly, the only response was the crackle of atmospherics and after several days of this the only progress made was the discovery that, during transmission, sparks could be 'drawn' from metallic objects in the hut!

Transmissions continued, still without reply, and on October 13 one of the masts broke in a gale. Since it was now necessary to concentrate on the main purpose of the expedition, exploration of the Antarctic coastline, the aerial was left down and all wireless experiments ceased.

Missing Detector

In the meantime, the second party, 1500 miles to the west, were having even less success in wireless terms. Their base was established in February 1912, and the first blizzard they experienced brought both masts down,

One only was re-erected, 37 feet high. It was then discovered that a detector and other parts were missing, and hope of receiving signals from Adelie Land and elsewhere was abandoned.

Hell of a Time

On Macquarie Island, however, wireless work continued successfully. The Pennant Hills high power station in Sydney asked for reports on tests it was making. News was regularly received from other land stations and from ships in the Tasman Sea.

One of the transmissions from Adelie Land was heard faintly on September 5, 'Please inform Pennant Hills ... '. A.J. Sawyer, the Macquarie operator then called Adelie repeatedly for hours, but without success. On the 29th he heard another call, 'Having a hell of a time waiting for calm weather to put up more masts', and October 3 brought, 'We do not seem to be able to get Macquarie Island. All is well, though bad weather has so far prevented any attempt at sledging'.

Missing Party

Equipped with a receiver, but no transmitter, the expedition's ship, the steam-yacht *Aurora*, set out in December 1912 to bring back the parties from the Antarctic. On arrival in Adelie Land, it was learned that Douglas Mawson and two colleagues had not returned from an extended exploration trip.

While the ship waited, the broken wireless mast ashore was re-erected in case it became necessary to leave a small party to search for the missing men. By early February, however, the ship could wait no longer if it was to successfully collect the western party and not be, itself, marooned in the winter ice.

Shortly after sailing, Adelie Land radioed that Mawson had just returned alone, his two companions having perished. The ship turned back but a fierce gale prevented any landing or visual communication with the shore. Time was now vital, and once again the *Aurora* turned towards the west.

Adelie Land Calling

With the ship gone, those left behind, numbering seven, settled in for the winter. The aerial was up again and the operator, S.N. Jeffryes, who had relieved Hannam, was at the wireless every night calling and listening. On 15 February 1913, he heard Macquarie Island sending a weather report to Hobart but was unable to make contact himself. Five days later Sawyer, in Macquarie, heard him and keyed back 'Good evening', whereupon a Leyden jar broke down and contact was again lost.

Later in the month (on the 23rd) signals were exchanged and a message was sent to the Governor-General of Australia, via Macquarie, explaining what had happened to the Mawson party, and seeking the King's agreement to naming the land the expedition had discovered to the east, 'King George V Land'. Special messages were also sent to the relatives of Mawson's two companions lost in the ice.

The first news received in return was that Captain Scott and his party had died on their South Pole expedition. On March 7, the King's approval was received by wireless for that part of the Antarctic lying between Adelie Land and Oates Land to be named as requested.

Freak Conditions

The station was now operational every night from 8 p.m. to 1 a.m. Notes
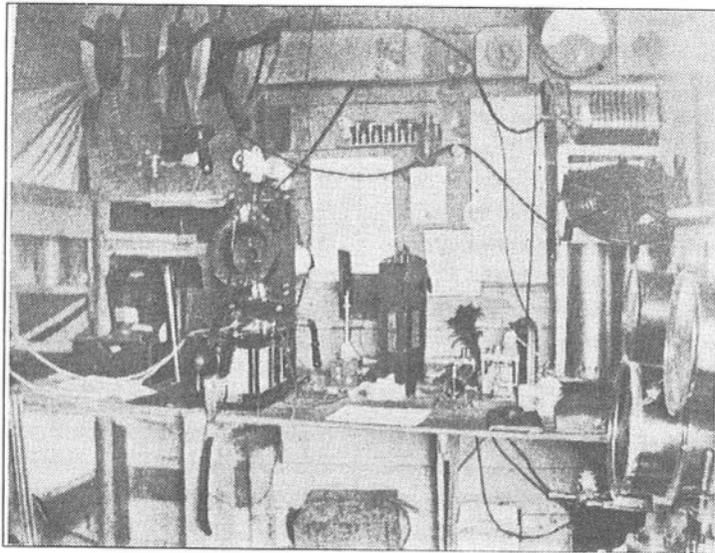
The station on Macquarie Island
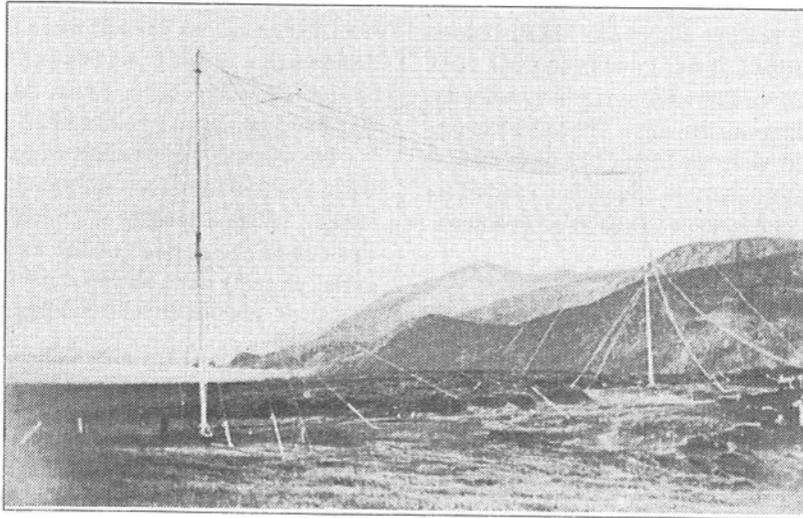
The antenna on Macquarie Island

were made of the strength of the signals received, the presence of atmospheric static, and intermittent discharges from snow particles (St Elmo's fire), together with fading caused by auroral activity.

Listening alone was a demanding task. It was difficult to hear signals through the electrical interference; there was the constant howling of the wind, plus the noise of the expedition's dogs sheltering just outside the hut!

Jeffryes spent entire evenings trying to transmit or receive a single message. A week of auroral displays would result in a complete blackout, then freak conditions would occur and traffic would be exceptional. He sometimes heard stations in Wellington, Sydney, Melbourne and Hobart, and on one occasion worked directly with the latter.

He sent weather reports nightly to Macquarie, which were often received when no communication was possible in the reverse direction. These reports comprised three meteorological code words, for barometric reading, velocity, and direction of wind. The velocities recorded were so high (103 mph on one occasion), that no codes then existed for them and new ones had to be invented.

Aerial Experiments

In June, part of the main mast came down and experiments were made with kite aerials in a steady 70 mph wind. After three falls to the ice a box kite was beyond further use, and two other designs shared the same fate. In July the broken aerial was repaired.

As rebuilt earlier, it had a centre mast at 90ft, and two smaller ones of 30ft, between which was stretched an 'umbrella' aerial with lead-in wires at the centre. In its place, two masts now supported an inverted 'L' directional aerial which, in August, as the first signs of the Antarctic Spring appeared, re-established contact with Macquarie I.

Message from the Queen

News was then received that the Queen had agreed the naming of the tract of Antarctic coast discovered by the expedition's western party, 'Queen Mary Land'. On August 6, Macquarie signalled enigmatically, 'Food done, but otherwise all right'. Five days later came the reassuring news that a New Zealand government steamer was on its way with much needed supplies; and when it arrived remarks made over the air indicated that the islanders were having a night of revelry!

In September, when the sea was frozen, communication was maintained with difficulty. In October, when the ice disappeared, wireless signals peaked at twilight, finally fading when daylight became continuous in November.

That month, experiments were made with a small receiver mounted on a sledge, using a length of copper wire run out on the surface of the ice as an aerial. Signals were received over short distances, but not beyond 5 miles.

Home at Last

It was time for the expedition to return home, almost a year later than had been anticipated. The *Aurora* arrived at Macquarie in November and at Adelie Land on December 13, and everyone was back in Australia by 26 February 1914. The station on Macquarie Island
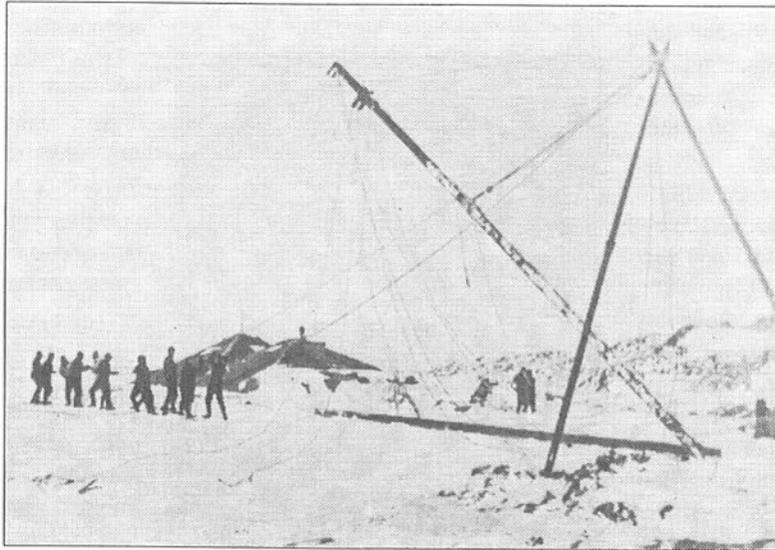
Erecting the lower section of one of the masts in Adelie Land
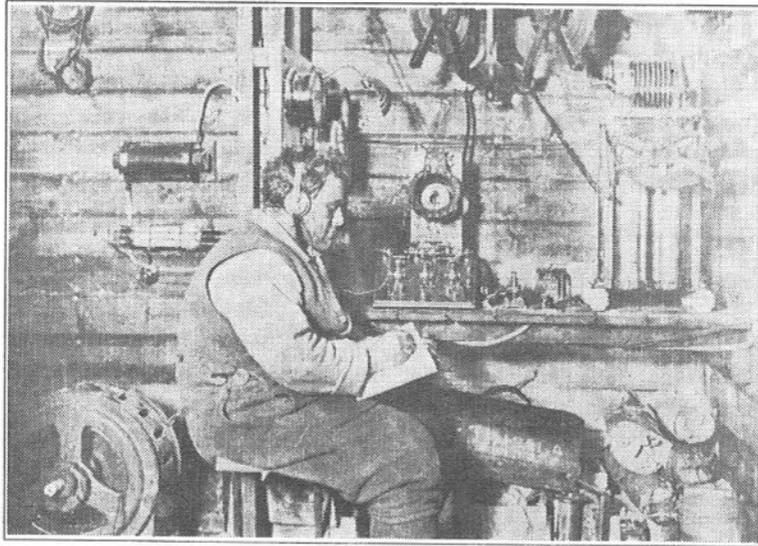
The station on Adelie Land. Operator, Walter Hannam

had proved its worth. It was taken over by the Australian government and continued to send meteorological reports to the Commonwealth Weather Bureau.

The expedition had discovered new lands and had carried out scientific work in the fields of terrestrial magnetism, biology, geology, glaciology, tides and oceanography. Their wireless work was almost incidental to all this, but they demonstrated the potential of radio in polar exploration despite the fact that in those days before short-wave radio, communication was restricted in the Antarctic summer to only a few hundred miles at best. Their determination and perseverance in establishing communication at all was remarkable. In these days of high technology and material comforts it is hard to visualise what they endured to get their messages through!
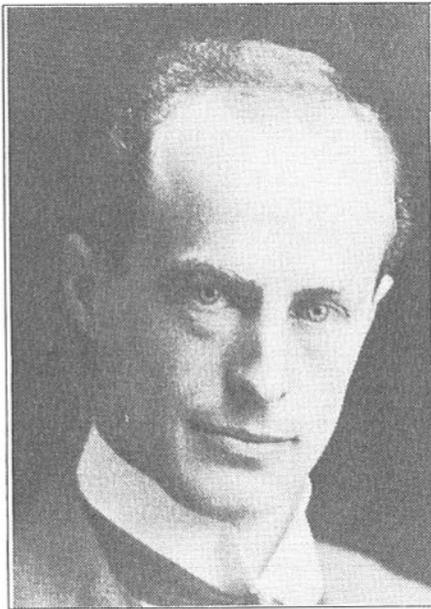
*Sir Douglas Mawson,
leader of the expedition*

© *1994 Tony Smith. This article originally appeared in* Amateur Radio, *journal of the Wireless Institute of Australia, March 1986, and has been amended and slightly enlarged for* MM. *Photographs reproduced from* The Home of the Blizzard, *by Sir Douglas Mawson, London, 1915).*

AUTHOR'S NOTE

After this article appeared in *Amateur Radio*, several readers wrote to the magazine with further information concerning the operator in the photograph of the station in Adelie Land. He was Walter (Wal) H. Hannam who was relieved by S.N. Jeffryes when the *Aurora* arrived in early 1913.

Hannam, then aged 26, chose the site for the successful Macquarie Island station and was in overall charge of the expedition's wireless telegraphy arrangements.

Prior to the Mawson expedition he was a member of the provisional committee, appointed at a meeting on 11 March 1910, briefed to set up the Institute of Wireless Telegraphy of Australia, which eventually

became the Wireless Institute of Australia. And at its first General Meeting he was elected the Institute's first Honorary Secretary.

He held the amateur call VK2AXH for many years up to the time of his death, and his QSL card carried the photograph used in this article endorsed 'the picture shows VK2AXH (Wal) in the Antarctic 1912'.

In 1984, a letter to *Amateur Radio*, from Wal Hannam's eldest nephew, appealed for contributions to 'Project Blizzard' which aimed to send two private expeditions to restore the Mawson Expedition's hut, at what is now Commonwealth Bay, to its original condition.

The outcome of this project is not known but a recent letter in *Aurora*, magazine of the ANARE (Australian National Antarctic Expeditions) Club, December 1993, reported on the current activities of a 'Mawson's Hut Restoration Committee' organised by Sir Peter Derham.

A small party of about six people was due to go to Commonwealth Bay for 10–15 days in December/ January, hoping to replace a number of beams in the roof of the hut which, as at a year ago, still appeared to be intact.

Some general maintenance was also due to be carried out, with the main restoration programme planned for a year's time. There have apparently been other visits to the site, as there are two field huts there from expeditions in 1978 and the mid-80s.

A further project involves the building of a replica of Mawson's hut on a site in Melbourne (site of the old Carlton Brewery, in Swanston Street), this year, as a fundraising exercise for the maintenance of the original hut. It is planned to open the replica to the public most days, with ex-Antarctic expedition members available to answer questions and tell visitors about life in the Antarctic.

The Wireless Institute of Australia has commemorated the first wireless signals made from Antarctica to the outside world, as described in the above article, by instituting the WIA Antarctic Award. This is for confirmed contacts with ten amateur stations operating in Antarctica on or after 23 February 1988, the 75th anniversary of the original transmissions. Special endorsements are available for particular modes such as CW. Full details can be obtained from the Federal Awards Manager, WIA, 3/105 Hawthorn Road, Caulfield North, Vic. 3161, Australia. (Send 2xIRCs).

Info Please!

Collection/Photo: Wyn Davies
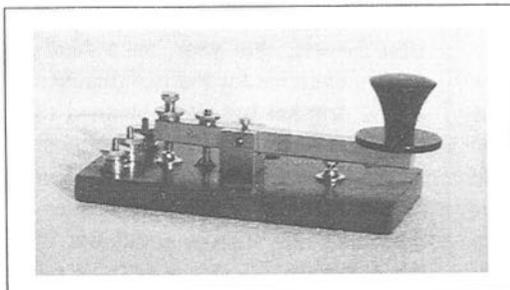
Unknown brass key with three terminals at rear.
Accompanied by an ATC code learning book published by Longmans, 1941, price 1/-

Set of two adjustable spark gaps on marble base, probably German pre-WWII. Use unknown. Perhaps used for communications, but could be part of HF spark surgical equipment? Information welcomed
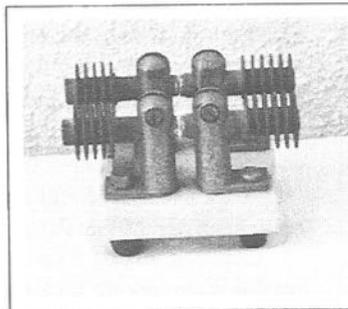
Collection/Photo: Alex Vilensky 4X1MH

Collection/Photo: Wyn Davies
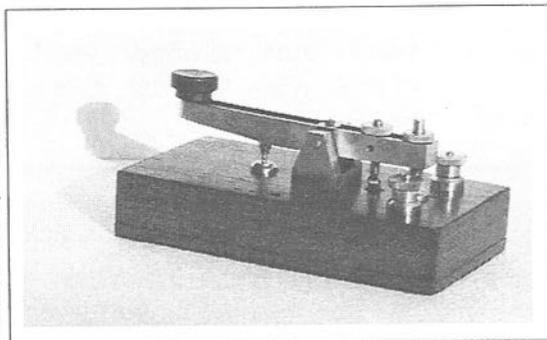
Unknown key brass. Has 0.25µF condenser in base, and black painted area along top of ridged lever

Bookshelf

A mail order book service for selected telegraphy and radio titles. The letters *MM* or *RB* followed by a number after each title indicate the magazine and issue in which a review appeared.

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Bunnell's Last Catalog (with commentary) by Tom French *(MM23)* .... £4.85 (UK): £5.05 (Eur/Sur)
Railroad Telegrapher's Handbook by Tom French *(MM22)* .... £6.75 (UK): £7.05 (Eur/Sur)
Keys, Keys, Keys by Dave Ingram K4TWJ *(RB13)* .... £6.55 (UK): £6.95 (Eur/Sur)
McELROY, World's Champion Radio Telegrapher by Tom French .... £14.70 (UK): £15.40 (Eur/Sur)
The Telegraph by Lewis Coe *(MM31)* .... £19.10 (UK): £19.80 (Eur/Sur)

RADIO BOOKS

A First Class Job! – a biography of Frank Murphy by Joan Long .... £8.50 (UK); £9.30 (Eur/Sur)
Dawn of Australia's Radio Broadcasting by Philip Geeves .... £3.95 (UK): £4.40 (Eur/Sur)
Discovering Vintage Radio by Peter Lankshear .... £4.15 (UK): £4.65 (Eur/Sur)
Communications Receivers – the Vacuum Tube Era by Raymond S. Moore .... £15.00 (UK): £15.85 (Eur/Sur)
The RACAL Handbook by Rinus Jansen .... £13.00 (UK): £13.75 (Eur/Sur)
The Golden Age of Radio in the Home by John W. Stokes .... £17.50 (UK): £18.00 (Eur/Sur)
More Golden Age of Radio by John W. Stokes .... £25.00 (UK): £25.50 (Eur/Sur)
Radio! Radio! by Jonathan Hill .... £28.50 (UK): £29.50 (Eur/Sur)
70 Years of Radio Valves & Tubes by John W. Stokes .... £21.00 (UK): £22.00 (Eur/Sur)
History of the British Radio Valve to 1940 by Keith R. Thrower *(RB22)* .... £12.25 (UK): £13.00 (Eur/Sur)
Comprehensive Radio Valve Guides, in five books:
No. 1 (1934-1951); 2 (1951-1954); 3 (1954-1956); 4 (1956-1960); 5 (1960-1963) .... Each £2.95 (UK): £3.25 (Eur/Sur)
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Radio, TV, Industrial & Transmitting Valve Equivalents .... £2.95 (UK): £3.25 (Eur/Sur)

AFTER READING TONY SMITH'S ARTICLE on page 18 of MM30, I was instantly able to put my hand on the more common Type B identification switchbox, having the same reference number, i.e., 5C/372.

Several aircraft using the switch were previously mentioned in *MM* (Anson, Bolinbroke, Lancaster, Lysander, Oxford, Spitfire, Tempest), and they were also used in Sunderland flying boats. My own experience of these switches was on Ansons, Battles, Wellingtons, Dakotas, Catalinas and Hudsons.

You might think that American aircraft, such as the Hudson, would have original USA type switches still installed but not so! It often happened that the American gear was stripped out and UK equipment installed. (As late as mid-1942 I was still using the RAF's R.1082/ T.1083 in brand new Hudsons. Whatever happened to all that lovely Bendix equipment?) In fact, the switchbox

More on the Aircraft Identification Switch

by Vic Reynolds, G3COY/G4ATC
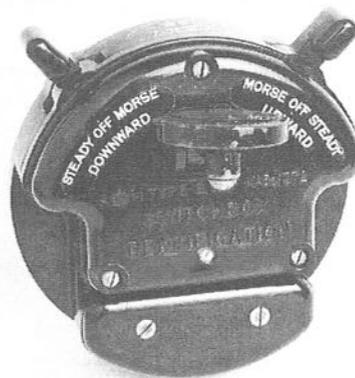
Type B identification switchbox 5C/372
Collection: Vic Reynolds. Photos: Geoff Arnold

was standard equipment on many types of British (and some American) aircraft of the 1937–1950 period.

Landing Procedures

The switches were wired in different ways. Some just connected to the white lights (one above and one below); and sometimes just to the navigation lights, i.e., red, green, white, upper, and red, green, white, lower.

During the war years, 'visual silence' was just as important as radio silence, although this silence had to be broken at times. Therefore, only limited use was made of the identification lights for communicating.

In the circuit prior to landing, for example, the letters VX-B would be flashed to indicate '206 Squadron – aircraft B'; or TF-A, to indicate '200 Squadron - aircraft A'. The T.R.9 and the R.1082/T.1083 were not suitable for making such contacts by radio. Try winding-in a trailing aerial on the downwind leg of an approach!

View of switchbox with front cover removed, and (right) connection drawing from A.P.1095A
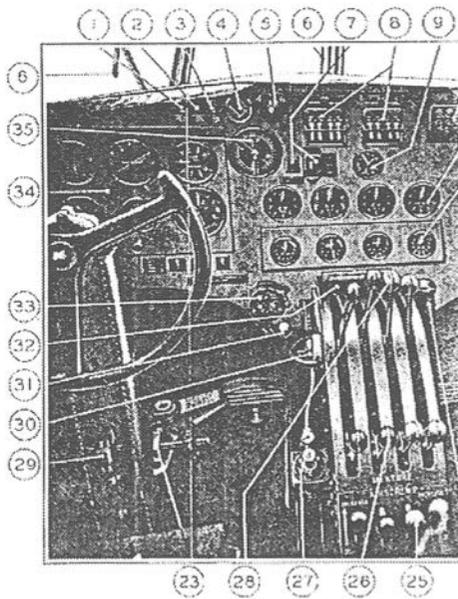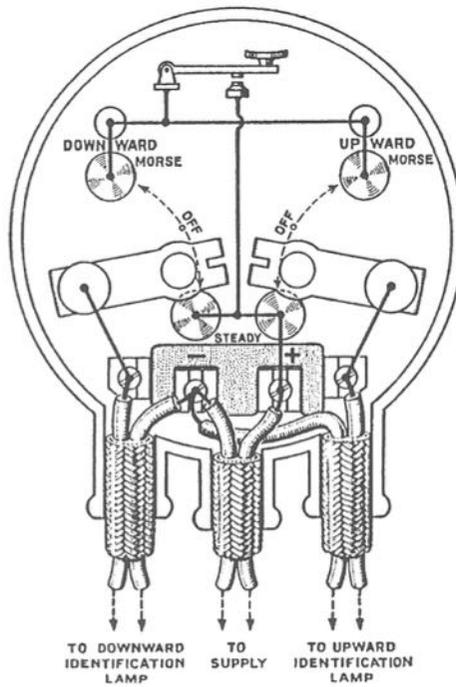
At Sea

Another important need for identification was when approaching a convoy at sea. Here, the 'letters of the day' would be flashed. A challenge; and hopefully a correct reply. Sometimes coloured 'Very' lights were fired with the 'colours of the day.' However, these could be mistaken for anti-aircraft fire, which sometimes it was!

Likewise, when approaching a friendly coast AA fire might come snaking up. Then the lower identification

Instrument panel of Sunderland III flying boat with the older style identification switchbox (identified as No. 33), used for downward identification lamps

From Pilot's Notes, A.P. 1566C, 2nd Edn

lights would be keyed to send the letters of the day. Again, hopefully, someone down there in charge of the guns could read Morse and would stop the firing.

Kept to a Minimum

For safety, signalling of any kind was kept to a minimum. Without contradicting that statement, however, I may add that there was much more visual signalling than was generally realised.

I spent more time on the Aldis trigger, for example, than I spent on the RAF's boat-shaped Key, Telegraph, 10F/1047561. Communication between aircraft and ships by Aldis was never part of the training syllabus – not for aircrew or for the navy. But that's another story!

Regarding the 'V' signals described by Dick Johnson G2FFO ('Letters', MM31, p.48), no pilot I flew with would have permitted unnecessary light from the aircraft. Even the glow from the 8 volt filaments of a VT25 (T.1082 output valve) seemed like an arc lamp – and a 'give-away' to the enemy on a pitch-black night.   *MM*

Hear! Hear!

On a letter from the USA comes this promotional slogan with a difference – turning the "opposition's" catch-phrase on its head!

SUPPORT THE KNOW-CODE LICENCE

Infatuation

O mystic fascination,
O fate idealized,
I'm but a mass of molecules,
Reversely polarized.
I'm vanquished by a sorcery
No amulet can cure,
For Love, you are the magnet,
And I the armature.

The more I circle round you,
Love's current stronger grows,
Till leaping forth from heart to heart,
Love's arc electric glows.
Against the ardor of that flame,
Insurance won't insure,
For, Love, you are the magnet,
And I the armature.

The messages un-numbered,
Of fond endearment fly,
At once, in all directions,
The wireless they outvie.
A throbbing heart is at the key,
Its dots and dashes sure,
For, Love, you are the magnet,
And I the armature.

I dwell within your field of force,
In that blest region where,
Your strength is to the distance,
Inversely as the square.
No influence external,
Can me from you allure,
For, Love, you are the magnet,
And I the armature.

At last we'll cling together,
Apart no more to roam,
With hearts attuned harmonic,
We'll sing of Ohm, sweet Ohm.
One circuit never broken,
While life and love endure,
Forever you the magnet,
And I the armature.

(Park Benjamin, *Wireless Age*, 1915)

Short Breaks

Steam Morse

Mr Bailey, of Salford, proposes steam-whistles for signalling in fogs at sea by means of the Morse alphabet. Whistles have been expressly made at the Albion works, Manchester, suitable for the purpose. Use is made of two valves, which balance each other.

In this way a 12-in whistle is opened with 100 lbs of steam as easily as one of 2in with 30 lbs of steam. In very dense fogs a 12-in whistle is heard 6 miles off, and a 6-in whistle 3 miles off. With the Morse alphabet 20 words a minute can be telegraphed.

From The Telegraphic Journal
London, 15 June 1876

Sending and Spacing

A large percentage of the difficulty in reading code can be attributed to the irregularity in spacing between letters and words by the one sending. This practice makes sending difficult and receiving a problem. This tendency to ignore uniform spacing accounts for many students becoming stalled at low speed. The urge to push forward in their own sending causes them to acquire a jumbled mental image of all characters.

Seldom does an operator send correctly in excess of his own consistent receiving speed and with proper regard to spacing, although it is a common belief amongst inexperienced operators that their sending is good at a much greater speed than they are able to read from the other fellow.

Candler System Course, Lesson 7 (1931)

IN MM16, p.17, THERE IS A PHOTOGRAPH of this key which I mistakenly described as a combined key and sounder, mainly because it does in fact work admirably as a sounder, and I had wired it up as such for demonstration purposes!

However, thanks to Eric Palmer G3FVC, editor of *QRV*, journal of the RAF Amateur Radio Society, and several fellow members of

Creed Trainer Key
by Tony Smith G4FAI

RAFARS, I have now identified the key as being part of the Creed Morse training system used in the RAF during WWII.

The base appears to bear the marking AM REF No. 10F/525 (although this is rather indistinct and I can't be absolutely sure about it). The base is polished wood, 6¾ x 3in, and all the metal work is white metal. Protruding below the key is a black metal casing covering two solenoids hanging downwards.

Rods extend from each end of the keying arm down through the base into the centre of each coil. As the key is depressed, the front rod goes down into one coil and the back rod comes up out of the other coil. Conversely, as the coils receive incoming signals alternately, the magnetic actions of the solenoids move the keying arm up and down in sympathy with the signals.

No Hands!

When mounted on a desk, there is a need for a cut-out in the working surface to enable the coil assembly to hang below the key. I have the key wired up to receive pre-recorded signals from a cassette recorder, and it is quite fascinating to see, and hear, the key thumping up and down on its own as if controlled by an invisible hand!

Wiring from the two coils, and from the key itself, runs to a terminal block at the bottom of the assembly, and this is accessed through a cut-out in the black metal casing. The casing is heavy and resonant and seems to be intended to magnify the sound of the key when receiving signals.

Eric Palmer referred me to a reprint of an article from *Aeroplane* magazine of 9 June 1944, which appeared in *QRV*, Autumn 1989. This article described the training of aircraft wireless operators at an unnamed RAF School of Radio (identified in 1989 by Eric as No 2 Radio School, Yatesbury), and includes a description of the Creed Morse Trainer using student's keys apparently similar to my key.

Instructors' Idiosyncrasies

According to the 1944 article, the final Morse examination of the course was at 18 wpm, and special methods had been evolved to teach 'this somewhat difficult subject' in the shortest possible time. In order to avoid the 'unavoidable idiosyncrasies' of the instructors, it says, pupils received

40

elementary Morse training from the Creed automatic machine.

Each learner had a Creed trainer in front of him, while the instructor controlled a master unit. Punched tapes contained individual exercises, which could be sent at any speed by the master

Key AM REF No. 10F/525, used with the Creed Morse Trainer.
A heavy resonating cover (not shown) fits over the solenoids

unit, to drive the solenoids fitted under each key, causing the keys to move up and down in accordance with the signals sent.

The exercises sent were printed on a blackboard in advance and to hear the correct Morse symbol via headphones the oscillating keys had to be actuated by the operators in exact synchronisation with the master unit. An alternative use of the Creed Trainer, said the article, was transmission practice, when a permanent record of the signals sent was obtainable from the punched tape.

Memories

Following an appeal in *QRV*, several RAFARS members wrote to me with memories of the Creed trainer. Ron Brooks, G3YLL, trained as W/OP (AIR) at No. 4 Radio School, RAF Madley, near Hereford, in 1943. He recalls hav-

ing sending practice on the trainer from time to time. 'The instructor put on a Creed tape at his desk and we students had to hold the key in the approved fashion while our keys followed the tape'. He remembers that the Creed keys were set with a very large gap, 'and the resultant clanking noise that ensued was quite something.'

Les Avory, G2FQP, was in the first Radio Class at Compton Bassett in 1940 and recalls 50 of these keys being installed for training purposes. The idea, he says, was to teach operators the

necessary wrist movement, while speed was controlled by the instructor. He too remembers the noise, saying 'the mechanical noise was overpowering!'

Tom Luxmore, G3AWL, remembers the keys at Compton Bassett in February 1942 being used to assist Morse sending. 'A Morse character was heard in your headphones and was then sent mechanically via the key movement'. Also recalling the large gap he says that working together in a classroom they sounded 'like nut-crackers going hell for leather!'

MM

I HAVE ASKED the RAF Museum at Hendon to check their records but they cannot find such a key listed in the various AP's dealing with signals equipment, so I may have misread the reference number. I am intrigued by the sounding plate fitted to this instrument, which suggests that apart from 'tone' Morse it may have been intended for sounder training as well. If anyone can provide further information about the Creed Morse Trainer, especially if they have a manual or handbook, or can suggest where further information might be obtained, please contact me.   **TS**

Readers' ADs

WANTED

Your Letters

Morse at the Movies

In the excellent semi-documentary TV film, the first *Heimat*, the son Paul was a keen radio enthusiast who built the first radio in his village. When he got it going he received a station sending authentic Morse, the content of which, unfortunately, I cannot recall.

Wilf Corkish GD0IFU
Onchan, Isle of Man

Erasure Signal

Listening around the amateur bands, I can't help but notice what a pickle neophyte CW operators get into when they are obliged to use the eight-dot erasure signal – and they have to use it quite a lot in their early stages of the Morse code craft.

To count all those dots is an inhibiting matter: does one send a couple of triplets and then add the odd two? Or is it a case of carefully counted single dots? To get the erasure signal right requires mental arithmetic, and that's quite off-putting.

What do we ancient brass-pounders send to correct our errors? We cheat. Off-hand, it's hard to recall what we actually send instead of the righteous eight dots. Vic-Eddy, as we used to call it in the old Royal Corps; yes, $\overline{\text{VE}}$ fol-

lowed by $\overline{\text{IMI}}$ (Ink-Monkey-Ink – 'I say again'). $\overline{\text{VE}}$ $\overline{\text{IMI}}$ flows more smoothly from the key than those eight dots, I believe.

Reg Prosser GW4BUS
Caernarfon, Gwynedd, Wales

London Calling

I cannot comment on weekly programme information (MM31, p.48), but I do remember reading about, and then copying, the first 12 wpm Morse bulletin sent by the BBC on medium wave. I was serving in the ex-Estonian *Kalev* at the time and I think we were lying in Sunderland.

I read about the new service in a newspaper and actually copied the whole of the first broadcast which was sent late afternoon local time. It was a concise summary of war news which could easily have been written on a small sheet of paper for passing around amongst Resistance groups. The language was English. Whether other frequencies were used I cannot now remember.

Gus Taylor G8PG
Greasby, Merseyside

Those Tones

In any CW contact one gives, and receives, an RST report. In this age of

modern rigs and mains or battery supplies, the T (tone) report is invariably T9. Of course it can exhibit chirp or drift or be slightly off frequency but I feel that it must, basically, be a T9 report – at least on HF.

For some time I have experienced difficulty in explaining to Morse students exactly what these various T reports mean, never mind what they actually sounded like. I have always assumed that they were designed for use in the days of spark transmitters operated from convertors of one sort or another. With modern equipment these various sounds are just not heard. Or am I missing something?

A recent item in *Radio Communication* about a Canadian amateur who had constructed a spark transmitter, and offered tape recordings of what it sounded like, sparked off (sorry!) a discussion at my local club. During this, it transpired that a couple of our older members had memories of a record, or even a wax cylinder, which gave some indication of the sounds of the T1 to T9 tones.

I wonder if any *MM* readers have information about these recordings, and particularly whether any tapes (cassettes) might be available?

I, and my students, would love to have this dilemma resolved!

Ron Wilson G4NZU
West Bridgford, Nottingham

Semi-Automatics at Sea

Fellow Marconi-man, John Beech, strikes a loud chord (MM31, p.46) when he writes of his use of the semi-automatic key at sea. I likewise broke Company rules by using one at a time of life when I should have stayed loyal to the 'straight' key. My wife bought me an authentic Vibroplex for my 50th birthday and it made a new man of me.

After some weeks of assiduous practice, I summoned the courage to clear some traffic with North Foreland Radio/ GNF. It was disastrous; after 32 years of pounding brass, first in the Royal Signals and then at sea, I suffered acute stage-fright!

The old train ferry I was on didn't help, with its shallow draught and 20° rolls. The bug would send no dots at all when we rolled to starboard, and just a continuous dash on a port-side wallow. GNF was quite terse. 'Use a proper key' he recommended. I instantly complied. What a rotten loss of face though.

After mastering the bug, I graduated to electronic iambic keyers and now, having passed the three score and ten years mark, I find I have become addicted to them.

Reg Prosser GW4BUS
Caernarfon, Gwynedd, Wales

Morse on the Don 5

It was interesting to see a photo of this key (from a Telephone Set D Mk V) on page 39 of MM32. The 'Don 5' was the workhorse of field telephones and was issued almost like confetti to every kind of army unit.

I was introduced to it when I was an infantry signaller in the Royal Ulster Rifles, and we used it extensively for training at the depot in Omagh. There were two ways to call a distant station, the first was a magneto activated by a crank handle which rang a bell in the distant telephone. The second was to

use the Morse key, which sounded a built-in buzzer.

This buzzer was used for all Morse teaching and practice (except for lamp, flag and heliograph) – the only other suitable equipment available was the Fullerphone, which always seemed to be in short supply.

After qualifying, we were sent to guard the Lincolnshire coast against invasion, stretched out from Marsh Chapel to Mablethorpe. One night I arranged for the Mablethorpe operator that we should send Morse to each other, on the Don 5s, so as to keep our speed up.

At 1 a.m., when all was quiet, we began. We had not been going more than a couple of minutes when there was a furious bellowing on the line. It seems that the company at Saltfleet had tied into the line and the company sergeant major was asleep on a camp bed by the telephone!

He spoke fluently and at some length, using words which ought not to have been uttered in front of young soldiers! Needless to say, it put paid to any further attempt to communicate on the key, and I never came across an instance of telegraphy on a Don 5 again. Perhaps others had better luck?

Jeff Jeffrey VK6AJ
South Perth, Western Australia

Weather Kites

Reading 'Up, Up and Away!' (MM31, p.29) reminded me that some years ago while doing work on kite-lifted antennas I came across a fascinating book about the use of kites for raising instruments used for weather forecasting.

Apparently the US Weather Service used them for many years, sometimes getting up to heights above twenty thousand feet. Observations were taken in this way at points all over the USA. As one would expect, the steel kite wires often picked up large static charges. As far as I recollect, only one fatal accident was recorded in the book, but there were many instances of the weather observer 'being rendered senseless by the electrical discharge'.

Presumably this mass of data was telegraphed to regional and local centres by landline, so one wonders how this was done. Was there a special weather network, or were there local lines from the observatories to one of the major commercial networks?

Gus Taylor G8PG
Greasby, Merseyside
(If anyone knows the answer to Gus's questions, please write to MM. – Ed.)

RAF 10F/8782 Key

Although I have no personal recollection of the key (MM32, p.38) by its RAF nomenclature, 10F/8782, some bells are ringing! I suppose that after 34 years (1936–1970) with the RAF, mostly in communications, I ought to have seen most types of key on general issue. The '10F/8782' is not familiar but if any reader can get access to the archives the appropriate section of the RAF Stores Bible, A.P. 1086, Book 4, Part 2, may provide the answer.

What does ring a bell is the marking 'P.S. 4707G', at least the 'P.S.' does. Surely, this is a Marconi Part or Drawing Number (or both). I do recollect a key of similar appearance being

supplied by the Marconi Company, together with other pieces of high-speed Morse telegraphy equipment, at AMWT Ismailia, Egypt, around 1938 for use as the RAF Middle East terminal of the first high-speed automatic circuit to AM in London.

On reflection, it was similar in action to key reference 5805-99-541-1439 now generally available on the surplus market. It was used to make SVCs at hand speed and engineers' order wire type of communication. It might, therefore, have had limited application and not have been on general issue.

Other items comprising the high-speed terminal were the Undulator for recording the Morse on paper slip, the Morse keyboard perforator (from Creed) and the auto transmitter (originally from Creed). Together with the Imperial typewriter modified for upper case (capitals), these were the basic tools of the trade.

It was a pleasant surprise, therefore, to see the Great Northern Telegraph auto transmitter on page 3 of the same issue. The GNT auto head replaced the Creed machines quite early on due, I suspect, to its better speed control.

One varied the speed of the Creed machine by moving a rubber tyred wheel across the face of a disc driven at motor speed with no governor! Its re-setting accuracy was also problematical. The GNT machine's speed control was by adjustment of spinning governor weights which varied the clutch pressure.

The auto transmitters found a niche for themselves in the training commitment of the services. It was nice to see that an example has survived.

D.A. Coe G4PZQ
Wymeswold, Leicestershire
(Does any reader have access to the RAF Stores Bible as mentioned by Mr Coe, or information on Marconi products which may help to identify the 10F/8782 key? – Ed.)
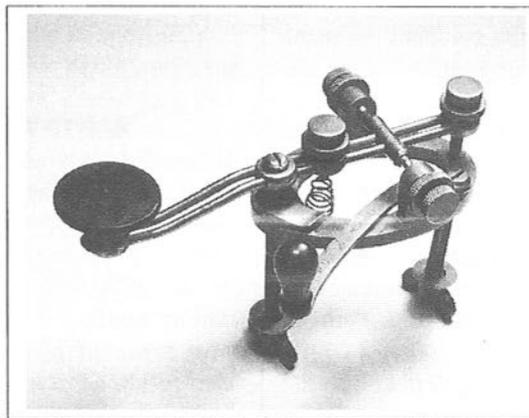
Western Electric leg key
Photo/collection: David R. Pennes, MD

Western Electric Key

The unknown key on page 18 of MM31 is a Western Electric leg key identical to the one in the enclosed photo. The manufacturer's name is on the shorting switch which is missing from the key owned by Richard L. Thomas. My specimen was used by Western Union and came from the St. Paul, Minnesota office.

David R. Pennes, MD
Indianapolis, IN, USA

Proper Nouns

Thanks to John N. Elwood (MM31, p.44) for pointing out that $\overline{\text{IMA}}$ (or $\overline{\text{UK}}$) means capitalisation. I agree it does meet a certain need when copying Morse by longhand, with $\overline{\text{UK}}$ sent before and after a word or phrase, but it's not the same as a signal indicating that 'the following word is a proper noun and its initial letter is to be capitalised.' (The signals today, I think, are $\overline{\text{UN}}$ for 'BLOCKS ON' and $\overline{\text{UK}}$ for 'BLOCKS OFF').

Forgive me, John, I'm just an old nit-picker. Proper nouns will go uncapitalised until the final dot of the last obsolete old telegraphist as he goes silent key – and may that be centuries from now!

Reg Prosser GW4BUS
Caernarfon, Gwynedd, Wales

Japanese Midget Submarines

When three Japanese Type A 'midget' submarines unsuccessfully raided Sydney harbour in 1942, two of the three were salvaged and re-constructed as a single unit for the Australian War Memorial. The third has never been found.

Unfortunately, the wireless equipment was 'removed for examination' by the Navy and has been lost. I have found a schematic diagram of it in the Australian Archives, but there is no photograph of the equipment.

Two other Type A midgets were captured intact, one by the Americans after Pearl Harbour, and the other by the British after the raid on Diego Suarez Harbour (Madagascar) in May 1942 when Japanese Sub Lieut. Akeida sank the tanker *British Loyalty* and severely damaged *Ramillies*. He abandoned his grounded submarine and tried to rendezvous with his mother submarine by travelling overland. He was unsuccessful and was captured.

Enquiries at the British and American Naval Historian's Offices and at the Japanese Embassy, have so far failed to produce any information about the wireless equipment installed in these 81ft-long 'midget' submarines.

Perhaps a reader of *MM* may know the whereabouts of a report on the wireless equipment, the whereabouts of the equipment itself, or best of all have a photograph of it? If so I would be delighted to have details, please.

The broad details of the equipment, made by OKI Electric Company, are that the receiver was a 7-valve superheterodyne using 6D6, 6L7G, 6B7 and 42 valves. The local oscillator was crystal controlled on either of two frequencies between 7.9 and 10.1Mc/s but provision was made for either or both of these channels to be preset as self-excited Hartley oscillators. A beat oscillator was also provided.

The transmitter was a two-stage MOPA using 510 pentode valves (similar to RK20) running 1000 volts on the anode from a motor generator. The screen supply was obtained from the receiver vibrator HT supply.

Like the receiver, two crystal frequencies were available and either or both could be preset by calibration chart to a frequency in the range 7.9 to 10.1Mc/s. There were separate output tuning circuits and separate aerial coupling units.

On CW, the transmitter would have had about 100 watts output into a

metal rod aerial only 2ft 3in long and 2½ inches in diameter. This could be raised or lowered by a hand-wheel in the conning tower.

The transmitter could be grid modulated for voice transmission. A tone oscillator was provided for MCW operation. There were no meters provided, only internal tuning neons.

The operator had no control over the equipment other than a switch for Off; Receive; and Transmit. The headphones were high impedance, connected via a capacitor to the anode of the 42 audio valve. The microphone was a carbon granule unit, as were the hydrophones.

I would be delighted if someone could enlarge on the above brief description.

C.G. Harvey VK1AU, 16 Leane St
Hughes, ACT 2605, Australia

Morse in Great Houses

Surely this a classic example of some poor penny-a-line hack trying to earn a crust! (See MM31, p.22. – Ed.). It is sufficiently pseudo-technical to impress a non-technical editor (and even more so his non-technical readers), and I bet that the text is written in typical Victori-an style, where a single word is never used if three words can be substituted for it. Good luck to the author; one hopes he ate well for a day or so on his fee.

Gus Taylor G8PG
Greasby, Merseyside

Fairey Swordfish Radio

Does anyone know what sort of radio gear was fitted in the Fairey Swordfish naval aircraft before WWII?

Stan Shackleford G2HAX, Reading
(Knowing of his early WWII experiences flying in the 'Stringbag', as the Swordfish was affectionately known, we passed this query on to Vic Copley-May F/G3AAG. He tells us that in 1940, the equipment was the A.P.1082 and 1083, all communications being CW or MCW. Later the ASV MkII was fitted, and during the course of the war equipment was updated several times.

Vic also mentioned a book entitled War in a Stringbag, *by Commander Charles Lamb, DSO, DSC, RN, published in 1977. He recommends it to anyone interested in this remarkable aircraft, what it did in WWII, and the personal exploits of probably the most famous Stringbag pilot. – Ed.)*

Morse QSLs

A series of reproductions of QSL cards with a Morse theme

GØGZJ
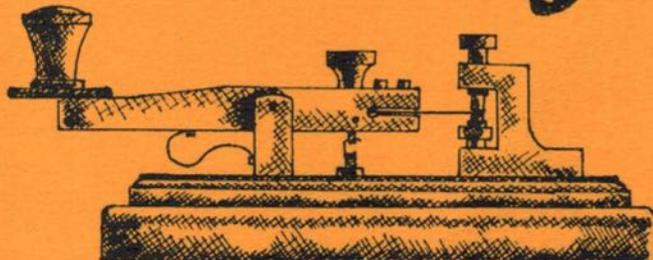
PA·DVB

NETHERLANDS
AMATEUR
RADIO
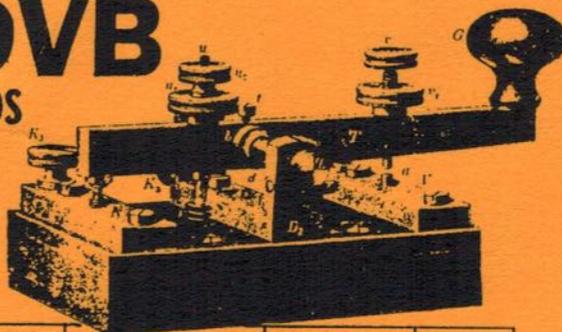
DATE	GMT	TO RADIO	RST-CW	MC
		G4FAI		

TNX FER QSO/RPRT, VY 73, DICK

Dick van der Vis, Uranusstraat 15, Alphen aan den Rijn, Netherlands. 2402 HE
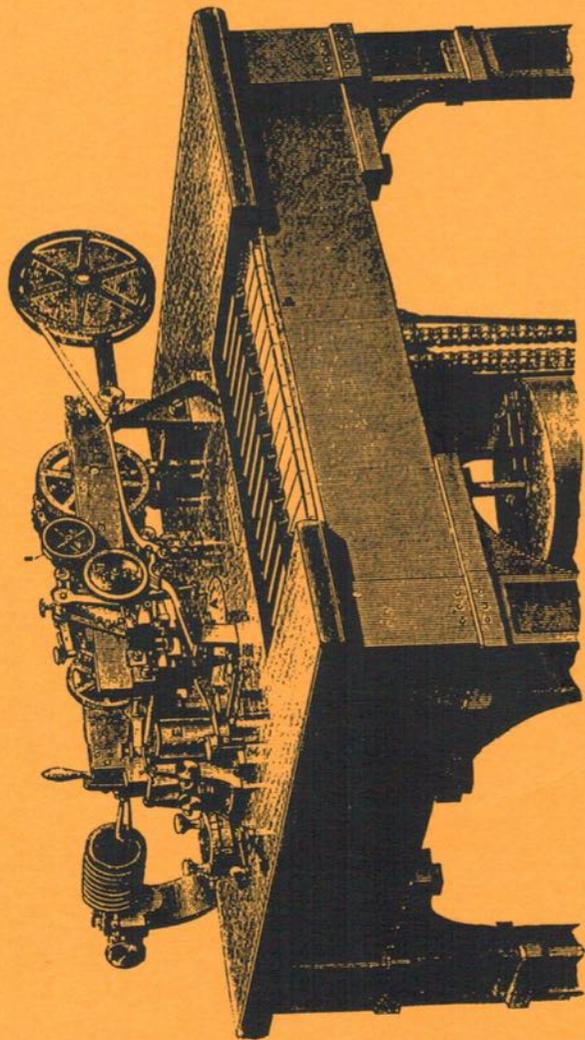
The Hughes Type-printer

A principally mechanical direct-printing telegraph system, employing identical instruments at each end of the circuit. Type-wheels in the two instruments are rotated in synchronism, driven by an arrangement of chains and weights. A pulse of current produced when one operator presses a key on the piano-like keyboard, causes the paper-tape at both instruments to be pressed against the type-wheels at the appropriate moment, printing the required letter on the tapes.

The system was extensively used in France and other continental countries, but in the UK was used only for working of foreign cables. The expense of the instrument, and the heavy strain imposed upon the operators by the need regularly to rewind the weights, militated against its wider employment. Work was being undertaken to develop a drive mechanism based on an electro-motor or air pressure.

From Telegraphy by Preece and Sivewright, Longman, Green & Co., 1895