



A Member of the SARL



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- * KZN—Don ZS5DR
- * Historian—Richard ZS6TF
- * Member—Ted ZS6TED

Newsletter

10th Anniversary

120

Feb 2016

Reflections:

Already it seems like we are so far into the New Year, that December is just around the corner again. My daughter said that January was just a test month and she was going to start the New Year from February again. Happy New Year.

Be that as it may, we seem to live in a period when time just has no boundaries and just seems to fly by.

So quickly has it gone by, that I still often think I am 25 and try to move and pick up things that any normal 25 year old would do, only to find that my back, arms and legs protest wildly and I then say to myself "What's wrong with you? You must be getting old or something". Its the "something" that often worries me more than anything else, because I cant believe I am getting

that old.

Is it more a state of mind that keeps us thinking we are still young and able to do these things, or can it be put down to blatant unwillingness to accept the inevitable?

No matter which way it goes, the facts are there before us. Time is ravaging our bodies and we have to deal with it.

Now that poses another question. What can we as ageing radio hams do to revive our bodies and keep them going?

Absolutely nothing.

We just got to take it as it comes and hope that we can make a good go of it.

I am so encouraged when I go to a flea market and see people, way older than I am, who will go to sit with friends and have a chat to

them. Who will take any greeting from passers by. Who will sit and enjoy the company and friendship of all they have come to know over the years of being in this tight community we call "Amateur Radio".

They go there in wheel chairs or using walking sticks. Holding on to others for support at times, but they are there to show their support for this fraternity.

This is why we don't have to worry too much about getting old. As long as we can do it gracefully amongst friends who care for us, it should never be too much of a problem.

Here's to the next 20 years.

Best 73

DE Andy ZS6ADY

WIKIPEDIA

Wireless Telegraphy

The term *wireless telegraphy* came into widespread use around the turn of the 19th century, when spark-gap transmitters and primitive receivers made it practical to send telegraph messages over great distances, enabling transcontinental and ship-to-shore signalling. Before that time, wireless telegraphy was an obscure experimental term that applied collectively to an assortment of sometimes unrelated signalling schemes. In 1898, Tesla demonstrated a radio-controlled boat in Madison Square Garden that allowed secure communication^{[67][68]} between transmitter and receiver.

In 1899, Landell de Moura transmitted the human voice from the College of the Sisters of St. Joseph,¹ high in the district of Santana, Brazil, north of the capital city. He also publicly demonstrated his invention on June 3, 1900. As the *Jornal do Commercio* reported (June 10, 1900), "Last Sunday, on top of Santana in São Paulo, Padre Landell de Moura has particular experience with various devices of his invention. In order to demonstrate some laws which he discovered in studying the propagation of sound, the light and electricity through space, which were crowned with brilliant success."^[citation needed] The experiments were performed in the presence of the English Vice Consul S. Paul, Percy Parmenter, Charles Lupton, and other persons of high social position. Upon observing the experiments, Rodriguez Botet, giving news of the trials, said he was not far from the moment of consecrating Landell de Moura as an author of radio discoveries. Landell de Moura later received several patents on wireless technology.^{[72][73]} He would later obtain U.S. Patent 775,337 for a wireless telephone.

In 1898, Marconi opened a radio factory in Hall Street, Chelmsford, England, employing around 50 people. In 1899, Marconi announced his invention of the "iron-mercury-iron coherer with telephone detector" in a paper presented at the Royal Society, London. In May, 1898, communication was established for Lloyd's of London between Ballycastle and the lighthouse on Rathlin Island in the North of Ireland. In July, 1898, the Marconi telegraph was employed to report the results of yacht races at the Kingston Regatta for the *Dublin Express* newspaper. One set of instruments was set up in a room at Kingstown, and another on board a steamer, the *Flying Huntress*. The aerial conductor on shore was a strip of wire netting attached to a mast 40 feet high. Several hundred messages were sent and correctly received during the progress of the races.

HF Happenings

The Leap Year Challenge

You are invited to take part in the Leap Year Challenge on Monday 29 February 2016 and make as many contacts as you can on this day. The challenge starts at 00:01 and ends at 23:59 CAT all modes, all bands. Work a station once only regardless of band, mode or call sign.



Submit your log by midnight on Wednesday 2 March 2016 by e-mail to zs4bfn@mweb.co.za. The log received with the most QSOs will win a SARL membership for 2016/2017. If you do not take part, you will have to wait until 2020, the next leap year, to put the date 29 February into your log-book!

The Antique Wireless Association CW Activity Day :

The aim of the CW Activity Day is for participants to contact as many amateurs as possible on the 20, 40 and 80 m amateur bands. The Activity Day takes place from 13:00 to 15:00 UTC on Sunday 7 February 2016 on the following frequencies - 14 000 to 14 060 kHz; 7 000 to 7 040 kHz and 3 510 to 3 560 kHz.



You can participate as a single operator all band, low power station (maximum 100 W); a single operator all band, QRP station (maximum 5 W); a single operator single band, low power station (maximum 100 W) or a single operator single band, QRP station (maximum 5 W).

The exchange is a RST report, the operators name and Grid Square locator. Contacts count 1 point for low power and 2 points for QRP. Certificates are awarded to the first places and the highest single band score. Log sheets must be submitted to andyzs6ady@vodamail.co.za by Monday 22 February 2016.

The South African Radio League National Field Day :

The aim is to work as many stations as possible on all the HF amateur bands (excluding the 30, 17 and 12 m WARC bands). The first leg of the National Field Day will take place from 10:00 UTC on Saturday 13 February to 10:00 UTC on Sunday 14 February 2016. Activity is on all the HF bands, excluding the WARC bands (30, 17 and 12 metre bands) and you may use phone, CW, PSK and RTTY. You and/or your club can participate in one of six classes. Class A - Field Station, Multi operator;

Class B - Field Station, Multi operator, QRP; Class C - Field Station, Single Operator; Class D - Field Station, Single Operator, QRP or Class E - Ultra Light Portable. Class F- General stations. To encourage more individuals and groups to participate in the National Field Day events, a 6-hour section has been introduced. It need not be for one continuous 6-hour period, but once operation has commenced in the contest, off periods must be a minimum of 60 minutes.

Only one call sign per station is permitted. In the case of multi-operator stations using more than one transmitter, all operators shall use the same call sign. Equipment for Field Stations may only be set up in the 24 hours prior to the starting time of the contest. This restriction applies to antennas, masts, towers and transmitting equipment, but excludes accommodation such as a caravan, tent, etc.

The exchange is a RS or RST report, the number of transmitters, the Field Day operating class and the Provincial abbreviation. Scores are based on the total number of QSO points x the power multiplier x the number of provinces worked X the class multiplier. QSO Points - each contact with a station from one of the South African provinces counts for five points. Each DX contact counts for one point. Power multipliers - x 6 for power of 5 watts or less; x 4 for power of 50 watts or less; x 2 for power of 100 watts or less and x 1 for power greater than 100 watts. The power multiplier for an entry is determined by the maximum output power used by any transmitter used to complete any contact during the event.

A multiplier of one for each one of the 9 South African provinces worked (regardless of band) and one extra for working any station outside of the 9 provinces i.e. DX. EC - the Eastern Cape; FS - the Free State; GP - Gauteng; KN - KwaZulu-Natal; LP - Limpopo; MP - Mpumalanga; NC - the Northern Cape; NW - North West; WC - the Western Cape and DX - used for all others that does not fall in the above group.

Class multiplier - General stations, class multiplier of 1 and Field stations single and multi, class multiplier of 3. Logs, in ADIF, Cabrillo or MS Excel format and labelled "your call sign NFD," shall be sent by e-mail to zs4bfn@gmail.com or by post to the South African Radio League National Field Day, Box 12104, Brandhof, 9324. The closing date for log submissions is 21 February 2016. Note: A photo(s) of the station in operation (JPG format) MUST accompany every log entry.

Please consult the 2016 SARL Blue Book for the complete rules.

Palmyra, K5P:

"If you worked us on 40 m SSB on 14 January between 11:09 UTC and 14:15 UTC, please work us again, as these QSOs are invalid since we accidentally operated on an unauthorised frequency in this region." At 10:04 on 22 January, the log search on Club Log included 57 154 QSOs with 14 876 unique call signs. The last full day of operation from Palmyra will be 26 January.

February Diary:

2 - World Wetland's Day
 7 - AWA CW Activity Day
 10 - Ash Wednesday
 13 and 14 - SARL National Field Day; CQ WW WPX RTTY Contest
 14 - SARL Youth Net at 15:00 UTC; Valentine's Day
 15 - Closing date for the PEARS VHF/UHF logs
 20 - SARL Youth Sprint
 22 - Closing date for March Radio ZS articles
 27 - West Rand ARC Flea Market
 27 - National Milk Tart Day
 28 - SARL Digital Contest
 29 - The Leap Year Challenge

South Sandwich Islands, VP8STI :



After a difficult and perilous landing on 17 January, which involved the loss of one generator, the VP8STI team started operations from Southern Thule, South Sandwich Islands on 18 January around 11:50 UTC. They experienced harsh conditions and (on 21 January) a "severe black out on the high HF bands due to a solar storm". The logs are uploaded to Club Log and the latest update (at 18:50 UTC on 21 January) showed 24 292 QSOs with 9 687 unique call signs.

Announced plans were for VP8STI to be on the island for ten days, including set up, tear down time and to be active for "eight full days". Weather and sea conditions permitting, their "primary goal is to do a good job from South Sandwich" before moving to South Georgia, where they will be active as VP8SGI again for eight full days starting on or about 1 February .

African DX :

Tanzania, 5H.

Stan, WS5K, will be active as 5H2SF from Tanzania from 26 January to 10 February. He plans to operate on HF bands during the local evening hours. The QSL route will be announced after the trip.

Ethiopia, ET.

The Ukrainian operators continue to be active as ET7L from the INSA Radio Club in Mekanisa, Addis Ababa, Ethiopia. Activity will be limited due to their work duties, but they are expected to be active for at least 2 to 4 months. Most of their activity has been on 30, 17, 15 and 12 metres using CW and SSB. Operators are members of UT7L Contest Club - Yarik, UW7LL, and Andy, UR4LRQ. Logs will be uploaded daily on Clublog; OQRS will be later. LoTW, as usual, after the end of operation. Their website is still under construction. The QSL Manager is USOLW.

Senegal, 6W.

Jean-Louis, F5NHJ, is now active as 6W7/F5NHJ from M'bour. His length of stay is unknown at this time. Activity will be holiday style using mostly data (PSK31 and RTTY) now (some SSB) with a Vertical L and dipoles into a FT-857d with 100 watts and a Signalink. Operations have been on 20, 17 and 15 metres. QSL via his home call sign, direct, by the Bureau, Club Log's OQRS or LoTW. For more details, see http://f5nhj.fr/?page_id=2439

The Gambia, C5.

Alan, G4DJX, will once again be active as C5DX from Banjul (Hotel) and Farafenni (Senior Secondary High School) between 12 and 19 February. Activity will be limited while on this school trip, but he will be on 40 and 10 metres operating on CW and SSB and using 100 w to wire dipoles. QSL via LoTW.

Angola, D2.

Vasco, CS7ACE, is now in Luanda and is expected to be active as D2ACE. The length of his stay is unknown, but will be active on the HF bands using SSB and the digital modes. QSL via his home call sign direct.

This week in History

(The week starting 25 January 2016)

1533 - King Henry VIII married his second wife, Anne Boleyn, in defiance of Pope Clement who had refused to annul his first marriage. The King later broke all ties with Rome and became Supreme Head of the Church of England

1547 - King Henry VIII of England died and was succeeded by his son, Edward VI. Henry had ruled since 1509. He married six times

1649 - King Charles I of England was beheaded for treason by order of Parliament under the direction of Oliver Cromwell, leader of the Puritan Revolution

1756 - Wolfgang Amadeus Mozart (27 January 1756 to 1791) was born in Salzburg, Austria. From the age of five to his untimely death at age 35, this musical genius created over 600 compositions including 16 operas, 41 symphonies, 27 piano and five violin concerti, 25 string quartets, 19 masses and many other works.

1788 - The British established a settlement at Sydney Harbour in Australia as 11 ships with 778 convicts arrived, setting up a penal colony to relieve overcrowded prisons in England (26 January - Australia day)

1832 - British novelist Lewis Carroll (27 January 1832 to 1898) was born in Daresbury, Cheshire, England (as Charles Lutwidge Dodgson). Best known for Alice's Adventures in Wonderland and Through the Looking Glass

1841 - Explorer Henry Stanley (1841 to 1904) was born in Wales. Upon locating Livingston near Lake Tanganyika in 1871 after an exhausting search, Stanley simply asked, "Dr Livingston, I presume?"

1880 - Gen Douglas MacArthur (1880 to 1964) was born on a military base in Little Rock, Arkansas

1933 - Adolf Hitler was appointed Chancellor of Germany by President Paul von Hindenburg.

1943 - German troops surrendered at Stalingrad, marking the first big defeat of Hitler's armies in World War II

1948 - A religious fanatic assassinated Mahatma Gandhi in New Delhi, India

1967 - Three American astronauts were killed as a fire erupted inside Apollo 1 during a launch simulation test at Cape Kennedy, Florida

1986 - The US Space Shuttle Challenger exploded 74 seconds into its flight, killing sev-en persons, including Christa McAuliffe, a teacher who was to be the first ordinary citizen in space

3019 (SR) Gandalf casts the Balrog from the mountain, but passes away afterwards. His body lies on the peak

3019 (SR) The Fellowship rests in Lothlórien.

AWA CW ACTIVITY DAY

1. Aim

The aim of the CW Activity Day is for participants to contact as many amateurs as possible on the 20, 40 and 80 m amateur bands.

2. Dates

1st Sunday in February

3. Time

From 15:00 CAT to 19:00 CAT on Sunday 07 February 2016

4. Frequencies

14,000 to 14,060 MHz; 7,000 to 7,035 MHz; 3,500 to 3,560 MHz

5. Categories

- a) Single Operator All Band - Low Power (maximum 100W)
- b) Single operator All Band - QRP (Maximum 5W)
- c) Single Operator Single Band - Low Power (maximum 100W)
- d) Single operator, single band - QRP (maximum 5W)
- g) Short Wave Listener (SWL)

6. Exchange

RST, call sign and Grid Square locator.

7. Scoring

Contacts count 1 point for normal power, 2 points for QRP.

8. Awards

Certificates are awarded to the first three places and the highest single band score.

9. Sponsor

Southern African Antique Wireless Association,
PO Box 12320,
Benoryn, 1504
E-mail: andyzs6ady@vodamail.co.za

10. Closing date for log submission: 1st of March.

Restoration of a Uniden 2020 SSB Transceiver

John ZS1WJ

Uniden was established on February 7, 1966 by its founder Hideo Fujimoto. **Uniden** became a well-known brand in the 1970s by manufacturing and marketing millions of CB radios, under the Uniden brand as well as popular private brand labels such as **Realistic** and **Cobra**.

During the 1980s, Uniden grew to become the world's largest manufacturer of cordless telephones in addition to television satellite equipment, mobile radios, advanced marine electronics and radio scanners (the latter under brandname Bearcat).

In Europe, it became successful in the telecommunications market with its introduction of 900 MHz cordless telephones.

As Uniden continued to grow and extend its international operations, Uniden Australia and Uniden New Zealand were established in 1989. The company now offers an extensive range of consumer electronic products including Digital Cordless Phones and the top selling XDECT, SCR, WDECT and DSS technology Cordless phones, Transceiver Radios and Scanning Receivers, Wireless Networking Products and GPS Products. The company has just announced it will be selling bluetooth car kits, HD Set Top Boxes, Laser Pocket Projectors, HD Digital Photo Frame and Wireless Power Accessories (most of which have been withdrawn from market due to poor sales).

Some “Before pics”:

GENERAL	
Type:	Amateur HF transceiver
Frequency range:	TX: 10-80 m RX: 10-80 m + 11 m and WWV 15.0 MHz
Tuning steps:	Continuous
Mode:	AM/SSB/CW
Channels/memory management:	Two XTAL-controlled channels
Repeater shift/offset:	No
Power supply:	Mains: 100/110/117/200/220/234 VAC or 13.8 VDC +/- 10%
Current drain/power consumption:	RX: 2 A (heater off) & 7 A (heater on) TX: Max 22 A @ 13.8 VDC (350 VA @ mains)
Antenna impedance/connector:	50-75 ohms / SO-239 (+ one phono RX-jack)
Dimensions (W*H*D):	350*165*333 mm (14.75*6.5*13.25")
Weight:	18 Kg (39.6 lbs)
Other features:	RIT, NB, VOX, 2*6146B finals
RECEIVER SECTION	
Receiver system:	Single conversion superheterodyne IF: 6.18 MHz
Sensitivity:	AM: 1 uV (10 dB S/N) SSB/CW: 0.3 uV (10 dB S/N)
Selectivity:	AM/SSB: 2.4 KHz (-6 dB), 4 KHz (-60 dB) CW: 600 Hz (-6 dB), 1.5 KHz (-60 dB)
Image rejection:	50 dB
AF output power/speaker:	2.5 W at 10% distortion / 4 ohms
External speaker connector:	RCA/Phono, 4 ohms
TRANSMITTER SECTION	
RF output power:	AM: 50 W SSB/CW: 100 W
Modulation system:	AM: Low power modulation SSB: Balanced modulation
Max FM deviation:	No FM
Spurious emissions:	Less than -40 dB
Microphone impedance/connector:	Hi-Z / 4-pin
MISCELLANEOUS	
Manufactured:	Japan, 197x-197x (Discontinued)
Additional info:	New price 1975 in Sweden: 3975:- SEK
Related documents:	User manual (6.4 MB) Alignment instructions (733 KB)
Modifications:	Some minor modifications (15 KB) in swedish.
Options/Accessories:	8010 Remote VFO 8120 External speaker



THE FINSEN TIME SIGNAL RECEIVER

by Richard ZS6TF AWA Historian

William Stephen Finsen was born in 1905 of Danish parents who lived in Parktown. He attended Yeoville government school and then King Edward VII (KES) obtaining a 1st class matric in 1923. He was inducted to the Faculty of Science Wits in 1924 at which time he performed voluntary work at the Observatory. In April 1925 a clerical position became available there and he completed his BSc degree at Wits in his spare time. He obtained his MSc from Wits and UCT later awarded him a DSc on the strength of his published works.

His duties included routine seismological and meteorological observations and the observatory time service for which he built the receiver described in this article to receive the time signals from Rugby and Bordeaux.

Finsen was Union astronomer from January 1957 until May 1961 when he became the 4th Director at the now Republic observatory until his retirement in July 1965, an unbroken period of 40 years with the observatory since he remained there on essential duties during WW2. During the war, he and his wife produced a film to train soldiers to navigate astrally in featureless territory such as the North African desert. Late in WW2 he designed a sun compass used in the Italian campaign.

In 1948 he designed and made an eyepiece interferometer to reveal double stars which are too close to be separated visually. The Sputnik 1 satellite launched on 4 Oct 1957 was too small to see with the naked eye but the launch rocket which accompanied it could be seen clearly in SA skies and was first photographed by Finsen on 2nd November 1957.

From contemporary comments he was a real hands on man, had a workshop on the first floor of Innes house, and was known for his geniality and fine sense of humour. From the early 1950's he took great interest in amateur astronomy groups, and continued working as guest astronomer after his retirement. receiving the Gill medal in 1967.

The time receiver is not a thing of great beauty but a practical solution using the technology of the period involving some innovation in its electronic design and circuitry and a very workmanlike approach to construction. The case is almost 1 metre wide constructed of 19mm SA pine painted Admiralty grey, with the receiver on top and a battery compartment below to contain the HT dry batteries and 2 volt accumulators for the valve filaments. My forensic adviser Oliver Gerondeanos vouches that the panel components do not all come from the same period, the earliest dating from 1915. It is possible that this receiver was re-constructed circa 1926 from previous versions, judging by the most modern components, the fact that there are no spare holes in the baseboard or front panel, and the absence of a metal chassis or front panel.

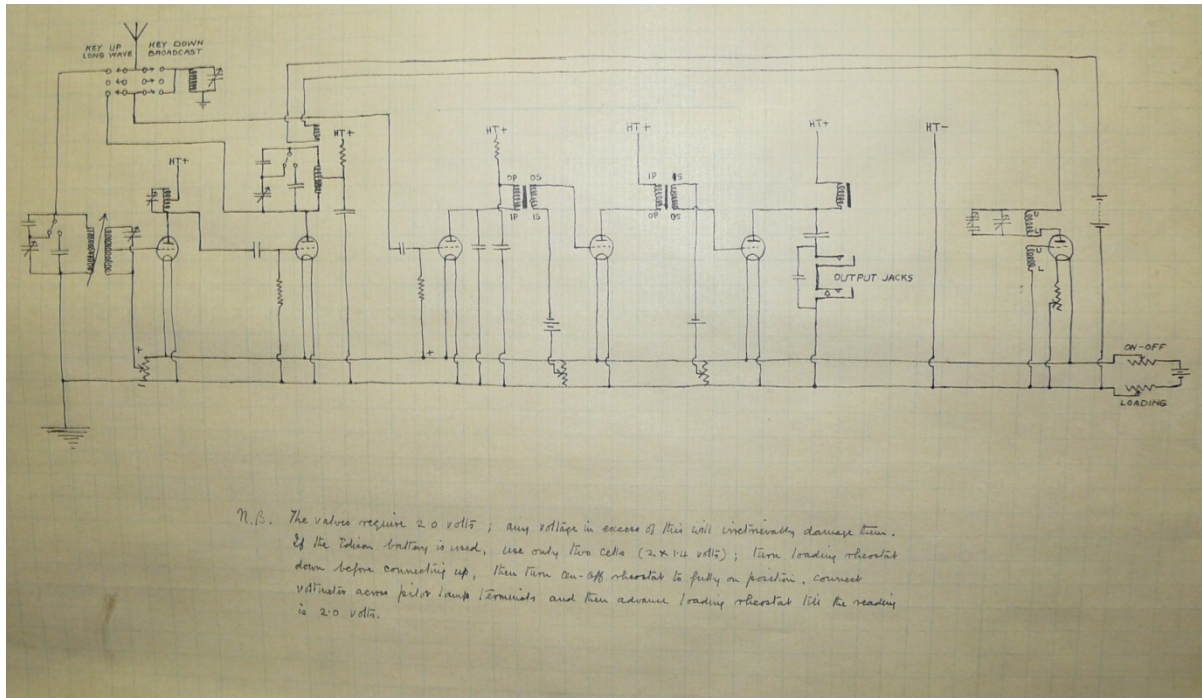


The receiver's main purpose was to copy the VLF (very low frequency) signals by the Rugby, England station GBR on 16kHz and the Bordeaux (Croix d'Hins) in France on 15.6kHz. (the latter station featured in the author's article on Long wave transmissions in the August 2013 AWA newsletter).

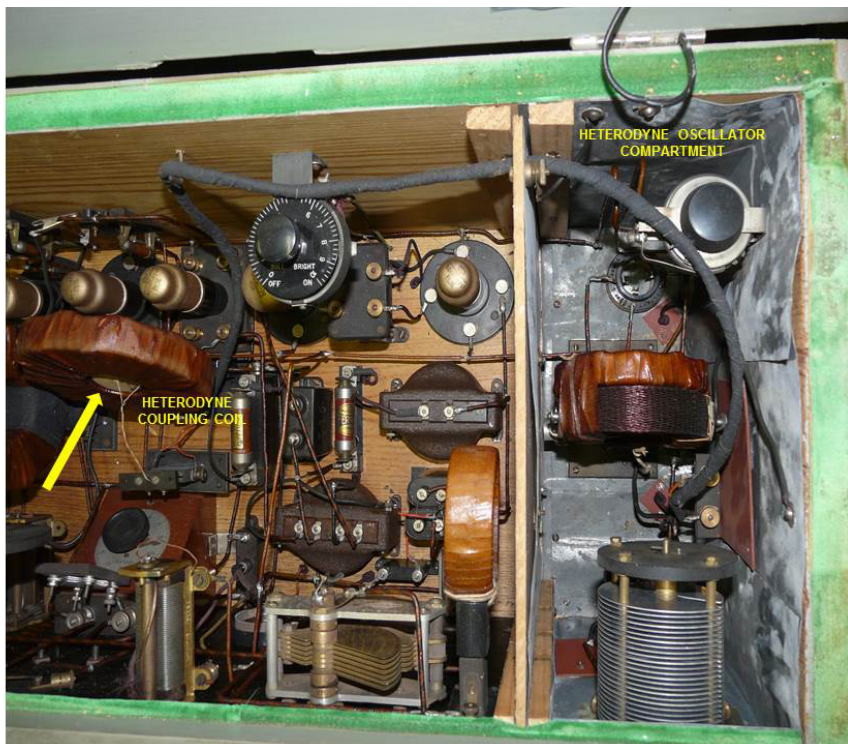
VLF transmissions (3 kHz to 30 kHz and wavelengths from 10 to 100 kilometres) have limited bandwidth, audio transmission is highly impractical, the transmitters cannot be keyed due to the high powers involved typically 500kW, therefore only low data rate digital signals are possible using FSK. The VLF band is still used today for a few radio navigation services, government time radio stations and for secure military communication. Since VLF waves penetrate about 40 meters into saltwater, they are used for military communication with submarines. The main mode of long distance propagation is an Earth-ionosphere waveguide mechanism in TM (transverse magnetic) mode, derived from zigzag reflection between the bottom of the D layer of the ionosphere and earth. It is not like HF signals which are returned to Earth from higher layers in the ionosphere, the F1 and F2 layers by refraction process incurring higher attenuation. Due to the huge wavelength, the ground waves can diffract around large obstacles and so are not blocked by mountain ranges and follow the curvature of the earth creating sweet-spots where the

sky wave is reinforced. VLF waves have very low path attenuation, 2-3 dB per 1000 km, with little of the fading experienced at HF. Propagation distances of 5000 to 20000 km are usual, however, noise caused by atmospheric discharges is high as it propagates by the same mechanism as the VLF signal.

There is a neat hand drawn schematic of the receiver pinned to the underside of the lid with instructions in Finsen's handwriting concerning setting precautions for the 2 volt heater supply. There are 6 screened triodes type PM2HL used in the receiver which is a conventional TRF for receiving Broadcast medium wave with 1 RF stage, Detector, and 2 audio stages and a post office pattern key-switch to change the receiver to the VLF operation with 2 RF stages, detector, 2 audio stages and a heterodyne oscillator on the far RHS of the schematic.

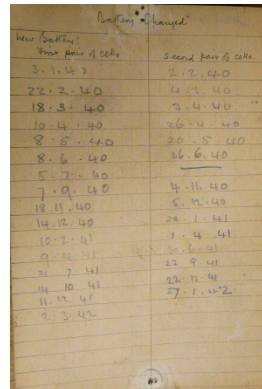
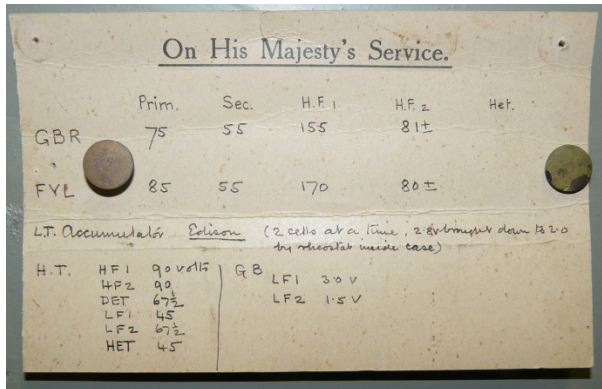


The heterodyne oscillator is constructed in a separate enclosure completely screened with zinc sheeting (the valve is missing in the picture).



To de-modulate the VLF 16kHz FSK signal the heterodyne oscillator was tuned such that the beat with the carrier signal was

inaudible but the frequency shifted code could be read as an audio tone in the headphones. The other innovation which tells of first-principles understanding of its constructor is that the RF stages have a negative feedback loop designed to compensate for the “Miller effect” arising from the high anode to grid capacitance of the triodes employed. The HT is fed to a tapping on the anode tuned circuit coil. Since HT is effectively RF earth this neutralises the tube by feeding an anti- phase RF component into the cathode circuit rather than into the grid as seen in the Neutrodyne. (in the same manner we use to neutralise RF final tubes! but using inductive coupling at these low frequencies)



Also under the lid the vernier settings of the tuned stages condenser settings are recorded to facilitate rapid change between the Rugby and Bordeaux transmissions. Inside the battery box lid is another card which records in the same handwriting the battery changeovers and shows that the receiver was still in use in March 1942.

Finsen was primarily a physicist with the sub-discipline of astronomy and not a radio engineer. It is not known where Finsen obtained the know-how to build the receiver but being a scientist with an enquiring mind and moving in academic circles, he would have had the opportunity to acquire a deeper understanding of how to make it work evidenced by the construction features employed. Working for Robert Innes as a boss would also have given him an entrée to the leading amateur radio circles of the time through Robert's son Toby.

Reception of time signals after 1942 was switched to the USA bureau of standards WWVH in Hawaii on 2.5, 5, 10, and 15 MHz, and WWV resumed normal transmissions on August 1st 1943 after recommissioning following a disastrous fire in 1940. Both were received on a Hallicrafters SX28 communications receiver. Finsen acquired this SX28 for domestic listening when it became redundant and it was donated to the SAIEE by his family after his death and is now displayed in the SAIEE museum wireless room.



In the latter part of Finsen's career the demand for accurate time signals around the country escalated. One interesting application was the need for accurate time stamping on Police speed traps! Quartz clocks were installed at the observatory in 1946 and these were progressively upgraded with higher stability crystals. In 1949 the SABC provided access via a landline to a low power medium wave transmitter to broadcast observatory time signals during idle time. Shortly afterwards a 100 watt HF transmitter ZUO was established at the Observatory to broadcast the time signals continuously on 5 MHz. Due to low coverage the transmitter was modified to 10 MHz as a link to the SAPO transmitting station at Oliphantsfontein which rebroadcast on HF at 4KW, and later over the FM broadcasting network during Idle time at night.

The Caesium atomic clock with an accuracy of 1 second in 30000 years was installed at the observatory in 1966, a year after Finsen's retirement, but while he was still actively involved with the Observatory. This was used to standardise the quartz clocks and must have been the culminating satisfaction for Finsen who had been continuously solving the problem of accurate time signals for forty years.

J. H. Bunnell & Co. Past, Present, Future

Presented at the 1994 Antique Wireless Association Conference

by Dr. Joseph Jacobs

Jesse Bunnell, founder of the company to manufacture telegraph apparatus and other electrical supplies, was a kind of folk hero, a man about whom songs and stories should be written. Being born one year before Morse's invention, provided Jesse with a fertile field to become a champion telegrapher, wartime operator and establish the company, bearing his name by the age of 35. Becoming a messenger boy at 11, subjected to cannon fire, long hours, hunger, and privations, he nevertheless found time to stand up for better pay, witnessed a wired observation balloon ascension, play practical jokes and earn the respect of the generals and colleagues with whom he worked. Jesse deserves a trip down memory lane. Let's begin at the beginning.



Jesse was born in Massillon Ohio in 1843. (Remember 1844?) By age 11 he was delivering telegraph messages and at 13 he was a full fledged operator serving at offices in Ohio, Pennsylvania and West Virginia from 1859-61. He set a record at age 17 of 32 words per minute as an average, when for a steady two hours he forwarded President Buchanan's last message to Congress (including the fancy words politicians of that day loved to use). After the attack on Fort Sumter, April 1861, Jesse, not yet 18, joined the Union Military Telegraph Service (UMTS), which had been recently organized by Andrew Carnegie, who was himself an operator at age 15. At the war's start, operators were the Army's Cinderellas. They were (and remained) civilians. Their value was not appreciated and they were given very little support and \$60 per month, less than that of a quartermaster clerk. They were often under fire as their main duty was to relay troop movement observations and orders, in part replacing military couriers. Jesse, in December of 1862, was one of 50 operators who signed a petition to the USMT headquarters for an increase in pay and support. As their importance was recognized, they got merit raises, more regular transport and supplies. Later, however, a group of operators in one area threatened to resign unless pay was raised to \$100 per month. The first telegraph strike aborted when they were threatened with charges if they resigned en masse instead of individually as was their right as a civilian Army employee.

Moving with the Army the operator would cut his wire keeping a few yards with his instrument to reattach to the line at the next stop. During battle lulls, operators were kept busy receiving and relaying casualty information for the Army and concerned relatives. Working long hours, operators would often fall asleep at their instrument, yet always awaken when the sounder clicked their call sign.

Being young operators, they were not averse to using their skill and wires for practical jokes. Early in the war, Jesse, "a great wit and very young," was fired when he pulled a hoax on Wheeling, West Virginia, newspapers about a great Union naval loss off the "Rip Raps." Of course he had to be fired, but then, because of his great skill, Jesse was rehired elsewhere at higher wages.

Jesse observed one of the few ascensions of a wired balloon operated by a balloonist and a telegraph operator to relay troop movements and dispositions. At first, Jesse, was assigned to the threatened Washington D.C. area in May of 1861 as telegraph service was needed to connect the surrounding encampments and forts with the War Department and the President. At the end of June, he was sent to Annapolis as part of a relay with the capitol, but during that time, operators were "moved from place to place as the occasion required." Jesse Bunnell's tenure on the relay might have allowed him to serve Lincoln, as his company maintains. Lincoln used the War Department's telegraph office as a refuge for relative peace and quiet. At a desk unofficially reserved for him, Lincoln wrote part of his Emancipation Proclamation and his second inaugural address ("--- with malice towards none ---") Lincoln sent his last telegram, two days before his assassination to Richmond opposing reconvening the Virginia Legislature.

From about June of 1862 to August of 1864, Bunnell served with the Army of the Potomac as General McClellan's personal telegrapher, with the sign MC, and with Sherman's Army of the Cumberland through the bloody battles in Tennessee and on to Atlanta. Exposure and starvation in the winter of 1864 weakened Jesse severely, forcing him to resign the 16th of August in 1864 and the UMTS lost one of its "ablest and bravest operators." Jesse's return to non-army work from 1864 to 1872 led him to Philadelphia and a partnership with James Patrick, a successor to Chester, Patrick and Co. Later, from 1875 to 1878, he worked

for L. G. Tillotson and Co.

In 1878, Jesse created J. H. Bunnell and Co. And in 1879 took Charles McLaughlin as a partner in charge of sales and administration while Jesse concentrated on manufacturing and innovations. Bunnell received a patent the 15th of February 1881 for his steel lever key. Stamped from one piece of steel, with minor machining, this was Bunnell's answer to the loosening of the steel trunion inserted in the brass lever. So successful, the steel lever continues to this day in keys. Early production bore the patent date on the lever. Later, this gave way to a logo containing the letters BUNNELL over a letter S, and with its general acceptance, later levers had no engraving. In 1888, Bunnell introduced his double speed (sideswiper) key to help telegraphers avoid a "glass arm" (today called carpal tunnel syndrome). The original sideswiper, Style G, did not have spring tension adjustment. Most photographs show the style W, with a spring tensioner. Bunnell was heavily into other electricals noted an article on Bunnell Wave motor published in 1898 In "Electrical Engineer." Bunnell, like other companies, had their castings made for them. In 1899 Jesse caught a severe cold which worsened. He died of heart failure on the 9th of February, 1899 at age 56. He was buried in Brooklyn's garden Greenwood Cemetery. McLaughlin took over the company. In the 1920s J. J. Ghegan became president and introduced many electrical innovations. Ghegan was succeeded by J. G. Dougherty, followed by this wife, who sold the business in the early 1960s to Inso Electronic Products, C. J. Meislich president. In 1989, J. H. Bunnell and Co. Was acquired as a division of MNH Industrials, M. B. Jacobs, president.

The company, which started in Manhattan, moved to several locations in that borough. In the 30s it moved its operations to a number of locations in Brooklyn, then to Long Island where it is now at Kings Park.

Starting with telegraph item production, Bunnell shortly branched into a huge variety of electrical items both as manufacturer, wholesaler and retailer. Theirs and other companies produced fire equipment for NYCFD and other fire departments, burglary, security, medical and the 1930's through 1950's commercial radio and fax transmitters. Bunnell produced for Postal Telegraph and Western Union, both to Bunnell's or the company specs. Bunnell produced telegraph items through 1988 for Mexico and other Latin American countries. Pre W.W.II, Bunnell was one of the largest telegraph key suppliers. Recently, an Amelia Earhart documentary maintained that her tragedy may have been avoided if she had better code skills and hadn't left without a key for CW backup. As one of the country's main telegraphic manufacturers, Bunnell equipment can be found displayed in the Smithsonian's Museum of American History as well as railroad and other communications museums.

With the introduction of the semi-automatic key (bug), Bunnell produced and won the right to use the generic bug. Bunnell also sold Vibroplex keys and later in association with Martin, (inventor and founder of Vibroplex) produced these bugs.

Bunnell produced for the military from the Spanish American War through the present. Bunnell made keys for Great Britain's military. Together with other companies, Bunnell produced the flameproof key, but for three decades to 1988, Bunnell was the only company to supply the flameproof to meet the Table of Equipment need of ships and planes. During W.W.II, Bunnell employed 600 people in a number of plants to produce a variety of electrical items and later supplied the military during the Cold, Korean and Viet Nam wars.

In the 1890's, Bunnell introduced its fully functional miniature versions of their key, sound and KOB, selling them as is or as a tie pin or with a bale for use as a watch fob. The sounder was also included in an earpiece for privacy or for use in especially noisy areas. They were sold to ardent telegraphers and presented as special awards, such as to Jesse's Civil War boss, Andrew Carnegie. They were presented at a 1908 Telegraphic dinner, RCA's Sarnoff (of Titanic fame), other radio luminaries, and in 1954 to President Eisenhower. As a collectible today, they are extremely rare and desirable. In addition to its current sales to industry and the military, Bunnell will issue a special limited edition of their mini key, sounder and KOB as a forerunner to production of other sought after telegraph items. Orders have been coming in and serial numbers are being issued on a first come basis for this limited production. Order forms are available on request to the company, J. H. Bunnell, 80 Locus Drive, Kings Park, NY 11754 or FAX 516-361-2173.



Bunnell Sideswiper 1923- 1925

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Saturday 07:30—KZN SSB Net—7150
Saturday 08:30— National SSB Net— 7140; relayed on 14135 beaming to WC and on Echolink (ZS0AWA-L)
Saturday 14:00— CW Net—7020
Wednesday 19:00— AM Net—3615, band conditions permitting.
