AWA Newsletter

#51

March 2010

A Member of the SARL

Antique Wireless Association of Southern Africa

Inside this issue:

AWA Committee:

* President—Don ZS5DR
* Technical Advisor—Rad ZS6RAD
* Net Controller—Willem ZS6ALL
* Secretary/PRO—Andy ZS6ADY

Reflections:

Summer is rapidly drawing to a close as I watch the leaves falling from the giant Poplar tree growing not from my shack. This tree must be almost as old as some of the rigs in my shack, fortunately they don't die off as easily as the Poplar does.

I notice in the early morning when I go in to the shack, the ambient is not as high as it used to be and no longer can I just go in there with a pair of shorts and sandals. Now I have to wear a T shirt and thin track pants.

One of these days, I'm going to have to thaw out the AM rigs before starting transmissions on the AM net. The fortunate thing about the winter, is the sun moves right around and from the time it makes it's appearance, around 07:30, it shines in through the shack window. This means it warms up quite fast as the sunshine pours in.

It's those two hours from the time we start the AM net to sunrise which gets into the bones. Then one has to sit and thaw yourself out.

I have recently put some insulation in the ceiling of the shack in the form of some 30mm polystyrene sheets cut into strips and laid between the wooden supports for the corrugated sheet roof. This definitely made a change to the summer temperature in the shack by a couple of degrees, so hopefully it will help to make the shack a bit warmer in the winter.

So as the bands start to improve and the days get shorter. Propagation times change on 80m and hopefully 40m continues to get betterrer and betterrer. The cold won't seem to matter so much, because we'll be too busy playing amateur radio.

Transmitting MF's and listening to the near perfect AM signals produced from a nice clear atmosphere, free of storms and static with little fade just to remind you that you are listening to something that's been around for a long time. Not only the radio's we use, but the mode of propagation.

What better way to start off the morning than by playing a bit of radio. Good friends, good conditions. Met eish Ja.

Best 73

De Andy ZS6ADY

Wikipedia—The Resistor

Metal film

A common type of axial resistor today is referred to as a metal-film resistor. Metal electrode leadless face (MELF) resistors often use the same technology, but are a cylindrically shaped resistor designed for surface mounting. Note that other types of resistors (e.g., carbon composition) are also available in MELF packages.

Metal film resistors are usually coated with nickel chromium (NiCr), but might be coated with any of the cermet materials listed for thin film resistors (see issue 49). Unlike thin film resistors, the material may be applied using different techniques than sputtering (though that is one such technique). Also, unlike thin-film resistors, the resistance value is determined by cutting a helix through the coating rather than by etching. (This is similar to the way carbon resistors are made.) The result is a reasonable tolerance (0.5, 1, or 2%) and a temperature coefficient of (usually) 25 or 50 ppm/K.

CW Net:

Slowly but surely the bands are coming to life again anf there is little more activity on CW than we have experienced for a long time.

That rare station from Witbank, ZS6JBJ can now be heard almost every Saturday running a 599 signal on QRP, sometimes not so QRP. John ZS5JON is also heard on a regular basis with good strong signals and stations even closer, like Clive ZS6AVP can even be heard 599 on 40m. It was even good to chat with Francois ZS6BUU last weekend on CW nogal.

This is absolutely life changing, after what we have been through over the past year or more. Now we just need to hear those ever diminishing Div 1 stations and life will become bliss.

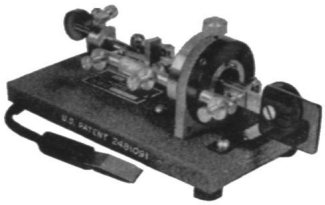
It really is a pity that more people can't experience the thrill of CW contacts and even understand how exciting it really can be.

There has been a request to run more CW activity events under the banner of the AWA. Not full day events like the most recent one, but shorter single band related events of a simple nature to encourage more use of the bands using CW.

Pierre started a thread on the SARL Forum, so if you have any suggestions about how or what you would like to see in these events, go along and put in your 5 cents worth and we will see what we can do to accommodate as many as possible.

Personally, I think it will be great to hear even more CW stations on the bands. It could easily become a regular thing.

Early mornings/evenings on 80m, late afternoons on 20m, daytime skeds on 40m. These are all possibilities to encourage some of the old fists to come back to a great part of the hobby that so many have forgotten about.



Dowkey

Hope to see you there.

De ZS0AWA/CW …-.-

SSB activity:

Well as far as SSB is concerned, this month has not been that great on 40m for the Saturday morning net. I know there have been times when 40 is really wide open, but it just seems to not be on a Saturday morning.

Never the less, we have had a good number of stations call in on the net and it has certainly kept Om Willem busy.

More and more stations are complaining about noise in their areas on 40m and more and more are finding out that ADSL modems are responsible for the noise. Not necessarily your own, but very likely your neighbours. So get the DF sniffers out and try finding the source of the noise.

It is great to be in an area where noise is not a problem, but every now then even we get plagued by various little gremlins.

The Collins seems to be performing quite well now with the 80 to 40 relay after sorting out a few glitches there and reports so far have been good. This means that at present we are running a Collins S Line split rigs on 80m and the KWM—2A on 40m. Most times I run the Collins 30-L1 linear on 80 just to help with the signals as 80 tends to have gone quiet by that time of the morning.

Local conditions on 80 are always good, with 5/9 reports coming in. So for those of you battling to hear willem or any of the other local stations on 40m, try using 80. At least then everyone can hear you and not just a few of the more distant stations.

It would seem that interest has not totally died in the AWA, so take courage and come and join us again soon

Hallicrafters SX42 Rx

AM:

It would seem the summer storms peaked this last month with regular QRN taking out most of the AM stations, especially in the evenings. Saturday mornings have been quite good with nice quiet conditions and a few surprise stations calling in.

Of course, the regulars are always there, but is so nice to hear a few different call signs every now and then. Every time I have the privilege of transmitting an MF, I realise how fortunate we are here in SA that we are able to do this. We can really be grateful to those pioneers who started the whole concept of transmitting music on AM. I wonder if there is anyone out there who may know the history of AM MF transmissions here and how they came about ? It could be an interesting subject to gather some info on.

Remember to call in on the AM net, even if it is on SSB after the net just to say you were listening, so you can stand a chance of having your name in the draw for the AM/SSB receiver at the end of the year.

We already have the receiver and now we just need someone to volunteer to do a restoration job on it to make it look as good as the picture. Anyone interested in carrying out this little project for us can let us know and we will make arrangements for transporting to and fro.

It is our aim to encourage not only the use of antique rigs, but also the modes. So join us on a Saturday morning or Wednesday evening (QRN permitting) and get your name in the hat.

Yaesu FR50B Rx

HAMMING IN 1934

Hams who operated pre-WW11 are getting very thin on the ground, so I thought I had better get the ball rolling with an article, and maybe this will prompt others to put down their memories before they are lost for ever. This article is based on my dad's logbook, as I was only born in 1944.

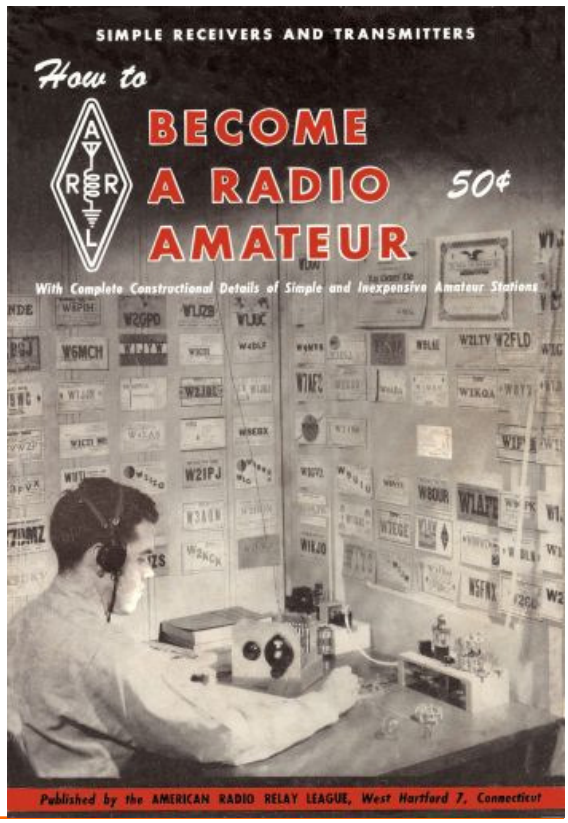
What strikes one immediately, is how thoroughly logs were kept. The logbook sold by the ARRL starts with two pages of printed instruction on how best to keep a log. It is stressed that a log should be kept of **each** transmission, even if it is a CQ call with no response. I guess there must have been a lot of these in those days and my dad logged them all. The logbook had a column in which you entered a "C" for Called, an "H" for Heard, or a "W" for Worked. I guess that you often heard stations and could not work them, and hearing them was an event. The logbook had to be submitted for inspection annually, and this one has a Post Office stamp dated 5 October 1935, initialled by "LM". At the back of the book is a sheet of graph paper on which one could draw a graph of frequency against dial setting. The heading of the appropriate column in the book is "KC or DIAL". This must have catered for receivers that did not have frequency calibrated dials.

I cannot determine what receiver my dad used. There is a note in the "REMARKS" column that he re-aligned the "FBX". This might have been the make of receiver he used and old timers may comment on this. He used a separate receiving antenna some distance away from the shack, apparently to combat QRN. There are many reports of auto-QRM in the "REMARKS" column and this verbatim entry : "And now that I've put up a twin doublet receiving antenna way up on the hill with all the associated twin wire transmission line and aerial tuning and coupling arrangements, the blooming RMO has chosen to move his garage right beneath it - talk about auto-QRM". The RMO was probably the Resident Medical Officer or something like that in Waterval Boven, where he lived.

There is a schematic diagram of his transmitter in the book. It consisted of an oscillator and push-pull amplifier, using type 89 valves, which were pentodes. It had 18 Watts input power. The amplifier was neutralized plate to opposing grid with "two 18 SWG wires in 2 mm sleeving, overlapping 1 inch". It is interesting that millimetres and inches are both used. It also notes "No flick in grid meter when plate tank tuned through resonance even with plate voltage on and without load". Another note says " trimming up neutralizing, I leant on the key by accident - two perfectly good tubes both six and a half years old Cossor 625 P's gone west. Will have to build another using 89's in the amplifier." Imagine tubes of that age still considered perfectly good!

He actually worked 248 stations that year, including 13 stations in Mozambique with call signs CR7. Also two in Northern Rhodesia VQ2 and seven in Europe and the USA. All were CW of course. This was probably the most romantic era of science ever.

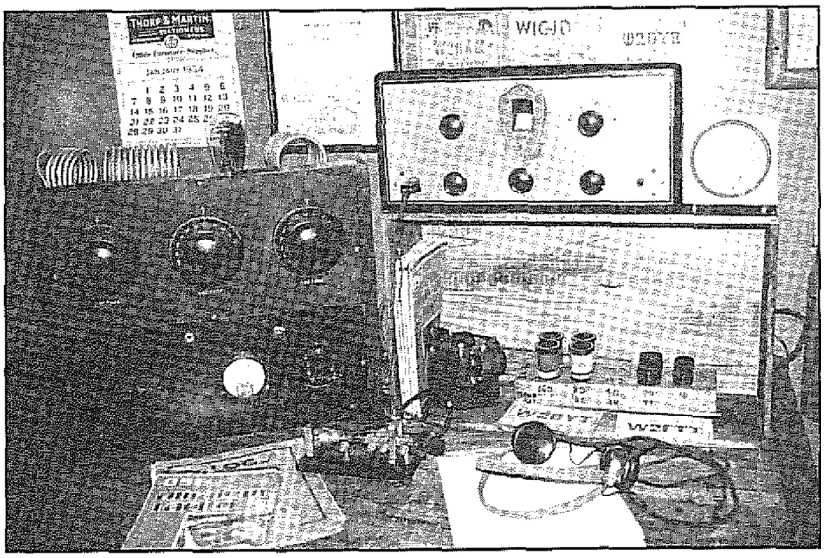
73
Evert ZS6AQW



By Al Klase, N3FRQ From *QST*, January 2002

The Age of the Autodyne

In the early days of Amateur Radio, the regenerative receiver was king of the world.



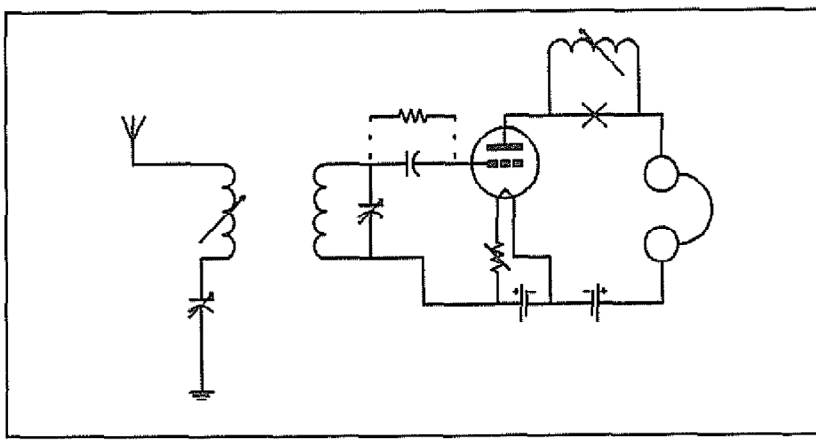
MOst of us grew up equating short-wave communications receivers with the superheterodyne circuit. Yes, we knew there were regenerative receivers, but most of the ones we encountered were clearly toys, and were effective only on strong short-wave broadcast stations. However, an examination of history reveals that there was a 20-year period when the vast major-ity of short-wave receivers were regens. During this period, amateurs went from transmitting tens of miles to regularly con-tacting the far ends of the Earth, and they did it with radios that were the second cousin of the lowly Knight-Kit "Ocean Hopper."

Edwin Howard Armstrong, an electri-cal engineering student at New York City's Columbia University and long-time radio experimenter, invented the regenerative circuit in 1912. The triode vacuum tube, in the form of the De Forest Audion, had been in use as a radio detector since 1906, but *its* operation was poorly understood. Its per-formance was better than that of crystal detectors, but its cost and unreliability kept it from displacing them from general use.

The original Audion circuit was what we would recognize today as a grid-leak detector. The grid-leak resistor was usu-ally omitted, as the internal leakage of these primitive electron devices made it superfluous. Armstrong observed that adding a small bypass capacitor across the headset affected the output signal level. This led him to believe, contrary to Lee Deforest's assertions, that RF signals were present in the plate circuit. Being an experienced RF hand, he sought to peak these signals by adding a *tuned* circuit *to* the plate lead.

The effect was immediate and astounding. As Armstrong wrote, "Great arnplification obtained at once!" By adding the tuned circuit to the plate, Armstrong had introduced positive feedback between the plate and grid circuits. At low levels, this feedback *caused the* signals *to* be amplified over and over achieving much greater gain that the original circuit. At higher levels of feedback, the circuit would break into oscillation and generate a radio-frequency signal of its own. This second mode of operation is important for two reasons: It marks *the* invention of the vacuum tube RF oscillator, the basis for a new generation of radio transmitters. Equally important, this oscillating grid-leak circuit is the autodyne detector that made continuous-wave (CW) telegraphy a practical reality. [1,2]

Prior to this time, "radio" almost universally meant spark-gap transmitters and receivers of limited sensitivity. Spark was inherently wasteful of spectrum space, emitting what was essentially broadband noise, and attaining sufficient transmitter power to overcome the shortcomings of the receivers was a considerable challenge. Experiments had already heen conducted with CW transmitters using high-frequency alternators (rotating machinery) and arc



Armstrong's modification to the basic Audion receiver adds an additional tuned circuit to the *plale* lead.

(de spark) transmitters, but the necessary heterodyne receivers needed a second alternator or arc to serve as a beat-frequency oscillator (BFO). In one fell swoop, Armstrong solved the basic problems at both ends of the transmission path ..

Armstrong's regenerative CHCUtt was protected by a patent, which constrained commercial applications and resulted in a long period of unpleasant litigation. However, this had no impact on the average amateur. All he had to do was add one more variable inductor, known as a variometer, to his Audion setup.

The Pace of Change Accelerates

Amateur Radio was banned in April 1917 for the duration of World War 1. When operations resumed in September 1919, changes came rapidly. Much improved vacuum tubes for both transmitters and receivers were now available. Hams soon recognized that a few watts of CW "got out" better than a kilowatt of spark. Wide-spread CW operation uncovered serious weaknesses in the Armstrong-inspired receivers then in use. When one wanted to change frequency when operating in the autodyne mode, all the adjustments-primary tuning, secondary tuning, plate tun-ing and filament current-had to be read-justed to obtain peak performance.

In a series of *QST* articles in 1921 and 1922, John L. Reinartz, 1 QP, introduced a simplified regenerative circuit that proved to be a much better solution for amateur operation.

A 1930's TRF Audiodyne Receiver

I purchased the homebrew radio shown in Figure A at an Antique Wireless Association auction some years ago. I was attracted by its excellent construction, and by the fact that it came with *five* sets of plug-in coils. The small size of the band-spread capacitor strongly suggested it was meant tor ham use.

Not knowing exactly what it was, I took it to Gerry Malhis, W3GM, who was the local Grand Old Man of ham radio. Gerry lifled the lid and said two words, "rationalized autodyne." Beyond that, he didn't add much that I hadn't already figured out, but it was an important clue, Later, I discovered George Grammer's "Rationalizing the Autodyne" article in *OST.* In this landmark article, he summed up the current state of the art in regenerative receivers, and detailed the construction of a highly developed receiver that was widely built and elaborated upon by others.

My radio was constructed on a salvaged broadcast-receiver chassis (see Figure B), and was carefully mounted in a handsome mahogany case that formerly held an RCA Radiola 16. While the physical layout is somewhat different from the set in Grammer's article, the circuit is almost identical. Fit and finish are excellent for a home-brew rig.

The RF-amp and regenerative detector stages both utilize type 58 RF pentodes. Band selection is by way of plug-in coils. The coils for the 20 and 1 O-meter bands are wound on salvaged tube bases. Each tube, and its associ-ated tuned circuit, is surrounded by a separate metal shield to prevent oscillation in the RF stage and to limit interaction between the controls. Audio-frequency amplification, sufficient to drive a headset, is provided by a type 56 triode. The tubes all *have* 2.5-V ac heaters.

Tuning is accomplished by the parallel capacitor method. The center tuning knob, below the lighted dial, is the "band-spread" control. It actuates two small capacitors that tune the RF amp and detector simultaneously. The knobs at the upper right and upper left are the "band-set" controls. The detector band-set is used to select the desired portion of a coil set's tuning range, and then the RF band set is tweaked for maximum signal. If you've logged band-set positions, this need be done just once when one changes coils.

The coils are designed so that a fair amount of band-set capacitance is always in the circuit when tuned to a ham band. This "high-C" arrangement greatly improves stability by making the unavoidable variations in tube capacitance, which occur as supply voltages and circuit settings change, small compared to the total circuit capacity.

Grammer pointed out that many operators used battery power supplies to avoid problems of *voltage* variations on the ac line. *However,* this particular receiver, while it did not *have* a built-in power supply, was clearly intended for ac operation. It *even* has a switch brought out on the power connector to control the power transformer primary. The 1934 *Radio Amateur's Handbook* shows plans for a sophisticated voltage-regulated power supply for just such applications. I constructed one, using vintage parts, that I use with this radio.

On the air, the "rationalized autodyne" gives a good account of itself. Tuning is precise and repeatable. The detector slides smoothly in and out of oscillation making it easy to set the best operating points for both AM and *CWI* SSB. Selectivity, alleast on 160 through 40 meters, is adequate for reasonable CW work. Sensitivity is *very* good, and the RF gain control keeps things nicely under control when the signals are strong. The set's stability is impres-sive, and interaction between the controls is minimal. It's easy to copy SSB on 20 meters.

The overall performance of this radio, at least for CW use, is superior to most of the inexpensive non-crystal-lilter superheterodynes of the era. After using one of these radios for a while, it's easy to understand how the simple home-brew TRF-autodynes held off the superhets for as long as they did.

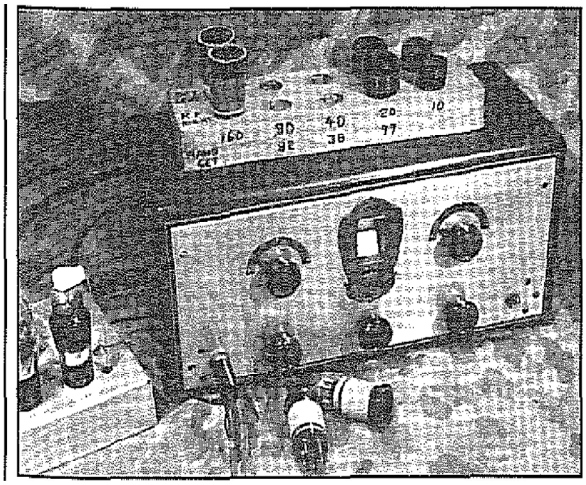


Figure A-Rationalized Autodyne, power supply and spare coils.

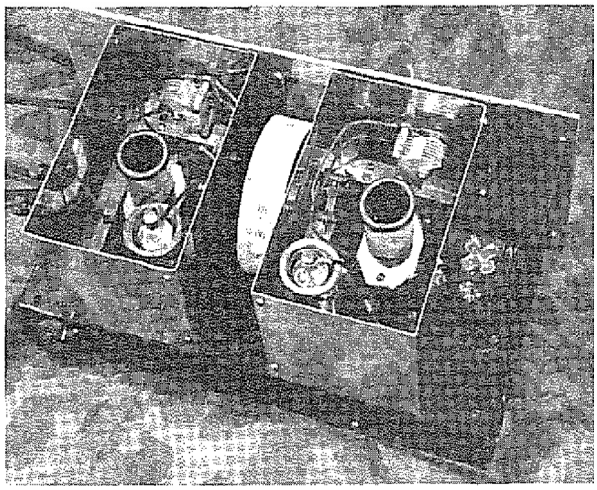
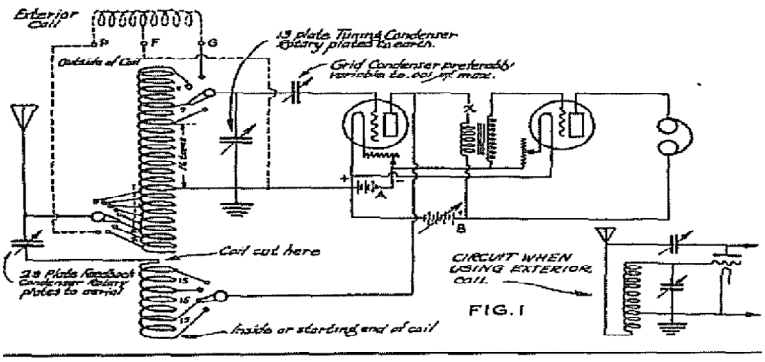
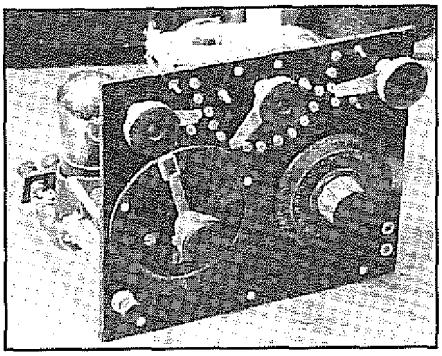


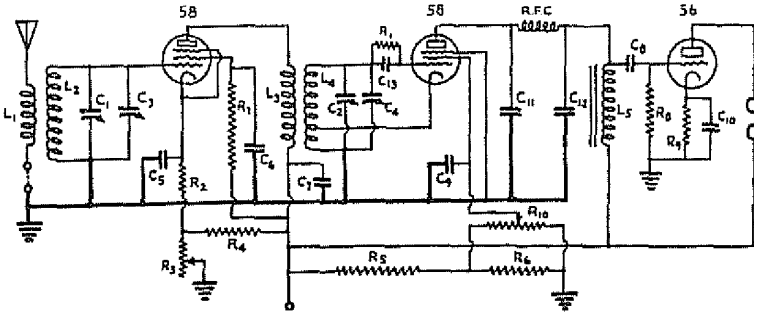
Figure B-Inside the Rationalized Autodyne.



"Improved Reinarlz Tuner" from March 1922 *QST.*



A vintage Reinartz receiver from the John Dilks, K2TQN, coJJection.



"Rationalized Autodyne" schematic tram January 1933 *QST.*

The Reinartz "tuner" uses a single parallel LC tank in the grid circuit. A tapped nonresonant tickler coil provides feedback from the plate circuit· that is throttled by a variable capacitor. A third tapped winding allows variable antenna coupling. The three-winding coil was an easily reproducible "spider-web" affair. Hams around the world built thousands of these receivers, and, fortunately, a few have survived. 3.4

Receiver development continued to ad-vance as new and more effective vacuum tubes were introduced throughout the broadcast boom of the '20s and '30s. For instance, late 1927 saw the introduction of the "shield-grid" tube or tetrode. A second grid was added between the control grid and plate of the triode. This added element acts as a Faraday (electrostatic) shield between the grid and plate. This reduces unwanted feedback between the output and input of an amplifier, and allows significant RF gain to be achieved.

Shield-grid RF amps were quickly added in front of the traditional triode de -tector to improve performance on the emerging 20 and 10 -rneter bands where receiver sensitivity was at a premium. RF amps have some additional advantages. They provide isolation between the an-tenna and detector. This greatly reduces radiation from an oscillating detector, and prevents its frequency from being "pulled" by the antenna swaying in the wind. A tuned circuit on the grid of the RF amp can improve selectivity, but great care must be taken to prevent the tuned-RF stage from oscillating due to stray coupling between the input and output tuned circuits. An RF stage can also exacerbate detector over-load on strong signals by providing too much gain.

Other vacuum-tube innovations included "heater" type amplifier tubes and high-voltage rectifier tubes to allow the radio to be powered from the ac line rather than batteries, low-filament-current types

The End of the Autodyne Era

In January 1933, *QST* assistant techni-cal editor George Grammer published an article called "Rationalizing the Autodyne, A Three-Tube Regenerative Receiver of Unusual Performance" in which he enumer-ated the common problems in most amateur receivers, and detailed the construction of a highly effective radio, based on the latest tube types and circuit innovations, that carefully avoids these problems. 5

The year 1932, however, had seen the introduction of the quartz-crystal IF filter. This circuit allowed superheterodyne re-ceivers to deliver "single-signal" selectiv-ity for CW signals. This development made superhets, another Edwin Armstrong in-vention dating back to 1918, sufficiently better than the autodynes to break into mainstream amateur usage. By the mid 1930s, many of the leading ham operators had abandoned their homemade TRF-Au-todynes in favor of commercially made receivers from the likes of National, RME, Hammarlund, and, of course, Hallicrafters.

Notes

'Edwin H. Armstrong, "Some Recent Develop -ments in the Audion Receiver," *Proceedings of the IRE,* Vol 3, no. 3, September 1915, pp 215-24B.

2Edwin H Armstrong, "The Regenerative Circuit," *The Electric Journal,* Vol. XVI1I, no. 4, April 1921.

3"A Receiving Tuner lor C.W.," *QST,* June 1921, pp 5-7.

4"The Improved Reinartz Tuner," *QST,* Match 1922, pp B-10, 26.

5"George Grammer, "Rationalizing the Autodyne," *QST,* January 1933, pp 11-16, 23.

By John Ceccherelli, N2XE From *QST*, January 2003

Vibroplex The Company and its Classic Key

On one level, the Vibroplex is just a bug-a type of Morse code key. But on another, it's a piece of ham radio history that resonates through the fists of generations of brasspounders.

Mechanically intricate yet functionally obvious, the Vibroplex is instantly recognizable as a quintessential telegraphic instrument. Second only to per-haps the steam locomotive, it is a classic example of form following function. People instinctively wiggle the lever, push-ing it left then right. To the right is where it springs to life.

As a telegraphic instrument, the Vibroplex key eliminated a debilitating ail-ment and doubled code transmission speed. Regardless of its merits in telegraphy, it can draw you into a mesmerizing stare for hours on end. Later models have a liquid chrome finish that you expect to splash when touched. The knurling on the myriad of screws and lock nuts sends showers of glinting light. The adjustments beg the mind to determine their purpose.

The Vibroplex is a semi-automatic tele-graph key. The operator makes dashes manually by pushing the lever to the left, but the action is to the right. The dots are automatic. When the lever is pushed to the right, the Vibroplex, as its name implies, vibrates. Weights suspended on a steel spring oscillate rapidly, opening and clos-ing an electrical contact with seemingly endless repetition.

Of Straight Keys and Bugs

The original telegraph key was invented in the late *18305* and was in commercial use by *the* 18405. Until 1900, it remained stunningly unchanged. That original key, Alfred Vail's "lever correspondent," a simple switch, was the archetype of the telegraphic transmitter for over 60 years. But the straight key, as it's called today, has a couple of fatal flaws. The *first* is its speed, which tops out at about 20 words per minute. The second is that it tended to cripple those who used it for any length of time. The more skilled an operator was, the more likely he was to be injured. In a busi-ness where words equaled dollars, the best operators saw the most action for longer periods of time, placing themselves at greater risk.

Many operators fell victim to what was called "glass arm" or "telegrapher's pa-ralysis." Characterized by excruciating pain and loss of fine motor ability. glass arm was a career-ending affliction. Today, it's known as repetitive motion disorder or, more commonly, carpal tunnel syndrome. If ever there was a perfect device to induce carpal tunnel syndrome, the straight key was it. The telegraph companies responded by replacing the stricken operator with a fresh body. It was a time when labor was both cheap and abundant.

Around the turn of the last century, a young telegrapher and experimenter was working on the problem. Horace G. Martin had developed an electromechanical widget that produced automatic dots and manual dashes. The human interface incor-porated a side-to-side motion instead of up and down. This new contraption, the Autoplex, was somewhat bulky and re-quired expensive batteries to power its electromagnets, but it was relatively easy to master and virtually effortless.

Martin developed a totally mechanical and compact version in 1904, which he named "Vibroplex." It brought simplicity, small size, modest cost (about a week's wages) and total relief of glass arm. Martin's Vibroplex was an instant success. The Vibroplex started to appear on tele-graph circuits en mass. For reasons not entirely clear, it acquired the nickname "bug." Perhaps it was the rapid fire dots or the annoying racket that resulted in the hand of a poor operator, but the name stuck.

The Company Evolves

The Vibroplex was originally manufac-tured by United Electrical Munufacturing Company of Norcross, Georgia. One of the principal investors in the company, A. O. Brown, suffered a huge $3,000,00010ss on Wall Street in 1908 and UEM collapsed with him. At the time, it was the largest financial failure in history.

Martin subsequently hooked up with E. Albright, who had a successful type-writer sales and service business in New York City. Albright sold many typewriters to telegraphers so the Vibroplex was a natu-ral extension of his business. Somewhere along the line, Albright had a bright idea-he was going to corner the bug market.

The partnership with Horace Martin gave Albright control of most, but not all, patents regarding semiautomatic keys. Albright purchased the remaining patents. With all bug patents in hand, Albright seems to have gone on an infringement holy war. It was not enough to go after the coun -terfeit manufacturers and wire line compa-nies; Albright threatened even the indi-vidual telegraphers using infringing keys. Within a few short years, Albright had exterminated all offensive bugs.

The Vibroplex enjoyed high demand and no competition until the patents started to expire around 1920. With time running out on his monopoly, Albright did what any good businessman would: he dressed up his product. **In** 1920 the Vibroplex label, that brass tag all Vibroplex bugs wore, got flamboyant Its size exploded and it included a red lightning bug that was to become the company's trademark. See Figure 2. It is simply impossible not to notice it. No longer did the tag merely identify the product

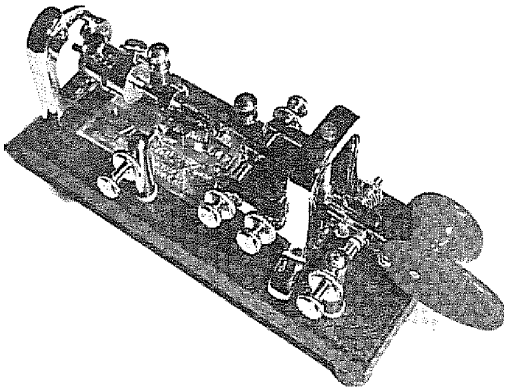


Figure 1-The author's prized 1946 Blue Racer

Figure 2- The label is perhaps the most distinctive feature of a Vibroplex key

and serial number, the new label made a statement! When the patents did run out, dozens of manufacturers entered the semi-automatic key market. Some were more successful than others, but only one re-mains to this day-Vibroplex. Did the la-bel make the difference? It didn't hurt.

Vibroplex remained in the Albright family for its first 65 years or so. From the mid-1960s to the mid-1990s, Vibroplex plugged along through several owners and declining sales. Over the years, Vibroplex produced 15 different models. By 1990 they offered only the "original." It seemed the Vibroplex destiny was to follow that of the industry it had originally serviced.

New Owner

The Vibroplex had been around to witness the development of radio, the sinking of the *Titanic,* two world wars, man land-ing on the moon and the Internet revolu-tion; and you can still buy a brand new one. The need for landline telegraphers has long since vanished. Railroads no longer dis-patch trains by wire. Yet the Vibroplex is still in demand and the demand is growing.

In 1995, Vibroplex found a new owner, S. Felton "Mitch" Mitchell, W40A. Mitchell faced a set of challenges that only a 19th century product could present at the end of the 20th. To understand Mitchell's problems, one needs to understand manu-facturing standards of] 900. While the Vibroplex is a fine instrument, it is not machined to super close tolerances. The Vibroplex was state of the art in 1904. In 2002, it's an arcane niche accessory in a market that demands high quality. A teleg-rapher in the mid-I 900s cared little if there was a blemish in the chrome or a tooling mark here or there. A ham in 2002 will not tolerate imperfections. The chrome must be perfect, paint must be flawless. Mitchell has had to become expert in machining, metallurgy, plastics and plating, and in the process puts out the finest bug that this 19th century design will allow.

New users find bugs to be a bit loose and sloppy feeling. You cannot adjust a bug to I micron contact spacing. A bug likes motion and lots of it. Your wrist, after all, is the power source. The Vibroplex is also noisy. In particular, you'll notice the con-stant clank of the damper. This is not a stealthy key; anyone within earshot will know you're on the air. The Vibroplex still has 10 or I 1 possible adjustments to fiddle with. It can take a week to fine-tune a newly acquired bug. It is, with all its quirks, won-derful. It's more emotional than practical but many agree that to tame and master a bug is to become a more complete ham.

Work of Art

Today's Vibroplex is made with some of the same tooling used 100 years ago. The same outfit that first stamped that flamboy-ant label in 1920 is still stamping them out in 2002. A bug made in 1920 was a neces-sary tool of the trade and remaining bugs from that era show it. The nickel plating is worn and dull; the base paint is peeling.

Semi-automatic for a Reason

While the Vibroplex is employed today to send International or radio Morse, it was the perfect instrument for American or land line Morse. Landline Morse is a differ-ent code than the radio Morse in common use today. Not only was it made up of dots (dits) and dashes (dahs), the length of dashes and spaces (letters C, Y and 0) was critically important. The character L was long duration dash. The number 0 was a really long dash-actually the character elements were time intervals between the *click* and *ka-lunk* sounds made by a me-chanical sounder. The difference between even by those who know neither. American Morse is "ditty" and comes in bursts; International Morse is smoother but less interesting. The Vibroplex was ideally suited for American landline telegraphy with its high proportion of dits and variable length dahs. Martin went halfway, making only the dits automatic out of necessity.

Morse Nirvana

On Amateur Radio bands, old landline telegraphers are not hard to discover. Even though they are sending radio Morse, old habits expose their history-and they have a lot of history . Virtually nobody was learn-ing landline Morse after 1950 so a practi-tioner is at least 70 years old. The long tone zero can be a giveaway but many radio Morse telegraphers have picked that up also. More subtle is the letter **L**. In radio Morse it's *di da di dit.* If you learned landline Morse first then it's *di daaah di dit.* They linger a little on the dah. They also favor bugs instead of the more popular electronic keyers. To strike up an in-depth conversation with a retired railroad teleg-rapher is a special treat. Their sending is musical and structured but unique to that individual's fist. With a little prodding, you can usually get their life story and it's well worth the effort. Their jobs, kids, loves, the war, retirement, loss of their spouse, the solitude of twilight years. The conversa-tion sometimes ends with a tear shorting out the bug.

A few years ago, I was fortunate to acquire a 1946 vintage Blue Racer Deluxe. Deluxe it is. All chrome, jeweled bearings, bright red finger pieces and quick on the dots. While not particularly rare, the Blue Racer is highly sought. All you need do is use one to know why. Many consider the postwar Blue Racer Deluxe to be the most attractive bug ever produced. It is a very fluid machine both visually and func-tionally. On the air, you forget the physical interface; dits and dahs disappear. The bug takes you into a telegraphic zone where you directly enter the other operator's mind. If you are lucky enough to find a retired rail-road telegrapher on the other end, it is Morse nirvana.

Need More Information?

The Vibroplex Company Web Site: www.vibroplex.com.
A great Vibroplex collectors page: **www.la.ca.us/frandy/index.html#bug.**

CONTACT US:

P.O. Box 12320
Benoryn
1504

Phone: 27 11 969 5619
Fax: 27 86 620 3291
Mobile: 082 448 4368
Email: andy.cairns@xsinet.co.za

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Antique Wireless Association of Southern Africa

Mission Statement

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterdays radio transmitters and receivers. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association.

Notices:

AWA CW Activity Day:

Congratulations to Pierre ZS6BB on scoring the most points again in the activity day. Once again, Pierre showed his prowess by not making the most QSO's but by using QRP to score the most points.

The following are the results:
ZS6BB Pierre — 48 points
ZS4JAN Jan — 34 points
ZS1TTZ Adrian —11 points

There were a total of 27 stations recorded in the activity. Congratulations to all who took part.

SARL 80m Club Championship:

Remember the Club Championship at the end of March. This month is the Digital section and one can use either PSK or RTTY to make contacts. The contest is from 19:30 to 20:30 SAST on Wednesday 31st March. Enter the contest and send in your log marked with AWA for your Club and help us in getting some points on the board. In the 1st event, the AWA were listed 4th, so help us in moving up the leader board.

Equipment for Disposal

Yaesu FT-102 HF transceiver and matching VF-102 external VFO. Transceiver has the usual RF relays problems but it works on several of the lower bands. Cosmetically 95% as new. Asking R1250-00 ONCO for transceiver and R500-00 for VFO, will split if required. Prepared to haggle on FT-102!

Drake TR-4C HF transceiver with 230V AC PSU and Astatic hand mike + set of spare PA tubes new in box. Cosmetically looks 100% as new. Asking R1750-00 ONCO for whole set up. The 3 PA tubes today would cost almost this amount!

And a few other items not mentioned here, but contact Bert on 031 765 2436 if interested. Buyer to arrange collection. Location: Hillcrest, KZN.