



AWA Newsletter

Issue 25

January 2008

Antique Wireless Association of Southern Africa

Inside this issue:

CW Net	2
SSB Activity	2
AM	2
Geloso—an important Italian contribution to Ham Radio	3 to 6
Mission Statement	7

AWA Committee:

- * President—Rad ZS6RAD
- * Treasurer—Willie ZS5WI
- * Technical—Don ZS5DR
- * Net Controller—Willem ZS6ALL
- * Newsletter/PRO—Andy ZS6ADY

Forward in to the Future

For those of you who celebrate the New Year according to the Roman Calendar, we wish you all a prosperous New Year. May it be all that you want it to be.

As mentioned last month, we start the year off with a new President and committee. Congratulations to Rad on his nomination as President. I am sure he will carry the stick well.

To the rest of the committee. Welcome to Don as our Technical Advisor. Hopefully we can get Don to make regular contributions to the newsletter with some technical tips on valve radio's.

The others are all old hat and keep the same portfolio's.

Of course it's good to hear Willem back on frequency again after his saga with the "Tree man" and his antenna's.

Everybody is hoping and praying for some change in band conditions and the start of a new Solar Cycle. It seems like it has been forever that we have been battling with poor conditions and we keep on saying it has to change some time. Maybe soon this will happen.

No definite date has been set for the AWA annual gathering, but we will more than likely use the same venue again, Rand Airport, and it will more than likely be in April again. This just so you can start to prepare yourself



THIS PICTURE WAS TAKEN WHEN NIAGARA FALLS WAS COMPLETELY FROZEN IN THE YEAR 1911. A VERY RARE PHOTO.
(I've read of this but never saw the photo before. Makes you wonder just HOW COLD and HOW LONG it was that cold!!)

for the gathering of the year and come along to support us.

Hopefully we will be able to get an even bigger flea market going this year, with lots of goodies to whet your interest.

Best 73
 Andy ZS6ADY

IT'S OVERLOADING THAT ENDS THE LIFE OF MOST AMATEUR PARTS: K.B Warner QST Dec 1942

It's overloading that ends the life of most amateur parts. Conversely, underloading vastly extends their lives—indefinitely. There is no blinking the fact that it's going to be hard, if not downright impossible, to get some components. When they go "blooie" under our custom-

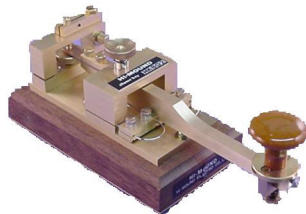
ary overloads, there may be no replacement. We therefore propose that all amateurs who value their place on the air, immediately reduce power, to say three quarters or half of what they are using now. We don't believe there would be any detectable difference in signal strengths and we

know that gear would last much longer. Particularly tubes and especially rectifiers. Tubes deserve particular loving care. Keep your filament voltages exactly right. Warm up plenty. Avoid frequent cooling and reheating of filaments.

CW Net:

Things have been rather quiet on the CW front this month. Of course being the “silly season”, everyone and their key have been involved in all sorts of activities, including myself, and have not made sked on a regular basis.

This might continue through to the New Year and then hopefully we will be able to get back in to full swing. To those who have been up on frequency regularly, my



HK 802 Straight Key

thanks to you for your support.

Thanks to Ian, now ZL2AIM, who sends regular bits of info about his CW escapades from the Land of the Long White Cloud (NZ). Ian is causing a lot of interest down under and will soon have a lot of CW enthusiasts back on the air again at the rate he is going.

I had my first CW contact using CQ100, a software programme

that looks and behaves like an HF rig, but is really VOIP on the internet. It took a bit of getting used to using the keyboard to send CW, and of course one has to use your own spacing otherwise the letters just become one mass of letters being spewed out without any breaks. Nevertheless, it was quite interesting seeing how many people have become active on the internet. Only licensed hams can register to use the software. This will certainly help to improve your reading skills if you so desire.

De ZS0AWA/CW

SSB activity:

I decided to stop bemoaning the fact that the band has been terrible and try and concentrate on the more positive side, and that is that despite conditions, we still get a good number of calls on the SSB net on Saturday morning.

Someone mentioned this the other day and said that we either all cookoo or we have quite a dedicated bunch who are willing to at least al-

ways try to get up on the band with their valve rigs.

Locally the Div 6 guys are still battling with short skip and once again we would recommend you try using

**For local stations, try using the
80m relay.**

the 80m relay. It always gives good results for the local stations and you can still hear the rest of the guys on the relay.

Well here's hoping that there will soon be some improvement and that we will start to hear a lot more restored rigs coming up on frequency.

Looking forward to hearing you all on the net soon.

AM:

Noise running at S9. The needle flicks up to 20 over and the noise dissipates. There is absolutely nothing like listening to an AM transmission on an AM receiver. If you are listening on an SSB receiver, then you will probably only be getting one half of the signal and will lose a lot of the fidelity in the AM transmission. But with a good receiver and a good speaker, you will appreciate what we are all talking about.

Welcome to some of the newer guys calling in on the AM net. Always nice to know that there are hams out there still with an interest in AM.

Of course there are still a lot of good receivers out there too, just waiting to be restored and put to good use.

3615 is the frequency. Wednesday afternoon from around 18:00, Saturday morning from around 05:45. Come up and join us.



Johnson Viking Ranger II

Hi, I am Tony IOJX

Geloso: an important Italian



contribution to ham radio

John Geloso was born in Argentina January 10th 1901, where his Italian parents had temporarily moved from Italy. The entire family moved back to Savona Italy in 1904, where John studied at the nautical school. After finishing school John started an electromechanical workshop where he manufactured items he had personally patented. In 1920 he went to the U.S., and began working for Pilot Electric Manufacturing in New York and attending Copper Square University. After graduation, in 1925 he was appointed chief engineer by the Pilot president Mr. Isidor Goldberg who had realized the potential of that young Italian.

John was able to solve most of the problems affecting, at that time, the development of radio, such as receivers AC supply, single command for frequency change, acoustic improvements, etc.

In 1928, in front of several scientists among which Lee De Forest (the "father of radio") and Hugo Gernsback (the licensee of the WRNY station), he demonstrated a system for images reproduction based on a Nipkow disk with 44 holes, able to generate 36 lines and 15 frames per second. Images were transmitted from a transmitter site at Hudson Terrace in Coytesville (NJ) to Philosophy Hall (NY), on the wavelength of 326 meters, since pictures could not be properly synchronized through the WRNY Hotel Roosevelt studios. Reception required a 24 inch scanning disc rotating at 240rpm. Eventually, Gernsback presented daily 5 minute programs in cooperation with John Geloso, via 48 line mechanical scanners set up in Coytesville,

By 1929 he was deeply committed to the design of the Pilot *Super Wasp* receiver, the first completely AC-operated short-wave receiver in the market. John was mainly interested in the mechanical aspects of replacing plug-in coils, commonly used at that time to achieve multi-band op-

eration, with a mechanism of highly ingenious construction based on switches operated by cams.

In 1931 he returned to Milano, Italy for setting up its own business.

The first Geloso radio I am aware of is model G.50, dated back to 1932. It had five tubes, i.e. two RF amplifiers (UY235), one detector (UY224), one audio power amplifier (UY247) and one rectifier (UY280).

At that time home radios were fairly pricey compared to an average wage and, to save money, it was then common to buy apparatuses in kit form (most commonly NOT including a wooden cabinet, which one often had to construct by himself...).

Some excerpts from the G.50 presentation:

" ... often some instability phenomena can occur... (some guidance is then given on how to avoid instability) ... but if the radio is *too stable*, then it will also be not too sensitive ..."

" ... hum will totally disappear increasing the capacitor up to 8 microfarad, and this will be possible when electrolytic capacitors will become available ..."

"... our sole ambition is to get soon all necessary materials and components ..."

Looking at the G.50 schematic diagram, one can see that, while paper capacitors were measured in microfarad as done today, the RF capacitors (i.e. the mica and the variable ones) were measured in *centimeters* (cm). *Farad* belongs to the MKS measurement system, and *centimeter* belongs to the CGS system. Below you see the label of a 5,000 cm transmit mica capacitor of those years.

After some search, I have determined that 1 cm is equal to about 1.1

pF, therefore the 5,000 cm capacitor actually has a capacitance of about 5,500 pF.

By the mid-30ies, John Geloso S.A. had already become an important home and professional electronics manufacturer, representing one of the few alternatives to importing equipment from abroad.

Geloso was also building plain components, such as switches, capacitors, potentiometers, transformers, etc. (really made in Milan, not re-labeled Taiwan stuff...); on the other hand autarky was one of key guidelines in the fascist era.

Geloso was also active in the military field, building a 1935 transceiver working in the 50 - 56 MHz range.

The front panel is marked (in Italian) "Small radio box - companion to a m-180 photophonic station". Before WWII "photophonic" stations were used for short-range voice and "optical telegraphy" communications between the military underground fortifications of the [Alpine Wall](#), over a light beam that the enemy could hardly intercept. The radio link was alternately used in case of fog or obstacles degrading the optical link quality. The small transceiver employs a 4-volt direct-heating tube (a Zenith type RRBF, built in Italy by FIVRE) working either as super-regenerative receiver or as self-oscillating transmitter (AM + FM at the same time). Despite its low RF output power (around 250 mW) and its very broad and deaf receiver, I succeeded to work Trevor G3ZYY in Cornwall UK on 50.370 MHz FM with fairly good signals, profiting of a sporadic-E opening. Interesting to note that the RX/TX switch only changes the grid resistor value, absolutely nothing else!

In 1934 the Geloso factory moved from its initial site of via Sebenico 7 to a new site in via Brenta 18 still in Milano, and in 1939 to a large plant in via Brenta 29 (about 17,000

square meters).

After WWII, Geloso expanded the production of components (electrolytic capacitors, microphones, piezo pick-ups, pre-adjusted receiver RF groups, IF transformers, etc.) as well as of complete equipment, including a wide selection of radios, audio amplifiers, recorders, vinyl disk players, etc.

Surely, the most popular Geloso product was the tape recorder mod. G.255 which was introduced in 1957. Most Italian families owned one of these.

Another important product line for Geloso were TV sets, B&W of course. At that time they came in just a few screen sizes, i.e. 17", 21" and eventually 24". The price of a TV set was rather high; the console model shown below costed 330,000 year-1954 lira, that correspond to about 4,100 year-2001 Euro (currently 1 Euro is about the same as 1 US \$).

Designing TV sets was not always an easy task at that time. Look at the solution that they had to adopt for getting the proper coupling factor between the sweep generator tube and the mixer tube. The screen of a 9-pin miniature tube was modified to derive a signal of an appropriate level.

The G.274/A has a push-pull pair of 807s driven by a 6L6G. Two pre-amplifier stages with 12SL7s. A 5R4GY and a 5Y3GT are used as rectifiers. The output transformer (Geloso mod. 6054) had been replaced with a modulation transformer (Geloso mod. 6055) that has the appropriate output impedance for modulation purposes.

A decade later the Geloso audio amplifiers had a bit more modern appearance, see model G.215-AN, using a push-pull pair of EL84s for a nominal output power of 15 W.

Yes, at that time manufacturers were still serious and declared real power, not the odd things we see today like "instantaneous peak musical power". Would you believe I recently saw a car amplifier using two EL84s, built for nostalgic hi-fi aficionados, advertised as a 200 W amplifier? Geloso did not even dare to use the "high-fidelity" term, so they just called it "high-quality amplifier".

All components were made by Geloso, even capacitors, switches and connectors.

Geloso, who had a radio amateur license with call I1JGM, began an ham radio products line in 1952 with the first ham bands-only professional receiver, the G. 207, which was produced in three versions, i.e. G. 207-AR, G. 207-BR and eventually G. 207-CR.

In 1955 the first "Geloso line" was born, by pairing a G. 207-CR receiver to the G. 210-TR transmitter (using a single 807 modulated by a push-pull pair of 6L6Gs). Picture below shows the G. 210-TR (left), the G. 207-CR (right), with a G.208-A general shortwave receiver on its top.

The G.210-TR transmitter included the very first Geloso Variable Frequency Oscillator, i.e. the VFO mod. 4/101. Note that the tube marked 6AU6 looks to be an octal tube instead of a miniature one, as it should be. The above picture was probably taken before they decided to change that tube (an 6SJ7?) into the more modern and better performing 6AU6.

In 1958 a new line came out, i.e. the G. 209-R receiver (153,500 year-1958 lira, or some 1,650 year-2001 Euro) and the G. 212-TR transmitter (125,000 year-1958 lira + 395 lira of "tube taxes", for a total equivalent of some 1,350 year-2001 Euro), still having a single 807 in the final producing 40 W RF, but now with a pair of 807s for modulation.

In 1962 the last AM/CW-only line appeared: on the left-hand side of picture below you see my G. 4/214 receiver (double conversion superhet for AM, CW and SSB, but rather poor on SSB due to its limited frequency stability, the absence of a product detector and the lack of a fast-attack slow-decay AGC) and, on the right-hand side, my G. 222-TR AM/CW transmitter (60 W RF produced by a single 6146 modulated by a push-pull pair of 807s). Still today, I use this equipment with satisfaction mainly on the 10-meter AM segment (29.0 - 29.1 MHz): lot of US contacts!

In 1964, an improved transmitter version appeared (the G. 223-TR), similar to the G. 222-TR but featuring

higher frequency stability by the use of a conversion-type VFO (mod. 4/105).

By the way, the ham-radio equipment case was also used for other purposes; such as model G.1523C, an odd integrated audio amplifier / broadcast receiver / switchboard specifically designed for airports, railway stations, jails (hi), department stores, churches, etc.

All the main items constituting Geloso receivers and transmitters were also individually sold, so that one could easily build an home-made transmitter using a Geloso VFO, a Geloso tank coil, a Geloso RF choke, Geloso variable capacitors, Geloso crystals, Geloso transformers (power and modulation), and an home-made receiver using a Geloso "RF group" (everything down to a 4.6 MHz IF), Geloso IF transformers, etc. etc. Interesting to note that, who knows why, Italian amateurs using Geloso equipment, when declaring their working conditions, used to replace the word "Geloso" with then term "la nota casa" (i.e. "the renowned factory").

In an period when people were much more budget-minded than today, readily offering the most critical equipment building blocks made Geloso very popular among amateurs, even in the U.S. where many hams still today have Geloso equipment or parts hidden somewhere in the basement. At this regard it should be noted that, in 1963, Geloso introduced, as part of his line of nuvistor-based VHF converters, models operating on bands at that time only available to U.S. amateurs (mod. G. 4/160 for 50 - 54 MHz and mod. G. 4/162 for 220 - 224 MHz). It is also interesting to note that the Bollettino was bi-lingual, Italian and English: though this would be normal today, it was not so in the 50ies when only a small percentage of the Italian population had some command of the English language. These facts witness that Geloso was aggressively hitting the U.S. market too.

The most popular Geloso loose item surely was the VFO for the HF range (10 through 80 meters). The early model was the 4/101, used in the G.210-TR transmitter, with a 6J5GT oscillator, a 6AU6 doubler / buffer and a 6V6GT driver.

It was soon followed by model 4/102, in which the 6V6GT was substituted by a more powerful 6L6G, this change making it possible to drive two final tubes (e.g. 807s) in parallel instead of just a single one.

The later model 4/104 instead had just two tubes, a 6CL6 oscillator and a 5763 driver, both miniature. This VFO, which was intended to drive a single tube (e.g. one 807 or 6146), appeared for the first time in the second Geloso transmitter (the G. 212-TR).

In reality, quality was not the best one could expect: switches often suffered from unstable contacts, VFOs were generally quite unstable (even the most recent VFO, the conversion-type mod. 4/105, was not a real rock...). At this last regard, it is interesting to note the solution that Geloso adopted for his VHF VFO (144-MHz), the model 4/103.

Actually model 4/103 incorporates two completely separate oscillators (two 6CL6s), that is a crystal one and a free-running one (i.e. a proper VFO). A 12AT7 is used to switch the two signals and a 5763 to drive the power amplifier. Below, I report how the summer-1962 issue of the Bollettino justifies the need for two oscillators:

"The aim of having two different oscillators, the VFO type and the crystal type, is that of using the former for brief connections (for the research of a correspondent, etc.), and the latter (having a greater frequency stability) for a normal connection."

To better understand this, one should remember that at that time (at least in Italy) 144-MHz operations were normally crystal-controlled (each amateur in a local area could easily be identified just by his transmit frequency). So, breaking in an on-going QSO was an almost impossible task, as neither of the two hams in QSO would have his receiver tuned on the breaker's transmit frequency. Geloso offered a solution to this problem: using the VFO-type oscillator one could quickly break in the QSO and tell one of the two guys: "Please listen for me, I am on 144.900!"; then, by means of the crystal-type oscillator, he could continue the three-way QSO with better frequency stability.

Coming back to the Geloso lines, the SSB era began in 1965 with the G. 4/225 transmitter (222,000 year-1965 lira, or some 1,825 year-2001 Euro). The transmitter, having a separate power supply (the massive G. 4/226 at 77,000 year-1965 lira, or some 650 year-2001 Euro), adopted phasing-type SSB. In addition to other more common tubes, it used a parallel of 6146s delivering 100 W RF out, three (today hard-to-find) 7360s as balanced modulators, one 6CW4 nuvistor as crystal oscillator, and even an EM87 ("magic eye") to permit properly adjusting the transmit audio level! The case size was still the same as that of the ancestral G. 207 receiver so, in total, you had to accommodate three real beasts in your shack. See two of them below (transmitter and matching power supply)

The new companion G. 4/215 receiver, was only produced for a short period and is therefore rather hard to find.

Its more modern case, as well as the new panel colors, were an early sign that Geloso was going to re-style their ham-radio products. As a matter of fact the G. 4/215 receiver was soon after replaced (in 1967) by a new receiver, the G. 4/216, having a smaller case.

The G. 4/216, paired to the new G. 4/228 transmitter having three 6146s in parallel, was the very last Geloso ham-radio line. Despite the smaller case, the three pieces (the G. 4/228 had an external supply, the G. 4/229, all having the same case of the G. 4/216) still occupy a remarkable room on your desk. Noticeably this line, as well as all the former ones, had no transceive facility, and you so had to zero-beat the transmitter each time.

The company went out of business in 1972, four years after John Geloso death.

Their former headquarters located in Milan via Brenta 29 is now owned by a bank. After 1972 however Geloso equipment were still on the market because the trade mark was acquired by other companies, which continued producing equipment marked Geloso.

The rationale behind this product is that, around 1975, there was a huge demand in Italy for FM-radio transmitters, as almost anyone could freely set-up and operate his own broadcast radio, the applicable laws being unclear (or perhaps just not enforced?).

By the early 80ies the Geloso trade mark was still used to label cheap electronic stuff produced in the far east.

By the way, I forgot to tell you that "geloso" is the Italian for the English word "jealous".

Going back to my Geloso line, I wish to report you on some of the design oddities which I found in the G. 222-TR transmitter schematic diagram. First of all, believe it or not, the front-panel receive / transmit switch (as well as the receive / VFO-beat switch) operates directly on the 220 VAC line; in other words transformers get only powered when one transmits or wants to zero-beat! Real energy saving, isn't it?

With such an arrangement, switching back from transmit to receive one would hear a carrier in his receiver until the power supply capacitors have discharged. To avoid this, the transmit / receive switch was designed in such a way that, just at the very middle of its excursion, a resistor was temporarily grounded to quickly discharge the electrolytic capacitors. This excerpt of the schematic diagram witnesses that I am not joking: you can see a 33-ohm 1-W resistor, connected to the power-supply electrolytic capacitors, getting shorted to the braid of the coax coming from the receiver socket.

Another candy. The front-panel meter can conveniently be switched to measure either plate current, or grid current or AM-modulation percentage, but in the plate-current position the meter is directly inserted in the high-voltage line, this meaning that the whole meter (and the switch) is at 750V potential. Don't worry: the plastic meter lid will protect you anyway... Here it goes: the resistor marked N. 80164 is the meter shunt through which plate current flows.

Before leaving this brief tour, please give a quick look to my Geloso G. 299 (1958), an unusual equipment called "Oscillofono" having the very plain task of generating an audible tone on pressing a Morse key (a loudspeaker was not included). This unit was expressly designed for code training; I guess it is a pretty rare item. In kit form, its year-1958 price was 13,500 lira (without tubes), equivalent to about 150 year-2001 Euro.

By means of a front-panel switch one can select the tone frequency, either 800 Hz, or 1,000 Hz or 1,200 Hz. The socket marked "Tasto" (the Italian for "Key") mates to the typical Geloso 3-pin microphone plug. The audio output on the back panel has two impedances, 3.2 and 600 ohm. The output waveform looks very good on the scope, a nearly perfect sinusoid.

What that sturdy box does can today be done by just a tiny NE555 plus, if you really need more power, an audio-amplifier IC. The G. 299 instead includes:

- a 50 W-class power transformer (made by Geloso of course);
- a big can-type dual electrolytic capacitor (Geloso-made);
- a Geloso output transformer;
- a Geloso two-winding audio transformer, the primary of which constitutes the "L" of the resonating "LC" circuit producing the audio signal;
- two tubes, 12AU7 and 6AQ5, not made by Geloso but bearing a Geloso sticker (John, if I were you, I wouldn't trust those tubes manufacturers...).

The world was much simpler than today, but we enjoyed it anyway, didn't we?

Geloso ham equipment schematic diagrams download (GIF format):

Receivers

- G. 207-AR (81 kbyte)
- G. 207-BR (317 kbyte)
- G. 207-CR (130 kbyte)
- G. 207-DR (314 kbyte)
- G. 209-R (135 kbyte)
- G. 4/214 (132 kbyte)
- G. 4/215 (173 kbyte)
- G. 4/216 (133 kbyte)

Transmitters:

- G. 210-TR (111 kbyte)
- G. 212-TR (135 kbyte)
- G. 222-TR (152 kbyte)
- G. 223-TR (197 kbyte)
- G. 4/225 + G. 4/226 (388 kbyte)
- G. 4/228 + G. 4/229 (347 kbyte)

VFOs:

- 4.101 (HF, drives one tube, 94 kbyte)
- 4.102 (HF, drives two tubes, 99 kbyte)
- 4.103 (VHF, 78 kbyte)
- 4.104 (HF, drives one tube, 95 kbyte)
- 4.105 (HF, conversion-type, 82 kbyte)

Converters:

- G.4/151 (144 MHz, w/o power supply, 83 kbyte)
- G.4/152 (144 MHz, with power supply, 98 kbyte)
- G.4/159 (power supply for nuvistor converters, 43 kbyte)
- G.4/160 (50 MHz, nuvistor, 56 kbyte)
- G.4/161 (144 MHz, nuvistor, 57 kbyte)
- G.4/162 (220 MHz, nuvistor, 60 kbyte)

- G.4/163 (432 MHz, nuvistor, 73 kbyte)

Tony has some very interesting photographs of a lot of the Geloso equipment described here on his website. If you can. Go along and have a look at the complete article with pictures at :

<http://www.geocities.com/siliconvalley/pines/5440/geloso.html>



P.O. Box 12320
Benoryn
1504
South Africa

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

Get your backdated issues at
[http://harc.org.za/
newsletters/AWA/](http://harc.org.za/newsletters/AWA/)

**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. We are proud that the Collins Interest Group are firmly associated with our ideals.

Membership of this group is free and by association.

