

RadioZS

Volume 71 No/Nr 2
Februarie/February 2018



**Congratulations on 70 years of unbroken membership of the South African Radio League
as of Thursday 1 February 2018**

Al Akers, ZS2U

Ring-rigstraler vir satelliet kommunikasie

The "Largely Plastic" 2 m Antenna

Two Band Quad Loop Antenna

Working for the future of amateur radio



Radio ZS

The Journal of the South African Radio League
Die Tydskrif van die Suid-Afrikaanse Radioliga



"Celebrating Amateur Radio's Contribution to Society"

International Amateur Radio Union - Working for the future of amateur radio

PARC hosts the 2018 SARL National Convention	3
Relaying Amateur Radio Today	6
The Year When Digital Modes Changed Forever	8
Ring-rigstraler vir satelliet kommunikasie	9
Switches, Part 2	15
Co-Launched CubeSats Settling into Orbits	16
The Archduke of Austria was a Radio Amateur	17
VHF, UHF, SHF and EHF News	19
Secretive "Numbers Stations" Persist on HF	22
The "Largely Plastic" 2 m Antenna	23
The Museum Piece	25
History of Amateur Radio, part 7	29
Two Band Quad Loop Antenna	33
Bill Brown, WB8ELK: Master of High-Altitude Balloon Projects	35
CQ Contest - Februarie/February	38
So, you want to build a magnetic loop?	42
Homebrew APRS – Arduino Uno KISS TNC	46
Five Band Indoor Magnetic Loop Aerial	49
What is Amateur Radio?	59
Back page	60

South African Radio League

Suid-Afrikaanse Radioliga

Founded 20 May 1925 / Gestig 20 Mei 1925

The National Body for Amateur Radio in South Africa
Member Society of the IARU Region 1

Die Nasionale Liggaam vir Amateurradio in Suid-Afrika
Lidvereniging van die IARU Streek 1

On the Cover

The Ring beam antenna for 2 m and 70 cm satellite communications built and used by Christie Grobbelaar, ZS4CGR. Read more on page 9

Op die Voorblad

Die Ring-rigstraler vir 2 m en 70 sm satelliet kommunikasie wat Christie Grobbelaar, ZS4CGR, gebou het en gebruik. Lees meer op bladsy 9

Deadline for articles

Contributions for the next issue must reach the editor on or before the last week of the month before publication. Closing dates are:

February 2018 - 25 January 2018

March 2018 - 22 February 2018

April 2018 - 26 March 2018

May 2018 - 24 April 2018

National Amateur Radio Centre

Nasionale Amateurradiosentrum

Administrator / Administrateur

Kelley Heslop

Sender Technology Park
1 Octave Street, Radiokop
PO Box / Posbus 1721
Strubensvallei 1735
South Africa / Suid-Afrika

Telephone/Telefoon: 011 675 2393

Facsimile/Faksimilee: 086 299 0566

E-mail / E-pos admin@sarl.org.za

Web: <http://www.sarl.org.za>

Volume 71 Number 2 February/Februarie 2018

Editor: Dennis Green, ZS4BS radiozs@sarl.org.za

They shall grow not old as we that are left grow old
Age shall not weary them nor the years condemn
At the going down of the sun and in the morning
We will remember them."

Hulle word nie oud soos ons wat bly vergrys,
Die jare sal hulle nie raak nog die tyd se eis
En, soos die son sak of die môre ontvou,
Eer hul herinnering – ons sal onthou."

Wessel JR Wessels, ZS6AKY

Norman Ellor, ZS5YM

The Museum Piece

Dave Gemmell, ZS6AAW

A chat at the Marconi home, Giovanni Francia, IOKQB

This article appeared in the December 2017 issue of the ERA Magazine "La voce dell'E.R.A. - European Radiomateurs Association" in Italian and English. Giovanni sent me a copy of the magazine as well as a letter of permission from the Editor of the ERA Magazine. The photos were taken by Vanessa Lucrezia Francia.

A long time ago at school, on a 1973 morning during a history lesson, the teacher was telling us an episode that had happened many years before, an episode that at first captured my attention and then with the flowing of the narrative details, it made me empathized with the protagonist. The story was that one about the experiment that Guglielmo Marconi did in the Pontecchio's family estate; do you remember it?

Guglielmo gave a rudimentary receiver to his acquaintance and asked from him to go with it down a hill, at a point where it was not visible, with the prayer to shoot a shotgun at the moment pre-set, when the "gavel" of the receiving device had moved. Well, a long time from that story, even today, the thought of what Guglielmo could have felt when he heard the gun shots that had shaken the air, that tangible sign that the distances between peoples would had no longer exist, it still gives to me a spine tingling. What could have felt in that moment the great Guglielmo Marconi? You know, life is full of unexpected moments and finally one of them has literally projected me back into that story, giving to me a spine tingling again.

The memory of that tale has become much stronger when on a November morning of this year, I talked personally about this topic and even more with Elettra Marconi (also Princess Elettra Giovannelli by marriage) that very kindly agreed to be interviewed by myself.

Elettra is a smiling, nice and extremely kind person and talking with her is truly enjoyable. Since the beginning, the interview turned into an interesting chat. My questions were deliberately a bit different from those that, inevitably had been repeatedly asked from her.

GF. All interviewers ask more or less the same questions. What did they never ask you and what would you had wanted to hear from asking?

EM. I have not been asked enough about the moral side of my Father, about his humanity, about the real purpose of his invention. Though he had fascinated by the electric waves, the invention of the radio had the primary purpose of saving human lives. He was a person with a sense of profound



Princess Elettra



Elettra Marconi and Giovanni Francia, IOKQB

(Continued on page 26)

(The Museum Piece from page 25)

rectitude, very believing, very spiritual, bound to my Mother by a deep love, they were very united, they were always together.

GF. Madam, regarding this matter I remember a beautiful picture that I saw where you, a little girl portrayed with your parents, who are looking at each other eye to eye. We can see that they were very united.

EM. Yes, I was 4 years old and I was hugging them in a protective way. They loved one each other a lot.



GF. Your Father chose not casually to patent the Wireless Telegraph in the United Kingdom. Even nowadays, many Italian researchers choose to go abroad for reasons similar to those ones of your Father. What do you think about it and how, in your opinion, could we act in order to contrast this "brain drain"?

EM. From my experiences with the people I have met and also from the experience about how my Father was treated, I want to say that unfortunately, when someone has an idea, or succeeds in something, then he is immediately hindered. When my father presented himself with his wireless telegraph, he was hindered. They even wanted to put "the sticks in the wheels." He had suggested to go to the mental hospital. Luckily, he was a strong person who knew he was on the right side and then, with his mother went to England where he was welcomed with open arms and where he patented his invention. The importance of that invention was soon very clear.

GF. Let me add that, due to some stories I heard meeting some Italian "good brains", this way of doing is still present.

EM. Unluckily yes. It's a matter caused by envy, jealousy, all of them are negative things. When the young have some new ideas, there is this sort of badness that wants to stop the young. You must know that Augusto Righi, which my father used to follow the lessons of and to whom he also confided the idea he wanted to develop, advised him to go to at first the faculty of physics and enrol himself and then only once he graduated, to come back to him. At that point my father left Righi's lessons, because he felt and understood that something was not so clear.

GF. Always as a personal matter, I want to mention a similar and quite recent case which I dealt with in an article, the story of the astrophysicist Fabrizio Tamburini and his "Vorticity of the Waves." Another brain drain abroad. Madam, according to you, is the figure of your Father and his most extraordinary invention, the radio, remembered with the right attention, especially here in Italy? If you do not think so, what should we do to preserve that?

EM. Recently, the Italian Senate organized a beautiful event where all the Senators were present. There had been a beautiful speech about the value of Marconi and his inventions. The Holy See also is organizing a next event dedicated to Marconi. There is also the dear Professor Spinelli who had organized a beautiful event in Santa Severa, a village on the Roman coastline, where there is an Etruscan tower called Tor Chiaruccia, in which Marconi built his last radio station. Let say that now there is more attention to the value of my Father's figure.

(Continued on page 27)



(The Museum Piece from page 26)

GF. In several interviews, you have said that you love radio amateurs. Why?

EM. Because they are the people closest to my Father, those who love him most. They talk with distant people and they even make friendships with them, maybe without even meeting one each other personally. I also like to speak with radio amateurs all over the world. When I am travelling around the world for

The Antique Wireless Association of Southern Africa - ZSØAWA

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterday's radios and associated equipment. To encourage all likeminded amateurs to do the same, thus ensuring the maintenance and preservation of our amateur heritage.

Please visit our website: www.awasa.org.za. Sign up for our monthly newsletter or download any backdated issues at www.awasa.org.za/index.php/newsletters. Membership of AWASA is free and by association.

We are on the air every Saturday morning, starting at 04:00 UTC on 3 615 AM, then 06:30 UTC on 7 140 SSB relayed on 14 140 to the Western Cape and 12:00 UTC on 7 020 CW. You can also connect to our Echolink node to listen to the Saturday SSB nets - ZSØAWA-L

The Wednesday evening AM net is held at 17:30 UTC on 3 615



some events and I meet with them, they are excited, I see tears in their eyes, I feel how much they love my Father, so I always want them next to me, in the front rows.

GF. I believe that radio amateurs all over the world are not only grateful to Marconi for the things he has done and left to us, but they also would like to help not forget his name. How can we, the radio amateurs, help to make Marconi's name not forgotten?

EM. Speaking about Marconi and his story with people. To speak about his inspiration, speaking about what he called "the gift received from God," a gift for which he had the idea for his own invention whom, as my father asserted, exploiting the forces of the nature, made sure that many lives were saved. (The story of the Titanic is emblematic.)

Remembering him as an example of courage,

(Continued on page 28)

will, as well as a stimulus for young people. He was never tired. He really used to work hard. When he had reached a goal, he wanted immediately to reach a new one. He was always thinking about what he wanted to do in the future. On board of the Yacht Elettra, he often thought for hours, even though there were people around him. So, you have to remember and talk about him, in this way.

GF. Is it true that he did not draw the ideas that came to his mind?

EM. Not really. When ideas came to him, he took notes. Often it used to happen that if we were at table for lunch or dinner, table always prepared with a white towel, you could see him drawing some signs on that, using the fork. Those designs were his ideas, transcribed in this way, due to his fear about the possibility that ordinary designs could be stolen from him. Then, the towel was washed, so finally no designs. It used to happen, due to his fear.

His latest invention, of which there are no designs and no equipment, was a device able to isolate and extract gold from sea water. I still remember very well, those yellow filaments of gold that my mother and myself, saw. He did not want to draw that device. Finally, he even broke all the equipment saying that it had well printed in His head. He said that he would have rebuild it in the next season. Unluckily he died earlier. Probably, for the will of God.

GF. At the end of the conversation, Mrs Elettra talked to me about an idea that she has been trying to realize for several years and for which she feels a lot. She told me that her thoughts are for young people, whom her Father loved so much. She said that it would be great to be able to give to them, the young people as well as scientists of all nationalities, the opportunity to meet, discuss, create, carry forward their ideas, in a place that her Father loved so much. Marconi had lived his childhood in a place of which the remains and past, might be of inspiration. This place is the Palazzo Marconi in Bologna, an ancient building, built around the year 1500 and originally owned by the Orsi family, located in the historic centre. Unfortunately, the Palace, with its enormous historical and cultural value for the ancient origins, as well as for being the place of Guglielmo Marconi's childhood, does not look in good condition, as it needs urgent interventions, which for many reasons have not still been put in place. It's a pity that this great idea cannot be put into practice.

You can see the conditions of the building, using Google Earth, where in the search string you will need to type the words: Bologna, Marconi palace. Once the program has "centred" it, you can watch in what kind of conditions the roof is. Then, using the "Street View" function, you can also get a look to the conditions of the exterior facades of the building.

We hope that this beautiful Marconi Palace used as a centre of studies for scholars, can be set up. It is a moral and cultural inheritance of Guglielmo Marconi and a heredity, a moral inheritance, must not be ignored.

Thanks Mrs Elettra.

For me, to have met with her and having spoken with Her, meant going back to that lesson of history that a long time ago I listened to. That lesson that gave me a spine tingling, as a steel spring pushed me and all those who understood the importance of the radio, the radio amateurs at first, in such a way to continue this wonderful adventure of experimentation, as well as being further stimulated in believing in our own ideas and trying to realize them.

As we say among the Radio Amateurs, "Hear you again".



Vanessa Lucrezia Francia, the photographer