

Marconi in Switzerland

True Story or Fairy Tale ?

Fred Gardiol, *Life Fellow, IEEE*, and Yves Fournier

Abstract— According to the reminiscences of a senior citizen, at some time during the summer of 1895 Marconi carried out original wireless transmission experiments near the village of Salvan in Switzerland. The IEEE acknowledged this event and inaugurated a Historical Milestone on September 22, 2003. And now the ITU recognized the site of Salvan “for its invaluable contribution to the Telecommunication Heritage.” But Marconi apparently never mentioned the name of Salvan, and this historical episode is not recorded in the archives of the Marconi Museum in Pontecchio. Why?

Index Terms— Electromagnetism, Marconi, Radio, Wireless

I. OLD MAN’S STORY

THE place is Salvan, a picturesque village in the Swiss Alps at the edge of the Mont Blanc range, close to the borders with France and Italy. In the 1960s, some senior citizens still remembered that during a summer, long, long ago, at a time when the village was a fashionable health resort, an event out of the ordinary had happened. They recalled — or their parents had told them — that a distinguished young foreigner used to roam around the area, accompanied by a local boy carrying flags, poles, and odd-looking equipment. They had also heard that, when he departed, the foreigner had left some electric wires in his rented room... [1]

Over the years, the local boy — Maurice Gay-Balmaz — had grown up, became a carpenter, and was getting quite old (Fig. 1). People started to fear that the story that he alone could tell would get irremediably lost, unless some steps were taken right away to record it permanently.

In 1965, two prominent Salvan citizens, Fernand Fournier and Jean Décaillet, recorded Gay-Balmaz’s story. In 1968 André Nüsslé, a radio reporter, came to interview him. They all heard and recorded a fascinating story — how, during a summer long ago, the distinguished young foreigner, called Guglielmo Marconi, had managed to transmit wireless signals over one kilometer, and then over one full mile [2].

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Fred Gardiol (retired) was Director of the Laboratory of Electromagnetism and Acoustics at the Swiss Federal Institute of Technology in Lausanne, Switzerland (phone/fax: +41-21-7297039; e-mail: fred.gardiol@hispeed.ch).

Yves Fournier is History Professor, Member of the Management Team at the “Collège de l’Abbaye,” Saint-Maurice, Switzerland, and President of the Marconi Foundation. (e-mail: yves.fournier@fondation-marconi.ch).



Fig. 1. Maurice Gay-Balmaz (1885-1975), 80 years-old at the time he told the story, about what had happened in Salvan some 70 years before.

Living in the district of Fontanil, which is today near the Martigny - Chamonix railway station, Maurice Gay-Balmaz was born in 1885. While playing in the area around his home, he was particularly intrigued by “a strange apparatus placed in the grass”. Marconi, who had rented a room in the chalet of young Maurice’s uncle, Mr. Ducret, noticed the child’s interest in his equipment. After having approached him and gained his confidence, he said to him, in almost accent-free French: “ So, you’re interested in that, are you, young’un? If you’d like to work with me, I’ll take you on.” The answer was as quick as it was affirmative.

This is how the boy Maurice Gay-Balmaz was allowed to carry the strange apparatus which a few moments earlier had fascinated him so much! Marconi’s generosity and kindness soon created a feeling of admiration in Maurice for this young man, who was completely different from other summer visitors. Despite the fact that this little job sometimes caused a certain tension with his slightly jealous young friends, and without realizing it, Maurice was to take part in one of the most important developments of our time by helping the young Guglielmo Marconi, who was soon to become a world-renowned engineer.

The big adventure began at Pierre Bergère, an erratic rock that overlooks the village of Salvan (Fig. 2). Marconi, perched on this monolith, was trying to send out waves with his transmitter, consisting of a battery, a Ruhmkorff coil, a Righi spark generator and an aerial. At the foot of this rock, four or five meters away, Maurice Gay-Balmaz held a rather curious receiver: a rod about two and a half meters long — that Marconi called an antenna [3] — from which ran a metallic wire probably attached to a Branly coherer, a battery and a bell. The material partially brought from Italy by Guglielmo and his brother Alfonso was ready to be put into action.

Here are some excerpts from the interviews, transcribed and translated into English [2]:

A: Mister Marconi was a tall blond young man, measuring about, in the vicinity of 1 m 80. He was very good-looking, he was very distinguished and very simple.

Q: So how did you meet Marconi, how did it happen that you worked somewhat with him?

A: Then we met in the street, he asked me for some information about the town, from here to there, and then he asked me whether I would like to carry his equipment during his experiments. Well, he had his apparatus and I had a small bell device with me. Then we started at a distance of about four to five meters and he... switched on his apparatus and it was to ring within my device.

Q: So in fact you had what one might somehow call a receiver and he had a small transmitter.

A: Yes, a transmitter. We started, if you know it, at the Shepherdess Stone, above Salvan.

Q: Yes, it is a rock of considerable size above Salvan.

A: He climbed on top of the stone and I went into a garden quite near. I would say about five meters away, more or less.

Q: And you held a pole?

A: Oh yes, I had the pole, and then a wire from the pole to my device, a small pole.

Q: And then, what happened?

A: Well, at first the bell would not ring, and then, after careful trials, evaluations and adjustments of his device, it did ring at that distance. Then I did...

Q: Do you remember, do you remember, when it rang, Marconi's attitude of when for the first time it succeeded?

A: His face was beaming with joy... he told me..., he signaled from the top of the stone: "it's fine, now it is starting to work!". He then asked me to move farther away, maybe one hundred meters away. And then it took some time... maybe half a day of trials before the bell rang again. But it did ring! He stayed on this stone and I went to the Evening's Rocks, i.e. 350 to 400 meters further, he did... it rang there finally. Then he came to the Evening's Rocks where I was and I went above Salvan, in the area of "Les Marécottes."



Fig. 2. The "Pierre Bergère" (Shepherdess Stone), the gneiss rock on top of which Marconi installed his transmitter.

Q: This was still much further, it was almost one kilometer?

A: ... A little close to one kilometer.

Q: And did it work out again?

A: We were signaling with flags, and it worked out!

Q: All this must of course have surprised you, were you... somewhat surprised that it worked?

A: Yes. Of course, without any wire at all, this was something extraordinary. And of course after the work we did together he would withdraw into his room and study... certainly, yes.

Q: In what way did the apparatus operate?

A: I cannot tell you that.

Q: Did the Salvan inhabitants know at that time who was Marconi or... ?

A: No, No, nothing at all, he was here as a... traveler, and that's all. And, well, a summer resident. No, they didn't know anything and when he left no one knew what it was.

Q: Did you at the time already realize the implications of these experiments ?

A: Not precisely, but... I had the feeling, well, that it still would not succeed... Phoning without a wire or... But... he did assure me that it would succeed and that he had very great expectations in this respect.

Q: Do you happen to know what brought him to Salvan, why he had selected Salvan to carry out his experiments?

A: I don't know at all, but I know that he had selected a mountain place to be quiet. But I do not remember why he had selected Salvan rather than some other town.

Q: Did he explain a little bit to you what he planned to do with his invention?

A: No, not at all at that time. No. I was too young, I was not...

Q: Then how long did you keep working with him ?

A: Oh... two months. Yes.



Fig. 3. Panorama from the “Pierre Bergère” (Shepherdess Stone) showing the places reached by the wireless transmissions, indicated by red dots. From right to left: Les Maraïches (5-200 m), Le Creté du Serré (~400 m), Ladray (~500 m), La Combaz (~400 m), and Les Marécottes (~1600 m).

Q: And later on, after Marconi left Salvan?

A: He left Salvan to go to Italy.

Q: Did you see Marconi again after he left?

A: No, never, he left, he then went to Florence.

Q: At some time later on, you must have bought a radio or at least you saw a radio. Did you realize that this also resulted a little bit from your collaboration?

A: Yes, yes, yes of course. I did indeed think that this was the work of Mr. Marconi while I was with him.

The researcher and his assistant gradually increased the distance from the transmitter to the receiver. From the Pierre Bergère rock, links were established with “Les Maraïches”, the “Rochers du Soir”, “La Combaz”, “Ladray”, the “Creté du Serré” and even what Gay-Balmaz called “a piece of land at the top of Les Marécottes” (Fig. 3). In the last case, the distance must have reached 1.6 kms. Maurice Gay-Balmaz sometimes had to move to transmit the test results, when the receiver was not in view of the transmitter. These errands did surprise the population of Salvan, not used to seeing people walking around with rods, “strange” instruments and flags!

Marconi spent a lot of time adjusting his apparatus, but also set aside moments for leisure. He liked to walk, and was fond of the views of the valley, from the “Vallon de Van” or from “Les Marécottes.” Although not very expansive, he was apparently highly appreciated by his hosts, who qualified him as a “pleasant person” and “highly distinguished and simple.”

After more than a month and a half of experiments, Marconi returned to Italy. The only tangible memories left in the area were a few copper wires forgotten in his bedroom.

Young Maurice hoped to see again the man who had fascinated him so much. He received a letter some time later: “...I was very proud to receive a letter from so far away... I never doubted that he would become famous one day. Although his letter asked me to spend a few days in Rome, I did not think to keep it! Alas, I was still very young, and my parents did not want me to leave. I replied to him with the clumsiness of a young school pupil, but I never saw him again in Salvan.”

Marconi had offered to pay for the trip, but it did not take place. Maurice Gay-Balmaz’s was greatly disappointed for a long time, and, almost seventy years later, during his final interview, he still expressed deep resentment with regard to his parents’ decision not to let him go.

Maurice Gay-Balmaz lived a peaceful existence in Salvan. After training as a carpenter, he took part in the transformation of a tuberculosis sanatorium at Le Bioley-sur-Salvan, where he later worked as “steward.” In 1912 he married Henriette Giovannini, from Florence. He later on moved to a building called “Le Mûrier” at Le Bioley, where he died at the highly respectable age of ninety.

On July 22, 1968, the “Radio Suisse Romande” broadcasted the main part of the interviews. But this broadcast did not make big waves... and did not reach the scientific community.

II. WHAT YEAR WAS IT ?

Gay-Balmaz said that he was twelve years old — so the encounter would have taken place in 1897. He also felt that Marconi was around 26 or 27 years old, pushing their meeting towards 1900! These dates cannot be correct, because by then Marconi’s waves were traveling over much longer distances.

In 1975, a memorial plaque installed on the Pierre Bergère indicates the year 1896 (Fig. 4). This date is also incorrect, in 1896 Marconi was filing patent No. 12-039 in London.

A careful examination of the sequence of events shows that the Salvan episode took place in 1895, i.e. around the very beginning of Marconi’s career — shortly after his experiments in the Villa Griffone, and before the gunshot signalling the transmission over two and a half kilometres. Gay-Balmaz was then 10 years old, Marconi 22. The full significance of Gay-Balmaz’s story appeared only years after the interview.



Fig. 4. The memorial plaque inaugurated in 1975 shows Marconi on the left, and the boy holding a pole on the right. But the date indicated, 1896, was later on found to be incorrect.



Fig. 5. The main street of Salvan, at the beginning of the 20th century.

III. SALVAN IN THE 19TH CENTURY : PRECARIOUSNESS

Typical of the Swiss canton of Valais, the population on the Salvan plateau was mostly pastoral during the 19th century. The indispensable element for survival — the raising of cattle and goats — often forced the farmers to risk their lives. The 1896 Valais Almanac recalls that haymaking took place “on rock faces where even goats dare not go”. The scarceness of grass constrained some landowners to mow minute fragments of precipitous parcels of land with sickles [1]. Fruit trees, vegetable plots, fields of potatoes, rye, oats or wheat enabled them to live almost self-sufficiently. .

To somewhat improve their everyday existence, or to buy the not-to-be-missed “town products,” the women wove, making linen and sheets, while the men worked in the forests, in slate quarries, or extracted rock crystals or blocks of ice in the upper parts of the valley (next to the Trient glacier). Some of them worked in neighboring France, descaling casks, an activity in which they had obtained an excellent reputation. However, even with some extra income, wealthy families were generally rare. A precarious existence was the fate of the large majority of people living in the valley.

The situation improved towards the end of the nineteenth century, as the picturesque beauty of the region began to attract summer visitors. The craze for unusual natural sites (gorges, panoramic views, etc) combined with the attraction of the mountain summits, encouraged more and more tourists to come to a village that soon gained the title of “resort.” Salvan was soon listed among the most popular of the time, evidenced by a phone network installed in 1897, three years ahead of Zermatt! A high quality hotel infrastructure was developed and Salvan welcomed many renowned writers and composers.

The virtues of its air and of its altitude, gave Salvan the reputation of a genuine health resort. Dr Gsell-Fels, a physician from the German-speaking part of Switzerland recommended Salvan as “an idyllic spot for a summer stay.” In 1880 E. Gross praised his native village: “Salvan is an excellent abode for everybody, but especially for those with fragile health. Everyone knows the importance of air for man’s health, and particularly of high quality air; nobody ignores the fact that under its beneficial influence... sick bodies pick up and blossom, strength is recovered as if by

some spell. Such are the effects of Salvan’s air, which have already been quoted several times. It is not the excessively strong and often harmful air of high altitudes; it is not the unhealthy air from the lowlands and the towns. It is the ideal in-between, sometimes so hard to find.”

Strengthened by this publicity and the increasing growth of visitors, the “Golden Age” of hotels, boarding houses and restaurants lasted until World War One. At the time of Marconi’s short stay in Salvan, the community boasted forty tourist establishments (Fig. 5).

IV. ABOUT THE BIRTH OF WIRELESS TELEGRAPHY

Man’s perennial need to communicate has always favored the emergence of original inventions. Centuries ago, means as varied as messengers, homing pigeons, smoke signals, and tom-toms were developed to convey information. They provided power for their users, and remained the exclusive property of small privileged groups. For a long time, communication remained limited either by its speed, in the case of a running messenger or a galloping horse, or by the distance covered by light that, in the best case, could not reach beyond the horizon.

Little by little, more elaborate methods were developed to transmit words and sentences, inaugurating genuine long distance telegraphy, such as Abbot Claude Chappe’s optical telegraph and Samuel Morse’s cable telegraph. Since 1850-1860, telegraphic cables were crossing continents and oceans. And then Graham Bell invented the telephone, another major technological advance. But developments relying on fixed cables cannot reach moving vehicles, such as ships. Wireless was still a dream for inventors at the end of the 19th century.

Electrical and magnetic phenomena were already known in ancient Greece, but the two domains remained distinct until 1820, when the Dane Hans Christian Oersted noticed for the first time that an electric current could influence a compass needle. The French physicist André-Marie Ampère elaborated a theory, and in England Michael Faraday introduced magnetic induction. In 1865 Scot physicist James Clerk Maxwell used these concepts to establish equations that form the basis of electromagnetic wave propagation.

But Maxwell’s equations did not show how electromagnetic waves could be generated and detected, and twenty-three years went by until in Germany Heinrich Hertz, in 1886-1887, found how to achieve it, with spark generators and patch antennas. But the distance covered was small, at most a few meters. In 1890, the French Edouard Branly developed the coherer, a more sensitive detector, increasing the distance considerably, and Sir Oliver Lodge improved upon this equipment. By 1891, Sir Henry Jackson, of the British Admiralty, reported wireless Morse code transmission over several hundred meters.

Even before then, many researchers had experimented with electromagnetism. As early as 1866 in the United States, the dentist Mahlon Loomis used two kites and atmospheric electricity to transmit some crude information across 25 kilometers. The great inventor Thomas Alva Edison noticed in 1875 that a spark in a telephone circuit induced other sparks on nearby metal objects: This effect was actually used by Hertz 11 years later!

The British David Hughes “almost discovered” wireless transmission in 1879 when a sensitive microphone of his invention detected spark noise at considerable distances — but his discovery was dismissed at the Royal Society as being a “simple effect of magnetic induction.” In 1882 a Kentucky melon grower, Nathan B. Stubblefield, wirelessly transmitted human voice over 800 meters... Thomas Alva Edison filed a patent in 1885 for an “electrostatic induction” system, made of two poles covered by plates. One plate was submitted to a high voltage, creating an electric field detected by the other plate — these were probably the first antennas. Around 1891 and 1892, several authors proposed to use Hertz’s waves for communications. These endeavors, and many others, are listed in a recent comprehensive “chronology of developments of wireless communications and supporting electronics” [4].

The prolific Serbo-Croat inventor Nikola Tesla, based in the United States, developed a wireless transmission system in 1893, and filed no less than eight patents in 1896, covering the generation of high frequency signals for wireless transmission. Tesla contributed important circuit designs but, to the best of our knowledge, he did not transmit wireless signals over large distances. In 1943, shortly after the inventor’s death, the US Supreme Court ruled that Tesla’s patents preceded those of Marconi, so that the latter’s were not considered to be valid in the US — it is interesting to note that the Marconi Company had sent royalty bills to the US Administration for the use of these patents, and this court decision implied substantial savings!

The Russian inventor Alexandr Stepanovitch Popov improved the design of the Branly coherer and made use of a wire aerial. In 1895, he presented a device to detect storms, and at the time also reported wireless transmission.

Meanwhile, in distant Calcutta, Sir Jagadis Chunder Bose generated and detected electromagnetic waves within the millimeter wavelength range. He built an impressive number of new devices, and developed more sensitive detectors, among others the first ones making use of semiconductors.

A lot of activity had taken place in the field of electromagnetism before Marconi’s experiments. The situation was apparently ripe for a breakthrough. But at the time people still generally believed that electromagnetic waves would never travel over large distances, and they felt that the recently installed network of telegraphic cables was quite adequate.

V. ABOUT THE LIFE OF GUGLIELMO MARCONI

Guglielmo Marconi was born in Bologna on 25th April, 1874, the son of a rich Italian landowner and an Irish mother, whose family possessed whisky distilleries in Dublin. He was only three years old when his mother took him to England, and English became his first language. Returning to Italy, he was taught by a private tutor and only went to a “real school” when he was twelve years old. He kept rather bitter memories of school, having been treated like a foreigner because of his English accent. For a period the family lived in the harbor city of Livorno, and Guglielmo received a sailing boat from his father, a present that gave him his love of the sea and created his desire to find a system to communicate with ships.

An old and virtually blind telegraph operator taught young Marconi Morse code. At the Istituto Nazionale in Livorno, he was strongly attracted towards sciences, but in such an exclusive manner that it caused the despair of his teachers and his father.

Confronted with his poor school results, his mother arranged for him to have private lessons. At the Vincenzo Rosa laboratory of the Niccolini Lycée in Florence, he acquired his first solid notions of physics and mathematics with Professor Giotto Bizzarini. He tried unsuccessfully to enter the Naval Academy in Livorno and the University in Bologna.

In 1894, while staying in Andorno, near Santuario di Oropa in the Italian Alps, Guglielmo Marconi read with great interest an article about the recently deceased Heinrich Hertz. He foresaw right away the revolutionary potential of Hertz’s waves for communications, and decided to transmit a message without any wires linking the transmitter to the receiver. He had attended some lectures by Professor Augusto Righi at the University of Bologna, and saw Righi’s wireless experiment. He started to work relentlessly in his attic laboratory, in the family’s “Villa Griffone” in Pontecchio. Guglielmo was a genial tinkerer, interested in anything mechanical or electrical, and he possessed an exceptional practical sense that enabled him to apply new information as soon as it reached him [5].

The attic soon became too small, he moved his equipment into the garden, in full view of family, visitors and servants. At first, pleased with the interest encountered, he later disliked time-consuming interruptions. He knew that his cut-and-try endeavors, if successful, would lead to a significant breakthrough, and he wanted to avoid any premature disclosure.

As he said much later: “... the idea was so elementary, so simple in logic, that it seemed difficult for me to believe that no one else had thought of putting it into practice ... there must be many more mature scientists than myself who had followed the same line of thought and arrived at an almost similar conclusion” [6]. His eldest daughter Degna revealed that her father felt a ghost haunting him, afraid that someone would steal his secret [7]. At Salvan in 2001, Marconi’s youngest daughter Elettra said that her father was looking for a quiet place, where nobody would understand what he was doing.

The “climacteric resort” Salvan was quite renowned at that time, and Marconi might have been sent there to recover from a respiratory ailment. He probably came by train to Vernayaz, a village served from 1859 by the Simplon railroad, (but the Simplon tunnel was still to be excavated) and took the “route du Mont,” the only way linking the valley with Salvan. Mules probably took him over the forty-three switchbacks of the road (the Martigny - Châtelard railway was not built until 1906).

Arriving in Salvan, Marconi was a summer visitor, just like many others, except for two curious apparatuses to which he gave a great deal of attention. He looked for accommodation for himself and his elder brother Alfonso, and rented a chalet belonging to a certain Mr. Ducret. A week later, his brother returned to Italy and Guglielmo, left alone, moved into a room on the second floor of a house belonging to Pierre Alexis Revaz (better known as “Tripette”), on a street with the predestined name of “Millionaires’ row”!

After the Salvan episode that Maurice Gay-Balmaz described, Marconi returned to Villa Griffone and pursued his tests, reaching 2.5 kilometers by the end of 1895. Flags were no longer sufficient for signaling, and a gunshot announced the success [7]! Marconi tried to exploit these astounding results, but did not find support in Italy: no one took this unknown young man without academic background seriously ... [8].

His mother then brought Guglielmo to London, and in 1896 he filed patent No. 12'039, "Improvements in transmitting electrical impulses and signals and in apparatus there-for," — granted the next year. In 1897 too, a wireless transmission, recorded by the British Post Office, reached 14 kilometers in the Bristol Channel [9]. With the help of cousins in banking, Marconi set up a wireless telegraph service, which later became the Marconi Company. A signal crossed the English Channel in 1899 and in 1901 Marconi managed the incredible feat of sending a wireless message across the Atlantic, from Poldhu in England to Signal Hill in Newfoundland [10].

His accomplishments earned him great honors, including fifteen "honoris causa" doctorates and important rewards throughout the whole world, culminating with the Nobel Prize for Physics in 1909. He kept traveling around the globe and kept a close watch on his commercial ventures, until a heart attack ended his activity in the early hours of July 20, 1937 [11]. We all know what followed: can we imagine our world today without radio, TV, and cellular phones?

A question is often asked: who invented radio? Actually, radio was not invented by any single person, but resulted from a long string of developments, with many contributors. Marconi played a key role in wireless telegraphy, being the first to push wireless transmission beyond the 1, 10, 100, 1000 kilometer marks. He also proved that wireless transmission can reach beyond obstacles and is not limited by the horizon.

A key to Marconi's success is that he realized, quite early in his research, that his activity had to be self-supporting: he therefore set up a commercial wireless telegraph service that ensured some financial independence. In sharp contrast, other researchers spent considerable time and effort locating sponsors, and some even died in abject poverty — like Nikola Tesla feeding pigeons in Central Park!

VI. THE MARCONI MUSEUM IN SALVAN

In order to celebrate the hundredth anniversary of the original Marconi patent, the Township and the Tourist Office of Salvan organized an exhibition, with the support of the Swiss Post Office and the Auditorium Museum in Montreux [12]. This exhibition has been regularly upgraded, becoming permanent within the Marconi Museum, which has welcomed more than 50'000 visitors (open during the summer and on request). Visitors can test modern replicas of vintage equipment, similar to that used by Marconi in 1895, see sparks sprout from the generator (fig. 6) and hear the receiver's bell ring. In addition to a collection of old radio receivers and movies, they can also listen to the original 1968 interview of Maurice Gay-Balmaz, in which, despite his old age, he had kept a vivid memory of the days spent with Marconi.

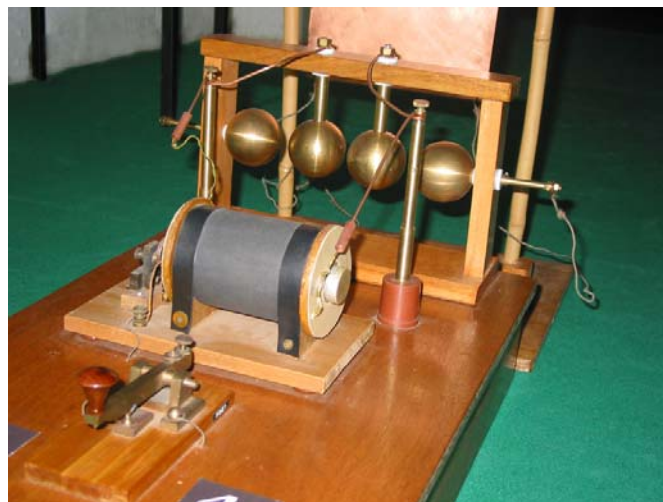


Fig. 6. Modern replica of a wireless transmitter like the one used by Marconi (Marconi Museum, Salvan).

The village of Salvan, at 7 kilometers from Martigny in the Rhone valley, is located on the "Mont Blanc Express" railway line that joins Martigny to Chamonix, and can also be reached by a good road. In 1895, there was only a winding mule path climbing from Vernayaz 480 meters below — athlete visitors can still climb this path to reach Salvan! The web site www.fondation-marconi.ch provides detailed information, in particular about openings times and dates.

A "Marconi path" starts in front of the Museum and climbs towards the monolith on which Marconi had placed his transmitter (fig. 2). It leads to several places where signals had been received, and ends at the house where Marconi stayed, on "Millionaire Row." Descriptive posters in French, German and English describe the particularities of what was then a fashionable resort, explaining in a nutshell some of the first wireless experiments carried out in a mountain area.

VII. THE IEEE MILESTONE

Feeling that this major episode in the development of wireless deserved more widespread recognition, the authors got the location "officially" acknowledged by the IEEE.

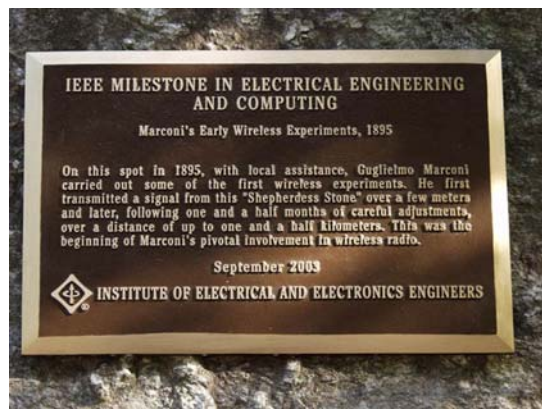


Fig. 7 The IEEE Milestone installed on the Pierre Bergère in Salvan..



Fig. 8. Participants to the mini-symposium in Salvan, from left to right: Prince Guglielmo Marconi Giovanelli, Prof. Fred Gardiol, Princess Elettra Marconi Giovanelli, Prof. Juan Mosig, Prof. Gabriele Falciasecca, and Prof. Yves Fournier.

They prepared the necessary documents and the IEEE Switzerland Section submitted them to the IEEE History Center. Experts scrutinized them, responded positively, and acknowledged Marconi's early wireless experiments in Salvan by granting an "Historical Milestone in Electrical Engineering and Computing." Mr. Raymond Findlay, IEEE Past President dedicated a commemorative plaque on 26 September 2003 (fig. 7), in the presence of Princess Elettra Marconi-Giovanelli, youngest daughter of Guglielmo Marconi, of Mr. Pascal Couchepin, President of Switzerland, and of other dignitaries [13]. The speakers at a concomitant mini-symposium recalled that Salvan had been the theatre of a major event in the history of Electrical Engineering and of mankind, which brought peoples closer together (fig. 8). Through his intelligence and doggedness of purpose, Marconi, promoter of wireless communications, provided an example of creativity and inventiveness to younger generations.

VIII. SALVAN, WORLD TELECOMMUNICATIONS HERITAGE



Fig. 9 From left to right: ITU Secretary General Hamadou Touré, ITU Chairman of the Board Frédéric Riehl, and Professor Yves Fournier.

An important delegation of the International Telecommunications Union (ITU), based in Geneva — some wavelengths away from Salvan — visited the site on 9 September 2007 under the guidance of Dr. Hamadou Touré, ITU Secretary General (fig. 9). He declared: "Coming to Salvan is in fact a pilgrimage. As an engineer in satellite communications and ITU Secretary General, it is a privilege for me. Tomorrow's world will be more and more placed under the sign of Hertzian communications, and the great inventor Marconi will remain for ever a guide for all of us."

Dr. Touré also felt that Marconi's experiments in Salvan should be properly acknowledged, so that the ITU recognized the site of Salvan "for its invaluable contribution to the Telecommunication Heritage." A commemorative plaque will be installed on the Shepherdess Stone on September 26, 2008. A short scientific colloquium will be organized to outline the significance of the process that started in that location more than a century ago.

IX. QUESTIONS RAISED, AND SOME ANSWERS

Dr. Barbara Valotti, curator of the Marconi Museum in Pontecchio, near Bologna, recently raised some very pertinent questions [14]:

Q: Is the witness of a 80-year-old man, who is recalling an episode that happened when he was a 10- year-old boy, the only evidence of such an experiment?

A: The testimony of Maurice Gay-Balmaz is indeed a key element. But in the 60s, when interviews were recorded, other people in Salvan — no longer with us — still recalled these long past events, and their testimony prompted the interviews.

Actually, the question was asked more bluntly in a British journal, wondering whether Maurice Gay-Balmaz may not have made up the whole story to impress his wife [15]. But Mr. Gay-Balmaz was a quiet and unassuming gentleman, of utmost probity, who hardly realized the significance of what he was saying. And how could a simple carpenter, with a rather limited scientific background, make up such a precise and technically relevant report?

Q: Is such evidence enough to "certify" a historical event?

A: A number of people feel that it is. When a plaque was installed on the "Pierre Bergère" in 1975, the event was reported in Swiss and Italian newspapers. When the Salvan authorities celebrated the hundredth anniversary in 1996, Professor Gian Carlo Corazza, president of the Marconi Foundation in Italy, presented the Mayor of Salvan with a beautifully engraved silver plaque portraying the Villa Griffone and the Marconi Mausoleum (the plaque can now be seen in the Salvan Marconi Museum) [12]. Guglielmo Marconi's youngest daughter, Princess Elettra Marconi Giovanelli, visited Salvan in 2001 and 2003, and wrote a preface to ref. [1]. And when the IEEE recognized the site as a "Historical Milestone in Electrical Engineering and Computing," none of the learned committees that approved the proposal voiced the slightest objection — they merely deleted the name of Gay-Balmaz, replacing it by "local help"!

Q: Guglielmo Marconi wrote many papers and memories, and he had numberless biographers: in none of these, to the best of my knowledge, there is evidence of the Salvan experiment.

A: As noted above, the Salvan experiment was reported in Swiss and Italian newspapers in 1975.

Some years ago, four notebooks reporting young Marconi's early experiments were found in the Villa Griffone, but they cover the 1891–1893 period, before Marconi's involvement in wireless and the Salvan episode — the “numberless biographers” certainly did not know of them either [5]. Aren't some 1895 notebooks still waiting somewhere to be discovered?

Many years later, in an unpublished report cited by Dr. Valotti in ref. [14], Marconi recalled that “...for months I lived the life of a hermit... I knew I would succeed, but I knew that success would require hard work and faith in the final results... In those early days I found two local youths who were prepared to help me... They did not always understand what I was doing, but they were fired by my enthusiasm.” This is precisely the “modus operandi” used by Marconi in Salvan, according to Gay-Balmaz's story!

There are also indications that, around the same time, Marconi was sighted in Cap d'Antibes, in the south of France, trying to communicate with a ship [16].

Q: In any case, in what ways and for what reasons would the Salvan experiment be more important than Pontecchio ones?

A: The Salvan experiment and the many Pontecchio ones belong to a long string of significant events, which started in Andorno and extended all the way to the coast of Newfoundland. How can one determine whether one of them is more or less important than another? Marconi kept repeating experiments, checking and rechecking the results obtained in a variety of geographic locations.

Q: If the Salvan experiment was so crucial, why didn't Marconi ever report it?

A: During his career, Marconi carried crucial experiments all over the world. Did he report the places and locations of every one of them? He might have had some reason not to mention Salvan... But this will remain an open question!

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Fred E. Gardiol (S'68–M'69–SM'74–F'87–LF'01) was born in Corsier, Switzerland in 1935. From 1938 to 1946 he lived in Argentina, returning then to Switzerland. He graduated in Engineering Physics at “Ecole Polytechnique de l'Université de Lausanne,” Switzerland, in 1960, received the MSEE degree in Electrical Engineering from the Massachusetts Institute of Technology in 1965 and the Doctorate in Applied Science from Louvain University, Belgium, in 1969.

He developed high power microwave ferrite devices (Raytheon SMDO, Waltham, MA, USA 1961-1966), joined then Louvain University, Belgium, becoming Assistant Professor in 1969. From 1970 to 1999 he was Professor and Director of the Laboratory of Electromagnetism and Acoustics (LEMA) at the “Ecole Polytechnique Fédérale de Lausanne,” Switzerland (Swiss Federal Institute of Technology). He retired at the end of 1999. He was also Visiting Professor in Canada, Algeria, Brazil, India, Japan, France, Italy and Cameroon. He has authored or co-authored three books in French and five in English. He has contributed more than 300 publications and presentations at symposia, on microwaves, waveguides, microstrip (circuits and antennas), and computational electromagnetics.

Professor Gardiol was chairman of the IEEE Switzerland Section in 1975-76, founder and first chairman of the IEEE Swiss Joint MTT + AP Chapter, member of the IEEE-MTT Speaker's Bureau (1988-89) and of the APS AdCom (1988-1990). He is an Associate Editor of the IEEE Antennas and Propagation Magazine. He organized the 4th. European Microwave Conference (EuMC) in Montreux in 1974 and chaired the EuMC Management Committee from 1973 to 1976. He received the 2004 Distinguished Service Award of the European Microwave Association. He chaired the Commission B of URSI from 1990 to 1993, the Swiss National Committee of URSI from 1979 to 1992. He was a consultant for the ITU. He is a member of the Swiss Alpine Club, and a member of the board of the Marconi Foundation (Salvan).

Yves Fournier was born in Martigny, Switzerland, in 1964. He graduated in contemporary and Swiss history from Fribourg University in 1992, and has also followed a course in public relations (organizational communication) at the University of Quebec, Canada.

He is at present history professor and member of the management team at the “College de l'Abbaye” in Saint-Maurice, Switzerland. After completing a thesis on the inter-war years for his history degree, he was awarded first prize in the SHVR contest in 1993. Author of numerous articles concerned with political ideology and international history, he has also been a scientific collaborator for the *Dictionnaire historique de la Suisse DHS* (official Swiss Historical Dictionary) and for various journals including *l'Année francophone internationale* (Quebec). Following the publication of his book “*Salvan, sur les pas de Marconi*” / “*Salvan on Marconi's Footsteps*” (1996/2000), he contributed articles in *EMEA Channels* (London, 2001) and in the magazine *TRACES* (Swiss Association of Architects and Engineers), Lausanne, 2002.

Professor Fournier is President of the Marconi Foundation (Salvan, Switzerland), which received worldwide recognition from the IEEE in 2003 (Milestone). He received the honorary title “Cavaliere dell'Ordine al Merito della Repubblica italiana” in 2004.