

First Spanish Ham Radio Congress

Enrique Fraile Algeciras (EA3BTZ)¹; and Isidoro Ruiz-Ramos García-Tenorio (EA4DO)²

¹ Unión de Radioaficionados Españoles, Barcelona, ea3btz@telefonica.net, Spain; ² Archivo Histórico EA4DO, Unión de Radioaficionados Españoles, Madrid, ea4do.isi@terra.es, Spain

Abstract — From the beginnings, the radio electric science has been a constant research field that has lasted until our days, but the great work done by the Amateurs at the early twentieth century had its worldwide recognition during the short waves conference celebrated in Barcelona during the 1929 International Exhibition Fair, just six years after the amateurs had crossed the Atlantic ocean for the first time in short wave.

After the year 1912 the Amateur long wave experimentation was forbidden in United States and the Amateurs were exiled to experiment in the waves below the 200 meters. But the constant successes achieved by these radio Amateurs, allowed them to discover an enormous advantage in the use of short waves for professional purposes.

Over the years, and in the heat of wireless telegraphy development, the radio electric science was separated in two branches, separating them in “Amateurs” and “professionals”. While the professionals are dedicate themselves to the expensive radiotelegraphic governmental facilities or assemble the first broadcasting stations, the worldwide Amateurs continue experimenting on even more high frequencies, joining easily “ by wireless” to other Amateurs within the five continents.

And that’s how, in the Barcelona of 1929, we can find well joined, under the Amateur coordination, the best scientist, professors, teachers and radio professionals, in such a way to discuss there the most recent experiences and advances on short wave theory know until those days.

Index Terms — Short Wave, Ham Radio, Barcelona, 1929 International Exhibitions Fair.

I. INTRODUCTION

At a [1] time when amateur radio had officially been banned in Spain since 1908, the few amateurs in what were known as the "Radio-electric Sciences" were nevertheless experimenting with their Runkorf reels.

Although amateurs were banned from carrying out such experiments, they started testing in secret. First they managed to transmit the sparks a few feet away, then tens and hundreds of meters, and, finally, several kilometres. In those days, most ships were equipped with their own spark stations, and most amateurs likely to try to contact them. What is more, their activities caused great interference with the radio spectrum. This was the main reason why in 1912 amateurs all around the U.S.A. were restricted to performing their radio electrical activities in the radio spectrum of wavelengths below 200 meters.

The main goal was to avoid any interference with the maritime traffic and, it would appear that they wrongly believed that such short waves were totally useless. They were

completely mistaken. Amateurs quickly realised the potential of short waves and the advantages they had over long waves.

Some years later, as a result of the constant evolution and technical advances made by radio amateurs since the beginning of the 20th Century, they decided to hold the “Short Wave Days”. This event turned to be the First Spanish Amateur Radio Congress, held in 1929 in Barcelona.

II. AMATEURS AND BROADCASTING STATIONS

As well as working in Morse code, amateurs using wireless radiotelegraphy also started to develop the technology associated with phone transmissions. In the majority of developed countries, the second decade of the 20th Century saw the growth of phone transmissions for general information, music and even time and frequency signals.

At that time, amateur radio was totally forbidden in Spain. This changed in 1923, when the government and related authorities relaxed the laws, allowing radio amateurs to go further with their activities. From then on, it was not uncommon to see the schedules and frequencies of amateur stations published in newspapers.

As time went on, there was a clear trend among all those interested in wireless telegraphy. In fact, two distinct branches were born. On one hand were all the radio amateurs, and on the other were the so called “professionals”. The fact is that plenty of amateurs became “professionals” and some of the pioneer radio stations were created thanks to their skills, effort and hard work.

It was not until 1923 that the “Dirección General de Comunicaciones” started to set guidelines for the operation of private radio stations in Spain. A year later, in 1924, they published regulations for the operation of private radio stations. From then on, both amateur and broadcasting stations were assigned specific licenses. This was the start of a new era where amateurs, devoted to the Amateur Radio-Sciences, and professionals involved in broadcasting stations began to go in different directions.

The strict Spanish regulations forbid amateur stations from transmitting press releases, music concerts, conferences and commercial news. In 1930, following the directions of the Technical Advisory Radio Communications Committee held in The Hague in September 1929, Spanish amateurs were exiled and forced to perform such “broadcasting” transmissions using the so called “5th category” stations.

III. EXECUTIVE COMMITTEE ORGANISATION

During the Barcelona International Exhibition held in 1929, a group of Catalan amateurs led by Dr. Luis Cirera Terré, EAR-106, decided to book a stand at the Projections Palace. Their idea was to exhibit their material with “extra-short” waves. This included the cards they used to send to confirm contacts or SWL reports, several pictures, equipment such as transmitters and receivers as well as graphs related to their activities.

They also decided to hold what they called the “Shortwave Days” and they invited well-known scientists to attend the meetings.

Gradually, [2] some of those who had attended the conference joined different organisations.

Dr. J. Baltá Elías, EAR-54, became a representative of the Spanish Association of Amateur radio engineering (EAR). Mr. E.J Ferrer, EAR-25 became Catalonia Radio Club President, Mr. Elizalde, EAR-142, was the Catalonia Radio Club vice-president, and Mr. A. Estublier, EAR-31 were among some of the most active radio amateurs who undoubtedly contributed to the outstanding success of the show.

Thanks to their perseverance and the constant support they received, they won over plenty of new members.

Mr. Miguel Moya, EAR-1, President of the Spanish Association of Amateur radio engineering (EAR), brought not only his unconditional moral support, but also a donation which, with no doubt, was extremely helpful to launch the organization.

Radio Barcelona EAJ-1, allowed the use all their facilities and antennas in order to publicise events and meetings.

The National Association of Broadcasters provided both financial and moral support.

The Catalonia Radio Club and their members as main organizers of the "Shortwave Days" meetings held with the official opening of the stand.

This enthusiastic group of amateurs worked really hard not only to get the support of the “Diputación” and the Barcelona City Hall, but also to attract world renowned scientists to attend and participate in the “Shortwave Days”.

The main purpose of organising the show at the stand and also the related lectures on amateur radio topics was to attract as many EAR amateurs as possible. They also wanted to project the right image of the association’s activities and members. As a result, they showed that Spanish amateurs, although not few in number, had an excellent knowledge of technical topics and were as skilled and as willing to organise themselves as other groups abroad. This was how the “Shortwave Days” became the First Spanish Ham radio Congress.

Finally, the Executive Committee of the "Shortwave Days", representing the EAR Association (Spanish Section of the International Amateur Radio Union) at the International Exhibition of Barcelona included the following members:

Honorary Chairman: Eng. Miguel Moya, EAR-1
Chairman: Dr. Luis Cirera, EAR-106
Vice-Chairmen: Dr. José Baltá Elías, EAR-54
Eng. Enrique Ferrer, EAR-25
Secretary: Eng. Francisco Baqué, EAR-35
Treasurer: Eng. Salvador Elizalde, EAR-142
Members: Eng. José Ramon Sanchez, EAR-61
Eng. Alfonso Lagoma, EAR-29

IV. “SHORTWAVE DAYS” OPENING

The opening session of the “Shortwave days” conference was held on the 15th of November at 11 a.m. [3] the event was held at the auditorium of the Royal Academy of Sciences and Arts.

The chairman was the Catalonia Army General, Mr. Emilio Barrera, accompanied by distinguished guest and attendees (political appointments, ecclesiastical authorities, university members of the board).



Fig. 1. “Shortwave days” Inaugural Session in the Royal Academy of Sciences of Barcelona

After a warm welcome to all the attendees, Dr. Luis Cirera, EAR-106, chairman of the organizing committee, briefly explained the work done and the background behind it. Following Dr. Cirera’s introduction, Dr. Baltá, EAR-54, succinctly presented the program of events and the goals of the conference.

Later on, the engineer and EAR Association chairman, Miguel Moya, EAR-1, gave a lecture on “Short waves in Spain”. He explained how shortwave transmissions were widely used among Spanish amateurs and he also talked about the important role they would play in the future. After Mr. Moya’s talk, General Barrera declared the “Shortwave Days” conference officially open, thanking all the distinguished attendees for their support and concluding the inauguration session.

V. LECTURES

After the official opening came the eagerly awaited lectures and presentations. Professor Blas Cabrera, Chancellor of the “Central University” started with an interesting topic, “Shortwave transmission troubles”. The chair for the session was Dr. Alcobé, Vice-Chancellor of the same university.

With an impressive knowledge and background, Dr. Cabrera was a well-known expert in the field. His lecture was presented in a very clear way so that everybody would easily understand the nature of these problems. He dealt with complex and high relevance scientific topics with a popular science approach in order to reach all the attendees.

He pointed out and explained the difference between the wavelengths of kilometres and those of tens of meters. He confirmed that they could be compared and depicted as the difference between the visible light wavelength and that of the X Rays. In fact, he tried to establish the parallelism between light phenomena and those related to electromagnetic radiation. Later on, he introduced a bit of controversy when he mentioned the possibility of communication with other planets. In the event that Mars had inhabitants with a development level similar to that of our precious Earth, he stated that it would not be possible to reach a bilateral communication through Hertzian waves. He presented the main arguments explaining the role of the atmosphere and the mirror effect in some of the intermediate layers. He explained that the transmitted electromagnetic waves were reflected towards the earth once they reached those layers and that the same would happen with electromagnetic waves coming from the outer world. Unfortunately, they would never reach the Earth and they would bounce back to their origin.

The “Press House” at the International Exhibition Centre was the scenario of other interesting lectures which started around 4 pm.

Assistant Professor René Mesney gave a talk on the interesting topic “Shortwave propagation”. He tried to explain to which point research about the propagation process was contributing to the understanding of wave transmission and the noticeable change in signal strength between night and day, and even within seasons. He explained that the main reason was the ionization process of the different atmosphere layers, something that was also pointed out by other renowned scientists around the world. Last but not least, he described how the increase of transmission power was significantly cutting down silent zones.

Then it was the turn of Telecoms Engineer, José Feyto Balaguer, who gave a lecture entitled “Some notes and remarks on shortwave transmission and reception”. He introduced a new subject dealing with equipment design and construction, focussing on the extra-shortwave station located in Prat (Barcelona) which was transmitting on the 31,8m band. The station was built around two 10 KW Marconi valves with an external cooled anode.

After a clear introduction explaining the operation of double-heterodyne receivers and their drawbacks, he continued his lecture making references to the reception of EAX signals all around the world. Most Spanish ships were receiving press news which was transmitted daily at 2 am. The main goal was to test long range reception.

Later on, the Industrial Engineer Celso Mira together with the radiotelegraphy officer Mr. Vidal Ayuso, EAR-40 delivered a lecture entitled “Madrid-Barcelona: one year of daily communication”. Using their scientific experience they pointed out the good job performed by amateur stations. Some articles published in an American magazine in 1925 had fuelled interest in shortwave propagation, leading to the design and construction of the EAR-40 station. They wanted to do some tests and studies in that zone of the radio electric spectrum. They presented the characteristics and features of the equipment they had used both in Barcelona and Madrid, explaining that they basically operated on two bands, 35m and 48m, defining clear rules in order to clarify the interpretation of the obtained data. After two years of experimenting, they had come to the conclusion that with a balanced and progressive variation of the wavelength of the low power shortwave transmitters (QRP), they were able to guarantee signal reception with a stable and constant strength along the whole year and at any time during the day or night. This assertion was valid for a defined distance between transmitter and receiver.

Next, Mr. Rosendo Sagrera Durán, EAR-60, gave a talk about “Languages and QSLs”. Again he brought attention to an interesting subject which addressed the language in which amateurs should communicate. Once more, controversy was incited. While some had a “universal language” such as Esperanto or Ido in mind, some others were in favour of using the languages of relevant scientists and researchers. Suggestions were the German language as a tribute to Hertz, French in tribute to Branly, English because of Maxwell, Italian obviously with reference to Marconi, and last but not least, Spanish as a tribute to Torres Quevedo. The same problem occurred when they had to send the QSL cards in order to acknowledge the radio communication contacts. In the end they agreed that everyone had to be free to use his or her own language.

After that, Dr. Luis Cirera Terré, EAR-106, expounded upon a quite common trouble they had to face in the big cities. The title of the lecture was “Shortwave reception disturbances in big cities and medical QRM”. It was a very interesting lecture since it was devoted to the troubles derived both from natural disturbances such as the atmospheric (QRN), storms and lightning which unfortunately were not under human control, and also those caused by so called “industrial noise” (QRM). The main sources of this were the tramways, the electric motors working both in companies and also in the small ones within big cities, electromechanical bells and especially electro-therapy equipment.

Dr. Cirera explained the need to set up protective devices to minimize these kinds of disturbances. In fact, amateur radio operators were only able to perform shortwave communications when the radio spectrum was free of those interferences.

Regarding the research done by Mr. Santiago Maymi, EAR-105, concerning "A Hartley oscillator linked to a neutralized amplifier", he presented a summary of the results attained after performing an exhaustive set of tests. The study was focused on how to avoid the shifts in the oscillator wavelength derived from the antenna swing and especially from the feeders in Hertz antenna.

Finally, Mr. Andres Planes Py, F8SEI, representing the REF Association (Réseau des Emetteurs Français) gave a talk entitled "Notes on the use of shortwave emitter and receiver circuits by radio amateurs". This was an outstanding lecture which captivated the attention of all the attendees. He reviewed the most common shortwave equipment in use by amateurs and gave an in depth description of the operation of receiving circuits, such as the most simple one based on a single valve detector which was easy to build but with quite a hard alignment. He ended his lecture with a description of the "zeppelin" antenna, one of the most popular aerials in use among amateurs.

Around 19.30 pm, Dr. Blas Cabrera started his lecture, "The atom as an emitter of electromagnetic waves". The location of the lecture was the Machinery room of the tests laboratory belonging to the "Real Politécnico Americano". The lecture immediately became a master class on the electromagnetic theory based on Hertzian waves. He concluded that visible light and Hertzian waves had a totally different origin.

The second session was held on the 16th of November in the Meeting room of the Press House. Dr. José Baltá Elias, EAR-54 gave a lecture on "Shortwave propagation anomalies detected in Barcelona". He presented some outstanding research with an in-depth analysis of all the factors affecting propagation of all frequencies between 3 and 28 Mhz (from 100m to 10m wavelengths). He first explained the perceived day-night, summer-winter variations, basically caused by the so called ionospheric effects. Then he explained the meaning of "fading" or the strength variations known in French as "scintillement" which were closely related to meteorological variations. He closed his lecture with a rough description of all the equipment used and the results attained by all the observers based in Barcelona.

Later on, Mr. Enrique Ferrer, EAR-25, proposed a rather interesting lecture with the generic title "Electricity". He tried to explain the relationship between electricity and natural physical phenomena. He suggested that signals produced millions of kilometres away from the earth could probably be received after a long journey through open space. He also stated that the sun was not only producing heat radiation, but also very strong electromagnetic waves which could disturb

normal operation of telephones, telegraphic devices and obviously all amateur radio equipment.

Next, Mr. Francisco Delgado, EAR-19, spoke about the topic "A year of communications between Paris and Teruel". He explained that they had scheduled contacts with Paris every Friday at 23.00 GMT on the 42-43m bands. In the course of his humorous presentation, he explained to the audience how amateur radio contributed not only to the improvement of his knowledge of the French language, but also to his knowledge of geography, as well as contributing to international relations.

Later on, Mr. Alfonso Estublier, EAR-31, gave a talk on "Amateur TV transmissions". Without going in depth into technical details, something which would only have been understood by a very small audience at that time, he explained how the Radio-vision and not the television, as they wanted to name it, worked. The concept here was that Radio-vision dealt with the transmission of motion images, something which was quite similar to cinematography. He briefly explained how those images were generated within the transmitter and also the receiver circuits involved, as well the physical means used to project the image (CRTs, neon tubes and photoelectric valves)..

Following Mr. Estublier, it was the turn of Mr Juan Castell, EAR-30, who insisted that the efficiency of the low power (QRP) shortwave emitter was directly related to its simplicity. The secretary of the Catalonia Radio Club emphasized the role played by all the amateurs devoted to experimentation and all their valuable contributions. He told that he was sorry to realise that amateurs were not treated respectfully by some of the radio organisations. Later on he showed how to improve the popular Colppits, Hartley and Ultraudion oscillators to use them to transmit short waves at QRP levels.

Before the last lecture, Mr Santiago Maymi, EAR-105, gave a talk on the "Shortwave receivers using screen grid valves". He described how the innovative screen-grid valves were used as RF amplifiers in the new shortwave receivers.

The last lecture of the morning was again by Assistant Professor René Mesny. He introduced a new topic, "Telephotograph fundamentals". In a very straightforward and simple way, this instructor and officer of the French navy explained how a Photo-telegraph Emitter worked. He introduced the transducer concept and how a photoelectric cell was able to turn a light level into an electric signal. He similarly explained how the Belinograph (Arthur Korn) worked. His background and knowledge allowed him to give his personal perception about the evolution of telephotograph and he advanced their future use not only for journalists but also for the police and meteorologists.

At 6 pm, Mr. René Mesny gave another lecture in the "Diputación" meeting room. The title was "Beaming transmissions". It was an interesting speech on the way directivity could be reached by using linear antenna arrays, either with vertical or horizontal polarization. There were two main approaches to reach the target: either by modifying the

phasing or, alternatively, by the introduction of reflectors. Until then, it had been really very hard to test both methods with long waves, but the effectiveness was confirmed by tests carried out with wavelengths from 15m to 30m.

One hour later, the audience attended a ground-breaking lecture. Professor Blas Cabrera, with an extraordinary background and knowledge, introduced an interesting subject. The lecture, "Electromagnetic waves and light", allowed Dr. Cabrera to review the theories of Newton, Huyghens, Fresnel, Maxwell, as well as other scientists such as Einstein. Likewise, he explained his ideas around the evolution of the electromagnetic theory which, at that time was still in its infancy. For sure, the younger attendees would have plenty of time to study and do some research on those topics.

The 17th of November was the last day of lectures held at the University of Barcelona. Assistant Professor René Mesny dealt with a new subject. The lecture was about "Ultra-short waves". He concentrated on the research and progress of the use of what they considered ultra-short waves. At that time, those were wavelengths below 10m. Until then, the experiments and tests had been done with wavelengths from 3m to 3,5m and also from 1m to 1,5m. They were unable to reach long distance communications basically because of the main constraints we know today. This included visibility of the points to be connected, obstacles in-between, terrain features and some other factors that they were still analysing and studying. The research done at the labs had already achieved wavelengths of 13cm. Mr. Mesny pointed out how difficult it was to build the equipment to be used with such ultra-short waves. However, he also explained that those ultra-short wavelengths would probably find their place in communications between ships, coastal stations, aeroplanes, submarines, etc. as well as in plenty of other applications that they could not imagine.

When Mr. Mesny finished his lecture, Colonel Gil Clemente, chairman of the Radio telecommunications Technical and Inspection Committee closed the session. In his conclusive talk he emphasised how they had contributed to the development of so called Radio-Science in Spain.

VI. EARS GENERAL MEETING

The General Meeting of the EAR Association was held in the Press House on the International Exhibition grounds on the 16th of November at 10 am. The Chairman was Mr. Moya, EAR-1, who was also the chairman of the EAR Association (based in Madrid) and with the following representatives: Mr. Baltá Elias, EAR-54 (Catalonia), Mr. Delgado, EAR-19 (Teruel), Mr. Ferrer de Barcia, EAR-47 (Mallorca). Several other EAR members supported the meeting and they got also unconditional support from Madrid and the Canary Islands. Mr. Moya proposed starting scheduled transmissions in order to analyse and study propagation and at the same time to

guarantee permanent links between the different EAR local offices or branches.

They also commented on the important role played by amateur stations in case of disasters and the assistance provided in such cases. They remembered the contribution of radio amateurs in the Byrd Antarctica Expedition, how they helped when the French seaplane Siap broke down, or the difficult situation faced by the "Italia" airship.

The meeting clearly showed society the importance of the radio amateur. They were able to project the right image of a hobby uniting science, experimentation and friendship. Last but not least, from then on, Spanish radio amateurs would have a better consideration by the authorities. When they closed [4] the meeting, they continued with the scheduled lectures

VII. OTHER EVENTS

Some related recreational events were organised for the audience. On the 15th of November, after the lecture sessions they visited the "Real Politécnico Hispano-Americano", the "Escuela del Trabajo", and also the "Diputación".

When they reached the hall of the building, the deputy, Mr. Antonio Robert, with an eloquent speech explained to the audience how they were organised and the general layout of the buildings, including the "Escuela del Trabajo", "Industrial School" and "Industrial Engineering School". Later on, they paid a visit to the main rooms and labs.

That evening, Radio Barcelona, EAJ-1, set up a provisional studio with the aim of transmitting all information concerning the "Shortwave days" and all the events organised around the festival. They were allowed to use the shortwave experimental transmitter, EAR-104, which had previously been installed in the EAR stand.

The festival itself consisted of concerts given by the "Radio Barcelona Orchestra" and the "Municipality Band", as well as the local dance called "Sardanas" performed by the "Cobla Barcelona Albert Martí". The singer Miss Rosa Cotó and the actor Mr. Francisco Mora closed the festival singing several songs.

After Mr. René Mesny's lecture on the 16th of November, the attendees were invited to visit the City Hall where they were welcomed by Mr. Ribé, Master of Ceremonies, and also by Mr. Puigdomenech. They also met the Mayor of Barcelona "Barón" de Viver.

After the visit to the building, the Mayor made a speech praising the role of radio amateurs and of the activities they organised for the "Shortwave days". He said he was sure that radio amateurs would play a relevant scientific role in the future of radio.

The 18th of November was the last day of events and all the attendees were invited to go by bus to Tibidabo, the mountain behind Barcelona city. The purpose of this very short trip was to visit the premises of the main broadcasting radio station in Barcelona, EAJ-1 (Radio Barcelona). Mr. Sánchez Cordovés

gave an in depth explanation of all the equipment and how it worked.

Later on, around 6.30 in the afternoon, the attendees were invited for a cup of tea in the Florida Hotel and they went back to the exhibition ground where they had the opportunity to visit the optical fountain. The engineers in charge explained how the electrical installation worked and how they were able to attain the light effects. More than 100 attendees were present at the official dinner which was organised at the Miramar Restaurant near the exhibition grounds. This gave them the chance to celebrate and to mark the official end of the conference.

As a final event, the Barcelona “Diputación” invited all the lecturers and scientists to visit Montserrat, an unusual mountain area an hour’s drive from the city. They left “Plaza Catalunya” around 8.30 in the morning. When they arrived, they visited the Monastery and admired the paintings and the onsite museum. In the magnificent church devoted to the Virgin of Montserrat, they listened to the famous children’s choir singing the “Salve Solemnis”. Then they took the funicular railway up to the summit of St Joan and admired the extraordinary view of the landscape.

Finally they had a wonderful meal together to end the day.

IX. EAR STAND

The Executive Committee did an excellent job, starting preparations in June 1929. They managed to get 30sqm free of charge inside the “Projections Palace”, one of the most emblematic buildings in the exhibition ground. They were granted this free space because of the cultural purpose of the stand. The building had a big theatre surrounded by conference rooms and they managed to hang a “Zeppelin” antenna from the ceiling. Then they got permission from the “Dirección General de Comunicaciones” to perform some tests with their equipments and antenna. Those radio amateurs who so wanted were able to transmit from there.

The EAR stand was opened on the 5th of October. It was international until the 15th of January, with both international and local visitors having access to it. Later on, until the 15th of July, it was only open to the Spanish visitors.

Mr. Vicente Juan Segura was in charge of the stand from October until the end of December 1929. During that time, he had the opportunity to perform plenty of tests with the EAR-104 station which had been installed there.

When the lecture sessions started, the attendees were visiting the station and some of them were even able to transmit some words through the EAR-104 microphone.

The Spanish EARs had the opportunity to show their cards acknowledging long distance contacts (DX). Some others sent pictures and drawings of their stations, taking up all the available space.



Fig. 2. EARs Stand in the Barcelona International Exhibition Fair

Some EARs brought their own transmitters and receivers which were displayed in the stand and were also used in communications with almost all European countries and also the USSR. In this way, the EARs promoted the International Exhibition and also encouraged amateurs to use shortwave.

The associations EAR, REF, ARI, RCC and RDF's were contributed to the international success of the events.

X. Conclusion

The work of the radio amateurs lead by Dr. Luis Cirera Terre was undoubtedly outstanding. Their achievement was substantiated by the scientists, authorities and contemporary news media. Thus the First Spanish Ham Radio Congress was a great success.

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