

## Companhia Portuguesa Rádio Marconi

The *Companhia Portuguesa Rádio Marconi* (CPRM) began operations in Portugal in 1926 and ceased activities when it was fully absorbed into Portugal Telecom in 2002. Despite the Italian nationality of its founder, CPRM was a British company, as Marconi had established his business in the United Kingdom. Starting as a provider of radio and radio-telegram services, the company later offered international phone services and invested in underwater cables and satellite communications. Its role was initially crucial in improving communications with Portugal's colonies and, subsequently, in Portugal's broader economic development.

*By Andrew Shepherd*

### **Brief background**

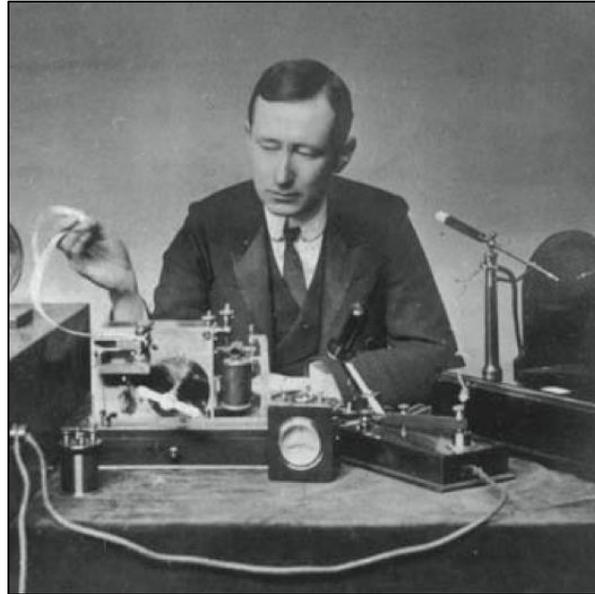
Communications systems in Portugal date back to 1855, when the first telephone line was inaugurated in Lisbon on 16 September, connecting the Cortes, Paço das Necessidades, Sintra and Terreiro do Paço. A year later, Porto was connected to Lisbon, Santarém and Elvas. 1857 saw the first international line, between Elvas and Badajoz. Eighteen years after the first submarine cables under the English Channel, a contract was signed in 1869 for the installation of submarine cables to connect Lisbon with Portugal and Gibraltar, leading to the well-known Carcavelos cable station. This was initially run by the Falmouth, Gibraltar and Malta Company, which became the Eastern Telegraph Company in 1872. Although primarily designed to improve communications between Britain and India, the Eastern, which became part of Cable and Wireless in 1934, rapidly expanded its network to include most of the Portuguese colonies. Communications to North America were also established, through the Azores.

Within Portugal, the first experimental telephone communications took place on 24 November 1877, between Carcavelos and Estação do Cabo, in Lisbon. In December 1877, King D. Luís I took part in a telephone call between the Meteorological Observatory of the Polytechnic School of Lisbon and the Astronomical Observatory of *Tapada da Ajuda*. He became a convert to the technology, which may have played an important role in overcoming any fears that might have surrounded the new invention. In 1895, Marconi succeeded in making the first radio communication at distance. The first radio transmission in Portugal was made on 17 April 1901 from the Fort of Alto do Duque in the southwest of Monsanto Park, across the Tagus to the Fort of Trafaria, a distance of 4,300 metres.

### **Guglielmo Marconi**

Marconi was born in Bologna, Italy on 25 April 1874, the son of Giuseppe Marconi, an aristocratic landowner, and an Irish woman, Annie Jameson, of the Jameson whiskey family. In his youth he closely followed scientific publications that gave publicity to the latest experiments by people such as Hertz. Marconi's first successful experiment with radio was carried out in 1895 in Bologna. This received considerable publicity but quickly led to controversy as two leading scientists, Augusto Righi and Oliver Lodge, refused to acknowledge his claim to the invention on the grounds that Marconi had used an oscillator very similar to one previously developed by Righi. But while both Righi and Lodge had failed to see the

commercial implications of their work, in 1900 Marconi registered a patent related to frequency tuning and, in 1901, he carried out the first transatlantic wireless communication. In 1907 Marconi officially opened his transatlantic service and, by 1909, he had been awarded the Nobel Prize.



**Guglielmo Marconi in 1901**

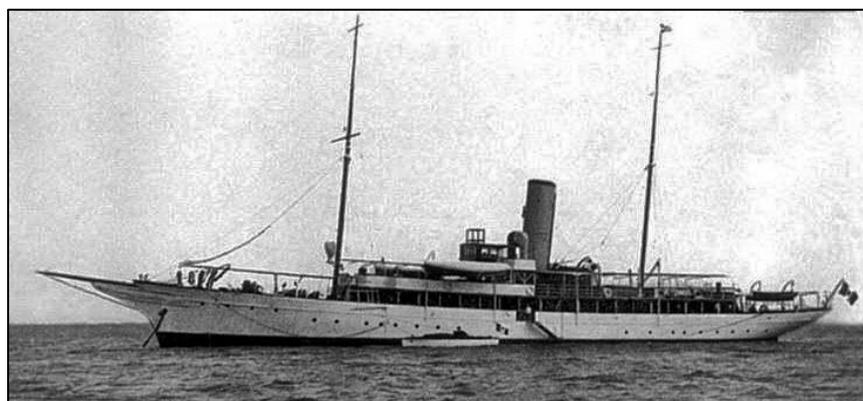


**Receiver developed by Marconi in 1896**

Marconi had chosen to leave Italy for Britain to take advantage of financial support from his mother's family. He must also have thought that Britain would be a more fertile area for the commercial development of his ideas. London was the financial and commercial centre of the world; the British navy was all over the world, providing a ready market for radio communications; and Britain also had colonies everywhere that could benefit from a radio service. In fact, it was the military application of radio that led to its rapid initial development. Financed by his cousin, Henry Jameson Davis, he founded the Wireless Telegraph and Signal Company Ltd in 1897, which was established with an initial capital of 100,000 shares of £1 each. In 1900 it was renamed as the Marconi Wireless Telegraph Company Limited. It continued in operation as a

British company until being taken over by the General Electric Corporation in the mid-1960s. The name of Marconi lived on in various GEC subsidiaries but seems to have died out in the early 21<sup>st</sup> century.

Early long-distance radio transmission used long waves. This required very expensive transmitters and receivers, and enormous antennae. Long waves also lose power over long distances. Prior to the 1920s, shortwave frequencies were regarded as unsuitable for long-distance communication and were used mainly by amateurs. Marconi commissioned his assistant, Charles Samuel Franklin, to carry out a large-scale study into the transmission characteristics of short-wavelength waves and to determine their suitability for long-distance transmissions. Franklin rigged up a large antenna in Cornwall and, in June and July 1923, transmissions were completed on the 97-metre frequency to Marconi's yacht, *Elettra*, in the Cape Verde islands. With further development, the technique became known as the Marconi/Franklin Uniform Beam Array, which effectively made short-wave radio possible.



**Marconi's ship, the *Elettra***

### **Early Marconi operations in Portugal**

Initial contacts were made between Marconi Wireless Telegraph Company Limited and the Portuguese Government in 1906. These were initiated by Marconi's company, which appears to have been primarily interested in operating a high-powered radio station in the Azores, and was prepared to offer free communications for the Portuguese Government between Lisbon, the Azores, Madeira and Cape Verde in order to obtain this. Horta on Faial Island would eventually become a major telecommunications centre, with six companies from five different countries being set up there, operating fifteen functioning cables. With strong support from the Portuguese Navy, which had immediately appreciated the potential for radio, the two parties were close to agreement in 1910, but the intervention of the German ambassador in Lisbon in favour of the German company, Telefunken, delayed matters. However, it should be noted that the Portuguese Navy had already bought equipment from Marconi in 1909.

In 1912, following a visit to Lisbon by Marconi, a contract was signed between the Government and his company for the installation of a network to permit radio communications between mainland Portugal, the Azores, Madeira and Cape Verde. In addition to upgrading communications between the mainland and the islands, Portugal was also keen to improve communications with its colonies. Although submarine cables did provide links with the African colonies, Timor, to the northeast of Australia, still relied on letters delivered by ships.

These were, however, turbulent times in Portugal and the envisaged activities did not go ahead, apparently the result of Government failure to provide the required financing. The First World War then intervened. Portugal was actively trying to improve communications with its colonies, mainly by using Marconi equipment, together with some from Telefunken, but the *Companhia Portuguesa Rádio Marconi* (CPRM) was not finally formed until an agreement was signed, in 1922, between the Government and Marconi Wireless Telegraph Company Limited, following numerous readjustments to the 1912 agreement. These included the fact that while the earlier agreement had envisaged Marconi providing and installing the network's equipment, the 1922 agreement also called for the company to operate it.

The CPRM was formally established on 18 July 1925. The first head office of the company was located at Rua de São Julião, 131 in Lisbon. The agreement gave Marconi sole rights for telegraphic communication with the colonies, and also fixed a price per word for all telegram communications with and between the colonies. At this time, a radio communications station was built in Alfragide and another in Vendas Novas. Just before Christmas 1926, radio communications stations were opened in the Azores and Madeira and, shortly after, communications were established with major European cities, Brazil, and Portuguese colonies. Marconi thus provided an alternative to the existing submarine cables, which, while providing effective communications, were difficult, time-consuming and costly to repair if anything went wrong.



**First transmission from Marconi HQ in Lisbon**



**Transmission station at Alfragide**

Transmission was initially by Morse code. But, first, the outgoing telegram message had to get to the Marconi headquarters in Lisbon from post offices where customers would deliver their messages. This was done using pneumatic tubes, although later messages were transmitted by domestic phone lines. The message was converted using a tape-punching machine that resembled a typewriter, which punched a strip of paper with Morse signals. It was then sent automatically to the Alfragide transmitter. Incoming messages were converted to alphanumeric characters by teleprinters, being initially printed onto pre-glued strips of paper that could then be attached to a telegram form for delivery.

In 1933 the CPRM opened three stations, at Linda-a-Velha in Carnaxide, Madeira and the Azores, to offer a radio-telephone communications service to shipping. It would be more than a decade before radio-telephone services were opened to the general public, with services to major European cities beginning in 1937, and to the Portuguese islands a year later. The ability to transmit photographs became possible in 1948.

Marconi made at least three trips to Lisbon, in 1912 and 1920 to promote his business to the Portuguese government, and in 1929, on which occasion he visited all of the facilities installed by his company. In July 1922 he went to Horta on Faial Island, where he was made an honorary citizen. He visited Madeira in 1924 aboard his ship, but also seems to have stayed at Reid's Hotel. His company was constantly innovating, and many of the new inventions were first used in Portugal.

Marconi died on 23 July 1937 in London. In many countries of the world, including Portugal, two minutes of silence were observed at the time of his funeral.



**Marconi at Rossio, Lisbon in 1912**

## **Developments after World War II**

From the perspective of the *Estado Novo*, it was essential to quickly and effectively connect Portugal with its colonies in order to demonstrate the cohesion of the empire. At the same time, there was also a need to keep up with the technological progress of other European countries and provide international telegraph and telegraph services. The migration of Portuguese people to the colonies and other European countries and, to a lesser extent, the movement of people from the colonies to Portugal, provided a strong market for the service offered by Marconi's company.

A telex service became available after the Second World War and became the main vehicle for business telecommunications until the advent of telefax transmissions in the 1980s. In the early 1950s, the company's network had 48 telegraph and telephone transmitters, 25 of which were on the mainland and 23 on the Portuguese islands and overseas, and 106 receiving units. The total number of antennae was 117, of which 67 were on the mainland and 50 on the islands and overseas. By 1959 the number of antennae had increased to 179, compared with the ten available to CPRM in 1928.

Even while it was negotiating in the 1960s for a new 25-year contract, Marconi was continuing to invest in new facilities. The contract was renewed in 1966, giving the company the chance to make a good return on those investments. After 1966, Marconi signed several international agreements for cables connecting Portugal to South Africa and Great Britain, and for transatlantic cables. This led to the construction of new cable stations at Sessimbra and on Sal Island in Cape Verde. In 1970 an agreement was signed between

Marconi and CTT, in which the latter took on responsibility for communications with Europe, preferably using circuits rented from Marconi.

The 1974 Carnation Revolution and subsequent developments rather reduced the viability of Marconi's investments, as a result of the decision to give independence to the colonies. This led to a seizure of the company's assets by newly independent countries and a reduced level of communication between Portugal and those countries. Nevertheless, Portugal's geostrategic position, including its possession of the Azores, still made it a very attractive location for Marconi and the company began to seek new markets, while negotiating new relationships with the governments of the former colonies.



**The Marconi radio network, c. 1959**  
(Source: *A Electricidade e nossa Indústria*)

The Marconi company started to participate in intergovernmental organizations as a representative of the Portuguese State. These included the International Consortium of Satellite Telecommunications (INTELSAT), which was set up in 1964. Satellites, despite their high cost at the time, were no more expensive than cables, and offered better quality transmissions. Portugal joined EUTELSAT in 1977 and INMARSAT (International Maritime Satellite Organization) in 1978. In the 1980s, CPRM continued to invest in submarine cables, satellites, and land stations, with much of the investment taking place at the station just south of Negrais in Sintra municipality. Fibre-optic cables began to be introduced in the late 1980s and in 1998 transmissions with the Portuguese islands began to use fibre optics.

Further investments in satellites and cables continued in the 1990s, in part because Marconi was trying to strengthen its position in order to avoid being absorbed by Portugal Telecom (PT). This was one reason why *Marconi Comunicações Internacionais* established a joint venture with *Empresa Brasileira de Telecomunicações* (EMBRATEL) in Brazil. Despite these efforts, CPRM was taken over by Portugal Telecom in 1995, with the purchase of 100% of its capital. The operations of CPRM were effectively merged with those of PT at the end of 2002.



**Satellite station near Negrais, Sintra (Google Maps)**

### **Reminders of the past**

The Vendas Novas station, first constructed in 1925 and 1926, was upgraded in the 1940s. It is located a few kilometres to the east of the town, in the district of Évora, on Estrada Nacional 4 but cannot be accessed. Several antennae remain on the site, which was last used by Portugal Telecom in 2013. There is also a church with an innovative design that was built specifically for the employees, and which contains stained glass windows by José Sobral de Almada Negreiros. On the other side of the road are the houses, still occupied, that were built for the staff, where 30 employees and their families lived. The Vendas Novas municipality has plans to develop the site into a tourist facility, but presently lacks the resources to do this.



**Distant view of the church at Vendas Novas**

Marconi House was constructed in Lisbon in 1992 at Avenida Álvaro Pais, 2, just north of Entrecampos railway station. The architect was Raul Martins, who was inspired by the radio wave to produce a postmodern wavy building, which becomes smaller and smaller towards the top, creating a stair-like image. After the closure of the Marconi company in Portugal, it was occupied by *Telecomunicações Móveis*

*Nacionais*, or TMN. In time, TMN became MEO. The building was sold to *Caixa Geral de Depósitos* and from 2015 has been rented to a company operating “call centres”. Outside of the building is a three-metre bronze statue by Espiga Pinto, called the *Mapa da Memória Inicial*.



**Marconi House, Lisbon**



**Mapa da Memória Inicial**

## Miscellany

The father of the artist, Paula Rego, was an electrical engineer, who worked for Marconi.<sup>1</sup>

## Main sources consulted

- A Electricidade e Nossa Indústria. *Companhia Portuguesa Rádio Marconi*. <https://www.colecoesfundacaoedp.edp.pt/nyron/library/catalog/winlibimg.aspx?key=0045F35B03424043917F690B56F50D9F&doc=163162&img=152164>
- Jornal de Negócios. *Antiga estação da Marconi em Vendas Novas pode ser salva?* [https://www.jornaldenegocios.pt/empresas/telecomunicacoes/detalhe/antiga\\_estacao\\_da\\_marconi\\_em\\_vendas\\_novas\\_pode\\_ser\\_salva](https://www.jornaldenegocios.pt/empresas/telecomunicacoes/detalhe/antiga_estacao_da_marconi_em_vendas_novas_pode_ser_salva)<sup>2</sup>
- Leite, José. *Companhia Portuguesa de Rádio Marconi*. <https://restosdecoleccion.blogspot.com/2013/03/companhia-portuguesa-radio-marconi.html><sup>3</sup>
- News Museum Sintra. *As Ondas Globais da Rádio*. <https://www.newsmuseum.pt/pt/radio/ondas-globais-da-radio>
- Queiroz, Maria da Costa. *A Companhia Portuguesa Rádio Marconi na Rede Mundial de Comunicações (1906-1936)*. [https://run.unl.pt/bitstream/10362/18624/1/InesQueiroz\\_tesePhD\\_Marconi2015.pdf](https://run.unl.pt/bitstream/10362/18624/1/InesQueiroz_tesePhD_Marconi2015.pdf)

<sup>1</sup> The Art Story. *Paula Rego - Biography and Legacy*. <https://www.theartstory.org/artist/rego-paula/life-and-legacy/>

<sup>2</sup> Including video of the Vendas Novas station

<sup>3</sup> Contains an excellent selection of photographs

- Rollo, Maria Fernanda. *Marconi em Portugal ciência e engenharia na génese das radiocomunicações*. <https://www.ordemengenheiros.pt/pt/centro-de-informacao/dossiers/historias-da-engenharia/marconi-em-portugal-ciencia-e-engenharia-na-genese-das-radiocomunicacoes/>
- Shepherd, Andrew. *The Anglo-Portuguese Telephone Company*. <https://www.bhspportugal.org/library/articles/the-anglo-portuguese-telephone-company>
- Vieira, Alberto. *A Companhia Portuguesa Radio Marconi na Madeira, 1922-1995*. [https://www.researchgate.net/profile/Alberto-Vieira-2/publication/311048701\\_A\\_Companhia\\_Radio\\_Marconi\\_na\\_Madeira1922-1995/links/583c53a208ae502a85e3bb31/A-Companhia-Radio-Marconi-na-Madeira1922-1995.pdf](https://www.researchgate.net/profile/Alberto-Vieira-2/publication/311048701_A_Companhia_Radio_Marconi_na_Madeira1922-1995/links/583c53a208ae502a85e3bb31/A-Companhia-Radio-Marconi-na-Madeira1922-1995.pdf)
- Vilela, José. *Datas e Factos do Cabo Submarino em Portugal (1855-2015)*. <https://www.fpc.pt/wp-content/uploads/2017/03/Datas-e-Factos-do-Cabo-Sub-em-Portugal.pdf>

— ooOOoo —

*Andrew Shepherd arrived in Cascais in 2017. He was born in Hertford and studied in Leicester and Bloomington, Illinois before moving to Brighton and then to Papua New Guinea. In 1985 he joined the United Nations Food and Agriculture Organization (FAO) in Rome, where he stayed until moving to Portugal. He is the BHSP's Webmaster and manages the Newsletter. When not writing articles for the Society, he is an active contributor on Wikipedia of articles on Portugal and Portuguese people.*