

Other Marconi Collection Objects and Documents: A Selection

In addition to the numbered series presented in the previous pages, there are many other objects linked to Marconi in the MUST collections that provide inspiration for further research and stories. We present a selection that documents a variety of fields which involve the complex history of wireless communication, namely scientific research, transport, geolocation, the wartime era, and the media. They represent the diversity of the industrial sectors in which the various branches of the Marconi Company operated in the 1900s. The artefacts have differing origins, but a significant group comes from the Raccolte Storiche del Comune di Milano – Civico Museo Navale Didattico (CMND), whose collections were exhibited at the opening of MUST (Ronzon 2006). Some of these objects were probably actually used, while others appear to have the same demonstrative purpose as the ‘artefacts’ that came from Marconi’s companies, so a common origin is likely. Finally, the Museum’s historical heritage also includes archival documents, and an extensive series of volumes dedicated to Marconi and the history of wireless communication. Here we present a small selection that records the construction of the Marconian myth.



Battery of six condensers or 'Leyden jars'

inv. IGB-009894

Era of technology: post 1897

Manufacturer: MWCT (Chelmsford) and Officine Radiotelegrafiche Marconi (Genoa), post 1909

Provenance: unverified

The Leyden jar was a type of capacitor with a long history. It was developed around 1745 with the contribution of various scientific experimenters and received its name from the Dutch city where public demonstrations of its properties were held. At the end of the 1800s, it was a common instrument in electricity laboratories. It became part of the collection of Marconi's early wireless transmitters, both in experimental apparatus and in the first commercial installations. The artefact is marked with the name of the Marconi's English parent company on the jar lids and the name of the Officine Marconi (Italian workshops) on the container. This leads us to suppose that the set was assembled after the opening of the Italian workshops in 1909 (Pietrangeli, *infra*).



Wave meter 'Direct Reading Cymometer'

inv. IGB-009888

Era of technology: 1906

Manufacturer: MWTC (London), post 1906

Provenance: unverified

Original instrument for measuring wavelengths, created in 1905 by the famous British engineer and scientist John Ambrose Fleming (1849-1945), who had been working as a scientific consultant for the MWTC since 1899. It was designed as a 'portable' instrument (Fleming 1906, 406). This artefact is a 1906 model that bears the series no. '99'. The instruction manual states that it was produced in the Marconi workshops in the London district of Dalston and specifies that the instrument could be used "without the slightest skills". It was not only useful for telegraphy, but also "demonstrating in an elegant manner the laws of electrical resonance and is particularly suitable for this purpose for class or lecture demonstrations" (*Instructions*, 1906-07, 4, OBL MS Marconi 1210). Like the previous artefact, the 'cymometer' (a term coined by Fleming himself) reflects how electromagnetism in the early 1900s was an object both of laboratory study and a field for industrial development.



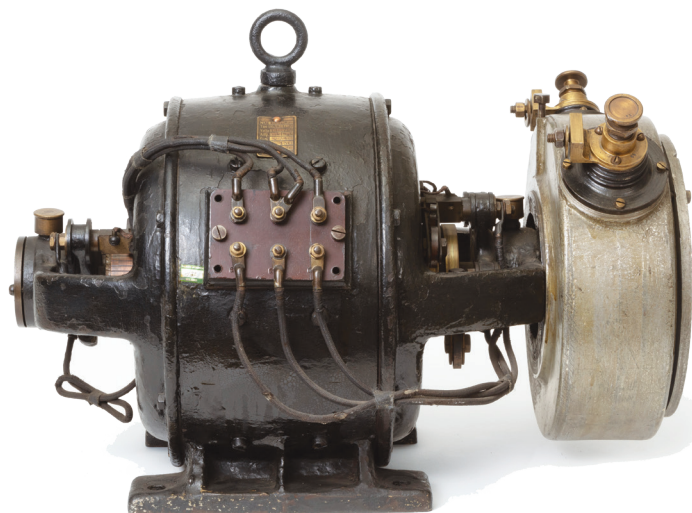
Antenna tuner (jigger secondary or transformer)

inv. D-000071

Era of technology: early 1900s

Manufacturer: Regia Marina italiana (?), date unknown

Provenance: Comune di Milano, date unknown



Rotary spark gap for radiotelegraphic station of 1,5 kW

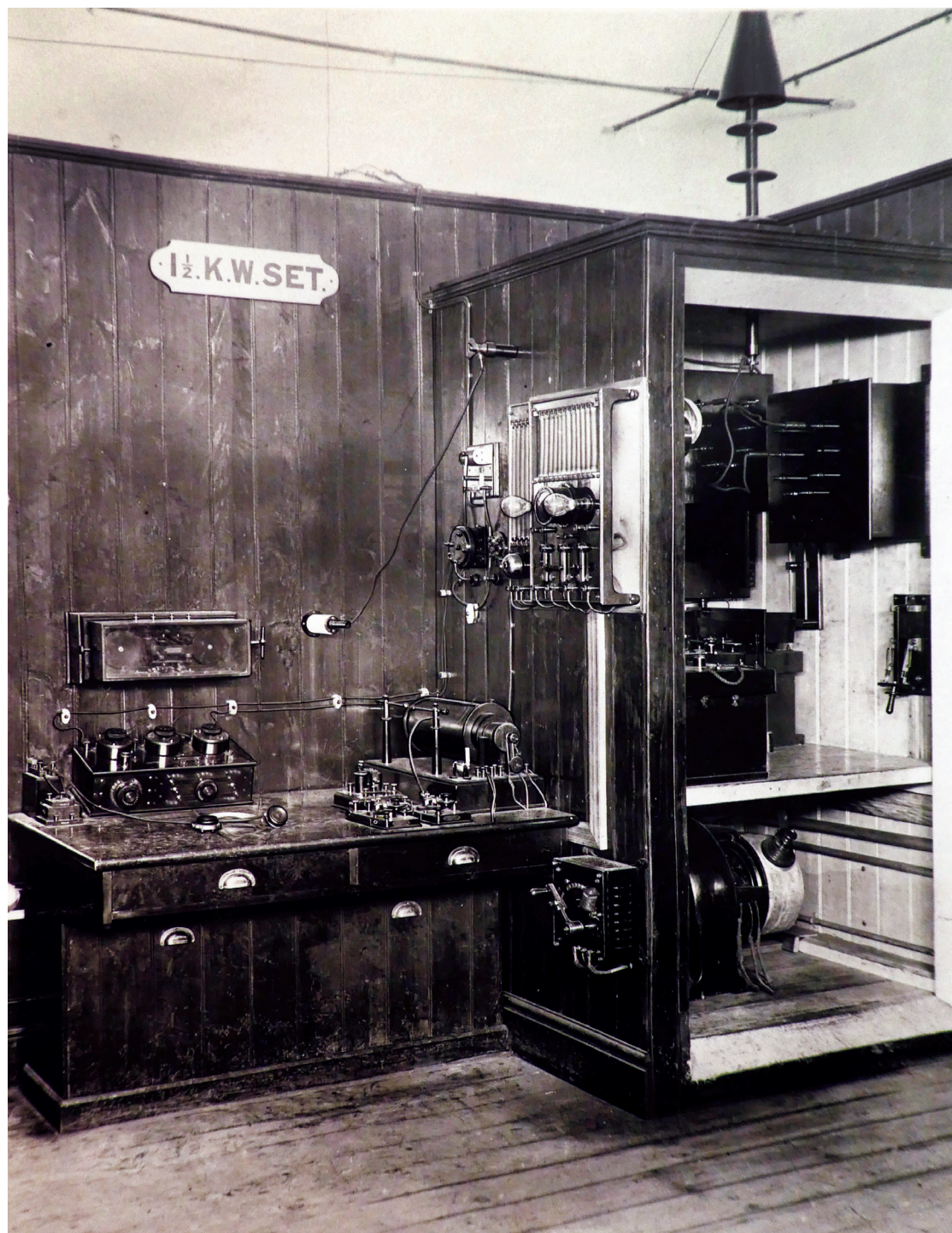
inv. D-000073

Era of technology: 1907

Manufacturer: MWTC (?), post 1907

Provenance: CMND, undated

The photographs show two elements from a naval radiotelegraphic station displayed at MUST, perhaps partly produced in Italy with the authorization of the MWTC (see Balbi, *infra*). The tuner bears a plate with the inscription “Divisione di Artiglieria” (Artillery Division). We can analyse these objects using MWTC promotional material. On the right is a photo depicting the exhibition setup of a naval radiotelegraphic station at the beginning of the 1900s (OBL MS photograph d74). The back of another promotional postcard of the time (not pictured) shows in detail the interior of the insulated cabin and also gives a description: “Marconi 1 ½ K.W. Ship Set. Interior of Silence Cabin. The set illustrated is fitted on most of the Atlantic [li]ners and on passenger boat generally [sic]. Current is supplied from the ship’s mains to a rotary converter, which charges the condensers through the jigger primary by a rotating disc with projecting studs which pass in close proximity to a pair of fixed electrodes. This disc, which gives to the signals a clear musical note [...] is enclosed in an aluminium casing. The aerial is brought through the roof of the cabin to the Aerial inductance and to the jigger secondary to the earth plate. A parallel rod sliding inductance is provided for final adjustment of wavelength” (HSM inv. 13905).





'Marconi-Bellini-Tosi Direction Finders'

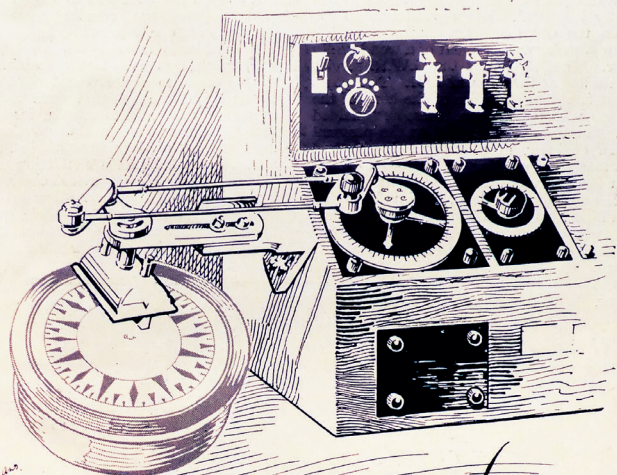
inv. IGB-002232 and inv. CMND-002546

Era of technology: 1912

Manufacturer: Officine Radiotelegrafiche Marconi (Genoa), post 1912

Provenance: CNR, 1956 and CMND, undated

Original instruments for determining the position of ships at sea and tracking their routes. When used in conjunction with ship wireless telegraphy equipment, they allowed operators to establish the direction of the wireless signals coming from remote transmitting stations, and therefore to locate the ship position (*Instructions*, undated, OBL MS Marconi 1213). The two artefacts were almost certainly manufactured in Italy. A system that used the new wireless technology to determine position at sea had already been patented in 1902 by Alessandro Artom (1867-1927). In the same period MWTC too got interested in this possibility, which it believed to be lucrative on a commercial level, and promoted internal research (Cuthbert Hall, 1901). The final device was later developed by two officers of the Regia Marina Italiana (Royal Italian Navy), Alessandro Tosi (1866-1936) and Ettore Bellini (1876-1943), who designed a new prototype in France from 1907. Their patent was purchased by the MWTC in 1912 (Baker 1970, 150). Direction finders became a flagship product for the Marconi maritime sector, used on transatlantic ships, fishing boats and later airplanes. They were the focus of large marketing and demonstration investments. Here, to the right, is a 1923 advertisement (OBL MS Marconi 1390).



The
MARCONI
DIRECTION FINDER
IS AN INSTRUMENT OF
PRECISION, AND AS AN
AID TO NAVIGATION IS
INVALUABLE.

The MARCONI INTERNATIONAL
MARINE COMMUNICATION CO., LTD.
MARCONI HOUSE, STRAND, LONDON, W.C.2



Portable aircraft transmitter 'Marconcina'

inv. IGB-009886

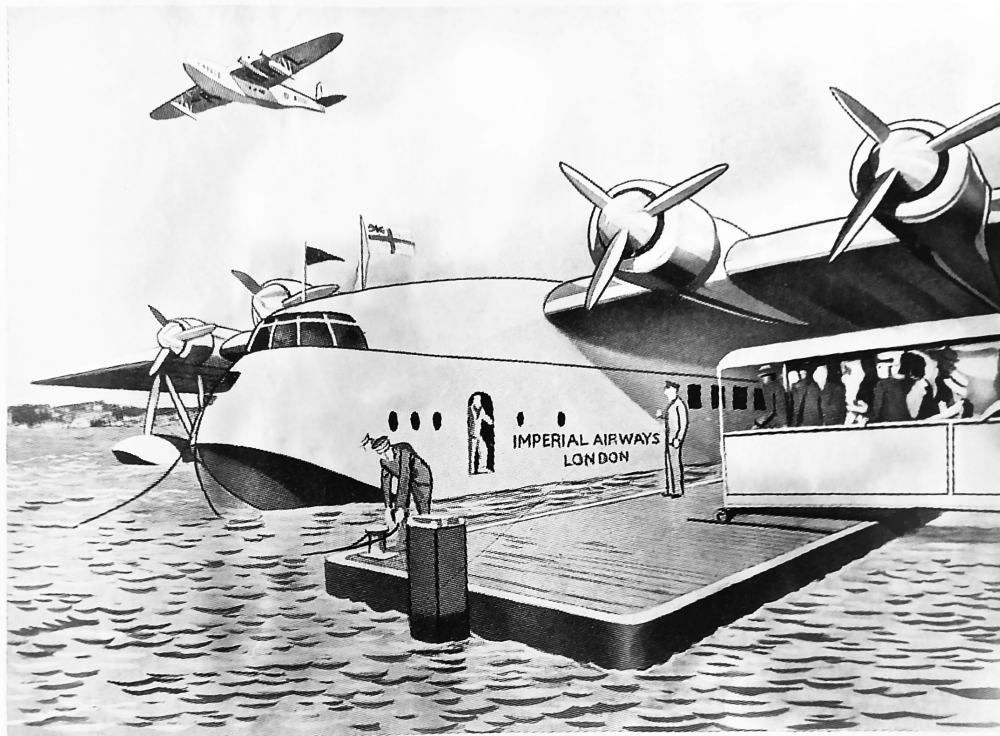
Era of technology: post 1915

Manufacturer: Officine Radiotelegrafiche Marconi (Genoa), post 1915

Provenance: unknown

This transmitter was the result of collaboration between Guglielmo Marconi and the technicians of the Italian Armed Forces, whose operational requests prompted the modification of aircraft apparatus designed by the MWTC in England. In the summer of 1915, the Italian army independently launched an experimentation project on unidirectional aircraft-to-ground communications to assist the artillery and improve striking precision. It was on this basis that Marconi, who had enlisted as a lieutenant in the Italian army, was called upon to become involved and help meet the needs of the military. The collaborative project produced this model of transmitter, which was later mass-produced in Genoa (Colavito 2020, 10). The artefact highlights the two most important sectors of industrial development for the MWTC which were destined to expand in the following years: the fields of military application and aviation. On the right, a cutting of a 1934 advertisement (OBL MS Marconi 1394).

MARCONI AGAIN



An artist's impression of one of the new flying boats reproduced by kind permission of Imperial Airways

***For their new fleet of aircraft, Imperial Airways
have again chosen Marconi equipment . . . already so
successfully used in their existing passenger fleet.***

WHY EXPERIMENT?—CONSULT

~ M A R C O N I ~

Marconi equipment is in regular service on civil, military and naval aircraft and for aerodromes in more than 30 countries. However difficult your requirements Marconi's can provide adequate service and equipment.



Valve transmitter for naval stations

inv. CMND-002571

Era of technology: post 1919

Manufacturer: Officine Radiotelegrafiche Marconi (Genoa), post 1919

Provenance: CMND, undated

Transmitter fitted with M.T.4.A triodes (thermionic vacuum tubes with three electrodes, Keilth 1999, 69 fig. 7.4) based on the original version produced by the Marconi-Osram Valve Company founded in London in 1919. It was able to produce sustained electrical oscillations (at a steady amplitude) and a predefined frequency. This kind of transmitter was part of the wireless equipment defined as 'new generation' in advertisements at the time (adjacent, on the left, a cutting from *The Electrician*, 28 July 1922, OBL MS Marconi 1390). The Marconi devices were not sold but the company usually provided leasing and operational management services. The Marconi International Maritime Company highlighted security aspects, and the global scale of the service offered (adjacent, a page from *The Wireless World and Radio Review*, 12 August 1922, xviii).



Wireless Equipment

*of the very latest pattern for
Passenger Cargo and other vessels
supplied, installed and operated under
Rental and Service Agreement or
Sold outright with Service if preferred.*

*Special equipment suitable for vessels of
very small tonnage on advantageous terms.*

The MARCONI INTERNATIONAL MARINE
COMMUNICATION COMPANY LIMITED.
MARCONI HOUSE, STRAND, LONDON. W.C.2
Telephone: CITY 8710. Cablegrams: THULIUM, LONDON.
Telegrams: THULIUM, ESTRAND, LONDON.

AUGUST 12, 1922

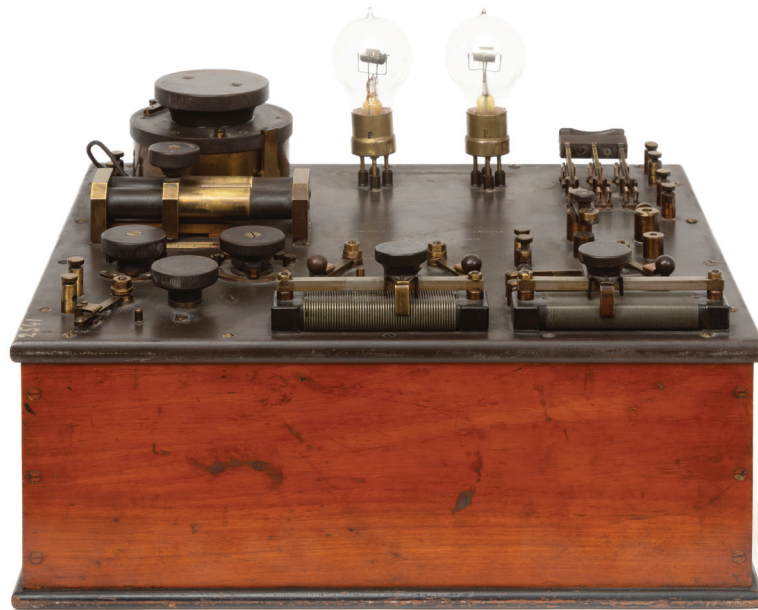
THE WIRELESS WORLD AND RADIO REVIEW

xvii



MARCONI
GIVES
UNRIVALLED
WIRELESS
SERVICE

75c MARCONI INTERNATIONAL
MARINE COMMUNICATION CO. LTD.
MARCONI HOUSE, STRAND, LONDON.



Crystal receiver with valve amplifiers
inv. D-000076

Era of technology: post 1906

Manufacturer: Officine Radiotelegrafiche Marconi (Genoa), post 1906

Provenance: Comune di Milano

Receiver with carborundum (silicon carbide) crystal detector with two thermionic valves (triodes) for signal amplification (similar to artefact D-000022). It consists of a wooden box with a top made of ebonite, an insulating material. The two crystal holders with interchangeable mounts are located on the top side along with one sliding capacitor, one rotating capacitor, two rheostats, various wire clamps and switches made of brass. John Ambrose Fleming in 1904 proposed to use thermionic vacuum tubes (initially, diodes with two electrodes) as electromagnetic wave detectors. The system was immediately adopted by Marconi. Diodes served as the foundation for American Lee de Forest to develop and patent in 1906 the triode, his three-electrode valve named 'audion', which later paved the way for broadcasting (Hong 2001, 119 ff.).



'Round Triode' Valve

inv. IGB-002189

Era of technology: post 1913

Manufacturer: MWTC (Chelmsford), post 1913

Provenance: Eugenio Gnesutta, 1955

Three electrodes thermionic valve (triode) for continuous wave transmission, designed by Henry J. Round, an MWTC engineer, who was granted patent no. 28413 in 1913. In the same period, other engineers in the leading wireless communication industries (such as Telefunken, General Electric, AT&T, Westinghouse) were also patenting new types of valves. They had discovered that these devices, created by John Ambrose Fleming and Lee de Forest (see the page aside), and already present on the commercial market as wireless signal receivers, could also be used as oscillators and thereby be used for transmission. This discovery formed the technological foundation upon which broadcasting was developed (Hong 2001, 155-6).



50kW RCA Radio Broadcast Transmitter

inv. IGB-008333

Era of technology: 1932

Manufacturer: Radio Corporation of America, post 1932

Provenance: Rai, 1972

RCA (Radio Corporation of America) radio broadcast transmitter, part of the station of the Ente Italiano Audizioni Radiofoniche (EIAR, the state-owned radio broadcasting company) in Sizzano (Pavia). This artefact is closely linked to the history of the Marconi companies. RCA, in fact, was the name assumed in 1919 by the company formed from the merger between the Marconi Wireless Telegraph Company of America and the General Electric Company of America (Baker 1970, 180). EIAR developed from the earlier Unione Radiofonica Italiana (Italian Radiophonic Union), the first national broadcasting company set up in 1924 in collaboration with a subsidiary of the Marconi Company (Monteleone 1992, 19). Subject to subsequent modifications, this transmitter operated from 1932 to 1969. It became a museum piece in 1972 (Spada 2024).



Marconi Mark3 Television Camera BD687

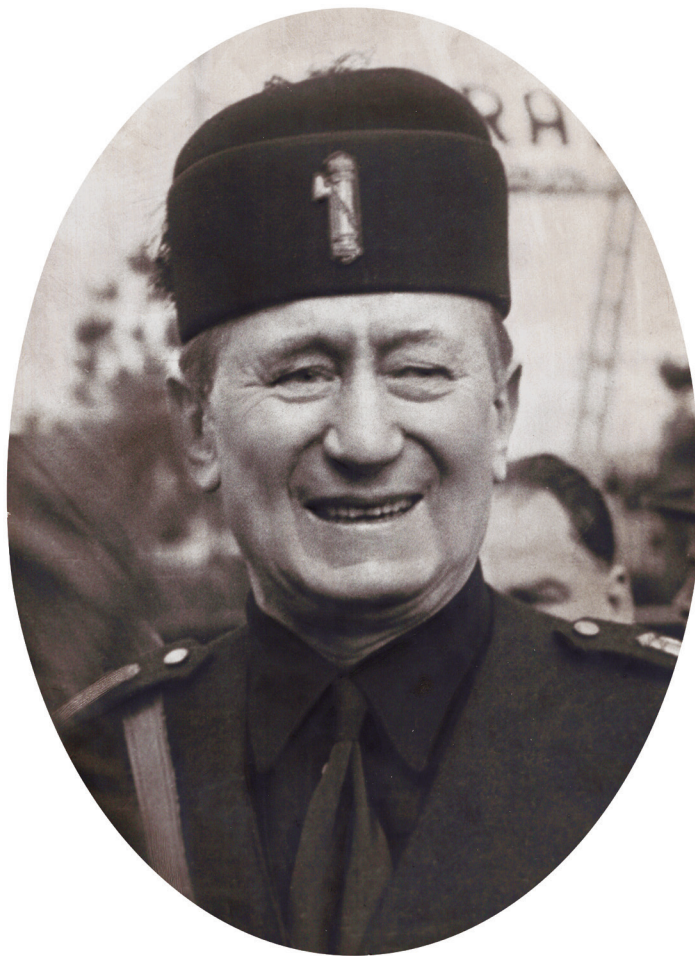
inv. IGB-016001

Era of technology: post 1947

Manufacturer: MWTC (Chelmsford), post 1947

Provenance: Rai, 2004

MUST inventory records reveal that this video camera was used in the Rai studios from the mid-1950s to around 1970. The MWTC began to produce television cameras starting from 1947, with Orthicon type imaging tubes, which also allowed recording in low light conditions (Baker 1970, 363). The front part features a rotating turret on which were mounted lenses of varying focal lengths, as zoom optics were not yet available. Like the RCA Transmitter (see aside), this artefact also accounts for the expansion of the Marconi Company into the sector of radio and television broadcasting. This field only emerged late in the inventor's career and developed somewhat independently of his initial interests (Balbi 2017).



Reproduction of a Marconi portrait mounted on cardboard with hand-cut edges, undated

In the MUST archives there are a number of enlarged period images portraying Marconi or Italian radiotelegraphic stations. They were most likely used for exhibitions, as they appear to be cut out and mounted on cardboard. The origin is unknown, but it could be part of material used in display contexts prior to the Museum's foundation. ASMUST, Archivio fotografico.



Model of the yacht *Elettra*

inv. D-000219

Era of technology: 1904-19

Manufacturer: unknown

Provenance: CNR, 1956

Scale model of the yacht that Marconi purchased in 1919 to be fitted out as a mobile laboratory. Built in Scotland in 1904 and originally named *Rovenska*, Marconi rechristened the vessel *Elettra* (Raboy 2016, 437). In Italy it became one of the artefacts that best represent his enterprises, and that persists in contemporary iconography. The television series, *Marconi. L'uomo che ha connesso il mondo* (Marconi. The Man Who Networked the World) (2024), was broadcast by Rai on the occasion of the 150-year anniversary of the inventor's birth and featured a reconstruction of the yacht as one of the main settings of the story. The model housed at MUST was part of the group of 'relics' received from the CNR which arrived in Milan in April 1956 (Casonato, Spada, *infra*).



Capt. Wilbur Lawton (John Henry Goldfrap) (1914). *The Ocean Wireless Boys on the Atlantic*. New York: Hurst & Company.

A novel for teenagers from the *Ocean Wireless Boys* series. The author, a film producer writing under a military pseudonym, created a series of adventure stories centred around the aspirations of teenage boys to become radio operators (Moving Picture World 1917, 1467). The book documents the fascination of the era with new wireless technology and the heroic aura that surrounded its operators, and more generally young radio amateurs. The protagonist is, in fact, a boy from humble origins, who due to his courage and technological skills gained from experimenting with homemade apparatus, becomes employed as a 'wireless boy' on board a large ship. The book was acquired by the MUST library in 2024.



Collectible advertising cards, series dedicated to the life of Guglielmo Marconi, Compagnia Italiana Liebig S.A., second half of the twentieth century

Series of six collectible advertising cards featuring some of the well-known episodes in Marconi's life and in the development of wireless technology. The back of the card carries a description of each moment that is depicted, using a dramatic tone to highlight the ingenuity of Marconi, and of Italian scientists in general: "Along with Luigi Galvani and Alessandro Volta he completes and embodies the quintessentially Italian trio to whom the world owes the discovery of electricity and its subsequent, miraculous inventions and applications" (card 6, transl. by the author). The Liebig cards started to be distributed in France from around 1870, and were later also circulated in other countries, as a free gift when purchasing Liebig products. They were produced until 1975 (Sanguinetti 2018). The Marconi series is currently being acquired by MUST as evidence of the widespread circulation of the 'inventor legend' which accompanies accounts of Marconi.



Marconi in front of a show case displaying his 'historical devices', alongside his assistants George Kemp (on the left) and Percy Paget (on the right), in the 1930s (OBL MS photograph 238)

Sources

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