THE PHONOGRAPH IN BARCELONA (1877-1880):
TECHNOLOGY AND IDEOLOGICAL CONTROVERSIES

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1.- Introduction.

Edison was already recognized in his time, in spite of rivalries and jokes, as a luminary of the technological progress, to the extent of being mythicized as the “Wizard of Menlo Park”\(^1\). The phonograph, despite its precedents and its deficiencies, was one of his most famous inventions. In this current age of great development of audiovisual media, it is difficult to understand the fascination with this device, which is proven by a large number of references in various original or translated writings (even monographic articles and books), in which some clues can be found.

First of all, the phonograph, as a fulfilment of an elementary idea, could be used to endorse the positivist model and to promote trust in the great possibilities of technology, as well as contribute to its humanization. Lasarte proclaimed that “the phonograph and the telephone by themselves had provoked an actual revolution, up to the point that some wondered if everything could be resolved” “thanks to human intelligence”\(^2\). On the other hand, the

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\(^1\) This article was funded by the research project HAR2009-12918-C03-02: Science and Expertise in the Public Sphere: Barcelona (1888-1992), directed by Agustí Nieto-Galan. Studies on Edison, the phonograph and its diffusion, the circulation of technology, scientific performances, the Catalan context... are very abundant. Regarding his mythification, see in particular WACHORST, Wyn (1982) *Thomas Alva Edison: An American Myth*, Cambridge, MIT, and GLICK, Thomas F. (1994) “Edison: Mito y realidad”, *Arbor*, no. 581, May, 39-50. Nevertheless, Edison inspired some jokes, such as a famous hoax on 1 April 1878 in *The Daily Graphic* about a supposed food machine. See ISRAEL , Paul B.; NIER, Keith A.; CARLAT , Luis (ed.) (1998) *The Papers of Thomas A. Edison*, vol. IV, Baltimore, Johns Hopkins University Press, 224-225, and BAZERMAN, Charles (2002) *The Languages of Edison’s Light*, Cambridge, MIT, 33-35. This practical joke was spread by the Catalan press, and the humoristic review *El Loro* attributed the invention of see-through vision glasses to him (no. 19, 3 April 1880, 4; no. 41, 4 September 1880, 1).

hyperbolic denomination “talking machine”, besides personifying the device (as well as the anthropomorphic shape of phonograph dolls), emphasizes the importance of recording the voice. This achievement has been compared with the discovery of writing or printing. Moreover, it was proclaimed:

“It seems that the importance of human voice was unknown; it seems that in it the personality of man is synthesized; that man is his voice and, therefore, if one is able to have, hear and reproduce his voice, one may have him, hear him and resuscitate him.”

The engineer Melcior de Palau, who celebrated the phonograph in some poems, even suggested that this device has great analogies with the human brain. If the telephone, with which it was associated in experiments, could transport sounds across long distances, the phonograph could keep them in time, beyond death, just as photography preserves images. Cinema would culminate the aspiration towards an audiovisual experience.

The applications of the phonograph were diverse: evocative, communicational, entertaining, musical, folkloristic, literary, linguistic, acoustic, medical, pedagogic, legal... Its inventor speculated about them, as did many others. For instance, La Imprenta even imagined that, besides reproducing lectures and musical or theatrical performances, “this wonderful instrument”, like an “external conscience”, would contradict definitively supernatural presences, as well as guaranteeing the truth in politics and in court.

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3 Although “fonògraf” is the normative Catalan noun, the term “fonógrafo” was at that time more common. Gabriel Nogués i Garcia in Primer Congrés Internacional de la Llengua Catalana (1908), Barcelona, Joaquim Horta, 300-301, proposed “fonograph”, adducing a phonetic tendency of the Catalan language. See also BASTARDAS I PARERA, Joan (2004) “Què vol dir micròfon? Què vol dir microfonia?”. In: COLÓN, Germà; MARTÍNEZ ROMERO, Tomàs; PEREA, Maria Pilar (ed.) La cultura catalana en projecció de futur: homenatge a Josep Massot i Muntaner, Castelló de la Plana, Universitat Jaume I, 93-110.

4 E. g., FERNÁNDEZ BREMÓN, José (1878) “Crónica general”, La Ilustración Española y Americana, no. 11, 22 March, 186, and CASCALES Y MUÑOZ, José (1899) La palabra y sus manifestaciones: Origen y desarrollo del lenguaje articulado, de la escritura, de la imprenta, de la litografía, del telégrafo, del teléfono y del fonógrafo, Madrid, De Bailly-Bailièire e Hijos.

5 “Semana histórica”, La Academia, no. 11, 23 March, 162.

6 PALAU, Melcior de (1889) “Poesías de Apeles Mestres”, Acontecimientos literarios, vol. I.

7 There are some studies on Catalan visual and audiovisual performances before cinema.


9 24 March 1878, 2049-2050. See also, “Teléfonos fáciles de fer” (1878), La Llumanera de Nova York, no. 35, March, 5.
humoristic Catalan review *Lo Nunci* already caricatured that its utilisation would often be frivolous\(^{10}\). Nevertheless, in the 19th century, they were so confident in their technological progress, that the phonograph was even present in futuristic fictions\(^{11}\).

As has been studied partially, this amazing invention quickly also became well-known in Spain, the state to which the largest part of the Catalan Countries belongs. On 8 December the writer José Fernández Bremón, who would refer to the phonograph in further writings, announced the publication of a commentary on this device by José Alcover –an engineer, according to the press and several studies, native of Catalonia– in *La Gaceta Industrial*\(^{12}\).

Indeed, two days later, he published an article with mention of the phonograph, quoting *Scientific American*, in this Madrid review, directed by him\(^{13}\). He stated that it was the first account of the phonograph in Spain\(^{14}\). Soon afterwards, a lot of information, a large part of which has been forgotten, circulated about it, not only in specialized publications, but also in the general press. Also in Madrid, the academic year 1877-1878 a phonograph made by Edme Hardy, with a low register number, was imported from Paris by the Saint Isidro Institute\(^{15}\). Moreover, in the latter year, the phonograph was also

\[\text{10} \quad \text{ROSÉS, J. (1878) “Lo fonógrafo”, *Lo Nunci*, no. 52, 22 September, 1-2. There are other humorous commentaries about the phonograph. E. g., GUMÁ, C. [Juli Francesc Guibernau’s well-known pseudonym] (1878) “A Thomas Edison. Inventor del fonógrafo, megáfono, aerófono, etc., etc., etc.”, *La Campaña de Gracia*, no. 486, 24 November, 3, remarked that it only repeats records without what it says, just like some people. However, the same author suggested celebrating technology, and specifically the phonograph, in the poem “Lo trovador modern”, collected in GUMÁ, C. ([1889]) *Cansons de la flamarada*, Barcelona, Librería Española de López, 77-80. See also similar jokes in *La Campaña de Gracia*, no. 529, 31 August 1879, 3, and GOMILA, S[ebastià]. ([1884]) “Al fonógrafo. Sonet”, *Almanach de la Campaña de Gracia per l’any 1885*, 2. Collected in GOMILA, S[ebastià] ([1889]) ¿Qué?...: Líneas cortas á granel, Barcelona, Libreria Española de López, 48-49.
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\[\text{11} \quad \text{E. g., GUANYABENS, E[mili]. (1881) “Demà”, *La Tramontana*, no. 2, 26 February, 2, reproduced in other publications; FABRA, Nilo María (1889) “Un viaje a la República Argentina en el año 2003”, *La Ilustración Española y Americana*, no. 21, 8 June, 335, 338, and FABRA, Nilo María (1895) “Teitán el soberbio: Cuento de lo por venir”, *La Ilustración Española y Americana*, no. 32, 30 August, 118 (both tales have been collected in books); DARWIN, Hipócrates [pseudonym] (1889) “La selección infinita. Novela”, *La Vanguardia*, 28 September, 1-2.
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\[\text{12} \quad \text{FERNÁNDEZ BREMON, José (1877) “Crónica general”, *La Ilustración Española y Americana*, no. 48, 8 December, 353-354 (354).}
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\[\text{13} \quad \text{ALCOVER, J. (1877) “El teléfono de Bell y el teléfono de repetición de M. Edison”, *La Gaceta Industrial*, no. 23, 10 December, 354-356.}
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\[\text{14} \quad \text{ALCOVER, José (1878) “El fonógrafo de Edison perfeccionado”, *La Gaceta Industrial*, no. 8, 25 April, 119-123 (119).}
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\[\text{15} \quad \text{JIMÉNEZ ALBARRÁN, Mª. Josefa; LASTRA GONZÁLEZ, Ignacio de la (2006) “¿Fonógrafos para la enseñanza?: Dos fonógrafos del Instituto San Isidro de Madrid en el Museo Nacional de}
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shown in South America.

Of course, Edison became very popular in the Catalan lands as well, in the context of considerable admiration towards the US, with which several relationships were established\(^\text{16}\). For instance, soon a famous Catalan tongue twister (“Setze juges d’un jutjat...”) –which is not only from Majorca, as was stated– was recorded by a visitor to Menlo Park\(^\text{17}\). Who was he? In any case, the engraving that illustrates the article was signed by “Ph[ilip]. G. Cusachs”. This Catalan artist, as is well-known, published in the newspaper as well as La Llumanera de Nova York, which obtained an autograph from Edison in Catalan (figure 1).

![Image](https://example.com/image.jpg)

**Fig. 1.** A[rtur]. C[uyàs]. “Thomas Alva Edison”, La Llumanera de Nova York, no. 66, October 1880, 1. Library of Catalonia (Biblioteca de Catalunya). Barcelona. All images are reproduced with the kind permission of the libraries or archives mentioned.


\(^{17}\) C[ROFFUT]., W[jilliam]. A[ugust]. (1878) “The Papa of the Phonograph”, The Daily Graphic, 2 April 1878, 221 and 223. The picture of the first page is reproduced in “The Thomas Edison Papers” (http://edison.rutgers.edu, scrapbook SB031) and the article is edited, with an illustration of its engraving, in ISRAEL; NIER; CARLAT (ed.) (1998), 213-220. It was also transcribed by Crónica Científica, no. 11, 1878, 259-264, and has been imprecisely quoted by VILLON, [A. Mathieu] (1893) El fonógrafo y sus aplicaciones, Madrid, A. Avial, 1893, 5-7; HEREDIA Y LARRERA, Publio (1895) El testamento fonográfico, Madrid, Revista Política, 47-48; BARREIRO, Javier (1992) Raquel Meller y su tiempo ([Zaragoza], 125-133 (126).
2.- The Transfer of the Phonograph by Francisco Dalmau and Son.

It is said, without giving references, that on 21 February 1878, this firm in Barcelona had obtained a five-year privilege for introducing the phonograph to Spain\(^{18}\). However, it has not been localized in the Spanish National Patents and Trademarks Office in Madrid, in the Cuban equivalent, nor among governmental dispositions or in the general and specialized press\(^{19}\). On the other hand, Edison had obtained the patent for the US only two days before, even though he had requested it on 15 December 1877.

In any case, on 22 March 1878 *El Porvenir de la Industria* announced that Dalmaus’ firm had received phonographic recorded sheets and expected that a phonograph would be delivered in a few days\(^{20}\). On 12 April it added that phonographs, which would be supplied in a few days, had been tested by their representative in London and the plates with musical and spoken recordings were displayed in the shop windows, at 9 Rambla del Centre (in front of the Liceu theatre, as many advertisements remarked)\(^{21}\).


\(^{19}\) Other files about the Dalmau family inventions and the phonograph Dalmaus’ inventions and the phonograph are conserved, one of which refers to a “procedure for reproducing and transmitting sounds and voices”, i. e., the telephone (Ministry of Industry, Tourism and Trade. National Patents and Trademarks Office. Historical Archive. Madrid. File 5573). Dalmaus also introduced other devices, such as the Edison electrical pen and the Hughes microphone.

\(^{20}\) No. 157, 103.

\(^{21}\) No. 160, 12 April 1878, 128. This information would be repeated by *El Comercio de Barcelona* two days later, 526. Also on 12 April, a Madrid newspaper, *El Siglo Futuro*, 3, reported that an optician in Barcelona had a fragment of phonographic sheet recorded in London on 5 April. A renovation project of Dalmaus’ shop windows is shown in figure 3.
The Boletín Mensual de la Asociación de Ingenieros Industriales informed that on 13 April Dalmaus’ firm tested a phonograph for the first time. This example had been imported for the physics laboratory of the School of Industrial Engineers of Barcelona. It was exhibited in Dalmaus’ shop windows until 18 April, when it was to be delivered to the School.

Its laboratory was photographed for an album, the bill of which dates from 26 May 1878, but the device in the image that could appear to be a phonograph is actually a part of a Hughes Telegraph. I have not located the phonograph in other pictures. Unfortunately, it is not conserved at the Higher Technical School of Industrial Engineering of Barcelona, where Lusa unearthed a bill issued by Dalmaus’ firm on 13 June including a phonograph, for 450 pesetas, and 2 pounds of phonographic sheets, for 5 pesetas.

No. 3 (May 1878), 11. The next year Tomas J. would become a member of the Industrial Engineers Association. See the same bulletin, no. 10 (March 1879), 13, and La Imprenta, 9 February 1879, 984.

Diario de Barcelona, 16 April 1878, 4540; El Comercio de Barcelona, 16 April 1878, 565; La Imprenta, 16 April 1878, 2605-2606.

LUSA MONFORTE, Guillermo; ROCA ROSELL, Antoni (2005) Historia de la Ingeniería Industrial. La Escuela de Barcelona (1851-2001). Álbum de 1878. Exposición catalana (1877), Barcelona, ETSEIB. There are several studies regarding this centre, with which the Dalmau’s firm had a long relationship, as well as on the history of Catalan engineering.

would be the earliest phonograph in Spain, according to many newspapers, as well as Antonino Suárez Saavedra, who tested it on 31 May\textsuperscript{26}. Josep Dalmau Montero, the youngest son of Tomàs J., informed that he conserved part of the family heritage\textsuperscript{27}. Regrettably, it has not been preserved, according to the kind responses provided by some descendants\textsuperscript{28}. However, there is a large quantity of scattered information regarding Dalmaus’ firm and it has been partially studied, as well as by economic historians, by historians of science\textsuperscript{29}.

Thanks to Sánchez Miñana and Lusa we know that Francesc Dalmau was a musician from Manresa who became an optician in Barcelona\textsuperscript{30}. He had partners and collaborators, especially his son Tomàs J. and the engineer Narcís Xifra\textsuperscript{31}. On 30 April 1881, Tomàs J. registered the Spanish Society of Electricity, becoming its managing director\textsuperscript{32}.


\textsuperscript{27} DALMAU MONTERO, J. (1956) “¿Quién fue el señor Dalmau?”, \textit{Destino}, no. 993, 18 August, 3. There are some projects by Josep Dalmau Montero in the Spanish National Patent and Trademarks Office in Madrid and several catalogues of his firm at the Higher Technical School of Industrial Engineering of Barcelona.

\textsuperscript{28} Personal communication, 2010.

\textsuperscript{29} See also CABANA, Francesc (1992) \textit{Fàbriques i empresaris}, vol. I, Barcelona, Enciclopèdia Catalana, 182-198.


\textsuperscript{31} See, in particular, MOLINA I FIGUERAS, Joan (1992) \textit{Narcís Xifra, capdavanter de l’enginyeria electrotècnica a Catalunya}, Barcelona, Associació d’ Enginyers Industrials de Catalunya. Narcís Xifra was married to a sister of Tomas J. Dalmau’s wife’s (the file of his son Francesc de P. Xifra Montero at the University of Barcelona). Information in Manuel Dalmau Montero’s file at the same university confirms that Francesc Dalmau came from Manresa and states that his wife, Maria Garcia, was born in Pontedeume (Galicia).

\textsuperscript{32} In addition to MALUQUER DE MOTES (1992) see MARTÍN RODRÍGUEZ, José Luis; OLLÉ ROMEU, José María (1961) \textit{Orígenes de la industria eléctrica catalana}, Barcelona, Instituto Municipal de Historia; GARCÍA DE LA INFANTA, José María (1986) \textit{Los primeros pasos de la luz eléctrica en Madrid y otros acontecimientos}, Madrid, Fondo Natural; ARROYO, Mercedes; NAHAM, Gerardo (1994) “La sociedad española de Electricidad y los inicios de la industria eléctrica en Cataluña”. In: CAPEL, Horacio, \textit{Las tres chimeneas}, Barcelona, FECSA, vol. I, 2-51; ALTSHULER, José; GONZÁLEZ, Miguel (1997) \textit{Una Luz que llegó para quedarse: Comienzos del alumbrado eléctrico y su introducción en Cuba}, La Habana, Editorial Científico-Técnica; ALAYO MANUBENS, Joan Carles (2007) \textit{L’electricitat a Catalunya: De 1875 a 1935}, Lleida, Pagès...
Fig. 3. Advertisement of a Dalmau and Son’s delegation in Madrid, illustrated with a Gramme dynamo. *El Globo*, 26 October 1877, 4. National Library of Spain (©Biblioteca Nacional de España). Madrid.

Fig. 4. Drawing for an illuminated advertisement announcing Francesc Dalmau’s Cosmorama, at 8 Ciutat Street, in Barcelona. 14 April 1843. Contemporary Municipal Archive of Barcelona (Arxiu Municipal Contemporani de Barcelona). Q127. Particular Works. *Foment*, file 65.
The Dalmau family, despite its modest optician origins, imported, exported, manufactured, constructed, modified and invented many kinds of devices. Two catalogues with a lot of items are conserved in the Royal Academy of Sciences and Arts of Barcelona: one, published in 1871, which I discovered significantly folded inside a secondary school textbook on physics and chemistry, and another, well-known, printed in 1877, the donation of which was recognized by the general meeting. I will only enumerate some activities: optics, photography, scientific instruments, lightning-conductors, electricity, illumination, telegraphy, telephony, industrial and agricultural machinery, armaments, electric bells...

The Dalmau family and the Spanish Society of Electricity had several shops, stores and workshops in Barcelona and in other cities and towns. There are many advertisements of Dalmaus’ firm in the press and in guides (e. g., figure 3), some already supplied by other researchers. The Dalmau family tried to attract customers to their headquarters and delegations (for instance, publishing an advertisement in Minorca) and visited other cities and towns (for example, the month after the phonographic session Francesc Dalmau would go to Tarragona to explain eyesight care). Beyond marketing interest, they contributed to science popularization through shows, booklets, public letters and articles. Moreover, they collaborated with societies, educational centres and professionals (for instance, with doctors).

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34 Several studies on some of these issues refer to the Dalmau family.

35 Diario de Mahón, 16 May 1868, 4.

36 Gaceta de Cataluña, 24 October 1878, 1917.

37 Besides their shop window exhibitions, they organized performances, such as a historical cosmorama. See SÁNCHEZ MINANA; LUSA MONFORTE (2009), 92; I found a drawing of an illuminated advertisement announcing this optical show (figure 5). Francesc Dalmau published the booklet El optímetro: Su origen, su composición y los recursos que ofrece para graduar la vista é indicar los anteojos que pueden convenir (Barcelona, Hispana, 1850) and El tesoro de la vista y su conservación hasta la vejez, which reached, at least, a 5th augmented edition (La Dinastía, 28 November 1883, 955). Dalmau and Son had sent a letter to La Imprenta defending electrical light (24 November 1878, 8147-8148). These are only a few examples.

They not only enjoyed great recognition in Spain, but also certain acknowledgement abroad. In 1874 the Dalmau family, with the aim of obtaining information on the Gramme dynamo, had visited Paris and London, where they consolidated and established important contacts\(^{39}\). Among their acquaintances, Tomàs J. Dalmau mentioned the French engineer Alfred Niaudet, who would contribute to the popularization of the phonograph with his widespread writings\(^{40}\), and the scientific instruments constructor in London L. P. Casella. To give just another example of Dalmaus’ travels, on 2 July 1878 Tomàs J. arrived from Paris and the next day would set off to Madrid\(^{41}\).

The Spanish Society of Electricity even earned the support of the anarcho-collectivist review *La Tramontana*, which praised the management in particular\(^{42}\). The Dalmau family had a complex and important network of relationships.

3.- Joaquim M. Bartrina’s Scientific Ideas.

Besides Tomàs J. Dalmau, Joaquim M. Bartrina (Reus, 1850 – Barcelona 1880) played a main role in the phonographic session at the Free Athenaeum. He was a writer and a science amateur and popularizer, evolving from romanticism to positivism, with a great dose of scepticism\(^{43}\).

Bartrina was not only a bohemian, as a possible caricature by the conservative review *Lo Burinot* claims (figure 5), yet neither was he a typical savant, as another portrait probably of him idealistically suggests (figure 6)\(^{44}\). We

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\(^{40}\) See note 61.

\(^{41}\) *La Imprenta*, 3 July 1878, 4339.

\(^{42}\) No. 95, 13 April 1883, 3.

\(^{43}\) There are quite a lot of studies on him, but some issues have yet to be researched thoroughly. Publications (such as early collaborations in *El Tesoro*), manuscripts, news, commentaries, imitations, parodies... have been forgotten.

\(^{44}\) *Lo Burinot*, 2 May 1879, 1. BARTRINA, Joaquín María (Barcelona, 1884, 4th edition) *Algo: Colección de poesías originales*, 11, engraving by Josep Lluis Pellicer. The contrast between the antiquated model of savant, represented by the clergy, and the modern one was repeated
know that he was only enrolled in a few liberal arts courses at the University of Barcelona. However, besides his natural gifts and his thirst for knowledge, he completed his training thanks to readings and contacts with very important figures in arts, science, politics... He then worked at the Gaceta de Cataluña as an editor, until he moved onto La Imprenta.

Fig. 5. Probably caricature of Bartrina, Lo Barinot, 2 May 1879, 1. Library of Catalonia (Biblioteca de Catalunya). Barcelona.

Fig. 6. Engraving by Josep Lluís Pellicer illustrating the poem “De omni re scibile”. In: BARTRINA, Joaquín María (1884, 4th edition), Algo: Colección de poesías originales, Barcelona, Librería Española de I. López, 11. Example of the author of the article.

and also illustrated with an engraving in Revista Popular, no. 590, 30 March 1882, 200-203.

A friend of Bartrina, Pompeu Gener, comparing him with Edison, claimed that “two years” before the invention of the telephone by Bell, Bartrina conceived a water telephone, mainly with the aim of transmitting music\(^{46}\). Gener specified that he took some notes on the conductivity of sound in water, as Bartrina asked for his help\(^{47}\).

In any case, he wrote about multiple subjects, including scientific and technological topics, which are even very present in his poetry. In addition to translating Darwin and applying his theories to several fields, as regards the subject of this article, it is interesting to point out several notes on physics\(^{48}\). His brother Francesc regretted the fact that, since Joaquim M. lent his writings to friends and forgot to retrieve them, the family has never recovered some, which they would have liked to publish, such as a short medical treatise, comments on “the mathematic point” and “studies” on the propriety of electrical conduction by discontinuous metal filings\(^{49}\).

In the notes collected in the posthumous edition of his works, Bartrina considered that “telluric flows” should be more exploited, since the microphone works well thanks to them (without a battery)\(^{50}\). He also wondered if, given that “electricity is propagated in concentric waves”, “metallic conductors” could be “wholly suppressed”. He even stated that he had “tested” it “on a small scale”. Moreover, he also suggested using “the electrical alterability” of sulphur and selenium “in aerial communications”. These ideas were dated from 1878 by Josep Roca i Roca, who regretted that Bartrina’s oral suggestions had not been phonographically recorded\(^{51}\).

A further passage was unearthed from a manuscript, claiming that the editors of the works would not dare to publish it:

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46 GENER, Pompeyo (1915, 1st edition from 1897) *Amigos y maestros: Contribución al estudio del espíritu humano a fines del siglo xix*, Barcelona, Maucci, 69, 299. I have not been able to document this curious statement, from an author who is not always fully trustworthy.

47 GENER, Pompeyo (1889) “Crónicas de la exposición de París. El teléfono y el telégrafo”, *La Época*, 17 October, 2.


49 RAMON, Jaume (1899) “Obras póstumas de Bartrina”, *El Vendrellense*, no. 362, 3 September, 1. There are further writings concerning Bartrina in this publication.

50 BARTRINA (1881), 284-285.

“Disregarding the categorical statement [of physics] according to which metals are electrical flow conductors. I have been convinced that not one would be a conductor in certain conditions. Interposing filings of any metal in a battery circuit (short or long) closed by a galvanometer or a bell, these [receptor devices] stop working [at once]. Do these filings not have enough cohesion to transmit the flow? Could an induced spark, produced at a far, farther, immeasurable distance (depending on the generator device), give cohesion to them? Ecco il problema.”

These ideas would be later related with the invention of the radio. On 18 July 1899 Josep Aixalà i Casellas sent a letter from La Habana to [Jaume] Ramon, who published it in El Vendrellense with the title “Bartrina, the inventor of wireless telegraphy”\textsuperscript{53}. He linked Bartrina’s conceptions to the discovery of the sulphur lens and considered that they would probably influence Marconi, because Bartrina’s works were well-known in Italy. This article was reproduced or quoted in other publications\textsuperscript{54}.

Nevertheless, the physicist Antoni Porta i Pallissé explained Maxwell’s theories, Hertz’s experiments and the Branly condenser, contrasting them with Bartrina’s notions, yet ignoring the passage suppressed in the works edition \textsuperscript{55}. He considered that Bartrina mixed, without basis, electrical waves

\textsuperscript{52} AGUADÉ I PARÉS, Enric (1924) “Biografia d’En Joaquim M.* Bartrina i de Aixemús llegida per son autor [...] a l’acte de l’inauguració de la Galeria de Reusencs Il·lustres que tingué lloc el dia 27 de novembre de 1915”, Revista del Centre de Lectura, no. 111-112 (1-15 September), 197-204. The lecture was reported by the local press, but without quoting this passage. The manuscript of the speech and other author’s documents concerning Bartrina are not conserved (Enric Aguadé Bruix, Personal communication, 2011). Regarding the author, see OLESTI TRILLES, Josep (1991) Diccionari biogràfic de reusencs, Reus, Ajuntament, vol. I, 34-35. The anonymous “Visión profética” (1916), El Diluvio, 24 May, 7 –reproduced in SARDÁ I FERRÀN, Jaume (1925) Noves biogràfiques del poeta Joaquim M.a Bartrina i de Aixemús, Reus, Juan Muñoa, 81– quoted the same text emphasizing that they had the manuscript. I transcribed the passage from the first article, but I added words from the second one in square brackets. I also incorporated the italics from this version, although it is possible they are not from Bartrina. I kept the word “bell”, which may have been forgotten by El Diluvio.


\textsuperscript{54} A few days later, in La Publicidad, La Autonomía –collected in SARDÁ I FERRÁN (1925), 49-51, and expanded in ALMAGRO, Víctor de (1901) “Aclaración de una duda”, El Heraldo Militar, no. 365, 11 June 1901, 1-2–, El Globo, Electrón, Diario de Pontevedra, Revista de Montes... It would still be reproduced in Buenos Aires Catalunya, no. 33, June 1933, 7.

\textsuperscript{55} PORTA PALLISÉ, A. (1901) “Bartrina y la telegrafia sin hilos”, Revista del Centre de Lectura, no. 1-2, 1-15 March, 4-6, and 12-13, dated in February 1901. The Enciclopedia universal ilustrada
with telluric flows and selenium properties, and, in any case, Maxwell, following Faraday, would have preceded Bartrina.

However, the next year, on the occasion of Marconi’s visit to Spain, El Vendrellense insisted on the analogy\textsuperscript{56}. Twenty-two years later, the writer Carles Soldevila raised the question again via the comments of an anonymous engineer, who claimed that Bartrina had known about Maxwell’s theories and Hertz’s experiments, as well as the fact that, if he had not died so young, maybe he could have invented the Branly coherer\textsuperscript{57}. The attribution of the invention of the radio to Bartrina was still repeated in many writings.

In other notes, Bartrina predicted that the Planté secondary batteries, “the best dynamic electricity condensers”, would play an important role in future discoveries \textsuperscript{58}. He also regretted that the primary iron sesquioxide battery (in his opinion, “the queen of batteries”, because of the constancy of its flows) was not more used. Moreover, he suggested accumulating solar energy in thermoelectrical batteries and condensers, such as was occurring with Muchot machines.

In 1878 Bartrina, at a banquet held to pay homage to the engineer Ave·lí Comerma, suggested an idea for a story about the Crookes Radiometer, which would be written by Narcís Oller and translated into French by Albert


\textsuperscript{57} SOLDEVILA, Carles (1924) “Full de dietari: Una intuïció malaguanyada”, \textit{La Publicitat}, 9 December, 1. Collected in SARDÁ I FERRÁN (1925), 56-58.

\textsuperscript{58} BARTRINA (1881), 285. Many others were interested in batteries, such as Tomàs J. Dalmau, whose projects on this item are conserved in the National Patents and Trademarks Office.
Savine. As I have referred to it in other studies, now I would only like to remark that this device, invented in 1875, was soon imported by Dalmau and Son, which displayed it in its shop window, and was also shown in several scientific centres, such as the University of Barcelona\textsuperscript{59}.

Without falling into exaggerations, Bartrina’s scientific ideas should be analysed thoroughly. He was far from being an ignorant visionary, since he had the support of Dalmau and Son and information sources (from scientific studies to general press, where several articles on these subjects had been published)\textsuperscript{60}.

![Image](image_url)

Fig. 7. Library of Catalonia (Biblioteca de Catalunya), to which it was bequeathed by Bartrina’s family. Barcelona. Catalogue number A 65-8-174.

\textsuperscript{59} \textit{El Porvenir de la Industria}, no. 66, 7 July 1876, 510, and no. 74, 1 September 1876, 672-673. The device figured in the mentioned catalogue by Dalmau and Son from 1877 (note 33), 69 and 110. The radiometer would even be shown at the Catalan Association of Excursions from the 1 December 1879, on the occasion of a lecture by Josep Ricard i Giralt (\textit{L’Escut de Catalunya}, no. 37, 13 December 1879, 296; \textit{Butlletí Mensual de la Associació d’Excursions Catalana}, no. 16-17, February-March, 1880, 35). \textit{GENER} (1915), 69, and “Coses d’En Peius”: Records anecdòtics, sèrius i humorístics de la meva vida (later than 1920), 28-29, claimed to have met Crookes in London and Paris. There are a large number of articles about the radiometer and his inventor, who was associated with Spiritualism as well as with “inorganic Darwinism”, although this issue seems to have been influential later, as has been analysed by José Ramón Bertomeu-Sánchez and Rosa Muñoz Bello in several studies.

\textsuperscript{60} Among the books bequeathed by Bartrina’s family to the Library of Catalonia, some are related with these kinds of subjects, one of which was dedicated by hand to “M[onsieu] r. Dalmau” by the author: NIAUDET, Alfred (n.d.. [work published in 1878]) \textit{Téléphones et phonographes. Étude complète de ces inventions}, Paris, J. Baudry (figure 8). On pages 42-43, “M. Dalmau from the academy of Barcelona”, Tomàs J., is mentioned with regard to the telephone. About the previous contact of the Dalmau family with Niaudet, see (note 39).
4.- The Phonographic Session at the Free Athenaeum.

In 1874, finishing the Democratic Six-year Period, the Restoration began, an important epoch which would be reviewed. However, the liberal substratum became apparent not only in political controversies, but also in scientific and philosophical ones, above all regarding positivism and Darwinism. One of the most important battlefields was the Barcelona Athenaeum. There, in 1877 the banning of lectures (caricatured in figure 8) provoked hostilities. The cycles by Estasén, on positivism, and by Bartrina, who spoke about pre-Columbus America in Darwinist terms, were suspended. In addition to organizing a banquet in homage to both lecturers, some people decided to create the Free Athenaeum, mainly as a reaction to these and other prohibitions.

Fig. 8. Caricature of the banning of lectures at the Barcelona Athenaeum. *Almanach de la Campana de Gracia*. 1878. Library of Catalonia (Biblioteca de Catalunya). Barcelona.

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61 ROCA ROSELL, Antoni; NAVARRO BROTONS, Víctor (1997) “Reflexions sobre la ciència i la tècnica a la Restauració”. In: *Actes de les IV Trobades d’Història de la Ciència i de la Tècnica*, Barcelona, Societat Catalana d’Història de la Ciència i de la Tècnica, 181-190.

62 BARTRINA (1881), 127-168. The manuscript of Bartrina’s lecture is partially conserved with papers of Joan Sardà i Lloret, collector of BARTRINA, Joaquín M. (1881). See SOLÀ, Maria (2006) *Joan Sardà, critic literari de la Restauració*, Barcelona, Abadia de Montserrat, 325. Among these documents, which at present are owned by his great-grandson Joan Sardà i Ferrer. I discovered manuscript fragments of “La meteorologia popular”, on sheets used for another piece of writing. BARTRINA (1881), 193-218. See also Barcelona Athenaeum’s documents, the press and studies on this society and the reception of positivism and Darwinism.

63 E.g., *Gaceta de Barcelona*, 5 May 1877, 3696-3697; *La Imprenta*, 5 May 1877, 3417-3419. There are some banquet invitation examples and further documents about these controversies among the personal papers of the active positivist Pompeu Gener at the Historic Archive of the City in Barcelona.

64 Besides the society’s printed memories, as well as some references in studies on some of its members the other athenaeum or the context, there is a lot of scattered information in the press and some documents in several archives.
Having had its first site at 7 Rambla de Santa Mònica, this centre was relocated to 23 Avinyó Street\textsuperscript{65}. At present, this place is occupied by the building of the former Casino Mercantil, popularly called “the little stock market”, the construction of which began in 1881. That was the time of the “gold fever”, an expression taken from the title of a famous Oller’s novel (\textit{La febre d’or}), in which an inventor, possibly inspired in part by Tomàs Dalmau or one of his collaborators, maintains correspondence with Edison.

In a soirée at the Free Athenaeum, on 12 April 1878, Conrad Roure had already read an ode celebrating the “North-American Edison” as the “inventor of the phonograph”\textsuperscript{66}. He praised the power of the genius, emphasising that Edison came from the country that had controlled lightning, thanks to Franklin, and remarking that phonographic records could transcend death: if “the God of nature” had given an ephemeral voice to man, the “god of science” immortalized it\textsuperscript{67}.

The phonographic session, which was held on the evening of Thursday 12 September, following its presentation in other European cities, was considered to be the first in Spain, even by Madrid press and Suárez\textsuperscript{68}. Some details

\textsuperscript{65} \textit{Gaceta de Barcelona}, 7 February 1878, 835, \textit{La Imprenta}, 7 February 1878, 927. \textit{Diario de Barcelona}, 8 February 1878, 1721. \textit{La Imprenta}, 13 March 1878, 1764; \textit{Gaceta de Cataluña}, 13 March 1878, 1581. The same newspaper (18 September 1879, 1) informed, as well as others, that the location had been moved to Conde del Asalto Street (today, Nou de la Rambla).

\textsuperscript{66} ROURE, Conrat (1878) “Al nort-america Edisson, inventor del fonógrafo. Sonet”, \textit{La Campana de Gràcia}, no. 449, 28 April, 2-3. See also \textit{El Comercio de Barcelona}, 13 April 1878, 513.

\textsuperscript{67} The persistence of phonographic recordings would still be remarked as an emblematic technological progress on 22 November 1881 by the Free Athenaeum’s secretary, Joan Martí i Thomàs. See \textit{Memoria y discurso leídos en la sesion inaugural del Ateneo Libre de Cataluña celebrada el 22 de Noviembre de 1881} (1882), Barcelona, Redondo y Xumetra, 10. The phonograph could even record divine words: SELLES, Salvador (1883) “Al fonógrafo”, \textit{La Ilustración Ibérica}, no. 40, 6 October, 3; RAHOLA, Frederich ([1894]) “Lo fonógrafo”, \textit{Almanach de la Esquella de la Torratxa}: 1895, 64.

can be found in the Free Athenaeum printed memories, several evocations and multiple reports\textsuperscript{69}.

![Image: Engraving of the Free Athenaeum phonographic session by Eugeni Alós [i Marte] and Josep Planella [i Coromina], La Academia, no. 16, 30 October 1878, 252. Example of the author of the article.]

The soirée took place in the largest room, despite not having the best acoustics. It was full, although the session, unlike others, was only for associates and a few guests, foreseeing a very large turnout and maybe also hoping to attract new members. In addition to the predominance of a certain ideology (with several tendencies), the audience, among which there were some ladies, probably belonged to a large extent to the bourgeoisie or the middle-class. Training levels were varied, from professors of the University of Barcelona and the School of Industrial Engineers of Barcelona (such as

\textsuperscript{69} Ateneo Libre de Cataluña: Discurso y memoria leidos por su presidente y secretario en la sesión inaugural celebrada el 6 de Octubre de 1878 (1878), Barcelona, N. Ramírez y Ca., 12. ROURE, Conrat (1916) “Recordant al amich Joaquim Bartrina”, L’Avençada, no. 65, 27 Mai, 2; ROURE, Conrat (s. a.) Anys enllà: Aplech de recordances dels temps jovenis, Barcelona, Ilustració Catalana; ALMIRALL, Valentí (1880) “¡Bartrina!”, La Veu de Catalunya, 5 August, 47, collected in ALMIRALL, Valentí (1985) Cultura i societat, Barcelona, Edicions 62, 75-82; DALMAU, A. R (1930) “La primera audición fonográfica que se verificó en España”, Diario de Alicante, 9 August, 1. Gaceta de Cataluña, 13 September 1878, 992-993 –reproduced by Crónica de Cataluña, El Porvenir de la Industria, Las Circunstancias, La Época...; La Imprenta, 14 September 1878, 6213-6214; Boletín Mensual de la Asociación de Ingenieros, no 7, October 1878, 7; Revista Universal Ilustrada, no. 80, 5 October 1878, 6-7; La Academia, no. 16, 30 October 1878, 252, with an engraving (figure 10), 254, yet criticized by the Gaceta de Cataluña, 5 November 1878, 2195. The example of this engraving held at the Library of Catalonia is only a cutting from the review. The session was also announced or mentioned by these publications (e. g., Gaceta de Cataluña, 28 August 1878, 635), as well as others, such as La Publicidad, 11 September 1878, 198.
Ramon de Manjarrés and Francisco de Paula Rojas y Caballero Infante) to people without scientific knowledge.

The act was opened by Bartrina. He had been a secretary of the constitution committee of the Free Athenaeum and also occupied this position after its creation, sometimes alternating this function with Valentí Almirall, whom he succeeded. Reports summarized that he praised the American character (especially their contributions to modern science), sketched Edison’s biography in an anecdotal manner and described the device, being interrupted by applause. Unfortunately, we do not have his talk. Nevertheless, in addition to anonymous articles in the _Gaceta_ about Edison and his phonograph, I found another in _La Campana de Gracia_ with a pseudonym already attributed to Bartrina: “A. T. O.”. The Catalan pronunciation sounds like the word “Ateu” (in English, ‘Atheist’). This article would be published three days after the phonographic session and the content coincides with reports of Bartrina’s talk. The emphasis on Edison’s self-education and jokes about religion are the most remarkable issues. The author commented that the phonograph does not like ‘capellans’, a Catalan word meaning not only ‘a drop of saliva spat while talking’, but also ‘a priest’. With this pun, he criticized the opposition of the clergy to certain issues of science, in accordance with the anticlericalism of the review.

Nevertheless, in his notes, Bartrina considered that “great discoveries often destroy statements considered laws” and, if Edison had respected them, some of his more notable inventions would not exist. However, he thought

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70 Ateneo Libre de Cataluña: Discurso y memoria leídos por su presidente y secretario en la sesión inaugural de esta asociación celebrada en 20 de Marzo de 1878 (1878), Barcelona, Luis Tasso, Hijo, Ateneo Libre de Cataluña: Discurso y memoria leídos por su presidente y secretario en la sesión inaugural celebrada el 6 de Octubre de 1878 (1878) and the press.

71 A. T. O. (1878) “L’inventor de fonògraf”, La Campana de Gracia, no. 475, 15 September, 1. Among other references to the phonograph in this review, see P. K. [Josep Roca i Roca’s well-known pseudonym] (1878) “Lo fonògraf”, no. 45, 31 March, 2. Two articles with the signature “A. T. O.” were collected in BARTRINA (1881), 259-267. I found other writings with this pseudonym. E. g., in the _Gaceta_ there is one titled “Se acaba el clero?”, Gaceta de Cataluña, 12 September 1878, 1126-1127. La Correspondencia de Cataluña, 20 September 1878, 323, considered that the author was “favourably known in literature and likeable to the general audience”, contradicting _El Correo Catalán_.

72 Regarding his religious ideas, see, for instance, “Rectificación y ratificación” (1878), Gaceta de Cataluña, 12 November, 2341-2342. Pompeu Gener joked about the substitution of acolytes by phonographs in “Coses d’En Peius” (later than 1920), 121, among other references to this device in his works.

73 BARTRINA (1881), 282.
that the phonograph and other devices, such as the Ruhmkorff induction coil, the Crookes radiometer and Bell telephone, were only “primitive instruments”, therefore rudimentary, of “the true physics”, which “in some centuries will turn into a science”\textsuperscript{74}.

Having yielded in part the role of speaker to Bartrina, Tomàs J. Dalmau began his experiments, pleasing the wishes of those present. In the same way as Edison and others conducted several tests with the phonograph and the phonographic sheets, at least, he used different materials for the membranes (steel, ivory and pine), positioned the device on top of a resonance box and substituted the clockwork mechanism by a Gramme dynamo. This association, although foreseeable, was attributed to Dalmau himself, who, as is well-known had imported this machine\textsuperscript{75}. As Casas Barbosa observed, the dynamo improved the regularity of the mechanism, but it could not be a common solution\textsuperscript{76}. According to the \textit{Gaceta de Cataluña}, some of Dalmaus’ innovations had been recently praised by the French press\textsuperscript{77}. It is not clear if they referred specifically to the phonograph.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure10.png}
\end{figure}

\begin{thebibliography}{77}
\item \textsuperscript{74} BARTRINA (1881), 284.
\item \textsuperscript{75} Some of Tomàs J. Dalmau’s projects about this device are registered at the National Patent and Trademarks Office (see figure 10). Regarding the transfer of this machine, in addition to mentioned studies, see, in particular, BOSCH TOUS, Ricard (2002-2003) “Los orígenes de una dinamo de Gramme en la ETSEIB”, \textit{Quaderns d’Història de l’Enginyeria}, vol. V, 185-199.
\item \textsuperscript{76} CASAS Y BARBOSA, José (1879) \textit{Maravillas de la telefonía: Descripción de el teléfono, el micrófono y el fonógrafo}, 64.
\item \textsuperscript{77} 13 September 1878, 992.
\end{thebibliography}
After Tomàs J. Dalmau’s experiments, the field marshal, Ramon Blanco, the only authority mentioned, greeted the phonograph, as if talking to a person, in the name of the Free Athenaeum. He, who had already been present at the inauguration of this society, had the support of progressive sectors. For instance, the *Gaceta de Cataluña* considered that he could be a “good” military commander “for the democracy”78.

Then, musical recordings were made. Music, in addition to attracting the interest of some of the Free Athenaeum members, had become the most popular use of the phonograph. The performers were the singers Ms. Wehrle, Ms. Rovira, Mr. Rincon and Mr. Puiggener, the pianist Mr. Mayol and two cornet players79. The works chosen, sometimes coinciding with other centres’ performances, were well-known: *I l’orbiere di Siviglia* (Rossini), *Norma* and *I puritani* (Bellini), *La favorita* (Donizzetti), *Saffo* (Pachini), *La Traviata* and *Aida* (Verdi), *Marina* (Arrieta), *Los comediantes de antaño* (Barbieri), *seguidillas*...

Along with literary and other recordings, several languages were employed with the aim of suggesting cosmopolitanism: Catalan (at least, one poem by the popular 17th century writer Francesc Vicent Garcia, recorded by Feliu i Codina –more likely Josep than Antoni–, and an idiom uttered by the field marshal when the phonograph does not seem to be working correctly), Spanish, Galician (a *cantar* recorded by Moreno Torres), Italian, English, and a dialogue in French and German (language taught by the professor Carles Fernández de Castroverde, surname of one of those present)80.

The act was brought to a close with a speech by Bartrina expressing the Athenaeum’s gratitude. According to the engraving, a record for Edison was made by a member of the Free Athenaeum. However, *La Imprenta* reported that Dalmau was commissioned to it and the *Gaceta de Cataluña* explained that the actual recording was made three days later at Dalmaus’ workshop 81. The plate was kept in a case with a dedication in Catalan on

78 Los Lunes de la Gaceta de Cataluña, 24 April 1882, 1.
79 I will not develop the study of musical references. The presence of Emerenciana Wehrle is especially remarkable.
80 About the reception of the mentioned Catalan writer, see ROSSICH, Albert (2011) «La fortuna literària i crítica de Francesc Vicent Garcia». In: MIRALLES, Eulàlia (ed.) Del Cinccents al setcents: Tres-cents anys de literatura catalana, Bellcaire d’Empordà, Vitel-la, 505-574.
81 La Imprenta, 14 September 1878, 6213; Gaceta de Cataluña, 16 September 1878, 1076. A few days later, this clockmaker would exhibit a phosphorescent clock at the Free Athenaeum. See Ateneo Libre de Cataluña: Discurso y memoria leídos por su presidente y secretario en la sesión inaugural celebrada el 6 de Octubre de 1878 (1878), 12.
vellum and was exhibited in Wehrle’s shop window, attracting great curiosity.\textsuperscript{82} Regrettably, these objects are not conserved at the Edison National Historic Site\textsuperscript{83}.

Despite some technical shortcomings, the event received wide exposure, except for the majority of the conservative press\textsuperscript{84}. The Dalmau-Bartrina tandem was repeated in other sessions, such as on 29 March 1879 in the presentation of the singing condenser, in which Bartrina also talked about physics in general, and on 25 June in a lecture on electrical light\textsuperscript{85}. Unfortunately, the Free Athenaeum, which organized various activities, would disappear in 1882, for multiple reasons, such as the changes at the Barcelona Athenaeum, the usual vicissitudes of any society, the plurality of tendencies, the difficult sustenance of an innovative and characteristic project, the illness and death of Bartrina, the other interests of its members, the economical shortage, the demolition of its location\textsuperscript{86}...

Dalmau and Bartrina also coincided at the Barcelona Society for the Protection of Animals and Plants, founded the same year as the Free Athenaeum\textsuperscript{87}. Moreover, at the time of the phonographic session, both institutions were presided by the Darwinist doctor Joan Giné i Partagàs\textsuperscript{88}.

\begin{itemize}
\item \textsuperscript{82} \textit{Gaceta de Cataluña}, 18 September 1878, 1099.
\item \textsuperscript{83} Paul Israel, Personal communication, 2010; Leonard DeGraaf likewise.
\item \textsuperscript{84} “The \textit{Diario de Barcelona}, 21 March 1878, 3475, had proclaimed its decision to ignore the Free Athenaeum’s activities, branding it as materialist. See also the reaction of the progressive newspapers (such as \textit{La Imprenta}, 22 March 1878, 1995, and \textit{El Comercio de Barcelona}, 24 March 1878, 53).
\item \textsuperscript{85} \textit{Memoria y discurso leídos en la sesión inaugural del Ateneo Libre de Cataluña} (1879), Barcelona, La Academia, 11, and the press. Dalmau and Son contributed a lot of instruments to the Tombola of the Free Athenaeum for helping people affected by floods in south-eastern Spain and unemployed workers. See \textit{Gaceta de Cataluña}, 18 November 1879, 1; \textit{El Diluvio}; 18 November 1878, 6809; \textit{Ateneo Libre de Cataluña}. Catálogo general de los objetos adquiridos para la Tombola a favor de los perjudicados en las inundaciones del Sudeste de España y de los obreros sin trabajo de Barcelona ([1879]), Barcelona, Tasso, 6, and \textit{Tombola del Ateneo Libre de Cataluña para los pueblos inundados y los obreros sin trabajo} [1879].
\item \textsuperscript{86} \textit{La Vanguardia}, 17 January 1882, 378.
\item \textsuperscript{87} E. g., \textit{La Imprenta}, 10 May 1878, 3198, and 24 June 1878, 4147, \textit{Crónica Científica}, no. 11 (1878), 258, and \textit{La Imprenta}, 23 August 1878, 5684. There is other news in the press about this quite forgotten institution. See also \textit{El Reino Animal y el Vegetal}, no. 1 (March 1892), 2-3.
\item \textsuperscript{88} On 16 September approximately he arrived from the Paris Universal Exhibition (\textit{La Publicidad}, 17 September 1878, 1; \textit{Gaceta de Cataluña}, 18 September 1878, 1115).
\end{itemize}
5.- Further Catalan Uses and Innovations of the Phonograph.

On 26 June 1873 Tomàs J. Dalmau had been elected member of the Royal Academy of Natural Sciences and Arts of Barcelona\(^{89}\). However, he did not assume the position until 3 June 1876, doing so with a speech on a Faraday device constructed at his workshops, which, as well as the manuscript of the dissertation, has been conserved\(^{90}\). Entrusted to the technological laboratory on 14 December 1878, five days later, having been invited by the president, he presented his modifications to the phonograph and made some experiments, such as recording academics’ names\(^{91}\). The plate is still conserved (reference number 181.9) at this academy, unlike Dalmau’s speech and the report that was said to be made by the pharmacist Fructuós Plans i Pujol, who had supported Dalmau in the investment as an academic, the doctor Manuel Mir i Navarro and the engineer Rojas. Furthermore, on 15 January 1879 Tomàs J. Dalmau demonstrated there at least one phonograph constructed at his workshops, obtaining full acceptance\(^{92}\).

Anecdotally, on 28 December 1878, Saint Innocents’ Day (equivalent to April Fools’ Day), *La Crónica de Cataluña* had even published a hoax about a supposed phonograph supplied by Dalmau’s firm, with the innovation of another cylinder that summarized the speeches and connected to a Gramme dynamo, which would have been used at the Council of Barcelona\(^{93}\). This practical joke is related to two humoristic subjects: inventions and politics\(^{94}\).

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\(^{89}\) NIETO-GALAN, Agustí; ROCA ROSELL, Antoni (2000) *La Reial Academia de Ciències i Arts de Barcelona als segles XVIII i XIX. Història, ciència i societat*, Barcelona, RACAB/IEC. I will not provide bibliographical references on other societies.

\(^{90}\) Respectively, register number 17 and 100.12.

\(^{91}\) General meeting minutes, 19 December 1878; *Memorias de la Academia de Ciencias Naturales y Artes de Barcelona*, vol. I (1878-1884), 243. The phonograph had been presented months ago in the equivalent European academies: e. g., on 1 February 1878 at the Royal Institution in London and on 11 March at the Académie de Sciences in Paris.

\(^{92}\) *Memorias de la Academia de Ciencias Naturales y Artes de Barcelona*, vol. I (1878-1884), 244; general meeting minutes, 18 January 1879. Whereas the first writing mentions “one phonograph made at his workshop”, the second one talks about some examples of these devices constructed there. The file of Tomàs J. Dalmau and other documents of the Academy contain more information about him.

\(^{93}\) 2. The falsehood of this information is confirmed by the fact that no mention is made to the phonograph either in the Council minutes or in the most important newspaper, although this report was reproduced the day after in part by *Diario de Reus*, 29 December 1878, 2.

\(^{94}\) It was common to contrast phonographic records with political lies. E. g., in addition to P. K. [Josep Roca i Roca’s well-known pseudonym] (1878), a humorous dialogue recorded supposedly by a phonograph in the ministers’ council in *Gaceta de Cataluña*, 1 September 1878, 724-725.
It is also illustrative that at the end of 1878 the Edison Dramatic Society was created\(^\text{95}\).

On 2 January 1879 the engineer Mariano Riera presented a phonograph that he had made by himself, at the Literary Circle in Vic, as part of the lecture *Origen e historia del fonógrafo*\(^\text{96}\).

The phonograph was displayed by the French conjurer Bargeon de Viverols in Barcelona, as well as in other cities, such as Tarragona (from 1 May) and Alacant\(^\text{97}\). There are a large number of reports. On 3 April Bargeon carried out a demonstration of his show to the press at the inn where he was lodged (*Fonda de España*). From 9 to 26 April he performed at the Romea and the Principal theatres\(^\text{98}\). He was contradictorily presented as a “professor on recreational physics” and “hidden sciences”, a “thaumaturge”, an “illusionist and anti-spiritualist”\(^\text{99}\) ... From the advertisements, we can deduce that, among prestidigitation performances, Bargeon demonstrated the phonograph by recording voices, laughs, cries, whistles, songs, instrumental sounds... According to a poster of the performance on 24 June in the Apolo Theatre in Madrid, conserved in the Spanish National Library, he, with Edison’s authorization, explained the device, conversed with it, recorded animal screams, substituted and superposed sounds and let the audience experiment with it. He was criticized for this use of the scientific instruments, as well as asked that the phonograph be explained in a lecture\(^\text{100}\). On 27 April *La Campana de Gracia* joked about a police inspection of a phonograph that was going to be displayed at a theatre, relating it with the political danger of recording everything\(^\text{101}\).

\(^{95}\) *Gaceta de Cataluña*, 22 December 1878. See also *El Diluvio*, 23 June 1880, 4884.


\(^{98}\) ALIER (1985), 345-346, mentions only the second.

\(^{99}\) There are many references in the press. In *Publicación Recreativa Dedicada a los Señores Concurrentes a las Funciones que da la Sociedad Julián Romea*, some of Bartrina’s poems were reproduced. Regarding other examples of Catalan scientific entertaining performances, see PABLO, Jordi (1996) “La ciència com a diversió”. In: RIUQUÉR I PERMANGER, Borja de (dir.) *Història, política, societat i cultura dels Països Catalans*, vol. VII, Barcelona, Enciclopèdia Catalana, 318-319.

\(^{100}\) Respectively, N. (1879) “Cartas fisiológicas. V. Fenómenos del magnetismo”, *El Diluvio*, 22 April, 1892-1893, collected in LASARTE DE JANER (1888), 159-162; *Diario de Tarragona*, 3 May 1879, 2.

\(^{101}\) No. 510, 3.
Also in 1879, Rojas, who the previous year had spoken about experimental acoustics at the Barcelona Athenaeum, gave a new cycle on this subject there. In the first lecture, on 16 April, he made phonographic recordings and transmitted them by telephone, and also demonstrated the singer condenser\textsuperscript{102}. In the second lecture, nine days later, Tomàs J. Dalmau experimented with the phonograph as well\textsuperscript{103}. On 15 November 1887 he would publish an article on the phonograph in a review, of which Edison appears as a collaborator, sponsored by the Spanish Society of Electricity\textsuperscript{104}.

On 29 June Narcís Xifra gave a lecture on acoustics, experimenting with a phonograph lent by Dalmaus’ firm, at the Mataró Working Cooperative (l’Obrera Mataronesa), in commemoration of its 15\textsuperscript{th} anniversary and after Bartrina’s lecture on this society\textsuperscript{105}.

On 25 July Xifra, on the occasion of the Pont de Vilomara festival, presented the phonograph, the telephone and the microscope, as well as deforming mirrors, during a popular dance in a marquee illuminated with electrical lamps\textsuperscript{106}.

The early interest in the phonograph by Rafael Roig i Torres, professor of science at the University of Barcelona, was manifested in his review \textit{Crónica Científica}. For instance, in 1878 it mentioned the device in the first number, said that they had seen plates recorded in the demonstration at the Academy of Sciences in Paris, reproduced (besides “The Papa of the Phonograph”) an article by Alfred Niaudet on this device, and celebrated its association with the fenakisticope\textsuperscript{107}.

As a member of the \textit{Association Française pour l’Avancement des Sciences}, he attended the conference in Montpellier, where on 30 August 1879 he presented a paper on “L’arc voltaïque dans les lampes électriques à carbons mobiles” and on 3 September 1879 he read another work on “Petite modification dans le téléphone et le phonographe: inscription mécanique de la

\textsuperscript{102} ALIER (1985), 346-347; \textit{Diario de Barcelona}, 17 April 1879, 4493; \textit{El Diluvio}, 16 April 1879, 1715; 18 April 1879, 1780.

\textsuperscript{103} \textit{El Diluvio}, 23 April 1879, 1925; 25 April 1879, 1987-1988.

\textsuperscript{104} ROJAS, Francisco de P. (1887) “Revelaciones de Edison. Su nuevo invento”, \textit{La Electricidad}, no. 22, 15 November 1887, 257-258.

\textsuperscript{105} \textit{El Clamor de la Marina}, 22 June 1879, 2; 6 July 1879, 2-3; \textit{El Diluvio}, 1 July 1879, 3787; \textit{Gaceta de Cataluña}, 2 July 1879, 11021-11022; \textit{El Mataronés}, 13 July 1879, 1-2; BARTRINA (1881), 219-258.

\textsuperscript{106} There are several reports about it in the press, which praised the initiative of introducing science popularisation into festivals.

\textsuperscript{107} Respectively, 1, 8; 6, 144; \textit{Crónica Científica}, no. 11, 1878, 259-264; no. 7, 145-149; 15, 335.
parole”\(^{108}\). In addition to putting forward the idea of fastening the telephone membrane and the phonograph plate with a thin rolled iron wire to improve the sound quality, he tried, like others (such as Tyndall Preece and Alfred Mayer), to decipher phonetic registers\(^{109}\). With this aim, he joined the phonograph stylus to another made with a quill pen or a metallic ball which writes on smoked bands of polished paper or porcelain paste bound to a cylinder with an independent clockwork mechanism. According to him, this combination, which he called “the inscriptor phonograph” (‘fonógrafo inscriotor’) facilitates the recognition of sounds, although sometimes the help of a microscope was necessary. He claimed to have distinguished all the vowels, some consonants and a few words. Nevertheless, he admitted difficulties and confessed that he was still unable to engrave phonographic records without a phonograph”.

He described these contributions and other innovations, such as a membrane by mica and the suppression of the inscriptor cylinder’s clockwork mechanism, in a study with a drawing (figure 11) published in *Crónica Científica* and as a booklet, obtaining a certain resonance among some international publications\(^ {110}\). It was still remembered by Pierre Jean Rousselot in his *Principes de Phonétique Expérimentale* (1897-1908)\(^ {111}\).

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\(^{110}\) ROIG I TORRES, Rafael (1880) “Contribución al estudio de la fonografía”, *Crónica Científica*, no. 58, 25 May 1880, 227-230, and, as a booklet, ROIG I TORRES, Rafael (1880) *Contribución al estudio de la fonografía*, Barcelona, Crónica Científica.

In another article, Roig clarified some issues, answering the questions by “P[aul]. Combes”, chairman of the International Scientific Union (Union Scientifique Internationale) in Belgium, and recalling his explanations, in August, to the Sciences Academy in Paris, and in particular to Etienne-Jules Marey, a doctor and inventor specialized in the graphic study of muscular movement, as well as to the manufacturer Ducretet, who became interested in constructing the inscriptor phonograph\textsuperscript{112}.

On 14 September 1879 Roig gave a lecture on telephony and phonography at the Mataró Working Cooperative, where he also spoke about other subjects, sometimes demonstrating devices from Dalmaus’ firm\textsuperscript{113}. Likewise, in collaboration with them, he wanted to popularize the phonograph and other inventions during the Barcelona Mercè festival, probably emphasizing his contributions\textsuperscript{114}. He intended to give a lecture on lighting in the most important Council room (Saló de Cent) and a demonstration of several devices, among them the phonograph, at the Circ Theatre. He even took the chair at a commission created with this aim, but he resigned due to the lack of support.

However, in the same festival the following year a stand was set up in Catalunya Square by the de master builder Espluga to show several improved devices supplied by Dalmaus’ firm, mainly the phonograph and the

\textsuperscript{112} ROIG I TORRES, Rafel (1880) “Nota sobre el fónografo inscriptor”, Crónica Científica, no. 68, 25 October, 480-481.
\textsuperscript{113} Gaceta de Cataluña, 14 September 1879, 2; 16 September 1879, 1.
\textsuperscript{114} There are many reports about it in the press.
telephone. There are several reports in the press, which on 28 September announced that two days later these devices would be demonstrated by this master builder at the Jovellanos Theatre\textsuperscript{115}.

Tomàs J. Dalmau was a member of the Catalan Association of Excursions, to which he sold some devices\textsuperscript{116}. On 26 October 1880, 9-12 p.m., at a soirée organized by them at the most important manager’s society on the occasion of the Catalanist Congress, he demonstrated the phonograph\textsuperscript{117}.

Dalmaus provided a phonograph for the presentation on Monday 27 December 1880 at 9.30 p.m. by the geographer and science popularizer Manuel Escudé, who also collaborated with the Free Athenæum, at the Reading Centre in Reus\textsuperscript{118}. The event attracted a great crowd, to the extent that one hour before many spectators had filled several rooms and some were even turned away. Escudé explained the operation of the phonograph in Catalan, although a greeting in Spanish was recorded (“El fonógrafo saluda al Centro de Lectura”), as well as closing the act with a speech of gratitude. The mentioned article on Edison from La Llumanera de Nova York was read also\textsuperscript{119}, and other recordings were made, one of which was in homage to Bartrina, who had been an active member of the Centre. There were also choral songs and poetry recitations, among them Josep Verdú’s “The Phonograph Song”

\textsuperscript{115} I did not find any references at the Municipal Contemporary Archive of Barcelona. However, I located several projects there from this time by “Francisco Espluga”. Therefore, this seems to be the surname, although the form “Esplugas” also appears in the press. Catalunya Square was full of shows, including an “electrical woman” and a zoological exhibition, with 20 pavilions, which extended as far as Jonqueres Square (today, Urquinaona Square), where the entrance was located.

\textsuperscript{116} Butlleti Mensual de la Associació d’Excursions Catalana, no. 22 (August 1880), 176; 1881, 575; documentation of this society conserved in the Excursionist Centre of Catalonia, boxes 293, 312, 346, and 374-376.

\textsuperscript{117} Butlleti Mensual de la Associació d’Excursions Catalana, no. 24 (October 1880), 219-220; Fomento de la Producción Española, no. 225, 30 October 1880, 716, and other publications, such as Lo Gay Saber, no. 21, 1 November 1880, 245, which concluded that the session sufficiently proved the importance of the phonograph, in spite of some shortcomings. Dalmau and Son was a member of the Fomento de la Producción Nacional (list of associates from 1872) and, when it became the Fomento de la Producción Española, and, in its turn, the Instituto de Fomento del Trabajo Nacional, Tomàs J. Dalmau would be also a board member (board minutes, 18 May 1876; general meeting minutes, 5 and 11 June; “Sección oficial”, El Eco de la Producción, no. 82, 21 February 1884, 63; see also the list of associates 1885-1887 and further minutes). Francesc had been a member of the Consultative Committee of La Asociación Defensora del Trabajo Nacional y de la Clase Obrera (see its bulletin Miscelánea, no. 10, 12 July 1849, 110).

\textsuperscript{118} The minutes from 22 and 31 December 1880 and a letter of gratitude to Dalmaus’ firm from 5 January 1881 in the copybook; El Eco del Centro de Lectura, no. 49, 19 December 1880, 8; no. 1, 1 January 1881, 6-7. Regarding Escudé, see OLESTI TRILLES (1991), vol. I, 228.

\textsuperscript{119} See figure 2, reproduced in El Eco del Centro de Lectura, 42, 31 October 1880, 1-2.
(“La Cansó del fonógrafo”), in which a phonographic recording reveals the interests of a marriage120. On 1 June 1882 the phonograph would also be demonstrated there in a lecture on electricity and its effects by Àlvar Bielza121.

On 22-25 September 1881, during the Roda de Ter festivals, a phonograph (associated with a Gramme dynamo connected to Bunsen batteries), telephones, a kaleidoscope, a microscope, lamps..., supplied by Dalmau and Son, were shown at the Working Class Athenaeum122.

Even if the modernist painter and writer Rusiñol considered the phonograph and the cinematograph to be “anti-artistic”, there are further mentions of Edison and his inventions, as well as of other devices, in Catalan literature123. It is remarkable that in 1882 and 1883 a phonograph was donated by the banker Ibó Bosch to the most famous Catalan Romantic literary contest (the Jocs Florals) for the poem that best celebrated “modern life”, yet this prize was not conceded124. In 1881 they had awarded a novel (Qiuestió de nom, by Lluís B. Nadal) in which the memory of a father’s speech stipulating the matrimonial conditions is compared with the “frozen and funeral voice of a phonograph”125.

Although in 1880 an article possibly overestimated that the majority of laboratories had phonographs and the next year Dalmaus’ firm did a stocktaking of five models, not many have been conserved126. The majority of the public or private phonographic collections are from later or abroad127.

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121 Las Circunstancias, 1 June 1882, 2; Diario de Reus, 3 June 1882, 1-2; El Eco del Centro de Lectura, no. 16, 11 June 1882, 6. Regarding the author, see OLESTÍ TRILLES (1991), 119.

122 El Diluvio, 21 September 1881, 7723; El Diluvio, 1 October 1881, 8038.

123 L’Esquella de la Torratxa, no. 527, 3 April 1908, 228-229, collected in RUSIÑOL, Santiago (1973) Obres completes, vol. II, Barcelona, Selecta, 632; see other references in author’s works.

124 Jochs Florals de Barcelona (1882), Barcelona, La Renaixensa, and Jochs Florals de Barcelona (1883), Barcelona, La Renaixensa, and the press.

125 Jochs Florals de Barcelona (1881), Barcelona, La Renaixensa, 116-117. In another novel, SOLÀ. Emilo [Lluís Suñé’s well-known pseudonym] (1883) Misterios del hospital, Barcelona, Guillermo Parera, 353, the conversation with a character who writes his answers is described as “fono-gráfica” (‘phonographic’).

126 Respectively, TRUILLET TEIXIDOR, José M. de (1880) “El hombre y la naturaleza”, El Eco del Centro de Lectura, no. 27, 4 July, 5-7, and Historical Protocol Archive in Barcelona, notary Luis G. Soler i Pla, 27 April 1881, 1945.

This study covers up to 1880, despite some mentions of the following years. Of course, the presence of the phonograph would increase, being improved through the rivalry with other similar devices. For instance, in 1893 Manuel Maluquer Salvador (Barcelona, 1866 – Madrid, 1924) would patent a photophonograph based on the Mercadier radiophone and the Bell phototelephone (figure 12)\textsuperscript{128}.


6.- Conclusions.

At the end of the 1870s and in the beginning of the 1880s, in a developing economy and contrary to the political circumstances of the Restoration, Catalans emulated the American and European modernity. As well as other technological advances, the phonograph was imported, constructed, innovated, explained, displayed and demonstrated in Barcelona and other Catalan cities and towns, mainly thanks to Dalmau and Son.

They soon purchased an example from London for the School of Industrial Engineers of Barcelona and would continue selling and modifying this device. Their firm, despite its modest optician origins, would become an important technological enterprise, through its initiative and contacts. Beyond their marketing interest, they also contributed to science popularization, gaining a considerable recognition in Spain and also certain acknowledgement abroad. The contribution of Rafael Roig i Torres, who in contact with France projected the inscriptor phonograph to obtain a phonetic register, is also remarkable.

Following an ancient link between science and performance129, this device was presented by people from different backgrounds (in general, technicians, but also a writer and a conjurer) to various audiences in several sites (shops, schools, cultural centres, academies, clubs, cooperatives, theatres, fairs, dancing marquees...) on multiple events (specific displays, lectures, performances, festivals, political congresses...)130. The Free Athenaeum’s phonographic session for associates and guests is especially relevant, not only because it was the first in Barcelona and probably in Spain, but also due to its characteristics and the ideological significance. Thanks to a curious symbiosis between a technician, Thomas J. Dalmau, and a controversial writer and science amateur, Joaquim M. Bartrina, the recently created Athenaeum obtained great success, which established it as a leading institution in the local popularization of science and endorsed their ideological conceptions.

“Appropriation” (in the meaning established, with precedents, by Roger Chartier) could be spoken of, at least to the extent of the using the phonograph to a certain juncture, with the aim of, over and above promoting technological progress, obtaining recognition and ideological acceptance. The analysis

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of this local case, supplying much unknown information from primary sources, illustrates, as well as some general possibilities regarding the circulation of technology, that, if environments are studied thoroughly, a richer scientific and social situation also emerges in the periphery.\footnote{GAVROGLU, Kostas et al. (2008) “Science and Technology in the European Periphery: Some Historiographical Reflections”, History of Science, no. 46, 153-175.}

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