

The heritage of ancient scientific instruments of the Liceo "F. Delpino" in Chiavari



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Abstract

This historical paper deals with the remarkable heritage of ancient scientific instruments in Liceo "Federico Delpino" in Chiavari. This old high School was founded in 1749 and therefore it is one of the ancient high schools in Italy. It is quite obvious that in the XIX century and the XX century, this school has accumulated a significant amount of scientific equipment, but the secular isolation of such a little town out of the major cultural centers makes this fact as an anomalous. Our paper would outline the historic value of this heritage and analyze a possible key to understand this "strange" phenomenon. This paper also aims at stimulating the reader about the possible presence in Brazil and in (the) South America of scientific equipment built by craftsmen from Chiavari.

Keywords: History, Scientific Instruments, Science Museums.

Resumen

En este trabajo se aborda el patrimonio histórico notable de los antiguos instrumentos científicos en el Liceo "Federico Delpino" en Chiavari. Este antiguo instituto fue fundado en 1749 y por lo tanto es una de las antiguas escuelas de Italia. Es evidente que en el siglo XIX y el siglo XX, esta escuela ha acumulado una cantidad importante de equipo científico, pero el aislamiento secular de un pueblo pequeño lejos de los grandes centros culturales hace que este hecho sea una anomalía. Nuestro artículo esbozará el valor histórico de este patrimonio y analizará una posible clave para entender este fenómeno "extraño". Asimismo, este artículo tiene por objeto estimular al lector acerca de la posible presencia en Brasil y en Sudamérica sobre equipos científicos construidos por artesanos de Chiavari.

Palabras clave: Historia, instrumentos científicos, museos de ciencia.

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I. HISTORICAL INTRODUCTION

A. The historical background

An almost unknown aspect of the history of Italian Physics consists of the technological and instructional activities carried out in the little Italian town of Chiavari in the northwestern part of Italy, throughout the nineteenth century and until the second half of the twentieth century. In this little town appear as reasonable the possibility of some research activity, because there were two institutions having Physics laboratories with suitable structures to some measurements and research [1]. This is not a surprising fact when you consider that at the time of its foundation (1897), the Italian Physical Society counted among its members an absolute majority of non-university teachers and that "Il Nuovo Cimento" up to 1932, often published experimental work carried out in non-university Institutions. This

phenomenon was supported by the lack of "assistants" at the University: this availability was gradually reduced to two laws that made the role of "assistant" incompatible with that of "teacher in secondary school" [2]. After these laws no exchanges or interactions between Universities and Schools happened.

As pointed out in a previous paper [3], Chiavari is a little coastal town placed between the east Ligurian sea and the mountains of the hinterland, so, despite from the relatively short distance from Genoa (about 40 km), the territory was impervious to communications by land and made the town culturally isolated until the arrival of the railroad in 1869, much later than other major Italian railway lines. This little town of about 12000 inhabitants at the end of the XIX century, had various high schools particularly in the area of Technical Education and a meteo-seismic observatory connected to the Italian seismic network [3, 4]. The historical Institutions in Chiavari devoted to the Science

were the Liceo "Federico Delpino" and the "Seminario Vescovile". Liceo "Federico Delpino" was founded around 1741. Initially managed by Religious up to 1817, then Lyceum "pareggiato" (that is "legally recognized") from 1863 and then governmental high school in 1910 (G. U. n° 31, 1910).

The other high school was the "Seminario Vescovile" founded in 1826 and high school not only for Religious but also for laymen. The same botanist "Federico Delpino" to which the Liceo is entitled studied in the Seminary.

The major cause of these cultural fortunes was the "Società Economica", one of the various Illuminist foundations since 1791; nowadays this institution claims to be the *unique* Illuminist foundation survived in Europe. The role of this institution in all fields of the industrial and instructional development of this town is recognizable through annual reports (Atti della Società Economica) in a time period of 250 years until today [5]. In practice, almost all schools were financially supported from the Società Economica. This is the background of the Lyceum "Federico Delpino", but also of all schools founded in Chiavari.

The interest of the "Società Economica" in the Instructional and research aspects was essentially *pragmatic* and mainly devoted to the "technical instruction" and to the improvements in the local industry and/or specialized craftsmanship. It is in this sense that can be read the presence of 24 members of the "Società Economica" at the eighth congress of the Italian Scientists held in Genova in 1846 [6, 7]. During the XIX Century the economy of the town was mainly devoted to the a high level of craftsmanship extended from the famous "Chiavari's chairs" to lutherie, construction of naval instruments and so on, up to scientific instruments. During the nineteenth century there was a large shipyard that launched 120 sailing ships and large boats [8]. This activity required the construction and / or import of nautical instruments. Raimondo Isler built for the purpose compasses and other apparatuses. Unfortunately, only two of these nautical compasses were found in Chiavari. During the First World War, these ships were requisitioned for war needs and obviously becoming easy targets, so nautical instrument made in Chiavari were lost. In spite of such thriving Economy, the emigration to the Americas was a phenomenon equally massive because of an unfavorable agricultural hinterland [9, 10].

The recognition of the historically interesting equipments made by local manufacturers has already been discussed in previous papers (Ref. 3 – 5). However, the isolation of Chiavari does not appear to have been the unique cause of the development of a small craftsmanship of scientific apparatuses. The collection of the equipments of the high school "F. Delpino" shows many unsigned devices, surely local copies of those articles homolous in Max Kohl's catalogue, but the most valuable pieces were built in Germany (signed Max Kohl and Hartmann & Braun) and in France. The survey made during these last 10 years allowed us classify about 400 major equipment of historical importance, while the oldest equipments, disused since 1963, are waiting for cataloguing and restoration. The

major difficulty in Italy is the "indifference" towards the national historical heritage; i. e. the old documentation regarding the purchase of equipment was destroyed or badly stored, and/or, in practice, unavailable, so, without documentation on purchases, the greatest difficulty is the dating of the equipment, often estimated by cross comparisons.

B. Makers of Scientific Instruments in Chiavari

If we refer to the historical background mentioned above, it is not surprising that Chiavari had skilled manufacturers of scientific equipment. The first references already appears in two prizes awarded in the Congress of Italian Scientists of 1846 (Ref. 7) but more detailed references appear in the "Atti (proceedings) della Società Economica di Chiavari". Among the names of the winners at the annual exhibitions are (particularly) Raymondo Isler (Rome 1830 - Chiavari, 1900) Egidio Caranza (Varese Ligure 1861 - Genova 1929) and Vittorio Ugobono (1899 Chiavari - Chiavari 1963). Raymondo Isler mainly built nautical instruments, Egidio Caranza and Vittorio Ugobono built equipments for the teaching of Physics. The excellence in Caranza and Ugobono apparatuses appears in particular in all the beautiful Wimshurst electrostatic machines in various Institutions and private collections. This excellence was pointed out in a previous paper (Ref. 3).

About Egidio Caranza must be said that this craftsman was also "Laboratory Technician" at the Lyceum "F. Delpino" and at another high school then facing the Lyceum from the end of the XIX Century up to the 1929.

A last reference to the Meteo-Seismic observatory founded by Father Andrea Bianchi (Recco 1856 – Chiavari 1922) and connected to the Italian network in 1887 completes the historical background about this singular little town. Fig. 1 shows the seismic hall, nowadays restored in its original place. The vertical seismometer (mass 600 kg, period $T = 2.6$ s) was made by Father Andrea Bianchi. Other seismometers are visible.

As we have pointed out above, the major causes that have made Chiavari "*a little town in the studies*" were the interests of the "Società Economica" in the area of the Technical Instruction. Of course, a local Historian [11] is claiming in Chiavari the first establishment in Italy of a professional school (and startling fact female) in 1797. As far as is in the Authors' knowledge, this supremacy in Italy appears actually confirmed.

C. The problems of the preservation

The heritage of scientific instruments is not limited to the Liceo "F. Delpino" alone. A lot of instruments (mainly made in Germany and in France) are abroad in various Institutions and Schools. The Seminario Vescovile has preserved its heritage restoring the old Meteo-Seismic observatory in the original settings and a Scientific Museum was founded in 2002. Another School (the "Istituto Tecnico") has restored some apparatuses and has founded a "Virtual Museum".

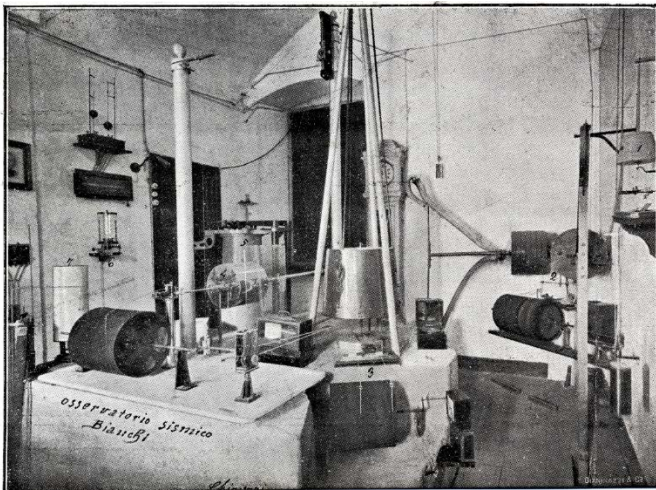


FIGURE 1. The seismic observatory as appeared in a first XIX postal card. Nowadays this observatory was completely restored in its original place. In the foreground the vertical seismograph made by Father Andrea Bianchi. (Original image comes from Authors' collection).

Liceo "F. Delpino" has no financial support and the cataloguing and restoration is made under volunteer's work. It is at least desirable that this cataloguing and restoration work meet receive the interest of some students involved in extracurricular activities. At the present the only restoration and re-location in the old closets is possible. The main hope is that of creating the opportunity to exhibit the most beautiful pieces of the collection in suitable illuminated cabinets.

II. THE CATALOGUE

Our Ministry for Cultural Heritage (Ministero dei Beni Culturali e Ambientali) suggests a cataloguing card followed by Italian Historians [12]. Our cataloguing card obviously agrees with these standards, as other celebrated Museums in Italy. Special care has been spent in the measures, which take into account the particular geometry of the instrument and therefore may appear redundant. We have always indicated the inventory number and its number of entry into it, confident that a new inventory always must refer to this paper inventory of 1964. The main purpose is to preserve this heritage by a careless taking charge in the future through the work done. We will report a typical (17) cataloguing card:

17. Siren of Cagniard De la Tour

Function: A tool for generating a sound of variable frequency with the frequency of rotation of a disk with holes near the edge. In the inventory number 6401, entry number 183.

Manufacturer: signed "Tecnomasio - Milan".

Period: end of the nineteenth century.

Materials: brass, iron.

Dimensions: height 240 mm, width of body 90 mm, rotor diameter 55 mm. Diameter of the wooden base 172 mm.

Notes: The wood base was probably grooved by a local craftsman functional to an existing glass bell. The instrument is in excellent condition and efficiency. The wooden base was made specifically for the protective bell. The bell has a diameter of 138 mm and 265 mm high. This instrument has revolution counter two scales (twice).



FIGURE 2. The siren made "Tecnomasio - Milan".



FIGURE 2 bis. Siren and the protective bell.

We report little notice about the typical function of the apparatus and we go into the details of it. The photographic documentation should be useful for the identification of a particular equipment in case of removing of the label in the inventory and/or for crossed comparisons. In this case, the bell jar, with finely multifaceted knob is surely contemporary or, probably, more ancient of the siren. Other interesting pieces in our cataloguing work were apparatuses signed by local craftsmakers. Excellence in electrostatic machines made by Egidio Caranza were pointed out in a previous paper [3], here we point out some devices of fine manufacturing of this craftsman and technician in this high school from the end of the XIX century up to 1929 as the beautiful Wimshurst machine in Fig. 3 signed Egidio Caranza and a beautiful demonstrator of the Pascal law shown in Fig. 4.



FIGURE 3. A beautiful electrostatic machine signed "Egidio Caranza" probably manufactured at the end of the XIX century. The dimensions of this beautiful apparatus are Length 700 mm; width 335 mm; height 750 mm. Disks' diameter 470 mm. Two Leyden jars were added in the half of XX century. In Chiavari we found other two electrostatic machines of this craftsman.

In the end we would give the image of the nautical compass signed "Raimondo Isler" in the Liceo "F. Delpino" (Fig. 5 a). Another (and complete) beautiful nautical compass is in the Museum "G. Sanguineti – G. Leonardini" and shown in Fig 5 b.



FIGURE 4. Demonstrator of Pascal law. This apparatus has 12 manometers and the height is about 540 mm. The apparatus is made using chromium plated brass. The realization date is the beginning of the twentieth century.

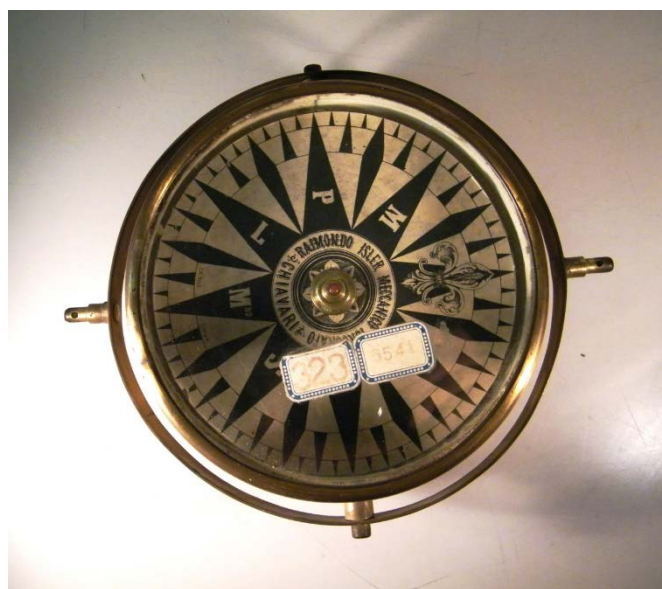


FIGURE 5. a) Nautical compass made "Raimondo Isler". The magnetic bar is below the window rose. This compass is without one of the two Cardanic suspensions. The window rose is made with card and a sheet of mica. Dimensions: diameter 220 mm, height 105 mm. As in an another compass the sign reports:

“Raimondo Isler, Meccanico Idrografo – Chiavari”. A comparison with another complete compass in the Museum “G. Sanguineti- G. Leonardini” in Chiavari is given in Fig. 5 b).



III. CONCLUSIONS

This brief report has shown a glimpse of the rich heritage of fine ancient scientific instruments, owned by the Lyceum. The catalogued apparatuses are about 400. Because of the lack of financial support, only a virtual museum was created in the Internet at this website: <http://www.museofdelpino.ssep.it> (it is in Italian language). Not all apparatuses are shown here. In particular, the oldest equipments that have been placed without care in two large closets will need a future restoring and cataloguing. Here we have found some interesting oldest apparatuses.

During the nineteenth century there was an intense migration of people from Chiavari to South America, particularly to Chile but also to Brazil and Argentina [9, 10] as pointed above. So, significant communities of Ligurian people were created. This paper also would like to stimulate the reader's attention about the (possible) presence, in Brazil and in the South American area, of scientific equipments built by craftsmen from Chiavari.

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