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Angelo Secchi: In the Footsteps of a Jesuit Scientist (Sicily and Calabria, 1875)

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Abstract: Angelo Secchi was one of the leading figures of 19th-century science, and a founder of modern astrophysics. Some recent biographical studies have revealed less-known aspects of his life and activity. This paper describes his attendance to the Congress of the Italian Scientists in Palermo and his travel to Cosenza, reveals his anxiety about the future of his Observatory at Collegio Romano, his controversial participation and shows his constant attention to promote *citizen science*.

Keywords: Angelo Secchi, Congress of Italian Scientists, Palermo, Calabria.

1. Introduction

On August 29th, 1875 the town of Palermo woke up under a wave of excitement: that very day the 12th Congress of the Italian Scientists would begin, gathering a multitude of academic people and scholars from all disciplines. Throughout the preceding year, the local journals had given wide resonance to the event, raising high expectations among the public.

At that time, Palermo was the third town in Italy for population, after Naples and Rome, one of the main commercial ports of the nation and «uno dei principali focolari della ricchezza, dell'attività, della intelligenza e della cultura italiana» (La Lumia 1875, p. 65-66), as stated by local historian and politician Isidoro La Lumia (1823-1879) in a book purposely written for the Congress participants.

In the fifteen years following the unification of Italy, the town had in fact gained a higher degree of prosperity, which in the past had only been a prerogative of the aristocratic class. The new political situation had benefited sectors such as agriculture and industry, commerce, favoured by the development of new transport routes by railways, shipping and roads. The presence of a very active and dynamic middle class reflected onto a lively town, animated by a variety of shops, cafes and hotels that brought liveliness and elegance to some areas of the town centre. Arts were also developed, and architecture, with the flourishing Art-Nouveau (liberty) style: the Teatro Massimo, third

theatre in Europe for capacity, started to be built that very year by Giovan Battista Filippo Basile (1823-1891). Cultural and academic life was lively in Palermo:

Il buon seme vive e alligna sempre in Palermo. Vive e dà nobili frutti in una Università [...] Vive in associazioni che serbano e continuano le onorate tradizioni del passato: una Accademia di Scienze e Lettere [...] Consiglio di Perfezionamento, trasformazione dell'antico Istituto d'Incoraggiamento [...] un'Accademia Medica; una Società di Storia Patria [...] una Società di Economia Politica; una di Acclimazione; un Comizio Agrario; un Circolo Giuridico [...] un Circolo Filologico [...] Più di venti pubblicazioni periodiche, fra letterarie e scientifiche, trovano alimento e spaccio. (La Lumia 1875, pp. 101-102).

Among the scientific publications, it is worth to mention the *Memorie della Società degli Spettroscopisti Italiani*, a journal established a few years earlier (in 1872) by Pietro Tacchini (1838-1905), astronomer at Palermo Observatory, who gathered around this project the main Italian scientists of that time (Chinnici 2008a).

The diffuse publicity campaign about the congress, attracted about eight hundred people, a good result compared to attendance at past scientific congresses held after the state unification in other towns (Wikiwand, *Riunioni*). The majority of attendants were associates of various academies, university professors and a high number of students. Although many invitations to attend the congress had been sent to foreign scientists, only a few accepted, among whom the philosopher Ernest Renan (1823-1892) and the medievalist Gaston Paris (1839-1903). Italian participants were scientists of various disciplines, such as meteorologist Domenico Ragona (1820-1892) and mathematician Luigi Cremona (1830-1903), to name a few (Pitrè 1875, pp. 207-208). Among them, we find the Jesuit astronomer Angelo Secchi (1818-1878), Director of the Collegio Romano Observatory and one of the most renowned scientific personalities of his time (Chinnici 2019a). Thanks to his pioneering research work, he significantly contributed to the development of various scientific disciplines, such as physics, astronomy, meteorology, geodesy, etc. (Altamore, Maffeo 2012); in particular, he is considered a pioneer of modern astrophysics, because of his innovative use of photography and spectroscopy in astronomy (Chinnici 2019a, pp. 160-200). It is thus not surprising that he would attend the congress. However, the relevance of this scientific meeting was not the main reason for his presence. Neither the lively scientific activities in Palermo nor the beautiful monuments and surroundings of the Sicilian town attracted Secchi there, as he was already acquainted with them, having visited Palermo a few years earlier.

2. A previous visit by Secchi

In December 1870, a total solar eclipse had been visible from South-Eastern Sicily and the Italian government organized its first scientific expedition to observe the

phenomenon. Secchi joined the Italian expedition¹ with the task of photographing the totality phase of the eclipse² in the astronomical station purposely set up in the town of Augusta, near Syracuse. Before reaching Augusta, Secchi stayed at Palermo Observatory in order to supervise the installation of a meteorograph he had devised,³ which had been acquired by the director, Gaetano Cacciato (1814-1889).⁴ Besides these scientific occupations, however, the visit of Secchi had other – partially unexpected – effects.

In the aftermath of the occupation of Rome and the consequent self-confining of Pius IX in the Vatican buildings, the debate between philopapal and antipapal parties⁵ was very lively in Palermo, as in the rest of Italy, especially in local newspapers. In this context, the visit of Secchi could not but have political implications. He was a very popular man, well-known in Italy and abroad and, as a Jesuit, he was respectively welcome or unwelcome, also as a representative of the Pope. Catholics circles reserved an extraordinary welcome to him, as it is testified by Secchi's diary:

Da alcuni giorni sono a Palermo, dove ricevo molti onori e complimenti. [...] Sono stato questa mattina nella cattedrale dove i canonici mi hanno fatto un'accoglienza straordinaria, giacché hanno fatto scoprire l'urna di S. Rosalia, cosa che non si fa che due volte l'anno, e poi in presenza di casa reale! (APUG 23.II.C)

There, Secchi celebrated Mass with the consideration due to his important personality («La pianeta che usai era di corallo e il calice d'oro gemmato», *ibidem*) and, in his diary, also spent numerous words of admiration for Palermo's cathedral and its treasures, in particular the tiara that belonged to Costanza d'Aragona.

Secchi spent those days in anxiety for his future: he feared countermeasures from the Italian Government after he renounced the chair of astrophysics at La Sapienza University⁶ and was especially worried about the possible confiscation of his

¹ At first, Secchi had been excluded, due to his loyalty to the Pope in the changed political situation; later, he was invited, thanks to the mediation of Tacchini (Chinnici 2008b).

² This was not by chance, because Secchi had captured important photographs of the total solar eclipse of 1860, in Spain (Chinnici 2018).

³ Secchi's meteorograph was an instrument automatically recording the main meteorological parameters (temperature, pressure, humidity etc.) (Brenni 1993). The Palermo meteorograph had been commissioned in 1867 but its installation had proven to be a complicated issue, in spite of the detailed instructions sent by Secchi.

⁴ In those days, Secchi also showed some stars' spectra to local astronomers and professors, who were intrigued by his pioneering spectral classification work (Chinnici 1999); he hence adapted his pocket spectroscope to the beautiful Merz refractor in use at Palermo Observatory (Chinnici, Brenni 2015), almost identical to the one he used at the Collegio Romano (Altamore 2012, pp. 120-125).

⁵ The first party generally gathered ultra-conservative Catholics, the second Freemasons; in the middle, there were moderate Catholics, open to the Italian political unification process, who recognized the Papal spiritual authority and rights.

⁶ After the occupation of Rome, Secchi was offered by the Italian Government the Chair of physical astronomy (namely, astrophysics) at La Sapienza University; at first, he accepted, but his superiors set the condition that Jesuit colleges and schools would be respected in their teaching activities. The Government

Observatory. In this context, the expressions of respect and esteem he received in Palermo were probably comforting and encouraging for him: he visited monuments and colleges⁷ – probably also the local University – and was warmly welcome everywhere.

One of the most reputed representatives of the Catholic party in Palermo was Marquis Achille Paternò di Spedalotto (1815-1886). He felt honoured to accompany Secchi around, as the Jesuit remarked: «è molto cortese verso di me, e mi fa ogni gentilezza, inviandomi la carrozza pel passeggio in sua compagnia» [APUG 23.II.C].

Almost certainly, Spedalotto invited the Jesuit to visit his villa, near Bagheria, to carry out astronomical observations.⁸ He wanted a marble bust of the scientist (fig. 1) placed in the entrance of his villa, «acciò ricordarmi dei bei giorni che onorò Sicilia tanto illustre scienziato» (APUG 1871b).⁹ Later, during his stay at Augusta, Secchi kept himself in correspondence with Marquis Spedalotto: he wrote him about the risks run during the sea crossing¹⁰ and the excellent welcome in Messina, where he found many «sincere Catholics»; in reply, Spedalotto kept him informed about political news of that time, assured him that «in Sicilia la gran maggioranza è di cattolici», and recommended him to come back to Messina by train, after the eclipse, and to reach Palermo from there by Florio steamboats, «al servizio de' quali ci stanno ottimi ed esperti comandanti» (APUG 1870b).

Another esteemed representative of the Catholic party was Prince Giulio Fabrizio Tomasi di Lampedusa (1813-1885), a wealthy amateur astronomer, who had built a private observatory in his villa near Palermo and was also involved in the observation of the eclipse.¹¹ Because of his interest in astronomical studies, the Prince of Lampedusa was in correspondence with Secchi (Chinnici 2019b) and it is highly possible that he invited him to visit his private observatory, even if no documentary evidence has been found until now.

This active community, also including some local Jesuits and clergymen, indirectly took advantage from the sojourn of Secchi to undertake actions supporting their political views.¹² This ignited a battle in the local press: while the anticlerical newspapers

apparently agreed, but then backtracked and Secchi, during his stay in Palermo, probably at the Pope's will, regretfully gave up the chair and wrote a letter of renouncement (Chinnici 2019a, pp. 210-223).

⁷ There is evidence of a conference held at the College S. Salvatore, directed by fr. Francesco Agalbato (APUG 1871a); the visit was held in the evening, probably in order to carry out astronomical observations with the students who were enthusiastic about the visit.

⁸ At Villa Spedalotto, it is still preserved an unsigned medium-size portable telescope, dating back probably to the beginning of the 19th century; it is traditionally called "Secchi's telescope", and was probably used or provided by the Jesuit scientist.

⁹ The bust was commissioned in January 1871 to the local renowned sculptor Domenico Costantino (1840-1915) and it is still preserved at Villa Spedalotto, forming a pair with the bust of the Marquis himself.

¹⁰ During the sailing to Augusta, onboard a steamship of the Italian Navy, the *Plebiscito*, the commander often failed to find the right course, putting the steamship in danger (APUG 1870a, APUG 1870b).

¹¹ He went to Agrigento to observe the phenomenon from one of his properties (Cacciatore 1872, p. 212).

¹² The situation of the Catholic Church in Sicily after the Mille expedition was quite complex. Some archbishops and clergymen supported the unification process, others were opposed at all, or to some extent. At the time of Secchi's visit, there was a vacancy in the archbishopric of Palermo, because Pius IX procrastinated the appointment of the new archbishop, due to the delicate political situation. In October 1871, he chose Michelangelo Celesia (1814-1904), openly papist and supporter of Papal infallibility.

deliberately omitted to mention Secchi among the scientists leaving for Augusta (APUG1870b), the catholic newspapers - especially *Ape Iblea* - replied by giving special relevance to the participation of Secchi in the expedition. Many catholic activists, concerned about the difficult situation of Papacy, wanted to seize this opportunity to support Pius IX.



Fig. 1. Bust of Secchi at Villa Spedalotto (courtesy of Anna Monroy di Spedalotto)

Cacciatore wrote that, in the days of Secchi's sojourn, many people came to visit the Jesuit and a sort of public petition (*Oremus pro Pio IX*) circulated in favour of the Pope, signed by Secchi (INAF 1871a). This disturbed very much the anticlerical freemason community and, in January 1871, an anonymous letter, whose incipit was «Oremus il Rev. Angelo Secchi a lasciarci tranquilli» was sent to the Jesuit. «Rispettiamo nella di lui persona il celebre astronomo italiano – odiamo il Gesuita» was the first statement of the letter; it contained many hostile and derogatory expressions against the Jesuits and ended with an intimidating sentence: «Per il vostro meglio andate via» (INAF 1871b).

Basically, Secchi found himself in the middle of a local political clash. Freemasons were irritated by the public activities of the famous Jesuit scientist, because his personal success was considered as a score of the Catholic party. For instance, the local Academy of Sciences, Letters and Arts – «corpo retrivo e clericale» [INAF 1871a] according to the anticlerical Cacciatore – invited Secchi to give a public lecture on the Sun. The initiative was disdainfully seen by the anticlerical party as a political gathering of «barbieri e pizzicagnoli» (*ibidem*); actually, Secchi was so popular that the Academy Hall could not contain the large crowd of participants – laymen, scientists and people from all walks of life – that attended his talk and it was necessary to host the conference in the wider Aula Magna of the University. «Folla immensa, che fece gran baccano» wrote Cacciatore (*ibidem*), midway between envy and contempt. It was certainly a personal success of the Jesuit, well-known for being a brilliant speaker and a charismatic lecturer, but it was also considered a demonstration against anticlericals, who disliked this successful event and organized alternative conferences. Ultimately, Secchi became a pretext for political conflicts having nothing to do with science.

He went back to Rome with poor scientific results – the observations of the eclipse were partially compromised by unfavourable weather conditions (Cacciatore 1872) – but richly supportive relationships. He was asked to be an intermediary for obtaining special blessings from the Holy Father (APUG 1871), as it was customary, and also to express the support of the Sicilian Catholics to Pius IX in the circumstance of the “outrage” he was suffering.¹³

3. Why did Secchi return to Palermo?

After the 1870 expedition for the eclipse, Secchi started an intense collaboration with Pietro Tacchini, astronomer at Palermo Observatory; they planned a programme of solar observations which led to the establishment of the abovementioned Società degli Spettroscopisti Italiani, in October 1871. The two scientists coordinated each other to observe solar prominences – Secchi in Rome and Tacchini in Palermo – in order to compare their results. They exchanged numerous letters (Chinnici, Gasperini 2013), reporting their drawings and remarks, but it became crucial that they would meet to make a comparative study of their spectrometers and find out the reasons for their diverging measurements of the solar diameter. Apparently, in 1873, Secchi promised Tacchini he would come to Palermo again; however, up until 1875, he had failed to go.

¹³ Encouraged by Secchi’s successful visit, a Sicilian section of the Società Cattolica was inaugurated in Palermo, a few days after Secchi’s departure (APUG 1871). The Society, which had been primarily established in Rome, was aimed at defending the interests of Catholicism, stopping atheism and Protestantism. The initiative to open a Sicilian section was more a symbolic – and political – than effective move, because the majority of Sicilians were Catholics, however. Secchi kept his relationship with Sicily in the succeeding years; in 1873, the Catholic Youth Society in Palermo (Circolo S. Rosalia) chose Secchi as its delegate to pay their respects to Pius IX on the occasion of the Pope’s election anniversary (APUG 1873).

Could the congress of the scientists represent the favourable occasion to make him maintain his promise? Perhaps so, but against the possibility of a trip to Palermo, a front of opposite reasons was tempting Secchi to remain confined in his observatory in Rome.

The Pope's diplomatic conflicts with the Italian state had led him into a controversial situation, even though he had so far managed to remain in very good terms with both parts. In 1873 a law of confiscation of the Church goods was approved by the government and many religious orders lost their properties, including colleges. As a consequence, a diplomatic war between the Italian Government and the former Papal State – now reduced to the tiny territory of the Vatican buildings – was ongoing. What would be the destiny of the Collegio Romano? His value as a scientist, recognized by the Italian government, gave him hope that he could at least maintain the directorship of the Observatory. On the other hand, probably due to the abovementioned diplomatic duel, the Vatican authorities had discouraged him from joining "Italian" official expeditions.¹⁴

The difficult situation Secchi was living was also related to tensions inside the Catholic milieu: his readiness to collaborate with the Italian Government was strongly criticised by some extremist ecclesiastic lobbies, which accused him of connivance with the enemies of the Pope. On the other side, people of anticlerical creed, although acknowledging him as a major scientist, did not forgive him for being a Jesuit and thus, by default, an enemy of progress and science. Consequently, rumours on his participation in the congress of the Italian Scientists triggered idle talks of all sorts, exacerbated by the presence of the French atheist philosopher Renan, who had been invited to the congress.

Quindi monsignori e neri di ogni tinta a dirne di ogni specie. Anche al papa naturalmente non mancarono di dire che io era imbarcato in quella baraonda del congresso di volteriani il cui scopo era congiurare lo sterminio del cristianesimo [...] (APUG 23.II.D)

In spite of these discouraging circumstances, Secchi had a prevailing reason that convinced him to return to Palermo and participate in the Congress: the need to preserve his Observatory from a possible shut-down in front of an expected reorganization of the Italian astronomy.

4. A "parallel" meeting: Tacchini's reform project

In 1874 Tacchini had publicly proposed a reform project for the Italian Observatories (Poppy *et al.* 2005) – too many for a small country like Italy – and the Congress offered a good pretext to hold a meeting of the Italian astronomers in order to discuss the project.

¹⁴ For instance, Secchi renounced to participate in the Italian expedition to India for observing the transit of Venus in 1874 (Chinnici 2019a, pp. 148-149)

The future of the Italian Observatories would have been decided in that meeting and Secchi, anxious for the destiny of his Observatory, could not miss to participate. He was aware of the criticisms raised by his participation in the Congress, but it was necessary, in order to save the Collegio Romano Observatory from confiscation or closing.

He travelled by sea and arrived on the evening of August 17th, with the double purpose to participate in the discussion of the reform and to work with Tacchini at their solar spectroscopic studies. The meeting was promoted by the Ministry of Public Instruction and the Minister himself, Ruggiero Bonghi (1826-1895), was a participant; it was held at Palermo Observatory in the last days of the Congress.¹⁵

During the discussion of the reform, they also faced the delicate question of the Collegio Romano Observatory. Prudently, no decision was taken about it; however, the members of the commission invited Secchi to prepare a report with desiderata to be recommended to the government. The Collegio Romano Observatory was secured, for the moment.

5. The Congress and Secchi's stay in Palermo

Secchi devised a plan of action to put up with the difficulties of his participation in the Congress. He was determined to maintain a low profile, and thus avoid public events and meeting with high personalities, just spending the days preceding the congress in working at the Palermo astronomical observatory. The Congress was inaugurated with a keynote conference given by philosopher Count Terenzio Mamiani (1799-1885), President of the newly-formed (1873) Società Italiana per il Progresso delle Scienze: it attracted so many people that it had to be held in the main hall of the National Library, formerly Jesuit College of Palermo. The congress sessions were organized in ten classes; Secchi was registered at Class I (Mathematics, Astronomy, Physics and Meteorology) of which he was nominated co-vice-president, together with physicist Giovanni Cantoni (1818-1897), physicist Pietro Blaserna (1836-1918) being the president.¹⁶

In a brief report published in in a local magazine (Pitrè 1875, p. 208), participants belonging to the classes of medicine, physics and astronomy, stood out for their operosity, as they did not interrupt the meeting sessions to take part in many of the excursions and entertainments organized for the attendants. Was such zeal also due to Secchi's strategy not to take part in these events?

¹⁵ The role played by Secchi in the meeting can be easily understood from the minutes (Poppy *et al.* 2005), which show his unquestioned scientific authority. His analysis of the situation of the Italian Observatories was clear and realistic and described the inappropriateness of the buildings and instruments, as well as the lack of staff. In absence of adequate resources, Secchi suggested his own strategy, namely to cultivate «physical astronomy» – this kind of studies could in fact provide important contributions to the understanding of celestial phenomena, without requiring high precision instruments and stability (*ibid.*, p. 156).

¹⁶ At the opening of the Congress, it was agreed that matters related to the organization of meteorology and astronomical observatories would be discussed elsewhere by the respective commissions (*Atti* 1879, p. 1).

Numerous cultural and social meetings had in fact been organized during the congress (*Varietà* 1875, p. 226), but none was attended by Secchi.

La mia vita in questi giorni a Palermo fu quella di peggio che frate, perché non faceva altro che andare all'osservatorio e a casa, e cominciate le conferenze, alla università e poi a casa. [...] Mi condannai a restare in casa durante tutte le ore che duravano le sedute pubbliche. [...] In mia parola non misi mai piede in nessuno di que' siti ove poteva affrontarsi o il Renan o il Principe Umberto (APUG 23.II.D).

He thus missed the official reception, on the evening of August 30th, offered at the Town Hall to over six hundred guests, and three art exhibitions organized by two local societies promoting fine arts and the agricultural consortium. He did not take part either in two excursions at Monreale and Solunto, and in a tour of Sicily, at the end of the Congress, which had the Minister Bonghi among its participants.

Secchi remained in Palermo until September 14, and in the time after the congress he managed to complete the solar research work planned with Tacchini. Apart from a few walks in the gardens of the Royal Palace, the only documented distraction he took during his entire sojourn, was an excursion to Mount Pellegrino to visit the sanctuary of saint Rosalia, the patron of Palermo, which was organized by Cacciatore and Tacchini before the congress. In the excursion took also part the French astronomer George Rayet (1839-1906), participant in the Congress, together with a few university professors. Secchi must have enjoyed the place, the company and also the ice cream and Marsala wine offered, as Rayet in his notebook jotted a comment, defining him a «bon vivant» (Rayet 1875).

On the whole, his visit to Palermo had been successful: he personally defended his observatory, kept the role of director, and maintained his promise to Tacchini. However, the journey had been so physically and psychologically demanding on his health, that he could not go to Cosenza as programmed, and had to return to Rome straight away.

6. A journey to Cosenza

Secchi, however, had another promise to keep. After a few days of rest in Rome, he went to Cosenza, in Calabria. The director of the local meteorological observatory, Domenico Conti, asked his help to install a geomagnetic station there.

The Jesuit astronomer travelled by train to Corigliano, where he found a welcome «fitting for a prince»: noblemen and authorities came to the railway station to escort him to the castle of Baron Francesco Compagna (1848-1925), who held a reception in honor of the scientist. Secchi then travelled by cart to Cosenza, through the district of Sibari and the valley of the Crati River, which he well described in his travel diary.

Before arriving at Cosenza, again, a committee headed by the mayor came to welcome him and Secchi was invited to take the carriage of the mayor: «A minister would receive no better treatment» Secchi commented (APUG 23.II.D). In the outskirts of the town, all

the people came out to welcome him, like in a sort of public festival. These demonstrations confirmed how popular he was, on account of his outreach activities, his involvement in public works and his name being most reported in newspapers.



Fig. 2. The Cosenza sundial by Secchi, as it appears today (courtesy of Maria Luisa Tuscano)

Conti wanted to erect a geomagnetic observatory but was unaware of the difficulties it implied. The choice of the site, as well as the adjustment of the instruments, was problematic; Secchi was quite unhappy with the final result, but admitted that it would have been difficult to do better in those conditions. Before Secchi's departure, the Cosentians organized what he described as a «family party» including a «rich lunch» with liberals and Catholics paradoxically gathered together. Moreover, he was asked to give a public conference on the connections between solar activity and geomagnetism and to draw a sundial on the wall of Compagna Palace (fig. 2), in memory of his sojourn.

Secchi left Cosenza with symptoms of fever, but preferred to hide his illness and to travel by wagon to Eboli, where he had to take the train to Naples and Rome. The trip lasted much longer than expected and was troubled by many stressful incidents, which he reported in his travel diary with his usual humour. In those circumstances, once more Secchi showed his leadership, problem-solving capacities and ability to take decisions in difficult situations.

While his fever increased, he arrived in Naples and went to visit the astronomers at the observatory. Once he arrived in Rome, exhausted, his life was in danger because of a

pernicious fever with cough and spitting blood: he reported in his diary that only thanks to forty grains of quinine in four hours, he could escape death (APUG 23.II.D).

7. Conclusions

Those to Palermo and Cosenza were probably Secchi's last scientific travels: less than three years later, not yet aged 60, he died in Rome for a stomach cancer. His Observatory was confiscated, and Tacchini succeeded him as Director, trying to keep alive the astrophysical research carried out there. He did not succeed and the Collegio Romano became one of the Italian Observatories carrying out traditional studies of astronomy. The golden era of the Italian spectroscopists soon faded away and Secchi's scientific legacy was inherited by the astrophysicists of the United States, who always kept in high consideration the studies of the Jesuit astronomer of the Collegio Romano.

These two scientific travels, however, seem to paradigmatically resume his activity and personality: the work on solar spectroscopy, the cooperation with Tacchini, the participation in congresses and meetings, the popularity among common people, the fight to defend the Collegio Romano Observatory, the contrasting hostility of both ultraconservative and anticlerical people, the encouragement to citizen science, the outreach activity, etc. – all aspects that significantly marked his life.

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- APUG 1873: Fondo Secchi 23.VI.a, Circolo di S. Rosalia in Palermo to Secchi, 16 June 1873
- APUG 23.II.C: “Viaggio in Sicilia per l’eclisse 1870”, pp. 27-56
- APUG 23.II.D: “Viaggio a Cosenza e prima in Sicilia pel Congresso 1875”, pp. 57v-68
- INAF 1871a: Archivio INAF-Osservatorio Astrofisico di Arcetri, Cacciatore to Donati, Palermo, 23 January 1871
- INAF 1871b: Archivio INAF-Osservatorio Astronomico di Palermo, Anonymous to Secchi, Palermo, 10 January 1871
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