Basilio Catania

ANTONIO MEUCCI

THE INVENTOR AND HIS TIMES

New York 1850-1871

PRESENTATION

BY CESARE CALENO, SEAT EDITOR IN CHIEF

ANTONIO MEUCCI - THE INVENTOR AND HIS TIME. THIS EXTENSIVE WORK ALLOWS TO PARTICIPATE DIRECTLY IN THE EVENTS OF AN EPOCH RICH IN THE FERMENT WHICH WAS STIRRED UP BY THE FRENCH REVOLUTION AND UNFOLDED DURING THE ITALIAN RISORGIMENTO, BUT IN A MUCH WIDER HORIZON WHICH INCLUDES CENTRAL AND NORTH AMERICA.

BASILIO CATANIA SYSTEMATICALLY RECONSTRUCTS THE HISTORICAL, GEOGRAPHICAL, AND CULTURAL ENVIRONMENTS WHICH ACCOMPANIED THE TRACKS OF ANTONIO MEUCCI IN THE COURSE OF ALMOST A CENTURY: THE NINETEENTH CENTURY.

A QUARTER OF A CENTURY IN ITALY, IN THE FLORENCE OF THE GRAND DUKE, HIGHLY LIBERAL BUT ALSO DETERMINED TO QUELL THE YOUTHFUL INTEMPERANCES OF THE IMPETUOUS REVENUE-OFFICER. ALMOST TWO DECADES IN THE EXCITEMENT OF CUBAN LIFE, WHERE HIS JOB AS THEATER MECHANIC AT THE OPERA HOUSE OF HAVANA INTERTWINED WITH THE RESULTS OF A LIFE FULL OF CURIOSITY AND RESEARCH WHICH RANGES IN VARIOUS FIELDS, WITH A COMMON DENOMINATOR CONNECTED TO THE STUDIES ON ELECTRICITY AND ITS APPLICATIONS: FROM ELECTRODEPOSITION TO ELECTRIC SHOCK THERAPY, WHICH ALLOW HIM TO BE THE FIRST IN THE WORLD TO ENVISAGE THE POSSIBILITY OF TRANSMITTING THE HUMAN VOICE AT A DISTANCE. BUT THE CUBAN PERIOD SEES MEUCCI AS A FORTUNATE ENTREPRENEUR ENGAGED IN DIFFERENT ACTIVITIES: FROM THEATER MECHANICS TO GILDING THE HILTS OF THE GUARDS, TO WATER PURIFICATION AND SOFTENING AND EVEN TO TAXIDERMY.

THE FORTY YEARS OF LIFE IN THE UNITED STATES ARE THE LIVING WITNESS OF THE DIFFICULTIES WHICH ANY IMMIGRANT WOULD CONFRONT IN THE NEW COUNTRY, FULL OF OPPORTUNITIES BUT EVER SO DIFFICULT. THIS IS WHERE MEUCCI MET HIS MISADVENTURES, FROM THE UNFORTUNATE EXPERIENCE WITH A CANDLE FACTORY TO THE MANY FINANCIAL PROBLEMS ON ACCOUNT OF WHICH HE EVENTUALLY LOST ALL ADVANTAGES FROM HIS INVENTION.

AFTER HIS DEATH, THE IMAGE OF THIS MAN AND INVENTOR AROUSED GREAT INTEREST AND ENTHUSIASM, ESPECIALLY IN THE JOURNALISTIC ENVIRONMENT, BUT NEVER, PRIOR TO THIS BOOK, WAS SERIOUS AND DOCUMENTED RESEARCH CARRIED OUT WHICH COULD PROVIDE THE INTERNATIONAL SCIENTIFIC COMMUNITY WITH VALID ELEMENTS ON THE BASIS OF WHICH TO REVALUE THE GREAT FLORENTINE INVENTOR.

THE RESEARCH CONDUCTED BY BASILIO CATANIA ON THE LIFE OF ANTONIO MEUCCI, GATHERING ANY DOCUMENT THROUGH WHICH THE PERSONAGE COULD COME BACK TO LIFE, IS ACCOMPANIED BY AN EQUALLY ACCURATE “INVESTIGATION” INTO THE SOCIETY, THE CULTURE AND THE SCIENTIFIC BREAKTHROUGHS OF THE TIME, SO AS TO ALLOW THE READER TO FULLY PARTAKE IN THE TROUBLES, THE JOYS AND THE VERY SENSATIONS OF AN EPOCH.

BASILIO CATANIA WAS BORN IN MALETTO (CATANIA) IN 1926. HE GRADUATED AT THE POLYTECHNIC OF MILAN IN ELECTRICAL ENGINEERING. HE WORKED FOR APPROXIMATELY TWENTY YEARS AT MAGNETI MARELLI, CONDUCTING RESEARCH IN THE FIELD OF GROUND AND SATELLITE RADIO LINKS. HE THEN MOVED TO TURIN'S CSELT, OF WHICH HE WAS THE DIRECTOR FOR MANY YEARS. HE PERFORMED RESEARCH IN THE FIELD OF RADIO COMMUNICATION AS WELL AS IN THAT OF CIRCULAR WAVEGUIDES, FIBER OPTICS, OPTOELECTRONICS, ARTIFICIAL INTELLIGENCE AND COMPUTER AIDED DESIGN OF INTEGRATED CIRCUITS. THE RESEARCH ON FIBER OPTICS IN PARTICULAR MADE CSELT FAMOUS WORLDWIDE. PROFESSOR AT THE MILAN AND TURIN POLYTECHNICS, HE IS THE AUTHOR OF SOME SEVENTY PUBLICATIONS AND TEN PATENTS.

IN ACKNOWLEDGEMENT OF HIS EXTENSIVE RESEARCH WORK, HE WAS AWARDED THE *AMBROGINO D'ORO* PRIZE OF THE CITY OF MILAN, THE *EUROTELECOM* PRIZE FROM THE KING OF SPAIN ON BEHALF OF THE EUROPEAN UNION, THE *IEEE FELLOWSHIP* AND THE *GUGLIELMO MARCONI* PRIZE FROM THE ITALIAN ELECTROTECHNICAL ASSOCIATION (AEI).

ANTONIO

MEUCCI

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Basilio Catania

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THE INVENTOR AND HIS TIMES

New York (1850-1871)

OUTLINE OF THE WORK

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Florence 1808-1835
Havana 1835-1850

Volume Two
New York 1850-1871

Volume Three
New York 1871-1889

Volume Four
Post Mortem

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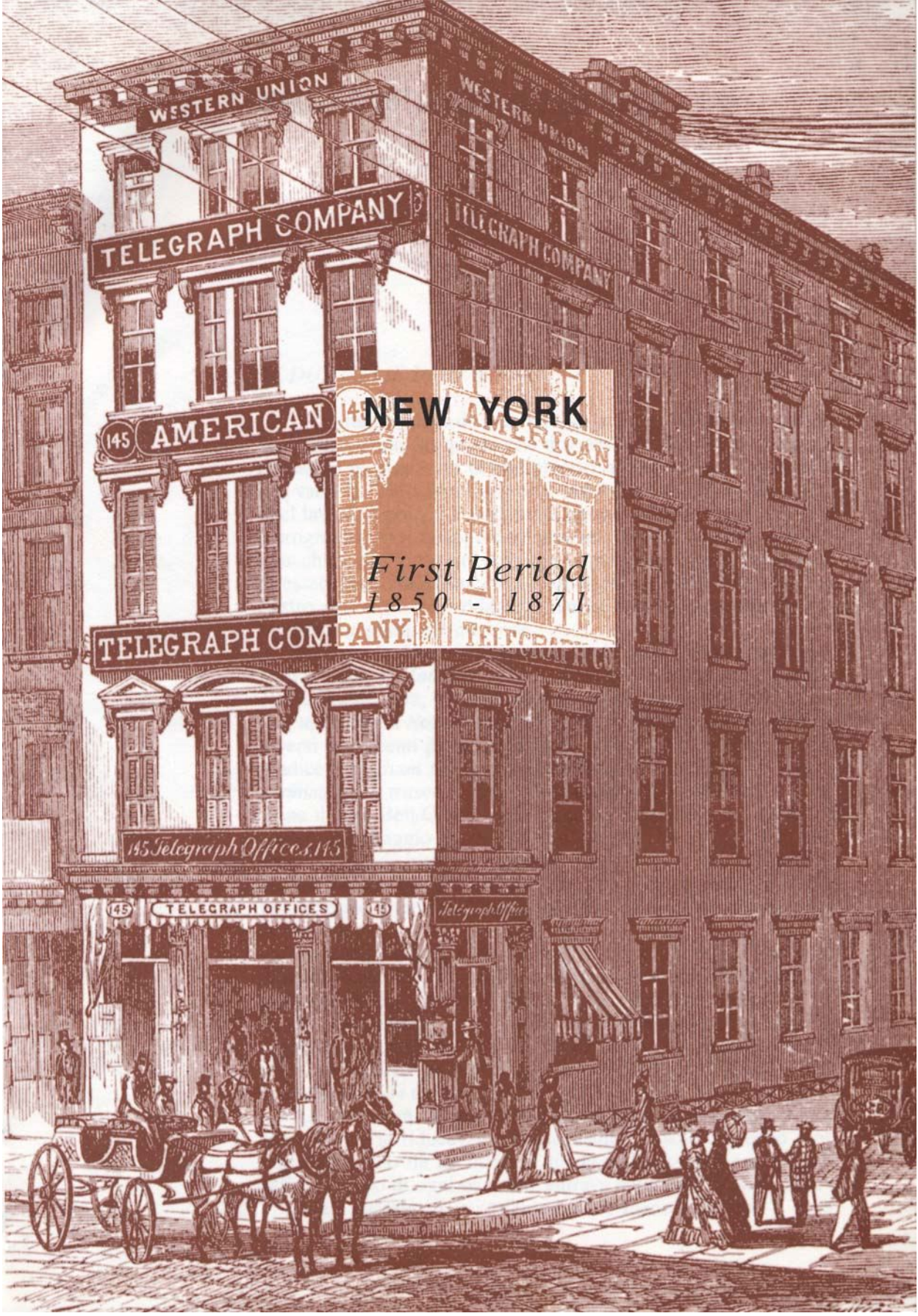
IT IS SAID THAT ONE'S SECOND CHILD IS MORE LOVED THAN THE FIRST ONE, PERHAPS BECAUSE THE FIRST CHILD IS ALREADY "OLD" AND BEGINS TO GO HIS OWN WAY. HOWEVER, I DO NOT THINK IT WOULD BE FAIR TO APPLY THIS SAYING TO THE FIRST TWO VOLUMES OF THIS WORK, FOR THE "DELIVERY" OF THIS SECOND VOLUME, WHICH WE PRESENT HERE, WAS SOMEWHAT TORMENTED (AND PERHAPS THE "NEWBORN" SUFFERED ON ACCOUNT OF THIS) OWING TO THE INTRICATE EVENTS — OFTEN DIFFICULT TO UNDERSTAND — THAT CHARACTERIZED THE FIRST TWENTY YEARS THAT THE MEUCCIS LIVED IN NEW YORK AND WHICH ARE ILLUSTRATED IN THIS VOLUME. SUFFICE IT TO SAY THAT ANTONIO AND ESTHER MEUCCI ARRIVED IN NEW YORK FROM HAVANA WITH ASSETS AMOUNTING TO TWENTY-SIX THOUSAND "PESOS FUERTES" (EQUIVALENT TO SOME $390,000, OR 625 MILLION LIRE IN 1990) AND WERE PRACTICALLY PENNILESS BY THE END OF 1871, NAMELY THE YEAR CHOSEN BY US AS THE DIVIDE BETWEEN THE SECOND AND THE THIRD VOLUME OF THIS WORK. THE THIRD VOLUME THAT WILL FOLLOW — DEDICATED FOR THE MOST PART TO THE BATTLES FOR THE RIGHT OF PRIORITY OVER THE INVENTION OF THE TELEPHONE — WILL BE NO LESS INTRICATE, ALTHOUGH WE MUST SAY THAT THERE ARE A GREAT DEAL OF EXCELLENT PUBLICATIONS ON THIS TOPIC AS WELL AS MANY IMPORTANT COLLECTIONS OF COURT DOCUMENTS, WHILE THE TASK TO DOCUMENT THE EVENTS DESCRIBED IN THIS SECOND VOLUME WAS DEFINITELY HARDER.

ONE ADDITIONAL CONSIDERATION BEFORE LEAVING THOSE INTERESTED IN ANTONIO MEUCCI TO THEIR READING: I WILL NO LONGER MAKE THE MISTAKE OF SPECIFYING IN THE INTRODUCTIONS THE NUMBER OF YEARS THAT I HAVE DEDICATED TO THIS WORK, SINCE EACH TIME I AM FORCED TO RISE THE NUMBER INDICATED PREVIOUSLY. INDEED, IN THE INTRODUCTION TO THE FIRST VOLUME I WROTE: "I DEDICATED SIX YEARS OF MY LIFE ...." HERE I SHOULD SAY: "I HAVE DEDICATED EIGHT YEARS OF MY LIFE ...." AND WHAT

WILL I SAY IN THE INTRODUCTIONS TO THE THIRD AND FOURTH VOLUMES? WELL THEN, LET ME SAY ONCE AND FOR ALL THAT MY INTEREST IN ANTONIO MEUCCI BEGAN ON 7 APRIL 1989 AT THE "FESTIVAL OF SCIENCE AND TECHNOLOGY" OF EDINBURGH, IN GREAT BRITAIN WHERE I HAD THE HONOR TO GIVE THE OPENING SPEECH AT THE ITALIAN DAY. IN THE TOWN WHERE ALEXANDER GRAHAM BELL WAS BORN — AND ALSO, BY STRANGE COINCIDENCE, THE CITY THAT IS TWINNED WITH FLORENCE, ANTONIO MEUCCI'S HOME TOWN — I COULD NOT FAIL TO MENTION THE PIONEERING WORK OF ANTONIO MEUCCI, WITHOUT HOWEVER DENYING THE MERITS OF ALEXANDER GRAHAM BELL. A FEW MONTHS LATER, PRECISELY ON 4 JULY 1989, IN VIEW OF THE IMMINENT CENTENARY OF THE DEATH OF ANTONIO MEUCCI, I SENT A CIRCULAR LETTER TO SOME TWENTY PERSONALITIES, OPERATING IN THE ITALIAN TELECOMMUNICATIONS FIELD, ENVISAGING A PROGRAM OF SYSTEMATIC RESEARCH AIMED TO SHED LIGHT ON THE ACTUAL TRUTH ON THE INVENTION OF THE TELEPHONE AND ON THE CONTRIBUTION GIVEN TO IT BY ANTONIO MEUCCI.

I GOT TO WORK AT ONCE AND PUBLISHED THE FIRST RESULTS OF MY RESEARCH IN OCTOBER 1990 ON "L'ELETTROTECNICA" IN AN ARTICLE ENTITLED "IN SEARCH OF THE TRUTH ON ANTONIO MEUCCI AND ON THE INVENTION OF THE TELEPHONE." IN THIS ARTICLE I MENTIONED THE FACT THAT THE DECISION TO COLLECT THE RESULTS OF MY RESEARCH IN A BOOK WAS TAKEN ON 23 JANUARY 1990, DURING A MEETING OF THE BOARD OF DIRECTORS OF THE "QUADRATO DELLA RADIO," THANKS TO THE JOINT INITIATIVE OF THE PRESIDENT, MR. MICHELE PRINCIPE (ALSO PRESIDENT OF STET AT THE TIME) AND OF MR. CESARE FANTO' WHO, TOGETHER WITH MR. UMBERTO SILVESTRI, ALREADY MENTIONED IN THE INTRODUCTION TO THE FIRST VOLUME, SHARE THE MERIT OF HAVING BEEN THE PROMOTERS AND SUPPORTERS OF THIS WORK.

ENJOY YOUR READING!



NEW YORK

First Period
1850 - 1871

IN THE UNITED STATES OF AMERICA

THE TWO ITALIES OF NEW YORK

Have you ever woken up in the morning with a clear idea, indeed a very clear idea, of what you are going to do on that particular day, with even a precise plan in mind: first I'll do this, then that, then I shall go over there, see that person, then I shall settle down calmly to do that bit of work and … then? And then you end up doing nothing, absolutely nothing of all that you had planned because you are unexpectedly overwhelmed by many other things that suddenly come up and need to be taken care of right away. Well, that is precisely what happened to our Antonio - and obviously also to his wife Esther - as soon as they reached New York.

The *Norma* berthed at Manhattan's *Drake Bros. & Co.* pier on the morning of Wednesday, 1 May 1850. This date is confirmed by the registration of the arrival of the *Norma* at the New York harbor as well as by several court proceedings (see, for instance, the sentence pronounced by Judge William W. Scrugham in the Mason/Meucci et al. trial, in the appendix "Summary and transcription of court proceedings"). The Bell/Globe trial is an exception for, in it, the date 1 May 1851 is erroneously indicated by Meucci himself (e.g. in his affidavit, where he stated: "I came to New York on 1st May, 1851"). He may be justified for this by the fact that, as one may note, more than thirty-five years had elapsed since the famous berthing of the *Norma* at the piers of New York.

Lorenzo Salvi and Domenico Mariani were waiting for the Meuccis at the company's offices to take them to Mario Rallo's boarding house on Leonard Street, near the corner of Broadway, which is where they were going to stay, together with other Italians. Mr. Rallo's boarding house was an apartment with six or seven rooms rented out to boarders, and it was one of the best Italian boarding houses in New York. At that time, immigration formalities were taken care of very quickly, and practically consisted only of a medical examination performed by a health officer who climbed on board every ship that sailed into the bay of New York and examined all of the passengers, granting or

withholding permission to land. Immigration formalities were to become tougher and more restrictive only many years later.

Back then, New York had about seven hundred thousand inhabitants, half of whom were foreigners, that is, born outside of the United States. Its population was therefore more than threefold that of Havana. Traffic in the port of New York had initially been much less intense than in the port of Havana, but by that time it had become just as busy: more than three thousand ships sailed into and out of the port every year. Of New York's seven hundred thousand inhabitants, Italians accounted for only about three thousand, that is to say less than half a percentage point: only a very small minority. Indeed, across the entire territory of the United States Italians numbered roughly ten thousand in the year 1850, and they were mainly concentrated in big cities like Boston, Philadelphia, Baltimore, Washington, New Orleans, Cincinnati and San Francisco, as well as New York.

The annual rate of Italian immigration to the United States had indeed grown rather slowly from the very low figure of thirty immigrants registered in the year 1820, to the 531 registered in 1850. In the first decades following 1850, the immigration rate continued to rise, though never exceeding a few thousand immigrants a year. However, starting from 1889, the year in which the figure climbed to 51,558 immigrants, the Italian immigration rate increased by more than one order of magnitude. It would continue to rise in the last decade of the past century and in the first decade of this century, reaching its peak in the year 1914, when as many as 296,414 Italian immigrants were admitted. Today, of New York's seven and a half million inhabitants, Italians account for roughly 30 per cent, only slightly less than the Jewish population, which accounts for 37 per cent (this being the reason why it is quipped that the city's name should actually be *Jew York* rather than *New York*). The Irish population follows with about 12 per cent, the Afro-American population stands at around 12 per cent while Puerto Ricans account for about 9 per cent.

However, according to the reports published by *Il Progresso Italo-Americano* in 1907, only seventy-four Italians out of the three thousand who lived in New York in 1850 made up what was known as the *Italian colony*, in the sense that they emerged from the anonymity and marginalization experienced by the majority, as we shall see. These distinguished men were mostly political exiles who had taken part in the 1821 or 1831 uprisings in Italy, or even in the more recent 1848-1849 riots. In fact, already in the early decades of the past century the United States of America was practically the only country to give open and unconditional support to Italian political exiles, granting them hospitality which was otherwise denied for obvious reasons by

Austria, France, Spain and their possessions, as well as by their allies and supporters in every part of the world, as Garibaldi himself was to discover.

As for England, although this country had given refuge to many political exiles and boasted the most advanced form of Parliamentary democracy, it proved to have an uneven attitude towards those exiles who were full-fledged Republicans. Exiles, that is, who refused a monarchy of any type, even the so-called constitutional monarchy that reigned in England. Indeed, whereas England gave hospitality to Mazzini, the English Consul in Gibraltar denied it to Garibaldi, as we shall later see (see also the Appendix *Giuseppe Garibaldi*). Switzerland too, on different occasions, offered a safe haven to many Italian political exiles, including Garibaldi himself. However, the United States' policy of unconditionally open doors, along with the liveliness of its political life and the concrete opportunities for initiatives and aid, undoubtedly made the United States the most attractive country for exiles from all nations, for men who had fought for the same ideals of freedom which the United States had managed to achieve less than a century before.

For these reasons it can be said that in the year that marked the half-way point of the nineteenth century one could behold a large chapter of the history and geography of the Italian Risorgimento right in New York. Some of the men had arrived alone, others in small groups. A larger group arrived in New York on 20 October 1836 on board the Austrian war brig *Ussaro*. They were mostly youths from the region of Lombardy who had been sentenced to death on 29 September 1835 for having taken part in the *Giovane Italia* secret society Their sentence had later been commuted to twenty years of harsh prison regime in Gradisca d'Isonzo (Udine) and finally - for those who accepted - to compulsory emigration to the United States. Other exiles coming from the infamous prison of *Spielberg* joined them when the Austrians offered them the opportunity to do so. Many famous names stand out among the exiles of 20 October 1836: Giovanni Albinola, Count Alessandro Bargnani, Giacomo Costantino Beltrami, Pietro Borsieri, Count Federico Confalonieri, Prof. Eleuterio Felice Foresti (who had been imprisoned with Silvio Pellico), Piero Maroncelli, the noble lawyer Luigi Tinelli, Pietro Orsieri and others who were perhaps less famous but by no means less deserving and brave, such as Argenti, Benzoni, Castillia, Marinelli and Minnelli.

In particular, Prof. Felice Foresti, who was awarded the Italian Language and Literature Chair at the New York Columbia University the following year, enjoyed a prestigious reputation also in the American cultural milieu. Furthermore, having been appointed Secretary of the Triumvirate of the Roman Republic in 1849, upon his return to New York he became a point of

reference for all the Italian exiles. Unfortunately, Foresti and Maroncelli did not share the same political ideas, as Foresti was a diehard Republican, while Maroncelli was in favor of a constitutional monarchy (which was obviously to be from the House of Savoy). Luckily, the two were finally reconciled before Maroncelli died in 1846. Foresti left the United States for good in 1856 and settled in Genoa, where he was to die two years later, on 14 September 1858 (see *L'Eco d'Italia*, 4-5 March 1883).

Felice Foresti, Spielberg's martyr

The Spielberg and Gradisca exiles had been preceded in their exile to New York by Neapolitan patriots and Carbonari, many of whom had been sentenced to death by the Bourbon government in 1821. Among the latter were Giuseppe Attinelli (later, in 1848, appointed Consul General of the Kingdom of Sicily and, in 1849, Consul to the New York Province of the Roman Republic), Luigi Chitti, Ferdinando Massa, Luca Palmieri (later appointed Consul of the Two Sicilies in New York). Many years later, following Palermo's 1848 riots, a spate of Sicilian convicts reached New York; Emanuele Sartorio was among them. The reader will undoubtedly be surprised, as was the writer, on learning that the same Bourbon government which had sentenced certain people to death, later appointed the same as its Consuls abroad. Yet, that is precisely what happened. For instance, in the letter of appointment sent to Attinelli by the Marquis of Torrearsa, the Bourbon Foreign Affairs and Trade Minister, it is written that the government was *"aware of your patriotism, and of the distinguished qualities which adorn you,"* and for this he deserved to be appointed Consul, *"so as to provide for the needs of trade, as well as to the welfare of Sicilian citizens residing in or journeying through foreign countries."*

Finally, between 1849 and 1850, the exiles of the unfortunate 1848-1849 riots made their way to New York from every region of Italy, including many of those who had founded and strenuously, though vainly, defended the Roman Republic in 1849. According to what was told by Peter Ambrose Parodi (see bibl.), among those who emigrated to the United States after the defeat of the Piedmontese army in Novara (23 March 1849) there was a Captain Franchi, an ex-major in the troop of volunteers who rushed to support the *Temporary Government* that had been installed in Milan after the famous *Five Days* of March 1848. Capt. Franchi, a university graduate, had made his fortune in Italy as a manager of the 'Messaggerie' (transport of valuables and mail) and could thus lead a relatively comfortable life in the United States.

A leading figure among the exiles who reached the United States after the fall of the Roman Republic, was General Giuseppe Avezzana from Turin, who had already been sentenced to death in Turin for the 1821 revolution and had emigrated to New York passing through Mexico. He later returned to Italy

with Foresti and others to take part in the 1848 riots, and there he was appointed Minister of War of the Roman Republic. He fought there strenuously and then returned to New York with Foresti himself and others, in 1849, after Rome had fallen into the hands of the French. He was welcomed triumphantly by the New Yorkers. Others included the writer and patriot from Emilia, Quirico Filopanti (pseudonym of Giuseppe Barili), who was the Secretary of the *Roman Constituent Assembly* in 1849 and later fought by Garibaldi's side in Mentana in 1867, as well as General Carlo Ferrero, who also fought to defend the Roman Republic. As we shall see hereinafter, Garibaldi was later the guest of General Ferrero's wealthy father, Stefano, who owned an estate with a luxurious villa in Yonkers (some fifty kilometers north of Manhattan) and a large farm in Bloomingdale (some fifty kilometers inland, in New Jersey, where, in summer, he would host the *Italian Guard* for its military exercises), and he was even the owner of the famous Tammany Hall in New York. Filopanti, unlike the Ferrero family, lived very modestly. Secchi de Casali wrote about him in the *Eco d'Italia* on 22-23 April 1883: *"Prof. Quirico Filopanti … an exile, lived in great simplicity among us, with very humble means and without ever boasting before his fellow citizens nor with foreigners. … Filopanti lived in a small room on Fulton Street, at the Belmont Hotel, the closest to the clouds. I visited him several times in winter and I often found him hard at work writing without any fire to warm his chilled limbs. He wrote on philosophy, history, aerostatics and other scientific fields, prepared conferences, and also wrote about Italy. He was poor, but proud and independent. I, who am a supporter of the constitutional monarchy, would give my vote in Italy to Filopanti rather than to a member of my own party."*

Moreover, in 1850, among the exiles of the 1848-1849 riots, in New York one could also encounter: the English Colonel Hugh Forbes, who fought alongside Garibaldi in defense of the Roman Republic and then followed him in his adventurous retreat across half of Italy; the American physician Dr. Valentine Mott Jr., who had fought in Palermo during the 1848 riots and later became Garibaldi's personal doctor; Major (later Colonel) Paolo Bovi Campeggi from Bologna, a Mazzinian conspirator, member of the *Carboneria*, who lost his right hand to a cannonball during the defense of the Roman Republic and accompanied Garibaldi in his exile to New York. Ten years later Bovi Campeggi took part in the expedition of the *Thousand* with Garibaldi, and was a member of Garibaldi's staff during the campaign in the Tyrol region. He was also decorated by King Victor Emmanuel II, when the latter entered Naples with Garibaldi, and received the Cross of the Military Order of Savoy. His son Giovanni died in Mentana on 3 November 1867,

fighting for the liberation of Rome. Another man who fought in the Roman campaign with the rank of Corporal was Mr. Speck, brother-in-law of the tenor Lorenzo Salvi, whom we shall learn more about later. Adolfo Rossi, Director of the newspaper *Il Progresso Italo-Americano* of New York, defined Mr. Speck a *"generous man, with sound principles and no personal ambitions, who followed Garibaldi everywhere, in battle as well as in exile in Caprera and the United States."* In 1859, Mr. Speck once again fought with Garibaldi in the *Cacciatori delle Alpi* (*Alpine Huntsmen*), with the rank of Captain.

In New York there were also many brave veterans of the *Italian Legion* founded by Garibaldi in 1842 in Montevideo, including Oregoni and Righini who were later to follow Garibaldi to Italy in 1848 and share his exile in New York. And there were also the very young and very ardent patriots like Antonio Oldrini from Lodi, who later followed Garibaldi in the campaign of the *Thousand* in 1860 and in Tyrol in 1866, when he was severely wounded in battle. Another intelligent and very brave young man was the Venetian Giovanni P. Morosini. He reached the United States in January 1851 and worked with Meucci and Garibaldi in the candle factory in Clifton, as we shall see; later, in January 1854, he left for London with Garibaldi and from there, after having met Mazzini, he returned to New York where he enjoyed a rapid career and became one of the wealthiest and most famous bankers in America.

Then there were others who enjoyed less military or political glory but nonetheless did much to honor Italy and endeavored to keep the flame of love for their motherland ablaze in the hearts of the Italians of America. Among the latter there were many in the liberal professions, traders or well-established shopkeepers, like Carlo Delvecchio and Bartolomeo Ceragioli (known as the 'capipopolo' (leaders of the people) of the *Società Italiana di Fratellanza e Beneficenza* (the Italian Society of Brotherhood and Charity, which will be described further on). Also, the previously-mentioned Gaetano Negretti, who was a member of the Italian Guard mentioned above, with the rank of Corporal, and Giacomo Brizzolara, known as 'Il Magnasco,' who owned a trattoria and grocery shop of Italian products on 19 Spruce Street, where he served excellent macaroni with tomato sauce, and Lorenzo Ventura, the owner of a famous restaurant on Fulton Street, between Broadway and Nassau Street.

Here is how the Director of *L'Eco d'Italia*, Mr. Secchi de Casali, described Magnasco's trattoria in an article dated 19 February 1882:

"…. the place that is most well-known and frequented by most of our 'high life' and common people was the hovel owned by Giacomo Brizzolara, better known under the pseudonym of 'Il Magnasco.' In this trattoria and grocery shop (both of which

were concentrated in a poky little room, built with planks, where, more often than not, huge rats would race madly) General Garibaldi and General Avezzana met almost every day; the most distinguished opera singers like Salvi, Ignazio Marini, the brothers Cesare and Federico Badiali and Bettini, as well as painters Molini, Allegri and Guidiccini, tradesmen Michele Pastacaldi (importer of marble and Italian wares), Gaetano Negretti, Leoni and the 'capi-popolo' Carlo Delvecchio and Ceragioli would gather there also. There one could come across journalists like Charles A. Dana, now chief editor of the 'Sun,' Snow, Cleveland and Ripley of the 'Tribune,' Hudson of the 'Herald' the poets Bayard Taylor and John Savage, and many American and foreign literati. 'Magnasco' was the idol of every social class, not only for his tasty dishes and generous wines, but even more so because of his personality and generosity. In those humble premises he created gems and, if only he had resisted the temptation to try his luck in higher spheres and had remained in his 'lair,' as Garibaldi called it, in a few years' time he would have made a fortune. General Garibaldi never forgot 'Il Magnasco' and many years later, having heard that the latter was living in poverty, he invited him to leave California and go to Caprera, where indeed he spent a few years with the Hero of the Two Worlds. 'Il Magnasco' is now back in California. In his premises, the preparatory meetings of the Italian Committees were held to organize public assemblies or to help the mother-land. The sea captains, mostly from Genoa, would bring there their shoddy goods, which they quickly sold, and if, by any chance, they were left with some goods unsold, they would leave them with Brizzolara until their return, so great was their trust in him …"

Incidentally, it is worth highlighting that as Magnasco had become an American citizen many years before - having been resident in New York well over the minimum five years required by the law - he was appointed Flag Captain of the American merchant navy ship, the *Commonwealth*, which was to take Garibaldi back to Italy in 1854.

Hence, both of the restaurants - Magnasco's simple trattoria and the more elegant restaurant belonging to Ventura - had a clientele comprising many outstanding personalities of the New York artistic and cultural community, who loved the Italian cuisine and culture. There were also many other intellectuals and independence supporters from numerous countries, including those who conspired for the independence of Cuba. Not far from these restaurants, on Chambers Street, between Broadway and Centre Street (see the map below), there was another famous Italian café, the *Café Palmo*, while towards the southernmost tip of Manhattan, on the corner of William Street and Beaver Street,

there stood the famous Italian Restaurant - the *Trattoria Delmonico*, which was within walking distance of the Battery wharves, where it was fashionable to dine after the opera at a price of over ten dollars per person (equivalent to about $150 of 1990).

The two foregoing restaurants, *Magnasco's* and *Ventura's*, were located in a strategic position, as they were very close both to the *Park Theater*, on Park Row, and to Printing House Square, on the axis of Park Row, as is shown in the map below. Around the corner from *Ventura's* on Nassau Street, there was a shop owned by the wealthy tobacco trader John Anderson, whom Meucci had met in Santiago de Cuba and later became a strong political and financial supporter of Garibaldi, whom he had met precisely at *Ventura's*.

Park Theater was famous because this was where the Italian opera was performed for the first time in the United States, back in 1825, thanks to the Venetian Lorenzo Da Ponte and the opera company of Manuel García. Lorenzo Da Ponte was another distinguished personality of New York's first Italian colony. He was a poet and a writer of librettos and was considered the founder of Italian culture in America. Of the thirty-six librettos that he wrote the most famous were the ones for the three operas of his dear friend Wolfgang Amadeus Mozart: *The Marriage of Figaro, Don Giovanni* and *Cosi fan tutte*. Moreover, Lorenzo Da Ponte held the first Chair of Italian Language and Literature at *Columbia University* (known as *Columbia College* at the time). This chair was later assigned to Prof. Felice Foresti, precisely in 1837, as mentioned before. Up until his death in 1839, Lorenzo Da Ponte strove to promote Italian culture, not only the opera, in the United States.

Lorenzo da Ponte

The map reproduced below indicates other two Italian shops that were renowned in 1850: the Italian wine and liquor shop called *Monteverde's*, on 8 Barklay Street, and *Ferrari's* barber shop. Ferrari was from Parma and worked as a barber near the famous Astor House Hotel, right in front of the cemetery of Saint Paul's Church (on what is currently Vesey Street). Ferrari was known for his distinguished clientele and his impeccable style of dressing. He always wore white kid gloves, went to the Opera, and attended all the most important social gatherings. About half a mile south on Broadway, at the corner of Wall Street just in front of Trinity Church, there was another famous Italian barber shop owned by Cavanna, from Novi Ligure. He also had well-known clients, including consuls, chargés d'affaires and distinguished clergymen.

Italian businesses and centers in downtown Manhattan

Finally, just a stone's throw away from Magnasco's trattoria, on 9 Spruce Street, after countless flights of steps all the way up to the seventh floor, there was the office of what was then (1850) the only Italian newspaper in New York, *L'Eco d'Italia.* The

newsletter - rather than newspaper - was first printed on a cold winter Saturday preceding the arrival of the Meuccis in New York, and precisely on 26 January 1850, and it was published initially on a weekly basis. Of course, it was not among the papers that newsboys would pick up in Printing House Square at five o'clock in the morning and then sell in the streets of New York, hollering the head-lines. Indeed, *L'Eco* was mailed to subscribers for an annual fee of six dollars, to be paid in advance. Several years later (and certainly before 1865) *L'Eco* moved from the garret on Spruce Street to nearby 65 Nassau Street. It would become a twice-weekly publication only towards 1870, when it was issued on Wednesdays and Saturdays, and it finally became a daily newspaper in 1880, with offices on 51 Liberty Street. This was the same year in which Carlo Barsotti founded a new Italian daily paper which was to compete with *L'Eco*, called *Il Progresso Italo-Americano*. Ten years later, in 1890, the offices of *L'Eco d'Italia* were located at 22 Centre Street, near the famous Printing House Square, like all its previous offices, and like those of all other New York newspapers.

A group of newsboys at midnight, on the Brooklyn Bridge

G. F. Secchi de Casali, aged thirty at the time, founded *L'Eco d'Italia* in practically impossible conditions just five years after his arrival in New York from Italy. He tells the story himself in two detailed and interesting series of articles, published in *L'Eco* between 1882 and 1884: "A Short History of the Italian Colony in New York" and "Thirty-eight years of America." He mentioned that Magnasco, *a man with a heart of gold*, gave him money to buy paper so that he could have the only Italian newspaper printed. To make a living, the young Secchi de Casali also worked as a reporter for the *New York Herald*. From then on, for almost forty years he worked as editor, leader, promoter and owner - never wealthy - of *L'Eco d'Italia*. His political views were in favor of a constitutional monarchy, like Maroncelli. But he was not a fanatic, as it were. Indeed, Secchi de Casali had a very open and lively personality, and had thus built many sound friendships. For instance, this is what the *New York Daily Tribune*, founded and edited by the well-known Horace Greeley, had to say about him on 27 July 1850: *"L'Eco d'Italia.—This neat little Italian journal, edited by our friend, G. F. Secchi di Casali, has just completed the first six months of its existence. It is a lively and intelligent sheet, warmly devoted to the Italian cause, and deserves the liberal encouragement it has received."*

Last but not least, it is worth mentioning the residence of the well-to-do merchant Michele Pastacaldi, at Irving Place, not only because this was where Felice Foresti - the respected and uncontested leader of New York's Italian colony - dwelled, but also because that house was always full of important guests and was an important point of reference and organization for all

Italian exiles in New York. General Avezzana and Quirico Filopanti were steady visitors there.

The Pastacaldi residence was situated in Irving Place, a new district of Manhattan at the time, if one considers that until 1812 New York's inhabited area ended on 14th Street, which runs down the southern end of the large rectangle called Irving Place. This was the area where, just a few steps from the Pastacaldi residence on the north-eastern side of 14th Street, at the corner of Irving Place, the *Academy of Music* was built between 1853 and 1854. At the time, it was considered to be the largest theater in the world. Note the so-called royal entrance, on 14th Street, in an engraving dating back to that period, reproduced below.

The Academy of Music in an 1856 engraving

After a somewhat uncertain start, the *Academy of Music* was given new life by the Austrian impresario and orchestra conductor Max Maretzek, who had formerly been the impresario of *Astor Place Opera House* and *Castle Garden*. The latter ceased to function as a theater on 3 August 1855 and was rented to the State of New York, which transformed it into a welcome center for immigrants. Max Maretzek had given new impetus to Da Ponte's endeavor to foster the taste for the opera in New York City and it can be said that the *Academy of Music* finally launched the opera in the American metropolis. Soon after the *Academy of Music*, the famous *Metropolitan Opera House* was built, further north on Broadway, almost in line with New York's large Central Park (which was started later, in 1858, but was finished only in 1876). The city's two large opera houses developed a fierce competition (to the tune of thousands of dollars) to ensure the performance of the best collection of famous opera singers.

Very close to the Pastacaldi residence there was a grocery shop owned by a man called Paolicchio. It was situated on Third Avenue, between 13th and 14th Streets, and was mentioned in Domenico Mariani's testimony at the Bell/Globe trial, which will be reported later on.

Garibaldi was to find a safe haven and support in the house of Michele Pastacaldi. He wrote in his memoirs: "*… in the house of my dear and precious friend Michele Pastacaldi, where I enjoyed the pleasant company of the illustrious Foresti - one of the Spielberg martyrs …*" It was in Pastacaldi's house that Garibaldi met Theodore Dwight, the enthusiastic writer who fell in love with Italy and wrote "A Tour in Italy in 1821" and "The Roman Republic in 1849," and who would later become Garibaldi's American biographer. Pastacaldi also commissioned a daguerreotype of Garibaldi from the New York photographer Max S. Root. It was to go down in history as *Garibaldi in Redingote*, and many valuable engravings were derived from it, one of which, made by T. B. Welch, is reproduced on p. 69.

Other respectable Italians joined the ones indicated above in the years that followed the arrival of the Meuccis in New York. Among them, it is worth mentioning *Peter Ambrose Parodi*, of clearly Genoese origin, who arrived (see his manuscript in the general bibliography) on 9 January 1852 and had the opportunity to meet Antonio Meucci shortly thereafter.

Max Maretzek, the theater impresario

Thus, there were many important distinguished personalities in the Italian colony of New York. It should be mentioned that exile - as has always been the case ever since ancient times - was the most effective school for patriotism and for the idea of a united Italy. Italian exiles in America, from those of 1821 to the more recent exiles of 1849, immediately developed strong bonds of solidarity with one another. Sharing an aspiration for the liberty and unity of Italy, they forgot all forms of parochial love, no matter what region of Italy they came from. They never ceased making plans for their return to the motherland and were ready to seize any favorable opportunity to pick up arms and finally achieve their dream of a free and united Italy. Naturally, many had placed their hopes in Garibaldi, but the General was obliged on many occasions to use his prestige to sedate the arguments that often arose in Pastacaldi's house on the most bizarre ways to free Italy.

The brotherhood and solidarity that existed among the Italians of America were exemplary. For instance, eleven years before the Meuccis reached New York, Piero Maroncelli, Felice Foresti, General Giuseppe Avezzana, Quirico Filopanti and others founded a society which was called by Maroncelli "The Italian Society for Unity, Brotherhood and Charity" whose aim was *"to provide help to all Italians who, by chance or accident, found themselves in a condition of indigence."* Although Maroncelli died in 1846, before Meucci's arrival, the spirit of the society that he had founded remained forever in the hearts of the Italians of America. It was first founded on the evening of 20 January 1839, in the house of Mr. Pietro Ameli, on 395 Broadway. Secchi de Casali wrote in *L'Eco d'Italia* on 8-9 January 1882:

"… At the time, the meetings of Italians were not held in 'bar-rooms,' nor were those who convened these meetings the same arrogant cocksure persons who stayed up all night. The meetings took place in the houses of the most respectable Italians, and if there were too many people for the small rooms, they were held in halls suitable for public meetings. In those days, those who undertook initiatives for a patriotic cause or in the interest of the Colony were the cream of our Italian émigrés, men that other nationalities justifiably envied us, not vulgar pub-goers or the despicable rabble always ready to flaunt or boast of some small appointment."

Secchi de Casali was obviously referring to the rabble of Italians living in the infamous district known as *Five Points*, which shall be described soon hereafter.

The above-mentioned *Society for Unity, Brotherhood and Charity* was only the first association (by the end of the century there were thousands of them) in the so-called Italian colonies of North America. The statute was drafted by Maroncelli, Foresti, Palmieri and Tinelli. On the following 10 March 1839, the statute was ready and the assembly met in the same place to vote its approval. There were ninety founding members. Secchi de Casali (op. cit.) continues:

"The Statute [*consisted of,* Editor's Note] *4 chapters and 37 articles: it provided for aid in the form of food, lodging, drugs and medical care. In a few 'special' circumstances, also money and the means to move somewhere else. It also provided help of an intellectual nature to those in need of it … men … like Maroncelli, … like Count Bargnani, Foresti and Tinelli gave their paternal assistance to their poor fellow citizens, they taught them to read and write*[1] *and helped them find a job. In that assembly the following officers were elected: Carlo Delvecchio, President; Giuseppe Avezzana, Vice-President; Bartolomeo Ceragioli, Treasurer; Luigi Tinelli, Secretary …"*

Secchi de Casali also reported that as of January 1841 the society *"published announcements at its own expense in the city newspapers, looking for jobs for one or more Italian manual workers or craftsmen who were recommended to foremen, families, shops, pieceworkers or farmers …"*

Another important initiative undertaken by the Italian colony in New York was the formation of the *Italian Guard*. Secchi de Casali reported in the *Eco d'Italia* of 22 January 1882:

"On 13 September 1843, our colony organized a military Corps known as the Italian Guard, whose motto became: «Now and for ever.» … The Marquis Ode A. Sant'Angelo de Intilli, a Neapolitan, … for reasons beyond his will, did not take command. … The company was summoned on the evening of 15 November in the main hall of the Fifth Ward Hotel, on West Broadway, to elect a new Captain, who was the First Lieutenant Giuseppe Avezzana … on the following evening, at 212 William Street … a Statute was drafted … Captain Avezzana … addressed a warm appeal, asking everyone «to show that their hearts still harbor the noble sentiment of unity, brotherhood, love for their motherland, and gratitude for the country which gives us hospitality … Remember that we are all sons of our beautiful and beloved Italy; therefore we should always foster

[1] This was done in the *"Free Italian Elementary School"* and the *"School of English,"* both evening schools.

that understanding, that civility of behavior and brotherly affection which impose and command the respect of others. Let us do our utmost to ensure that our dignified behavior and the union of our hearts prove to foreigners that, by embodying the warm love of our motherland, we may represent the honor and union of our nation in these countries with pride and dignity.» The uniform was the same as that of the Italian 'veliti[2] *of the Army Corps of General Beauharnais, the Viceroy of Italy under Napoleon, namely a green tunic with red cuffs and two rows of white buttons. The Guard had 50 or 60 rifles and was considered one of the best Corps of the 252nd Regiment, 62nd Brigade, 31st Division of the National Militia of the State of New York. The standard showed the Italian colors … Whoever was proven guilty … was submitted to the judgment of a Disciplinary Council and definitively expelled from the Corps. Every year, in summer, the Italian Guard held its military camp, generally in Bloomingdale on a farm that belonged to the late Stefano Ferrero, the owner of Tammany Hall in the city. The military camp lasted about one week … In January 1847 … the Committee consisted of: Captain G. Avezzana; 1st Lieutenant M. G. Lenghi; 2nd Lieutenant D. Altrocchi; Sergeant E. Levi; Corporal G. Negretti, our dear friend who is now the director of the Gas Company in Lucca…"*

We have provided a very detailed description of the history and composition of the Italian colony in New York, highlighting its cohesion, to help the reader understand how two respectable Italians who had just landed, namely the Meuccis, could in no way avoid (not even if they wanted to) getting involved in the many problems of that community. First and foremost was the financial problem.

For the Meuccis this *union, brotherhood and charity* meant making part of their savings, amounting to twenty-six-thousand *pesos fuertes* (equivalent to some twenty-six-thousand dollars of the time), which they had accumulated in Havana in over fifteen years of work, available to the poor Italians of New York, of which there were hundreds, if not thousands; and their savings would also be used to purchase rifles and to finance expeditions to liberate Italy. Had it been entirely up to Antonio, their savings would have been swallowed up in a very short time by the mare magnum of the colony's many needs. But Esther - who was indeed illiterate (she signed with a cross) but nevertheless a wise administrator - prior to leaving Havana had made her husband sign the following statement:

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[2] A Corps founded in Italy by Napoleon Bonaparte in 1805, which had a similar role to that of the Roman "*veliti*" who were soldiers in light armor who preceded the legions and initiated the battle with the enemy.

Map of the Five Points neighborhood, currently Greenwich Village (Also indicated: Leonard Street, Stoppani's bar and Peyro's wine-shop)

"I, the undersigned, declare that I have received from my wife Mrs. Esther Meucci the sum of seven-thousand-five-hundred scudi [*dollars* - Editor's Note]*; I undertake to deposit this money in a bank upon my arrival in New York until a property that meets her satisfaction can be purchased. I declare that I have received an additional two-thousand scudi which I leave as a deposit in the trusted hands of Mr. Bonifazio Acosta, brother of the Countess de la Reunion.*

Havana, 7 April 1850

(signed) Antonio Meucci. Luigi Tartarini, witness."

Moreover, Esther brought with her a bill of exchange for thirty-five hundred dollars, signed by Lorenzo Salvi, to whom she had entrusted (or loaned) such a sum. Therefore, the fortune that Esther had accumulated in fifteen years of work in Havana amounted to thirteen thousand dollars, as was verified and acknowledged by the judge of the Supreme Court, William W. Scrugham, in his sentence of 4 February 1861, transcribed in the Appendix "Summary and transcription of court proceedings." As for Antonio Meucci, he brought to New York at least another eleven thousand dollars, as is indicated in his affidavit, notarized on 9 October 1885, in which he stated: *"I wish to state that when I came to New York I had $20,000 or more."* On this subject, we have a confirmation from Peter Ambrose Parodi's manuscript (see bibl), which reads: *"… at the great Tacon Theater in Havana ... with the aid of his wife, he saved, as his intimate friends revealed, a sum of from $25,000 to 30,000, a conspicuous amount in those days, and with it he came to settle himself in New York …"* As was ascertained by Justice Scrugham, all this money was deposited on an account in the name of Antonio Meucci at the *Mechanic's Bank* and it was later transferred to the *Seaman's Saving Bank* on Wall Street.

But before going into the events which befell the Meuccis just after their arrival in New York, it is necessary to complete the description of the setting in which these events took place.

First of all, as the title of this chapter suggests, in New York there was not only the Italy that we have described heretofore, namely the Italy of exiles, professionals, traders and honest shop keepers, but another Italy as well, that of the derelicts and scoundrels, which was almost wholly concentrated in the notorious neighborhood of *Five Points.* Few remember this name today. Others are known, such as *Little Italy* or *Greenwich Village,* the heirs of the infamous *Five Points,* which also bordered with the neighborhood that is currently known to tourists as *Chinatown.* To avoid the risk of falling into rhetoric or getting carried away by a flight of imagination, only descriptions made in that period by direct observers are given below.

First of all, it should be mentioned that the Five Points neighborhood was not far from Leonard Street (which is indi-

cated with one of the black circles in the map below), where Meucci, Salvi and Mariani lived. As one can see, Leonard Street - which exists still today, like almost all of the New York streets mentioned in this book - crosses in this order the large Broadway, Lafayette Street, Centre Street and Baxter Street, close to the (ill-defined) southern border of Five Points.

On the corner of Leonard Street with Broadway and Church Street (the first parallel, West of Broadway) one easily encountered knots of prostitutes. In the easternmost area of Leonard Street, there were clusters of putrid hovels, mostly inhabited by blacks. As a matter of fact, Manhattan's *East Side* was the area where the poorest population lived - hence it was also called the *shilling side* - while the *West Side* had a wealthier population, and was therefore also called the *dollar side.*

Five Points was neither East nor West, but right in the middle of the island of Manhattan, and indeed in the lower central part, which was the most densely populated at the time. The notorious Mulberry Street and Baxter Street (which are indicated on the map with black circles) marked the half-way point of Five Points and were also the show-case of its squalor. The map above also indicates with black circles the location of the two well-known *clean* Italian places: Carlo Stoppani's "bar room" on the corner between Broadway and Walker Street, and the (nearby) wine shop owned by Giuseppe Peyro from Piedmont, on 63 Walker Street, both, as one can see, West of Broadway. As is mentioned in an evocative article published on 19 February 1882 by *L'Eco d'Italia,* Giuseppe Peyro, *"who ended up working as a physician in a small town in Illinois, sold vermouth from Turin and the best wines of Piedmont … he was a good man, honest and hard working, and many of our most distinguished fellow citizens were regular customers at his shop."* It would therefore appear that the West side of Five Points was more civilized than the East side.

Actually, it was hard to say exactly where Five Points started and where it ended. In his "Manhattan Diaries," (see bibl.) George Templeton Strong claimed that even Seventh Street, West of Broadway, with its tenement houses and whiskey (Irish whisky, that is) distilleries, were to be considered an extension of Five Points, while on Eighth Street traces of a certain class could already be seen. Strong added:

"… Yet we have our Five Points, our emigrant quarters, our swarms of seamstresses to whom their utmost toil in monotonous daily drudgery gives only bare subsistence, a life barren of hope and of enjoyment; our hordes of dock thieves, and of children who live in the streets and by them. No one can walk the length of Broadway without meeting some hideous troop of ragged girls, from twelve years old down, brutalized already almost beyond redemption by premature vice, clad in

the filthy refuse of the rag-picker's collections, obscene of speech, the stamp of childhood gone from their faces, hurrying along with harsh laughter and foulness on their lips that some of them have learned by rote, yet too young to understand it; with thief written in their cunning eyes and whore on their depraved faces, though so unnatural, foul, and repulsive in every look and gesture, that that last profession seems utterly beyond their aspirations …"

To the honor of the Italian community, no Italian girls, not even a single Italian woman, ever became a prostitute in New York. In fact, Adolfo Rossi wrote in his valuable book "An Italian in America," referring to what he saw with his own eyes from 1879 onwards:

"…when these [*Italian* - Editor's Note] *women are abandoned in the dark rooms* [*of Five Points* - Editor's Note] *without bread or coal, when they are forced to age before their time, collecting rags, carrying heavy loads on their back or on their head, then they gradually turn into brutes that must feed themselves and seek warmth. However, there is one thing to be said: that Italian women who live in such abject conditions end up, from time to time, surrendering to a fellow Italian, but there is not one in all of New York who sells herself for money in the streets or in the special houses that are full of Irish, German and French women…"*

Yet, the same author was not quite as tender with the Italian men of Five Points. Here is what he relates in his book:

"…. The vast majority of our fellow countrymen, coming from the most miserable classes of the Southern Italian provinces, live in the dirtiest neighborhood of the city, called Five Points. It consists of a cluster of repulsive black houses, where people live piled up on top of each other in conditions not even worthy of beasts. Large families crowd together in a single room: men, women, dogs, cats and monkeys, eating and sleeping together in the same hovel with no air or light … Italian children in filthy rags [*can be seen* - Editor's Note] *in the mud of Baxter Street and Mulberry Street … In some houses on Baxter and Mulberry there is so much dirt and the air is so fetid that one wonders how it can be that a lethal cholera epidemic doesn't break out in the first summer heat every year*[3]*. Yet many of these people who never wash their faces and live in these unhealthy tenement houses with their squalid wives and ragged children work, earn and save.*

All those who come with some money … head for the inland. Only those who haven't a cent remain in the coastal cities like New York, Boston and Philadelphia … Seventy-five per cent of

[3] In reality, New York had many killing epidemics, and most of the deceased were in Five Points.

these people are peasants who, during the good season, are taken to the railways or farms and return to the streets of New York in the winter. The children work as shoe-shiners, and the adults either accept the most miserable jobs that are refused by workers of other nationalities - loading garbage on boats and dumping it out at sea, cleaning sewers, and the like - or else they roam about with a bag over their shoulder, scavenging through garbage cans and collecting paper, rags, bones and broken glass. And since in New York alone there are more than twenty-five-thousand Italians [*in 1880* - Editor's Note], *it is impossible to walk down any street without finding a boy at the corner shouting 'shine! shine!' inviting you to have your shoes shined, or a ragman bent over under a heavy load carrying a hooked iron in his hand. Thus an Italian is always confronted with the misery of his own country and the degradation of his fellow citizens.*

I was deeply upset, ashamed, and wounded in my national pride: and at that time I had only caught a fleeting glimpse of Five Points. When I visited the area better, I saw incredible things. One night, for instance, I went down into one of those basements where stale beer is sold at two cents a pint. Under the inner courtyards of the most run-down tenement houses there are dark and reeking basements lit by an oil lamp, where people dance and drink cheap beer. If one does not belong to the neighborhood, it is dangerous to enter into these dungeons of vice and degradation without being accompanied by a policeman … In the evening, when the streets of Five Points teem with people, suspicious-looking characters crawl out of inmost recesses. They are women, most often Irish, dressed in rags and with messy hair, looking much older than their age. Along with the bruises from the blows they received the night before, their faces reveal traces of the most abject orgies. These witches, clutching mud-spattered shawls to their scratched breasts, totter down into the basements. The basement generally has a counter, behind which there stands the owner - an Italian - who looks like a jail-bird and is surrounded by kegs of stale beer. A few benches lean against the walls where the people sit. In the middle of the room some people clumsily dance the dances of distant countries, mostly Irish jigs and Italian tarantella, to the music of a harmonica or another musical instrument, generally out of tune.

Standing at the doorway of one of those basements around midnight, one can perceive through the thick fog of smoke drunken men and women sitting on the benches. Some are singing, others drink, others still mutter obscene remarks, argue or snore, while other couples stumble and shove and lie in scandalous positions and uncouth attitudes. The clients are cosmopolitan: Americans, Germans, Irish and Italians. From

time to time, for a word too many or in the attempt to get close to one of those women, a brawl breaks out, with fist fights and brandishing of knives. After two o'clock, when there is no more beer in the kegs nor oil in the lamps, the picture changes. One by one, they all lie down on or underneath the benches, men and women together, in a state of unconsciousness. The air is unbreathable. The snoring of these creatures is disturbed when at times one of them sits up and pronounces unintelligible oaths and vomits the liquid imbibed over the nearest person …"

Another aspect of Five Points which was accurately described by Adolfo Rossi was the exploitation of the work of the most defenseless Italian immigrants, who spoke no English. Rossi continued as follows:

"… Five Points is also the center of Italian slavery which is practiced with impunity by the 'bosses.' The latter are Italians who take advantage of their better knowledge of the country and of the English language, and who take contracts for jobs and then choose the number of workmen they need, to whom they do not even give half the wages they should have earned. Thus it is that on all earth-moving jobs inland, digging rivers or laying down railway tracks, building bridges or factories, our manual workers are led like a herd of sheep by the 'bosses,' who exploit them in the most abject way.

There are Italian bosses who have hired a number of manual workers at Five Points or directly in Italy, paying for their journey over, and have taken them to large work sites. Besides the journey, the companies pay the owners or foremen two to three scudi [*dollars* - Editor's Note] *a day for each working day per man. The worker, however, only gets one dollar from his boss. And these true slave-drivers find other ways to take part of the wages away from the men, forcing them to buy their food and clothes from them. They also rob them when they send their money to their families in Italy. Therefore, while these men work incessantly from morning to night, the bosses sit, smoking calmly and checking on them with a rifle slung over their shoulders and a revolver stuck in their belts. They look like real brigands - and that they really are … The company managers and engineers know all about the 'Camorra,' but they could not care less. They reckon our workers to be inferior beings, like the Chinese coolies, and they say: 'What can we do about it if they are ignorant like beasts, cannot read or write, don't understand a single word of English, and need bosses? That's their tough luck!'*

A lot could have been done about this very sad state of affairs many years ago by the Italian Foreign Office if the consulates in New York, Boston, Philadelphia and New Orleans had set up offices to welcome the immigrants, acted as their guide, and had them organized by honest men who would take

them to work without robbing them, giving them good advice. These offices for protection, aid and charity would soon have destroyed the Mafia, Camorra and the 'bosses.' It would also have put an end long ago to the white slave trade, that is the exporting of small shoe-shiners, harp players and rag collectors. But our government, which spends millions for the so-called Eritrean colony and for Italian schools in the Far East, has never done anything to protect the well-being and morality of the Italian colonies in North America. It is no surprise that the Mafia and Camorra flourished there as they did in the very worst Bourbon Times and also that illiterate Italians, quick to use their knives, exploiters or exploited, are despised more than the Irish or the Chinese …"

The harsh criticism levied by Adolfo Rossi on the Italian government around 1880 was even more deserved by the Savoy government of thirty years before, when a unified Italy was little more than a dream. An enlightening episode is reported by Secchi de Casali in *L'Eco d'Italia* of 13 May 1883:

"On 30 March 1853, the Sardinian corvette 'San Giovanni' set sail from Genoa and then from Villafranca. It had 86 individuals on board, sent by the Minister San Martino to purge the emigration. This was the period in which relations between Austria and the Sardinian government were very tense as a consequence of the uprising which had broken out in Milan and in other cities of Lombardy and Venetia.

Were those on board the 'San Giovanni' all political emigrants? No, but they were not all disreputable individuals, as they were described on their arrival, and are still considered to be by some people today. Some of them were honest young people, some were of distinguished social condition or intellectually gifted. With few exceptions, these men returned to Europe soon after landing in New York. Others immediately looked around to find an honest way to make a living, no matter how humble or hard the job. Others still, a minority, as soon as they landed did much to discredit the Italians for many years to come, perpetrating bloody crimes, extortions, and thefts. What they did was enough to shame the whole San Giovanni emigration, and to make it synonymous with all that is most vile.

I almost fell victim of two of these scoundrels, who pretended to be Mazzinians and conspirators. I owe my escape to a walking stick with a blade which had been given to me the day before, and which I used as soon as I was attacked - in full daytime, on Broadway, on the corner of Reade Street[4]*. Those two jail-birds had recently escaped from life imprisonment in Civita Castellana and only two or three days previously had been*

[4]Four blocks South of Leonard Street.

given help in the form of money at my office, the fruit of a collection that I had organized myself. My serious crime, for which they had tried to take my life, was that I had protested against the murders of Italians which were committed from time to time by those wicked men who discredited the entire Colony and kept everyone under their control through fear. … those plebeian Camorra members with yellow gloves, those scoundrels who conned our poor fellow citizens…

After 44 days of sailing, the San Giovanni anchored in the Bay of New York on the night of 14 May 1853, exactly thirty years ago; I was the first to climb on board that Italian ship, both as editor of the only Italian newspaper and as a reporter for the 'New York Herald.' When I climbed on deck, at about ten o'clock in the morning, all of the officers, crew and emigrants were standing there, watching with curiosity … My first impression upon seeing those 86 deported men was, I must confess, not very favorable. There were some ugly-looking characters who did not inspire any trust, especially Cancemi, Antonai, Sassi, Bianchi, Mancini, Banchetti, Monco and others whose names I do not recall. Their actions after landing and their personal history of which I was informed by Commander Incisa, confirmed my first impressions. Nevertheless … I asked for the Colony's sympathy … I was dreaming! — Indeed, as soon as these men landed, along with other similar types, they set up a secret society of criminals, of murderers and in the end, not managing to cut the throats of those who did not belong to their sect, they, as we shall see later, ended up killing one another. One died of a knife wound, another with three revolver shots in his back, the head of a third was literally severed from his body, others died in jail, one was sent back to Italy and is in jail in Romagna, and the bandit Cancemi, after having killed a policeman during a robbery in New York near Centre Street Market, was sentenced to death. But thanks to the maneuvers of the mob, as it was powerful then, his death sentence was commuted to a life sentence, and later, always with the Mafia's help, he was set free on condition that he leave the United States forever. And now he is serving a life sentence … Each one of the San Giovanni emigrants received seventy francs on landing … and everyone did their best to give them help and jobs …"

Confirming what was said by Secchi de Casali, one of the deportees on the *San Giovanni,* Stefano Moretti, with the help of General Avezzana, managed at first to open a well-known restaurant on 14th Street, not far from the house of Michele Pastacaldi, and was in his turn very generous towards his needy fellow countrymen.

Naturally, the government of Piedmont was not the only one to send ships full of *undesirables* to the United States - including not only political deportees, but also common criminals and

murderers. Indeed, as one would say today, it was a sport played by almost all European governments, at least until the United States, in the second half of the last century, began to exert stricter control on immigration. This control was enforced at the end of 1855, when New York State set up the *Emigrant Landing Depot & Offices* in the former *Castle Garden* Theater, in South Manhattan. This is where two thirds of all of the emigrants to the United States transited in the thirty-five years of its existence, for a total of roughly eight million people.

The reader will find a detailed history of Castle Garden in the Appendix, but it is also important to underline that this center was very helpful to all the honest emigrants from every country, and did its best to free them from the frauds of local exploiters. There were many employees at Castle Garden who were very polite (as Rossi reported) and who spoke the languages of the emigrants and helped them find lodgings in reliable hotels as well as an honest job. Whoever has the opportunity to visit the small but pleasant *Castle Garden* (currently *Castle Clinton*) *Museum*, may admire a cartoon in a show-case portraying dozens of ugly individuals laying ambush at the exit of the Center, with the caption: *"Leaving Castle Garden, the immigrants confronted all sorts of people ready to take advantage of them."* This was confirmed by Adolfo Rossi who wrote:

"… Despite police surveillance, Castle Garden is surrounded by a net of thieves, scoundrels, speculators of all sorts, capable of any action, who make a living out of taking advantage of newly-arrived emigrants. Innumerable traps are laid before them, many types of thefts, swindles and crimes. As they leave Castle Garden, the new arrivals are singled out by people who hang around like birds of prey, who recognize their nationality at a glance, as well as their financial conditions, and follow them insistently offering themselves as interpreters and guides, adopting the most appropriate manners to convince these people and dispel any suspicion. If the newcomers do not fall for it on the first day, then they often do on the second or third, without realizing it … They are also cheated when changing their European currency into American dollars, if they have not been cautious enough to change their money at Castle Garden … The hotels around Castle Garden where mysterious deaths are reported are the haven of thieves and murderers, and they are not duly patrolled by the police … and liquor laced with drugs is served …"

Once the unwise emigrants had been stripped of all their belongings, just outside Castle Garden, they had no other choice than to end up in the tenement houses in Five Points, where no-one paid any attention to neighbors, as they changed every month, or to try to eke out a living, gathering rags or roaming about the streets of New York playing a barrel organ, or begging

the 'bosses' to find them any old job. And the 'bosses' were to be found in the so-called 'bar rooms.'

Italian immigrants arriving at Mulberry Street

Here is a description of the *bar room* given by Adolfo Rossi:

"… The 'bar room' is a dark room with a low ceiling and a counter behind which a few bottles of liquor are lined up together with a cask of beer. Two or three round tables, a few chairs, and a couple of pictures of General Garibaldi, Victor Emmanuel or a ship of the Red Star Line, make up all of the furnishings. The bar room is ugly, poor in appearance, although the owners make a lot of money, and the people without ties gamble hundreds and hundreds of dollars on those shaky tables.

The 'bar rooms,' Italian taverns or watering holes as they may be called, that are in Five Points and chiefly on Mulberry Street, are the hang-outs of workers who have just come back from their labor on the farms or from the railways, and who are temporarily out of work, and also of those who work in the city, and all those who live nearby in the so-called 'tenement houses.' To while away an hour smoking and drinking, or to settle a contract, or to look for a job, or talk to a boss, the only way is to go to one of the bar rooms, whose owners know everyone, and who help people find a job, change napoleons into dollars and vice versa, and provide transatlantic tickets for those returning home and so forth. Besides selling liquor, beer or cigars, the 'bar rooms' are business centers, where jobs are offered and sought, and where a worker can get all the useful information he needs.

The 'bar rooms' are the headquarters of the bosses. That is where they recruit the men they need for railway construction, for city sweeping or unloading ships.

When a boss who controls forty or fifty workers as garbage collectors needs another man, he lets it be known in the Mulberry, Park[5] *or Baxter Street bars. Plenty of people will immediately show up for the job. The boss picks his choice and receives five dollars as a present from the man he has selected. Every week, on pay day, each worker has to give the boss a contribution to keep his favor and so as not lose his job. The boss can fire a man, even for petty reasons. Some bosses regularly fire a number of workers every month simply to take on new ones and receive the usual commission. The bosses live like great lords, and to flaunt their influence and money they offer drinks and throw five-dollar bills around in the bars, as if that were all they had ever done in their life …"*

The thing that Americans - and by this I mean the majority of those born in America, of Anglo-Saxon descent - hated most

[5] Perpendicular to Mulberry Street and Baxter Street, on the South side.

about Five Points - and about the bar rooms in particular - were the brawls in which knives were used. Fist fights and kicking were tolerated and were even considered healthy physical exercise, but not knives (or stilettos as they were known at the time); this was a barbarian custom, and incidentally, a typically Italian one.

Adolfo Rossi went on recounting:

"… the Italian words that everyone is familiar with are: stiletto, macaroni, brigante and vendetta, [and the Italians are indicated as] *dark-eyed and hot-blooded… at Five Points, when an Italian gets wounded, chances are it happened in a bar room … Injuries and murders are unfortunately very frequent in the Italian neighborhood, first of all because it is infested with a large number of criminals who have escaped from justice in their own country after having killed, robbed, and committed all sorts of crimes. And also because the honest worker — who was born and raised in a peaceful village, and who then decided to emigrate because of misery, in the hope of earning well or following the example of others — often becomes morally worse in America.*

Homesickness, the thought of his distant relatives, life in a squalid neighborhood, the greed of bosses who rob him of his wages, the Camorra that controls workers from the southern provinces, all of this hardens the character of the poor devil. Add a completely different life style, the change in climate, the noise of a large city, the densely inhabited society in which he is forced to live, the difficulty of a foreign language, and the insults he is often subjected to because of his ignorance, greed for money and the envy that he feels for those fellow countrymen who make a fortune… Under these conditions the emigrant becomes nervous, angry, and lives in constant fear of being tricked, swindled, betrayed, and, even if he was not previously accustomed to doing so, he begins to carry a weapon with him.

Many of the sad blood-letting scenes that mark the Five Points neighborhood are caused by adultery, by betrayals for love. It is so strange: the peasants who live in the dark tenement houses of Five Points are mostly illiterate, rough, at a loss in America because of their hunger and because of the bosses who act like leeches, they are exhausted by unending toil, yet their passions still smolder in their breasts…"

And what about the police, and the Governor of New York State? What did they do to fight against the scourge of organized crime in Five Points and other places? George Templeton Strong, whom we mentioned above, provided a harsh picture of what he noticed in 1857:

"… Lawlessness had increased with the exploding population of the city and massive immigration from Europe. Organized gangs — the Dead Rabbits, the Empire Club, the Five

Pointers, and Mike Walsh's Spartan Band — fought in the streets, almost unimpeded by a corrupt constabulary. In response to public outrage, the state legislature created a new Metropolitan police force, but a shameless mayor, Fernando Wood, refused to instate it, and the intervention of Federal troops was required to enforce the new law. A riot growing out of a brawl between the Dead Rabbits and the Five Pointers, before the difference between the old and new police forces had been settled, reduced the city to near chaos. It was quelled at last by the Seventh Regiment …"

OUT IN THE COUNTRY WITH GARIBALDI

On 27 June 1850, Giuseppe Garibaldi, after having been invited by the government of Piedmont to choose a place of exile, and also after having been rejected by half of Europe, set sail in Tangiers for New York, via Liverpool. The news reached New York only a few days prior to the General's arrival. It caused a stir not only in the Italian colony, as was natural, but also among other independence supporters and Republican communities - especially the French and German ones - besides the city authorities. The *New York Daily Tribune* (or the *Tribune* as everyone called it) wrote on 25 July 1850:

"Arrangements for the reception of Gen. Garibaldi.— The Italian, French and German Committees met last night to make arrangements for the reception of this distinguished defender of Liberty. The former Committee pledge that there will be a large turn out on the part of the Italians under the Socialist Banner, and we have no doubt Gen. Garibaldi will meet a warm reception from our citizens without distinction of nationality."

It should be mentioned that the Socialists' sympathy for Garibaldi, which was reciprocal, was based on a number of misunderstandings on both sides, of a religious, political and social nature. Indeed, it is true that while in 1844 Karl Marx wrote in Paris that *"religion is the opium of the people"* and, later, in 1848, he and Friedrich Engels wrote in the famous *Communist Manifesto* that "*history is nothing but a succession of class struggles"* (i.e. of the powerful against the oppressed), Garibaldi made no mystery of his criticism towards the Papacy, nor of his solidarity for the oppressed throughout the world. Yet, unlike Marx, Garibaldi had nothing against religion. He fought against the temporal power of the Popes, but only because this was an obstacle on the road to the unity of Italy. As regards class conflicts, Garibaldi's views were far removed from this perspective, if nothing else because he knew and respected wealthy and/or aristocratic men, who would have given their lives for the sake of Italian unity. It is true that Garibaldi dressed, ate

and lived very simply and soberly, like a working man, but he had no prejudices linked to social class. He respected people for their sincerity, honesty and courage, and it is only due to the fact that these qualities are encountered more easily in poorer people that he sided with them. Besides this, there was a fortuitous coincidence - color. Garibaldi had founded the *Italian Legion* in Montevideo and adopted the red shirt in 1843, *before* red became the color claimed (independently, it seems) by the Marxists.

Nevertheless, the Socialists of New York wanted to welcome Garibaldi as one of their own. In subsequent days, however, the Italians took their distance and it became known that the Socialists were in reality mainly French and Germans. Indeed, the *New York Evening Post* wrote on 29 July 1850:

"Reception of Gen. G. Garibaldi.— At a meeting of the French and German committees, held last night, a resolution was passed that the following call, or notice should be published: «The United committees of the Democratic Socialist Republicans of the French and German nations hereby call up their brethren, the French and German Republican Socialists, and invite them to come to the Shakespeare Hotel on the evening previous to the demonstration in favor of Gen. Garibaldi. The time at which the reception of this beloved General will take place will be announced in the different public papers, and the Socialist citizens will thereby know when they are to call at the Shakespeare Hotel in order to receive their red badges, as no other color than the red will be admitted.»"

A similar communiqué was published by the *Tribune* on the same date. In reality, on the following day the *Tribune* published a corrigendum on behalf of the committee itself, on the subject of the admission of red badges alone, which read as follows: *"…This of course applies only to the special societies who adopt such badges, and not to all the procession in general. The Committee who have the matter in charge hope to see republicans of all nations and shades of opinion together on that occasion, and do not think of prescribing any other distinctive badges than the flags of their respective countries."* This meant that the *red Republicans* - who were not highly regarded by the middle and upper classes of New York - had opted for a broader-based Republican event, admitting all *other colors* as well. Incidentally, it should be mentioned that the actual Republican Party, which was to give the United States so many great presidents, starting from Abraham Lincoln, was only founded in 1854, and thus the 1850 Republicans were quite another matter.

The Italians of New York had made it known that they had their own independent committee, as reported by the *Tribune* on 27 July 1850:

"The reception of Gen. G. Garibaldi.— The Italians of this City have organized a Committee, composed of Avezzana, Foresti, Filopanti, Minnelli, Secchi di Casali and other Italian citizens for the reception to be given to the defender of the Republic of Rome and the hero of Montevideo. We are glad to learn that Mayor Woodhull will receive the distinguished Italian on his arrival. The generous hosts of the Astor House have written a letter, to be delivered to him on landing, inviting him to become their guest. We also learn that a few days after his arrival a splendid banquet will be tendered to him at the same hotel, on which occasion Signor F. Foresti will address the Italians and an English speech be delivered by Mr. C. E. Lester."

As a curious coincidence, another personality, also exiled from his country, had reached the United States a few days before and on account of his deeds he was considered to be almost like Garibaldi: it was the Venezuelan General José Antonio Paez. He had fought for the liberation of Venezuela and neighboring regions from Spanish domination next to the hero Simón Bolívar, and had later become the first President of the free Great Colombia (of which Venezuela was a part). Later, in 1849, he was ousted and exiled by José Tadeo Monagas. He remained for a certain period of time on the Island of Saint Thomas, a United States possession East of Puerto Rico, and then sailed to Philadelphia, where he arrived on 26 July 1850. On the following day he traveled by train to Elizabeth, New Jersey, where on the morning of 30 July the Venezuelan Consul to New York, together with other distinguished personalities, was waiting on the steamboat *Tempest* to take him to New York where he was to be honored with festivities similar to those prepared for Garibaldi. In those days, the *Post* and *Tribune* newspapers also praised Gen. Paez, publishing many long congratulatory articles on his feats.

Dr. Sidney Doane, health officer of the New York harbor, was on the alert on 30 July 1850, because of the forthcoming arrival of both General Garibaldi and General Paez. He was scrutinizing the horizon with his marine binoculars, looking out anxiously towards the Narrows, hoping to identify the *Tempest* or the *Waterloo*. The first ship to appear on the horizon was the packet ship *Waterloo*, on board of which was General Garibaldi with his inseparable aide-de-camp Major Bovi Campeggi. The packet ship (*paquebot* in French) was a very fast and light ship used for the mail service and, occasionally, hosted a few distinguished passengers who were guests of the government such as, for instance, ambassadors. That day Manhattan was in the grips of a heat wave, the temperature up at 34 °C, without the benefit of

a breath of wind. The Mayor's representatives and three or four welcome committees were walking up and down the Battery, dripping with perspiration already in the early morning hours. They were fanning themselves with the *Post*, the *Tribune* or the *Sun* (but not the *Times*, which was founded the year after) while looking for the *Waterloo* or the *Tempest*, which were scheduled to arrive soon.

No doubt, it was more pleasant out at sea in the large New York Bay, and on Staten Island or in New Jersey, where the large woods offered shade and fresh air, a relief in that exceptional heat wave.

Almost all of the ships sailing into the New York harbor passed through a canal south of the large bay called *The Narrows*, as they still do today. After 1959, they would also pass under the Verrazzano Bridge, which links Staten Island to Brooklyn. The southernmost tip of the Island of Manhattan - the Battery - is about seven miles north of the Narrows. A few miles north-west of the Narrows, on the northernmost point of Staten Island, there are the wharves of St. George currently used by the Staten Island ferryboats, linking Staten Island with Manhattan.

About half-way between the Narrows and St. George, in the period described, there was a twelve-hectare hospital area called *Quarantine Ground*. It belonged to the *Marine Hospital Service* - a precursor of the *Public Health*, which was to be founded in 1792. The area hosted a number of buildings. Besides caring for the passengers in quarantine who were suspected of being carriers of infectious diseases, the Quarantine Ground also provided health care to seamen and served as a (bland) center for immigration assistance and control. This lasted until 1858, when a group of leading personalities of Staten Island, who were concerned about the possibility of transmission of infectious diseases to the inhabitants of neighboring areas, burned down the *Quarantine Buildings* (after having evacuated their few patients) and completely destroyed the area. The militia was sent from New York to watch over the ruins and a little later the role of assistance and control of immigration was shifted to Castle Garden, at the Battery. The Quarantine Ground was situated between Clifton and Stapleton, right next to the pier used by the ferryboats in Clifton.

In this regard, it is worth mentioning the names of the six towns located along the ca. six kilometers of the north-eastern coast of Staten Island which will be repeatedly cited hereinafter. Starting just West of St. George they are, in the following order: West Brighton, St. George, Tompkinsville, Stapleton, Clifton and Rosebank, the latter being situated right behind the Verrazzano Bridge. As can be seen, these are very small town, stretching over about one kilometer along the coast. It should also be noted (see the Appendix "History and Institutions of Staten Island") that

today the West coast of Staten Island - that is separated from New Jersey by a canal called Arthur Kill - is connected to New Jersey by two bridges: *Outerbridge Crossing* close to the town of Perth Amboy, NJ and *Goethals bridge* near the town of Elizabeth, NJ. Instead, the North-western coast - which is separated from New Jersey by the canal called Kill Van Kull - is linked to New Jersey by the *Bayonne Bridge*, which leads to the town of Bayonne, NJ. Staten Island is about 23 kilometers long and 11 kilometers wide.

It was ten o'clock in the morning when Dr. Sidney Doane climbed on board the *Waterloo*, just after it had moored at the piers of the Quarantine Ground. He had prepared a nice little speech and had given order to hoist the Italian, French and German flags next to the United States flag in the square in front of the Quarantine Buildings. But as soon as he climbed on the deck of the packet boat, he was left speechless at the sight of the General. Garibaldi was waiting for him standing, though his strenuous effort was visible; the Captain of the *Waterloo* and Major Bovi Campeggi stood beside him. He was wearing a dark velvet suit, in sign of mourning for the recent loss of his wife Anita, and his face revealed the sadness for the defeats and pilgrimages across half of Europe and North Africa to escape from capture and the consequent execution he had been sentenced to. But Dr. Doane realized that he was also affected by a physical illness, which called for his immediate attention. Therefore, he cut his speech short, which was all the better since his few words were appreciated even more by the General given their spontaneity. Garibaldi also replied briefly, with the same sincerity and simplicity.

In his "Autobiographical Memoirs," Garibaldi thus described his arrival in the United States: *"… During the journey to America, I was seized by rheumatic pains that tortured me throughout most of the trip, and I was finally unloaded like a trunk - since I could not move - on Staten Island, at the port of New York …"* Confirming this, the always well-informed *Tribune* reported on 31 July 1850, the day following Gen. Garibaldi's arrival:

"City Items - Arrival of Garibaldi at Staten Island.— …Gen. Garibaldi was suffering from a severe attack of rheumatism, which came on three or four days ago, and was unable to walk … [He] *was soon carried ashore, where rooms had been prepared for him at the Pavilion. By order of Dr. Doane, the tricolor of the Italian Republicans was displayed in front of the Quarantine Buildings, with the French and German tricolors, and the American flag. The Dr. expressed the opinion that the severest part of the rheumatic attack under which Gen. Garibaldi labors, is over, and that, in three or four days, he will*

be able to accept the public reception which has been tendered him …"

The Pavilion Hotel, one of the grandest and most luxurious on Staten Island, built in neoclassical style, was situated on the West Brighton coast, along Richmond Terrace, in an elevated position overlooking the sea. The hotel was run by an enterprising and friendly Frenchman by the name of Blanchard, who had made it a center of social attractions in an area that was then considered the aristocratic and picturesque outskirt of New York. The famous singer Jenny Lind, worldwide known as the *Swedish nightingale*, and another acquaintance of ours, the tenor Lorenzo Salvi, held many concerts at the Pavilion. Indeed, all of Staten Island was - and to a certain extent still is today - a peaceful oasis for New Yorkers wishing to enjoy some fresh air and relaxation from their busy life in the metropolis.

On the afternoon of 30 July 1850, the Pavilion witnessed a never-ending procession of important personalities who wished to pay homage to the General. Thus, Blanchard had a large living room prepared, with a comfortable sofa, so that the General could lie down comfortably, and gave instructions to the staff to restrain and entertain the many visitors fittingly. One of the first was General Paez, who reached the Quarantine shortly after Garibaldi and who was being hosted with his companions at the Clifton House. The *Tribune* wrote on 31 July:

"City Items - Arrival of Garibaldi at Staten Island.— … On hearing of his arrival, Gen. Paez instantly proceeded to the Pavilion, accompanied by his son [*Ramón Paez*, Editor's note] *The interview between the two exiled Republican chieftains, who both landed at nearly the same moment on our free and secure shores, was deeply interesting. The conversation was carried on in Spanish, which language Gen. Garibaldi speaks with great fluency, having acquired it during his residence in Montevideo. A number of our distinguished Italian citizens went to Staten Island in the course of the afternoon, to pay their respects to their fellow exile. Although suffering great pain, and obliged to recline on a sofa, he received them cordially, as well as several parties of ladies, who manifested a warm sympathy for the General's heroic efforts to sustain the true liberty of Rome. The invitation of Messrs. Coleman & Stetson* [owners of *Astor House*, Editor's note] *was also received during the afternoon, and he will become their guest when he comes to the City …"*

Gen. Garibaldi, like Antonio Meucci, also spoke excellent French, besides Spanish, as reported by the *Tribune*. As for English, instead, he only knew a few words of common usage.

Among the many distinguished Italian citizens who went to welcome the General there was also Antonio Meucci. He was received in the living room at the Pavilion together with General Avezzana, Michele Pastacaldi and Captain Antonio Figari, a merchant navy commander who was also resident in New York. They asked the General news about his old mother (*Mamma Rosa*, as his friends used to call her) who was still in Italy, poor and in ill health. As they had known for a long time that the General had refused a three-hundred lira pension offered by General Alfonso La Marmora from Piedmont in exchange for his voluntary exile, the four had put together four-hundred dollars (one-hundred dollars each) which they asked the General to accept, as this money came from the heart of ardent supporters of the freedom of Italy. Garibaldi accepted. Unfortunately, *Mamma Rosa* would die less than two years later, on 19 March 1852, while Garibaldi was sailing in the China Seas.

Garibaldi spent a comfortable evening at the Pavilion, thanks to Dr. Doane's care (he was visited several times on the day of arrival and on the subsequent day by the doctor) and also thanks to the kind assistance of Monsieur Blanchard. However, the *Tribune* of Thursday 1 August 1850, did not leave much hope to the organizers of the celebrations in honor of the General. It stated that Dr. Doane had noted that the General had not improved appreciably and that indeed his right arm was crippled by the rheumatic attack. Hence, he would not be able to take part in the events prepared in his honor before the following week. The *Tribune* published a letter addressed by Quirico Filopanti, as Secretary of the Italian Welcome Committee, to Mr. Coleman and Mr. Stetson, in which he thanked them for having invited the General and expressed his hope that the invitation would be honored as soon as possible, without specifying the date. And the *Tribune* concluded: *"The thermometer, yesterday, in The Tribune office, stood at 92° at 2 P.M. and at 88° at 7 P.M."*

General Giuseppe Avezzana

Garibaldi's ill health had indirectly solved the problem as to which groups participating in the parade in his honor were to have precedence. The various committees (to which a Polish one added) and the different groupings had already begun to fight over this matter, also in the streets, so vehemently that the police was forced to step in. The parade - a classic event for New Yorkers - was supposed to be held on Saturday, 3 August, and would consist in a march with band and flags down Broadway, from the Battery to Astor House, where Major Woodhull was to welcome Garibaldi. Astor House was on Broadway, just three blocks south of City Hall, almost in front of the southern tip of City Hall Park. After the parade, the City Hall councilors would have offered a banquet in honor of the hero in the Governor's Hall. But, as we have seen, Garibaldi was not quite in the mood

(and perhaps never really had a penchant) for such grand celebrations.

It is common knowledge that sultry weather has never helped rheumatic pain. Luckily, the weather improved on Sunday, 4 August: it was still hot, but much more tolerable than the heat wave of the previous days. Garibaldi began to feel better, much better. That afternoon he had received a German committee; then, towards evening, he managed to get up for the first time and walked to the large terrace of the Pavilion, where he enjoyed the fresh and clean air of Staten Island as well as a splendid view of the bay which could be beheld from the vantage point of the hotel. Like an experienced sailor, he looked up at the sky where flocks of clouds promised refreshing rain. His thoughts turned to his Anita, who had died in his arms the previous year on that very day, 4 August. *"Bovi,"* he said to his inseparable friend and aide-de-camp, *"we shall leave tomorrow. Let's take the ferry for Manhattan and from the Battery we shall go by coach to Maestro Bagioli, at Hastings. I have already notified Foresti. We will feel at home there and we will also be closer to Dr. Mott, do you remember him? He will take care of me, I am sure. As for the committees, parades and banquets … we shall see …"*

They thanked Blanchard for his incomparable hospitality and took the half-past-one ferry, which moored at the Battery at 2 PM. Let us give the floor to the *Tribune* of 5 August, which described the scene of that arrival, in its inimitable style:

"Arrival in town of Gen. Garibaldi.— Yesterday about two o'clock in the afternoon the people at the South Ferry[6] *were surprised by the sudden appearance of Gen. Garibaldi, landing from the Staten Island boat. It seems that the General had heard some hints of the proposed public reception in preparation for him, and for the purpose of endeavoring to avoid this display, and also for the purpose of being nearer to his physician, dr. V. Mott, Jr. he attempted to get through the city to the house of a friend in one of the upper Wards without being discovered. He would probably have succeeded, had he not been met at the landing by a number of Italians and Germans who were on the way to the Island to make a call upon him. The Germans were introduced to him as European Republicans, and welcomed him to the Model Republic. The General replied that he looked upon them as brothers; that all true republicans were so; that the brotherhood of the people ultimate freedom would be secured, &c. Gen. G. then proceeded, in a carriage, to the residence of his friends, where*

[6] Area of the Battery close to the quays of the ferry for Staten Island.

he was waited upon by the Italian Committee, and finally consented to be publicly escorted to the Astor House on Saturday next. Due notice will be given of the event in the course of the week."

Hastings-on-Hudson, as the name suggests, is situated by the shore of the Hudson River which flows along the west coast of Manhattan, some thirty-five kilometers of carriage road from the wharves of the Battery. To get there one travels along the road which flanks the banks of the Hudson, without ever crossing it. Six kilometers before reaching Hastings there is the city of Yonkers, where General Ferrero's family lived. When in Hastings, Garibaldi continued to receive many visits from Italian exiles, some of whom, like Prof. E. Felice Foresti, the spiritual leader of the Italian colony in New York, spent a few days with him. A letter from Foresti addressed to Colonel Forbes, dated Hastings, 6 August 1850, which was published by the Tribune on 7 August, corrected some of the errors made by the press in reporting the feats of the General. The newspaper clippings had been sent to him by Forbes himself. Foresti said that the General had some difficulty walking and that his *left* arm was still immobilized. Dr. Doane, according to the *Tribune* of 1 August, had spoken of the *right* arm. Foresti's letter ended as follows: *"… I hope, however, that the fine air of this place—some days of repose—with the hospitality and kind attention he receives from all around him will help to restore him to the usual good health. Garibaldi salutes you, Avezzana, Filopanti, Dr. Mott and other friends, in which I join heartily.*

Your very affect'te friend E. Felix Foresti."

Foresti and *Filopanti* insisted with Garibaldi that the public celebration in his honor, which had fallen through the previous Saturday, 3 August, should at least take place on the following Saturday, 10 August, and that, in any case, it would be appropriate for the General to express his thoughts to the press, also out of consideration for the personalities and committees that had worked so hard to organize the celebrations in his honor. But Garibaldi was steadfast on the first point. As for the second, he put pen to paper and wrote the following letter to the *Tribune*, which was published the following day, 8 August 1850. In the following insert we give the full article.

GARIBALDI'S LETTER TO THE ITALIAN COMMITTEE (THE NEW YORK DAILY TRIBUNE, THURSDAY, 8 AUGUST, 1850)

Garibaldi and the Italian Committee

We publish below a letter from Gen. Garibaldi to the Italian Committee of this City, by which it will be seen that the state of his health will not permit him to receive the honors it was intended to show him on Saturday of this week. In printing this letter we cannot forbear calling attention to the modest and manly dignity of his language; which cannot fail of assuring to its author the esteem of every republican who appreciates the generous sentiments of which it is the expression. And although the intended procession is thus out of the question, we shall impatiently await the full restoration of the General's strength, in order that a suitable opportunity may be afforded the public to testify their sympathy with the Italian cause and their regard for its chivalric soldier:

"Hastings, 7th August 1850.
To the Italian Committee:
Gentlemen:
I regret being obliged to announce to you that my continued ill health will forbid my participating in your proposed demonstration of Saturday next. The slowness of my convalescence and the uncertainty as to the time when I may recover will also put it out of my power to fix any day when I shall be able to meet you in compliance with your kind and very flattering invitation.

I hope you will allow me to repeat to you, more earnestly if possible as before, the wish that I have often expressed, that the proposed demonstration may be altogether abandoned. No such public exhibition is necessary, to assure me of the sympathy of my countrymen, of the American people, and of all true Republicans in the misfortunes which I have suffered, or of the cause out of which they have flowed.
Though a public manifestation of this feeling might yield much gratification to me, an exile from my native land, severed from my children, and mourning the overthrow of my country's freedom by means of foreign interference, yet believe me that I would rather avoid it, and be permitted, quietly and humbly, to become a citizen of this great Republic of Freemen, to sail under its flag, to engage in business to earn my livelihood, and await a more favorable opportunity for the redemption of my country from foreign and domestic oppressors.
Next to the cause to which I have devoted myself I value nothing so highly as the approbation of this great People, and I am convinced I shall enjoy that, when they become satisfied that I have honestly and faithfully served the cause of Freedom, in which they have themselves set so noble an example to the world.

G. Garibaldi."

This was a memorable letter, which made a great impression on the American public, more sensitive than any other to the strength of character, as well as honesty and modesty of a man who was also famous for his courage and great military skill.

Note that Garibaldi hoped that his Genoese friend, Francesco Carpaneto, would collect enough money in Italy to purchase a merchant navy ship to be placed under his command. Thus, he - who was a sea-faring man, before being the hero of many battles - would be able to earn a living, awaiting a more propitious time to free Italy.

The American public's admiration for Garibaldi was all the greater in that they still had a vivid recollection of the grand welcome that had been given a year before (September 1849) to General Avezzana, and only a few days previously to General Paez. Moreover, towards the end of the following year, there were celebrations in honor of the Hungarian hero Lajos Kossuth - who lodged in luxury with his large party at *Howard House*, on Broadway, in front of City Hall - all of this costing the State of New York a great deal of money. Thus, the various committees sadly resigned to Garibaldi's wishes and on the following day, Friday, 9 August, the papers published a matter-of-fact communiqué released by the Italian committee, which stated as follows: *"We lament the modesty of General Garibaldi, which, more than his retarded convalescence, has prevented the success of our urgent requests."*

The fifteen days spent in Hastings restored the General's excellent physical condition. He gratefully said goodbye to Maestro Bagioli, briefly visited the estate owned by the father of General Ferrero in Yonkers and then headed out for Manhattan where for six weeks he was a guest in the house of Michele Pastacaldi in Irving Place. This is where, as we have already said, Foresti also lived. Garibaldi, however, realized that he could not wait around passively and indefinitely for Carpaneto's boat and therefore he had to think of a way to earn a living. He was not the sort of man to take advantage of his friends' and supporters' generosity, even though there were hundreds of them in New York.

As was previously stated, Michele Pastacaldi's home was a real sea port. There were rarely less than a dozen people there, who would discuss a broad range of subjects in a lively manner or talk about their problems. One day they were talking about how to utilize the funds that had been collected to help the Italian riots of 1848-49, which had ended unsuccessfully. As reported by H. Nelson Gay (in his article in Italian, published by the *Nuova Antologia*, see bibl.) the American writer Henry Theodore Tuckerman was also present. He described the event in his article

entitled "Giuseppe Garibaldi," published by the *North American Review* of Boston many years later, in January 1861[7]:

"… The silent and modest behavior of one of the guests, who was sitting in a corner of the room, attracted our attention. He was of medium height, with frank and likable features, though with a singular determination to his looks, one of those faces in which modesty and candor merge with an invincible will, the former qualities were revealed by the naive expression of his mouth and by his modesty, the latter by his thick and immobile eye-lashes and his steadfast look. His wide shoulders and deep chest, together with a solid and imperious posture of his head, gave the impression of power and authority; whereas his open, mild and polite manners immediately won one's sympathy… We noticed in the behavior and appearance of this man a great simplicity and straightforwardness, and he inspired trust at a first glance. Anyone capable of analyzing a character, as it is revealed by the features, could not but help observing in him the presence of a man made noble by nature. His habits were entirely virile, and his vocation was such as to have required the commitment of his physical energy, his individual and sound convictions, his noble sentiments and his indomitable spirit, his steadfast heart, sound principles, and his disinterested approach. All these impressions were made evident to the observer, as if through a sort of magnetic influence.

This impression was confirmed when his turn came to voice his opinions. They were expressed with such little pretense, yet with so much weight and strength of conviction… His calm manners, relatively slow motions, his almost Saxon looking hair and beard, may have seemed more the features of a northern European than a southerner. Yet his eyes, his voice and his overall appearance were essentially Italian. His nationality was revealed even more by his sudden emotion, however repressed, which was evident in his speech and in his expression when he talked or heard others talk about his motherland. The passive man then became visibly excited, the modest man was enlivened, the silent man became eloquent.

His complexion was tanned on account of his having been exposed to inclement weather, his gait was more that of a sailor than a soldier. But the hero was clearly visible through, above and beyond all these features. He brought to mind masterly portraits of Middle Age personalities who often stand out in our memory, almost as if they were alive, through their courage, their spirit of adventure and loyal faithfulness, figures evoking

[7]The following is not the original text written in English but a translation of the Italian version, as reported in the *Nuova Antologia.*

austere nobles and chivalrous stories. When we heard the name of the foreigner, Garibaldi ceased being the representative of a failed endeavor, as the cause he embodied assumed the characteristics of a victory. 'I have never despaired on Italy; those who despair are cowards.' These few words interpret his patience, illustrate his faith, represent his beliefs…"

This article by Theodore Tuckerman, so penetrating and sharp in its description of the Hero of the Two Worlds, impressed President Abraham Lincoln in 1861, and convinced him to invite Garibaldi to take over the command of the Union forces, or part of them, to contrast the famous Confederate General Robert Edward Lee, who was winning battle after battle against the Union.

Also interesting, under other aspects, is the interview made by the *Progresso Italo-Americano* to the now famous banker Giovanni P. Morosini on July 4, 1907 in which the latter recalled how he saw Garibaldi way back in January 1851, when he was still a boy, and had had the opportunity to meet him:

"… The great patriot dressed simply and had the habit of wearing a black handkerchief around his neck which covered a very serious wound he had suffered at San Antonio [*San Antonio del Salto, Uruguay*, Editor's note]*. Wearing his hair in a Nazarene style, with a thick reddish blond beard and blue eyes, he looked more like an Englishman than an Italian. His gait was that of a sailor or a cavalry officer … I worked for some time in Meucci's candle-factory and more than once I went hunting with the General: at the time Staten Island was full of hares and birds of all sorts. The General was very sober, with simple tastes. He had no vices, except for smoking: according to the Spanish custom, he rolled tobacco in dry leaves to make his cigarettes. He never talked about Italy. When some chatter-box would make projects in front of him, he would answer: 'To free Italy it will take facts, not words' …"*

By that time, Garibaldi had had enough of words, with all due respect for Foresti, Avezzana, Minnelli, Pastacaldi himself and all the others. He had noticed that one of the few among the many who came to see him, who never embarked on more or less passionate declamations but appeared to be a man of few words and of sound principles and practical facts, was Antonio Meucci. He was also considered to be wealthy, which did not hurt. Garibaldi's affinity with Antonio Meucci is described by Peter Ambrose Parodi (see bibl.) with the following words: *"… The two were coevals, both men of action, plain laborious …"* They got on immediately and came to two conclusions: the first was that it was necessary to launch a business that would employ the

largest possible number of jobless Italian exiles; the second was that it was necessary to find a place out in the country where they could live with little expense and not be distracted by the busy city life, nor be disturbed by the Mafia and Camorra of Five Points (the latter, however, would not have had an easy time, as the Italian exiles were well accustomed to using weapons).

In a letter addressed to Giuseppe Mazzini, dated 21 October 1850, Foresti wrote that Garibaldi *"… went to Staten Island, not far from the city* [*New York City*, Editor's note]*, to live with a man by the name of Meucci in order to enjoy some rest, feel totally free and economize …"* This letter by Prof. Foresti is particularly important because it is possible to deduce from it that Garibaldi moved to Staten Island before 21 October 1850, the date of the letter. It also proves (once more) that the Meuccis arrived in New York in 1850, not in 1851, as was reported elsewhere. Our reconstruction of Garibaldi's moves, reported in detail in the Appendix entitled "Giuseppe Garibaldi," allows us to date Meucci and Garibaldi's move from Manhattan to Staten Island, with a good degree of confidence, to the first days of October 1850, a few weeks before Foresti's letter to Mazzini.

However, before finding that arrangement, Meucci and Garibaldi had explored the regions around New York City, including Harlem, Hoboken and Long Island, without finding anything that suited them.

At last, Max Maretzek, who at the time was the impresario of Castle Garden and a good friend of the tenor Salvi, came up with the ideal solution. Maretzek had rented a country house (like many wealthy New Yorkers) called *Forest Cottage*, on Staten Island, an island with plenty of woods and lakes where a man could hunt and fish, as well as take a break away from the city, though remaining close to Manhattan, which could be reached by ferry within half an hour. Moreover, the boarding pier in Manhattan was very close to Castle Garden, and the one on Staten Island was right in Clifton, a ten-minute walk from the cottage rented by Maretzek. As Maretzek had another country cottage at Prince's Bay, on the southern tip of Staten Island, and as he was about to leave on a tour in Mexico City, he suggested to Meucci, who readily accepted, to sub-let the cottage. The owners, Mr. William Townsend and his wife Suzan - who also owned the *Evening Express* newspaper of New York - would be very happy to have Garibaldi rent their house and be their neighbor.

Meucci thus recalls the relocation to Clifton in his deposition at the Bell/Globe trial: [Answer No. 16] *"For a few weeks I remained in Leonard Street, New York, and having met my friend, General Garibaldi, and Lorenzo Salvi, the General suggested to come and settle with me in some house in the country — some country place; we were in several places in Hoboken, and*

at last at Staten Island, where we found one house at Clifton, Third Landing, where used to live Max Maretzek. I rented said house, which pleased General Garibaldi, together with Salvi, as Mr. Max Maretzek was leaving with his opera company for Havana ….” According to Peter Ambrose Parodi (see bibl.) the decision to move to Clifton was influenced by Capt. Franchi, who had built a *miniature castle* near Forest Cottage which he had turned into a sort of officers’ club for his exiled comrades-in-arms and was visited by Meucci and Garibaldi during their search for a suitable place where to live. The guests were so impressed by Capt. Franchi’s *sylvan situation* that they decided to stop their search and move close by[8].

Back then, Staten Island was not just a tourist paradise for New Yorkers. It was also a rural community with a population made up mainly of Irish immigrants and a few Italians, for a total of sixteen thousand inhabitants. It was administered independently from New York City (it was incorporated in it only much later, in 1898), but as of 1683 it constituted the Richmond County. An authoritative scholar of Italian origin, Daniel Santoro, who was the founder of the Staten Island Italian Historical Society, reported (see Appendix “History and Institutions of Staten Island”) in an unpublished manuscript titled “A History of the Italians on Staten Island,” dated 23 March 1940, that while in 1940 the Italians in the island accounted for 17.5 per cent of Staten Island’s population (roughly 200,000 inhabitants at the time), in 1882 there were only fourteen Italian families living there, and almost all had settled along the north-eastern coast, between Clifton and West Brighton. The number rose to twenty families in 1888. In another manuscript, Santoro stated that the first Italian family to reach Staten Island was the Martino family, way back in 1676, when there were only a few hundred people living on the island.

Location of Forest Cottage (center of encircled area) near Vanderbilt Landing

As mentioned previously, the moving took place in the early days of October 1850, after Antonio Meucci signed the rent contract with the Townsends in his own name. When we speak of the moving we mean that of the Meuccis, who had brought with them an entire arsenal of batteries, reels of insulated copper conductor etc. from Havana, along with a few household appliances which Esther was particularly fond of.

Instead, Gen. Garibaldi and Major Bovi Campeggi packed all their belongings in a sailor’s sack. Garibaldi’s own sack was quite special. It contained very few pieces of clothing, one of which was also a dear souvenir: the red shirt that he had worn during the defense of the Roman Republic, and which he later

[8]Max Maretzek, in his book “Sharps and Flats,” makes some confusion, stating that Garibaldi went to live in Clifton “together with Capt. Franchi” rather than “near Capt. Franchi.”

left to Mrs. Meucci as a sign of gratitude and esteem. It was made of red percale, with a green collar and cuffs and white borders, so as to form the three colors of Italian unity, and it had little white buttons made of glass. His sack also contained a deer horn, given to him in South America, which Garibaldi always carried with him like a talisman. Another object, donated to him in Montevideo, was a dagger with a thick silver handle, finely chiseled and oxidized, which portrayed *Mazzeppa*[9] followed by a pack of dogs. He left the dagger as a gift to Antonio Meucci, on his departure for Italy. Moreover, anyone who was tempted to peek into his sack would also have found a nice pair of scissors with a long blade, to touch up his flowing beard and hair, which he wore in the Nazarene style to conceal the ear that had been severed in South America, (another souvenir, if an unpleasant one). Someone is known to have said that Anita's brothers had done this to him, after he kidnapped their sister … Finally, Garibaldi's sack also contained a small supply of tobacco and an inlaid wooden box, where he kept his cigarettes, which he rolled himself in his leisure time, swiftly and skillfully, in the South American fashion. But, naturally, no-one would have dared to rummage through Garibaldi's sack. In a little cage (another South American souvenir) he carried a macaw from the Brazilian Amazon forest. This bird is unable to fly and climbs on branches, helping itself along with its beak. Garibaldi had taught it to cry out *"Viva l'Italia, fuori lo straniero!"* (Viva Italy, away with the foreigner!), whenever it saw a stranger, as if it were a watch dog.

The happiest of them all was Esther. At last she had made it: she had a house all of her own, and never mind if she had to take care of three men, as well as the numerous and motley group of visitors who, especially on Sundays, would most certainly have come to visit Garibaldi, even in Clifton. She would certainly have managed to find some young girl to help her in her household chores.

The cottage, which is indicated on the land property maps as *Forest Cottage*, was situated West of Forest Street (currently Ditson Street), a very short road, not more than one hundred meters long. It linked Willow Avenue, which still exists today, with Maple Avenue (currently Lynhurst Avenue), both leading to the piers, which were only a ten-minute walk away.

Forest Street ran right in the middle of a wood (not exactly a *forest*) with many big and tall trees, many of which were even taller than the cottage. When the four friends - Antonio, Esther, Garibaldi and Bovi - reached the little house, they were im-

[9]Nickname of Ivan Stepanovich Mazepa-Kolendisky (1644-1709), ataman (i.e. leader) of the Cossaks in Ukraine. His life inspired Lord Byron's poem "Mazeppa," as well as Victor Hugo and Aleksandr Sergeyevich Pushkin.

Forest Cottage as it was seen from Forest Street in 1850
(Garibaldi's room was the one on the right of the observer; Bovi's was the one on the left)
The long roofed porch in front of the entrance, which existed in 1850, doesn't appear in this picture, because it was removed.

pressed by those grand trees. *"But are they plane-trees?"* asked Bovi. *"Yes,"* Garibaldi replied, looking up *"but they are taller than ours … they are called 'western plane-trees' … but over here everything is so much bigger …"* Antonio had walked beyond the fence, passing the cottage on the left hand side, along the border with Maple Avenue. All of a sudden he stopped and exclaimed: *"Take a look at this, what a stroke of luck … we have plenty of water … enough to move a large blade wheel … this will come in handy, General, just wait and see! …"* About ten meters to the right of the cottage, almost at the edge of a nearby lot, also owned by the Townsends, there was a large shed, probably used as a tool-shed. It was concealed from the road by a large weeping willow. *"Here,"* Meucci said *"this is where I will set up my laboratory … it seems to be made on purpose … and … what about this lovely willow? … of course! … it's on the side of Willow Avenue …"*

Forest Street, today, as seen from Maple Avenue
(Meucci's cottage was situated halfway up the street, to the left)

Forest Cottage, a cottage … in a forest, between *Maple Avenue* and *Willow Avenue*! The fact that back then the surrounding land was quite hilly and full of bushes and tall trees is shown in a drawing dated 1856, kept at the *Staten Island Historical Society*, that we reproduce in the following. Others, such as Daniel Santoro, a resident of Staten Island as of 1907, have reported that the trees were felled and the land made even only many years later. Naturally, as it sloped towards the Ocean, the vegetation became lower and more sparse, so much so that one could see the ocean - only about half a mile away - from the windows on the attic floor, at the north-east corner of the cottage; actually, on a clear day, one could even admire much of the New York bay, from the nearby Brooklyn promontory, visible on the far right, all the way down to Governors Island and even beyond, towards the mouth of the Hudson River, on the far left.

When the four friends climbed up to the top floor, where the cottage quite conveniently had four bedrooms, Garibaldi stopped to blissfully admire the view from the window of that room, at the north-east corner of the house. The sight of the ocean filled him with great joy and took him back to his youth, Nice, the journeys out at sea and the peoples of the world, which the sea had allowed him to discover.

Antonio Meucci did not hesitate: *"General,"* he spoke out, addressing him with great deference as always, *"I cannot give you much in this humble house but … at least allow me to offer you the view of the ocean from your room …" "Thank you, Meucci."* Garibaldi was reserved, a man of few words, but his usually calm and serious eyes beamed with happiness. Well, dear readers, from that day on, and for over a century and a half, that room was to be known as the *room of Garibaldi.*

All of the rooms on the top floor had sloping ceilings, and each had two windows: a large one that overlooked one or the

Major Paolo Bovi Campeggi

other of the cottage's side walls, and a smaller rectangular window, somewhat close to the floor (because of the sloping roof), which looked either to the front or to the back of the cottage (see the cottage plan, in the Appendix "History of Forest Cottage"). Behind Garibaldi's room, and with a view of the bay that was almost as attractive as that offered by Garibaldi's room, was the bedroom of Esther and Antonio (which, a few years later, would become Esther's own private bedroom, as we shall see). However, this room being set further back, its small window overlooked the cottage's back yard.

Bovi was given the room on the front, symmetrical to Garibaldi's, which was separated from the latter by a small walk-in closet. The large window in Bovi's room was oriented to the south, towards Maple Avenue, while his small window looked out to the front fence, on Forest Street. Bovi slept very lightly, and had always been used to watching over the General's sleep. Despite his amputated right hand, he was incredibly quick in grabbing his rifle with his left arm alone, and was a good shot. This was well known to those who, upon seeing he was mutilated, had thought they could take advantage of it. The fourth room was set aside for Lorenzo Salvi (who did not come often, as he lived in New York) or for Domenico Mariani or some other guest, or, possibly, for a servant.

In this regard, we quote what was stated by the already mentioned Peter Ambrose Parodi (see bibl.): *"… Meucci's residence became at once the resort of the theatric artists, of the professionals, of the wealthy, of the needy; in fact of Italians of all classes. There he was visited by Gen. Avezzana, the exiled Commander in Chief of the Roman Army, who having left Mexico, had settled in New York; by Colonel Maggi, a cultured man, pioneer of the Italian Press, editing the first Italian newspaper, under the title "Il Proscritto" and after its collapse, greatly appreciated by the Ex-Governor of Massachusetts, General Nathaniel F. Bank and by him appointed as his Aide of Camp, when he was made by President Lincoln a Major General, to command a Division in W. Virginia in the War of Secession; the renowned Turinese painter Augero or Oggero, the Piatti Brothers, distinct sculptors, Argenti, an exiled Patriot of 1821, Pastacaldi, importer of marble and Italian wares, Egisto and Ernesto Fabbri, Merchants and lately members of the Chauncey & Fabbri Firm and others whose names would be a legion…"*

On 6 October 1850, the first Sunday of the month, the visits of the exiles to Garibaldi began … but, much to everyone's surprise, they were all invited by the General to work with him. Garibaldi told everyone that Salvi and Meucci were willing to put up the capital for a real plant, and that General Avezzana was in charge of purchasing the machinery.

Salvi arrived with Domenico Mariani - who was now working full time as his personal secretary and administrator - on the following day, around noon, since he had performed at Castle Garden until late at night on Sunday. He related marvels about Jenny Lind, the *Swedish nightingale*, who had made her debut on 11 September and had enjoyed an enormous success thereafter in the large Garden amphitheater with her famous song "The Echo." Instead, Salvi did not receive the warm welcome that he had expected at the Garden, and *L'Eco d'Italia* of 25 February 1883, actually wrote (referring to 1850) that he was judged "*a singer on the decline and … boasted falsettos,*" also remarking on the "*exceptional salary … two thousand dollars a month, which were paid in advance every fifteen days,*" which Don Francisco Marty had accorded him. The day that Salvi and Mariani arrived, Garibaldi and Bovi had gotten up early and gone hunting in the woods on Dongan Hills, some four miles south-west of Clifton. They hoped to catch something more than hares, which could almost be caught with one's hands in Clifton.

Jenny Lind

Salvi, Meucci and Mariani sat down in the large living room which was to the right of the front door, and well above ground level, and which had large glass doors opening onto both the front and back porches of the cottage. The longest wall of this room, on the right side of the cottage, did not have any windows, but, in the middle of it there was a large and beautiful fireplace with some pieces of wood on the hearth. However, it was too early to light a fire, or even to light the large 'carcel' lamp that hung from the ceiling.

Antonio was the first to speak: "*Well then Salvi … The colony needs our help … They know that we are among the very few wealthy Italians in New York. You are certainly wealthier than I. And the General insists that we give work to the exiles … I … have been thinking about something big … a factory, that can also turn a profit and pay back our capital … but there is always a risk involved, of course … Would you … would you accept to be my partner?*"

Jenny Lind's debut at Castle Garden in September 1850

Mariani was listening carefully, whereas Salvi appeared to be somewhat absent-minded as he fiddled with the *ruchette* of his cuffs and glanced perplexedly at Mariani from time to time. Mariani suggested that Salvi buy the land and the building of the factory (which would obviously have to be purchased in his name); Meucci, instead, would pay for the machinery. The Townsends had made it known that they were willing to sell the entire block - including three lots, for a total of some 11,400 square meters - between Forest Street, Maple Avenue, Townsend Avenue (currently Tompkins Avenue) and Willow Avenue, for which they asked a total ten thousand dollars. An additional three to four thousand dollars would be necessary to build the factory.

The cost of the machinery, of course, would depend on what was to be manufactured.

THE LIGHTING BUSINESS

"Well … Meucci … just what sort of factory do you have in mind, if I may ask?" Salvi suddenly seemed more alert, or maybe he had always been so, but did not show it. Antonio stood up and walked over to a sturdy wooden and wrought-iron cupboard which he had brought from Havana. He opened up a drawer and pulled out two very white candles, white as rarely could be seen, even in theaters, which were the largest consumers. *"Here,"* Antonio replied, handing his guests one candle each *"tell me what you think of them … We could also export to Havana … We know many traders who travel back and forth to Cuba …". "Splendid,"* Mariani said, twisting the candle between his fingers and raising it up to the light, which shone through the glass door and squinting, *"but what is it made of? … wax? … it must cost a fortune!" "No, it's not bees wax,"* Meucci replied somewhat mysteriously *"and it's not made of tallow either, at least not entirely … it's … it's made out of … well, it's an invention of mine …"*

At that moment, Esther walked into the room, looking somewhat fatigued, but beautiful nonetheless (she had celebrated her fortieth birthday on the previous Saturday), with a large parcel in her arms. How good it was to see her happy, Antonio thought to himself. *"Meucci,"* Esther said, apologizing to her guests for having interrupted them, *"where do you want me to put this whale fat … or … spermatic or … spermaceti … or whatever you call it?"* There, she had let the cat out of the bag, as one would say! *"Oh well, never mind* - Antonio thought to himself - *one must forgive a woman's candor …"* Then, turning to the others: *"Well … there you have it, they are made with spermaceti, a fluid which is found in the cephalic and subcutaneous cavities of the sperm whale … but also with tallow … and, in any case, the secret is not 'what' they are made out of, but 'how' they are made …"* Esther stood there a while, holding the package in her hands. Then, seeing that no one paid any attention to her, she put it down on a wooden bench by the cupboard, somewhat annoyed, and went back to the kitchen. After a little while she announced that lunch was ready. It was served in the dining room, which communicated with the kitchen and took up about half of the raised floor of the cottage, on the other side of the entrance hall.

During lunch, they reminisced about the years they spent in Havana. It seemed so long ago … Yet only a few months had gone by. At times a distance in miles blurs with a distance in

months … Time and space … such closely-linked dimensions in our minds! Salvi told them about the unsuccessful military coup in Cárdenas, in which four Americans who had taken part in the landing were executed. *"Thank God you followed my advice,"* he said to Antonio *"otherwise you would be in big trouble now."*

After lunch Antonio started talking about the candle factory again. If it were too small, it would not be possible to compete with candles imported from France[10]. If, on the other hand, it were too large, then it would require too much capital. Very few stearin plants processed less than two thousand kilos of tallow per day, which would correspond to a total output of almost 900 kilos of candles a day (that would be about 10,000 medium-size candles). The large French factories would process between 5,000 and 10,000 kilos of fat per day, at least. Gen. Avezzana had made it known that a red-copper autoclave, capable of processing 2,000 kilos of fat, would cost about 2,400 dollars. One with a 3,000-kilo capacity would cost 3,200 dollars. Then, they needed two presses, a hot press and a cold press, a molding machine and a steam generator. This would amount to another 11,000 dollars. Finally, adding the costs of vats, trays, jute cloths, piping and other small gadgets, the total investment outlay would amount to a minimum of 17,000 dollars. But then, more money would be needed to purchase the raw material and pay the workers (estimated to about a man and a half per one hundred kilo of processed fat). They would be paid per capita weekly wages ranging from 7 to 10 dollars, whereas apprentices and other hands would be paid about 3 dollars a week. This meant that, guessing that the first cash inflow would come only after three months of work, a further preliminary outlay of 7,000 dollars would be needed.

As has already been mentioned, Lorenzo Salvi could easily have financed the entire business, thanks to his large earnings. But he led a very costly life and, moreover, he had to start thinking about when he would no longer be able to earn as a singer (he had already had the first warning signs) and would have to live off his savings. Mariani and Salvi left, before Bovi and Garibaldi returned from hunting, promising that they would think about the candle business. *"You know Meucci,"* Salvi said when leaving *"I will spend the entire winter in Havana with Marty. I'm about to leave because on 28 November there is going to be the opening of the season with 'Maria di Rohan,' and then we will perform the 'Huguenots,' and after that the opera*

[10] No such products were then available from the United States, as, according to Williams Haynes (see bibl.), the first stearic candle manufacture was set up by James ~~Proctor~~ Procter (of ~~Proctor~~ Procter and Gamble) in Cincinnati, Ohio, in 1854 (see the Appendix "The stearic Industry").

'Lucia di Lammermoor.' Jenny Lind will be coming to Havana in January, so she told me. I'll be back in early February, I believe. So we can talk about it then … After all … winter is round the bend, and you cannot start building the factory now, can you? Moreover, have you thought about the competition of gas? Remember, you installed it at the Tacón yourself four years ago. In New York, at Mr. Rallo's there were one or two burners per room, and now there is gas lighting everywhere, in public and private places, besides street lighting. Who is going to buy candles anymore?" "They will buy them … those who love light!" - Antonio answered jokingly, also because Salvi kept looking at his pocket watch. Then, as the two were walking down *Willow Avenue* towards the pier for Manhattan, he shouted from behind the gate: *"Say hello to Mr. Rallo! …"* Mariani turned round and shouted back: *"We're not staying with Rallo anymore … We are at a Frenchman's named Bonnell! …"*

When Garibaldi and Bovi returned from their hunting expedition, Antonio told them about his conversation with Salvi and Mariani. The General seemed a little vexed, but did not say a word. Bovi triumphantly handed Esther the two game-bags, full of grouses, ducks and snipes. *"Where did you find these?"* Esther asked with curiosity. *"Oh, certainly not at Dongan Hills …"* - Bovi replied in his unmistakable Bolognese accent - *"We went three miles further south, towards the salt plains of Great Kills … there is plenty of game there … there must be deer at Dongan Hills… It's a pity that we missed Castore, the General's faithful hunting dog, which we had to leave behind at Tangiers, with friends … We were later told that he died of sorrow!"*

Garibaldi and Bovi went to Dongan Hills many times, so much so that Forest Cottage lived off of their hunting. Esther learned to cook game, remembering what her mother did back in Florence to rid it of its gamy odor.

Mr. Speck, Lorenzo Salvi's brother-in-law and a brave fighter under Garibaldi's command from the Roman campaign on (as we have mentioned above), often went hunting with Garibaldi. One day, however, the two hunters brought back from the Dongan Hills woods something that could not exactly be called game. When they reached the cottage, they handed it over to Esther as usual. *"But … but … what is this white thing …"* - Esther exclaimed in surprise - *"it's alive! … I'm not about to kill it … it's so… it's so cute… see how its little heart beats in fear … it looks like a kitten …" "Mrs. Meucci,"* - Speck said - *"it 'is' a kitten … a female kitten … don't kill her, she will catch mice when she grows up! … You know, female cats are much better than males at catching mice!" "To say the truth,"* Esther promptly retorted *"females are better than males at many things*

and especially" she said, tilting her head to indicate her husband *"they have much more common sense in their head …"*

We wish to reassure the reader that the tale about the white kitten is true. It is reported by Adolfo Rossi (see bibl. p. 168) practically as he heard it from Meucci himself:

"… His [Garibaldi's] *regular hunting and fishing companion was Mr. Speck, the brother-in-law of the tenor Salvi and a Corporal under Garibaldi himself in the Roman campaign. Speck was a generous man, with sound principles and no ambition. He followed Garibaldi everywhere and was with him in Caprera, and in 1859 became a Captain of the Cacciatori delle Alpi* [*Alpine Huntsmen*]. *One day Garibaldi and Speck went hunting in the woods as usual, and came back a few hours later without having fired a single shot. 'But we were not completely out of luck, dear Mrs. Esther,' Garibaldi said to Meucci's wife, putting a little white animal on her lap 'here is a baby hare that was so stiffened by the cold that we were able to catch it with our bare hands.' The little hare was actually a kitten, and was the Eve of the feline species in the Meucci household …"*

Rossi's story is confirmed in a letter written by Antonio Meucci to Gen. Garibaldi on 23 September 1859. In it he wrote, among other things: *"… the white cat that you brought from the woods is still living in my house, but she is all ill …"* (see Appendix "Letters written or received by A. Meucci until 1871"). Esther immediately called the kitten *Lillina*, perhaps in association with the white lily, the symbol of Florence where she came from. But her friends and servants called her *Lily*, English style.

Bovi was said to have had the idea to manufacture salami, preparing them in the basement of the cottage, before the candle factory was started. This type of activity, however, was not mentioned in any of the depositions at the Bell/Globe trial, and particularly in the testimonies given by Antonio Meucci or Domenico Mariani. The oldest mention that exists on this subject is contained in an article entitled "Garibaldi's House," published by *L'Eco d'Italia* on 9-10 April 1882, that is, about two months before Garibaldi died. The article says that: *"… The cottage basement was used to make salami and tallow candles, businesses set up by Garibaldi and Meucci to give jobs to their friends and fellow soldiers, who accepted their hospitality."* At the time (1882) of said article, Meucci was still alive, and it is unlikely that *L'Eco* should have made it all up. A second reference comes from a nephew of Bovi (his sister's son) called Luigi Roversi. The latter visited Meucci in March 1885, and described his visit at length in an article on *La Follia di New York*, on 3 May 1942. Below is a long extract from that article, which is of interest due to its mention of the entire stay of Garibaldi and Bovi at Clifton.

"About the General's stay at Meucci's house, little has been written and not all reports are exact, often more the result of fantasy rather than historical fact. The following chapter (a sort of daily diary by Garibaldi) and the documents in Appendix, which are almost all unpublished and drawn from the personal papers that Meucci left me on his death, and that will sooner or later be published, prove this beyond all doubt and will suffer no contestation. The reader, therefore, should refer to the following pages, but it should immediately be stated that neither Garibaldi nor Bovi Campeggi ever needed to work for their living on Staten Island. Garibaldi at times would help make candles, and Bovi Campeggi - being from Bologna - would help stuff salami and baloney, to while away the time and give a hand to their hosts. But Meucci took care of everything, and if Garibaldi distributed the five hundred dollars [Daniel Santoro says *seven hundred* - Editor's Note] *that a wealthy American admirer of his and of Italy had given him, this was not only due to his inherent generosity, but also because he did not need the money. A number of writers of the so-called Souvenirs of America (excluding, of course, Dario Papa, Adolfo Rossi and Ferdinando Fontana from that number) affirmed that the General and his aide spent two years and half without any patriotic thoughts, as if resigned to their fate, forgetful of the past and content with the present, without an eye to the future. This is both stupid and false. After the epos of the siege of Rome and the tragic events during the retreat, their bodies claimed rest and their spirits needed leisure. It is no surprise, that they should have accepted the former and sought the latter. But they did not lead a life of blissful leisure, nor did they forget Italy. In the cottage of Staten Island, the prophetic motto and the password resounded more often than can be imagined: 'alere flammam!'* [Latin motto that means *feed the flame!*, Editor's note]"

Similar considerations are reported in a manuscript of another Meucci's friend, Peter Ambrose Parodi (see bibl.):

"… Meucci continued to attend to his physiochemical mixtures: the General hunted, fished, climbed hills, strolled on the beach, visited the Quarantine, and when tired returned home to attend to his correspondence which was always very voluminous; incidentally he would peep in the candle factory for a familiar chat with his friend, and if he needed a momentary assistance, the General tendered it, pleased to have been useful at the critical moment. This occasional, momentary, unexpected Garibaldian assistance was probably noticed by a visitor who thoughtlessly, indiscreetly or malignantly, originated the story

that Meucci employed the General in his Candle Factory as a laboring man, a story which, though repeatedly contradicted by both, General and Inventor, became a legend and here is the real version of the end of Meucci's bossism over Garibaldi …"

Garibaldi himself, never claimed anything different than what was stated by Roversi and Parodi. In his memoirs Garibaldi wrote: *"… in Meucci's house … I was always free: I could work if I wanted to - and, naturally, I preferred useful work to any other occupation - but I could also go hunting every now and then - and we often went fishing, with the boss himself, and various other friends from Staten Island and New York, who often came to visit. At home there was no luxury - although nothing lacked of life's basic needs, in terms of food as well as lodging …"* Finally, Meucci himself in his affidavit, with reference to Garibaldi, stated that: *"… I paid his expenses, amounting to a considerable sum of money …"*

We agree with Roversi on the seriousness and reliability of Adolfo Rossi, whose book "Un Italiano in America" (An Italian in America), published by La Cisalpina, Milan, in 1899, is warmly recommended to the reader who wishes to have a lively description of the Italian colony in America, in the second half of the last century. Rossi visited Meucci in the Spring of 1881 - thus, a few years before Roversi - and had a long conversation with him. Two short extracts from his book (pp. 158 and 168) are given below:

"Meucci … was the first to manufacture stearin, as well as paraffin candles … they were waiting for the return of his friend Salvi, who would have become Meucci's partner, to set up a full scale factory. General Avezzana, who was in business in New York, was given the charge of making the necessary purchases. Two boilers were set up in the basement, where salami had previously been made, and work began … In the meantime the tenor Salvi arrived, became Meucci's partner, and the house with several lots was bought, where they immediately erected a special building for the candle manufacturing …"

The statement of Rossi - who was then chief editor of *Il Progresso Italo-Americano* - according to which Meucci was the first to manufacture stearin and paraffin candles in the United States, is confirmed by Peter Ambrose Parodi (op. cit.), who wrote: *"… The stearin had recently been discovered and he* [Meucci] *started to make candles with it …"* Both statements agree with the analysis conducted on the origins of the stearin candle-making industry, which is reported in the Appendix "The Stearic Industry." It reveals that this industry was launched first

in France, starting from 1840, by De Milly, Motard, Petit, Lemoull, Benoît and Léon Droux. England was to follow a few years later, but it only took off in the rest of the world well after 1850, as we have already mentioned.

Coming back to salami, the two reliable sources mentioned above would make it seem likely that there was some activity of this sort in the cottage basement, before candle manufacturing began, therefore during the winter between 1850 and 1851. Additional and authoritative documentation is given by Adolfo Rossi who, in turn, took his information from the already mentioned visit to Meucci in 1881. He also relates an amusing episode (which Francesco Moncada and Roy Bredholt wrongly attributed to an unpublished work by Daniel Santoro), quoted below:

"... Despite all the efforts to lead an active life, Garibaldi and his friends often found themselves with nothing to do, so the General had the idea of putting to profit Bovi's experience in sausage-making. The necessary equipment was acquired, a salami factory was set up in the basement and manufacturing got under way at once. Garibaldi participated also, separating the meat from the bones. One day his knife slipped and abruptly cut off a piece of his finger, which fell into the meat scraps and was never found. «It doesn't matter», he said, «don't look for it, it will make the salami republican» ..."

The idea of manufacturing salami, might have come to the minds of these men, because salami was sold on board the ferries (see Appendix "The Staten Island Ferry"): *"… The bar and Gentleman's cabin contained a variety of eatables and drinkables such as Bologna sausages, hung-beef, biscuits, and all sorts of confectionery …"* This means that Bologna sausage was very popular in New York at that time, just as it is today. Also, we know that in the Italian rural areas, pigs are killed at Christmas time (or more precisely in early December). That is also the time in which salami is made, and then it is left to season for two or three months, hanging from the basement ceiling, with the same string with which it is tied. More than is usually consumed by the family is made, and it is quite common for it to be sold, but no one could actually define this endeavor as a (even small) salami factory.

One morning of that winter, before Christmas, the small community residing in Forest Cottage woke up with a strange feeling. The birds were not singing as usual. An isolated twitter could be heard here and there, but it sounded more like wailing. There was an unusual silence, with an almost padding-like quality to it. Garibaldi was always the first to get up, while Bovi,

as soon as he heard him move about, would dose off, trying to catch up with some of his lost sleep. Esther usually woke up before Antonio, who was a heavy sleeper. She shook his shoulders: *"Meucci … it's half past six … wake up … go and see what's happening … there's a strange silence …"* Antonio would have liked to keep on sleeping. He liked to have a good seven-to-eight hours' sleep, while Garibaldi only needed three to four hours. However, seeing that Esther was worried, he immediately sat up on the side of his bed, rubbed his eyes and instinctively glanced out of the large window, which looked out northward to the bay. He walked up to the window to see better, wiped the clouded over glass with his hand and exclaimed: *"Esther! … come quickly, … look here … What a magnificent sight … it's … it's SNOOWW … but how much snow … I've never seen so much in my life! …"*

Garibaldi already knew all about it. He had *heard* it snowing all night long, while he was writing his memoirs, as he had promised to Theodore Dwight, using a whale-oil light which had been attached to the door frame, and which he had shifted onto his table. He had written about Anita, at first, and then, little by little, about the martyrs of Cesenatico, Ugo Bassi and Angelo Brunetti. And then about Francesco Anzani and Luigi Carniglia, his companions in the *Italian Legion* in Montevideo. The snowfall gave him almost the same sensation as the sea: a great, immense peace, a silence filled with a thousand soft and muted voices, and in which he could hear the resounding voices of the people he loved, now dead or far away, and, especially, the smell of cleanliness, the cleanliness that was so dear to his soul.

When it snows, it is not cold, and there actually is a sort of warmth which makes one feel alive, like in an Eskimo igloo. But certainly a blazing fire in the hearth enlivens the spirit, as well as the body. Antonio went down to the living room, still wearing his braces over his undershirt, as he had not yet washed, and went to light the fire in the chimney place. As soon as he heard him, Garibaldi walked down the stairs and said good morning warmly. "*Good morning, General* - answered Antonio - *have you ever seen so much snow so close to the sea before?" - "No … not so often, I must say … but I do remember a winter in Odessa on the Black Sea, when I was a ship-boy on a merchant navy ship … it almost snowed on the sea … but it was not as beautiful as it is here … you are right!"*

Esther, before coming downstairs, went into all of the bedrooms, opening the windows and uncovering the beds, to air out the sheets, blankets and cushions. There is nothing better than open air to keep things fresh. She stayed on a little, leaning against the cushions she had placed against the window sills, admiring the snow-covered trees and meadows, and breathing in deeply the fresh air that had a subtle smell of eucalyptus. She

always had a certain reserve, when entering the General's room, almost as if she feared profaning a holy place.

"The General's bedroom … has a wrought iron bed and a wrought-iron wash-basin, three chairs, a little table, and a little wooden dresser and on top of it a checkers board, also a wardrobe decorated with simple light straw decorations in many colors, on top of which rested a wax skull. Two small mirrors hung on the walls, and Garibaldi would sometimes torment his blond beard with his scissors in front of them. There is no other furniture …" This description is by Adolfo Rossi, who saw the room, as already said, in the Spring of 1881. He referred that Antonio Meucci had kept it unchanged ever since the departure of the General.

Reconstruction of Garibaldi's room in the "Garibaldi-Meucci Museum"

Rossi's description is confirmed by a report published by the *Richmond County Standard* on 25 April 1891, on the auction of Meucci's assets, which took place some time after his death, on Monday, 20 April 1891. The *Standard* wrote (see the full transcription in the Appendix "History of Forest Cottage"): *"… they brought all told $325. Among them was … chairs of Garibaldi's own workmanship, his iron bed-stead, dresser, wardrobe …"* A more recent article of 1961 by Albertazzi (see bibl.) reports that: *"… Everything in this little room, with a sloping roof, not much larger than a garret, has remained just like it was. The pendulum clock at the bed-side, a hunting rifle hanging on the wall, two white goose quills on the writing desk, the lamp attached to the door frame, a jug of water, the bed right against the external wall …"* Albertazzi's description refers to his visit paid in 1961 to the *Garibaldi-Meucci Museum*, which latter is nothing but Meucci's cottage, restored and moved to a more suitable location (see "History of Forest Cottage" in Appendix). Unfortunately, what Albertazzi wrote, namely that *"everything in this small room … has remained exactly as it was,"* is not (and cannot) be true. It is true, however, that the small room, as shown in the above photograph, was re-furnished with great care, with new furniture, selected in the best possible way to recall the original furnishings[11].

Rocking chair made by Antonio Meucci

It is interesting, among the very few original furnishings of Garibaldi's room, the wax skull, placed above the wardrobe. The habit of keeping a skull (quite common, in those times, in the study of scholars), was a way of recalling the fleeting nature of human things, not only of joy, but also of sorrow. Thus, differently from what might be the reaction today, the presence of

[11] In addition, the small room concerned - as it is currently located at the *Garibaldi-Meucci Museum* - corresponds with the one occupied by Esther Meucci (note, in the above picture, the position of the small window and of the large one), as is better illustrated in the appendix "History of Forest Cottage."

the skull was a way of assuring serenity, rather than instilling fear. It was a way of saying: "*don't take it too much to heart … life is so short …*" The skull could have been a gift, received by Garibaldi after Anita's death, which caused an endless sorrow to him.

In a short time, the cottage's interior decoration was enriched with Meucci's and Garibaldi's artifacts. These included chairs, chests, sofas and tables of all sizes and shapes, but also a few wardrobes, little boxes and other objects. They used for these objects the roots, trunks and rushes of the many trees and plants which at that time covered the island. Meucci and Garibaldi used to work on the wood during the long winter evenings, when … *there was nothing to do*. This sentence, which is often repeated in Meucci's recountals, and also in those of Mariani, meant that they had already worked hard for about ten hours, and, therefore, in their 'leisure' time, they would cut and chisel wood, to while away their time. Above is an illustration of one of the two rocking chairs built by Meucci, which is both solid and elegant. It is kept in the *Garibaldi-Meucci Museum*, and was donated by a great grandchild of Mrs. Lazzari, to whom Antonio Meucci had left it in his will (see the Appendix "The second and last will of Antonio Meucci," in Vol. 1). Garibaldi made a beautiful wood inlaid box, similar to his own for hand-rolled cigarettes, which he gave to Antonio. They were both heavy smokers, especially during their leisure time. Max Maretzek, in his book "Sharps and Flats" (see bibl.), mentions the fact that Meucci and Garibaldi baked their own bread, besides eating the game and fish which they hunted and caught by themselves.

But let us come to the crucial issue of this period, which has been baptized "the lighting business." Contrary to what Salvi had stated, candles sold quite well in that period, especially in the countryside and in the many small towns in which gas lighting was not available. Also, candles could be easily exported. Many traders working back and forth between New York and Havana, like Carlos Pader, Antonio Jané, Gaetano Negretti and others, had assured Meucci that there was a safe market for them, because at that time stearic candles were being imported with high shipping costs from Europe. On the other hand, as illustrated more in detail in the Appendix "Artificial Lighting," the fall in the demand for stearic candles was not so much due to gas, but to kerosene, starting from the onset of its industrial production, that is, not earlier than 1855.

It should also be pointed out that Meucci had worked with candles - both using them and purchasing them from suppliers - ever since 1833, when he worked at the Teatro della Pergola, in Florence, and then, for almost fifteen years, at the Teatro Tacón in Havana. He had therefore learned a lot about them, in dealing with manufacturers and suppliers, especially in relation to their

quality/cost ratio. It should also be observed that, in 1850, when Antonio Meucci had the idea to build a candle factory in Clifton, this industry was in all likelihood non-existent in the United States. Instead, imported stearin candles were subject to heavy customs duty, as in almost all other countries in the world (see Appendix "The Stearic Industry"). For all these reasons, it seemed to be an attractive business. Adolfo Rossi, too, as we have already said, stated that Antonio Meucci "*… was the first to manufacture stearin, as well as paraffin candles* [*in America*, Editor's note]*."* In addition, as shown in the same Appendix, the price of tallow was dropping steadily, due both to the growing consumption of beef by the population (and therefore a rising supply of tallow on the market, as each head of cattle would supply about sixty kilos of tallow) and also to the growing availability of solid vegetable oil, from tropical (especially African) forests. The latter could be purchased at a lower price than tallow, and, moreover, it yielded purer stearin than that obtained from tallow, thus cutting back on the clarification costs. This is why Antonio Meucci thought to use spermaceti mixed with tallow, for his candle factory. Indeed, today, instead of spermaceti, paraffin - another (mineral) wax - is used, with much the same results.

For these reasons, we consider the adjective *naive* given by some writers to Antonio Meucci to be inappropriate. Although, Meucci certainly took into consideration, when deciding the business to be launched, the fact that candle manufacturing required a lot of labor - differently from electroplating, for instance. It would therefore have given jobs to many Italian exiles, according to Garibaldi's wishes. In our opinion, the latter fact may have proven to be counter-productive, both because there was no certainty of the stability of this workforce, and because, as shown in the above said Appendix, in many phases of candle-making, female personnel was more appropriate. And, after all, it is by no means certain that the fiery Italian freedom fighters would also have been suitable for a routine and monotonous factory job.

An estimate was made by this author, based on data supplied by Ettore Marazza (for the year 1870, which is the closest year to 1850, at an equal dollar inflation rate) and is reported in the already cited Appendix "The Stearic Industry." Our assumption was that Meucci's factory was designed to process 2,000 kilos of tallow a day, with saponification performed in a medium-pressure autoclave, and that an investment of 20,000 dollars at current costs was needed. Daily expenses (calculated for tallow at $22 per 100 kilos; lime, sulfuric acid and coal $0.32 per 100 kilos of processed tallow; total labor costs $1.04 per 100 kilos of processed tallow) would have amounted to $467.20 per day. The daily income, considering the prices of: stearin (47% of

processed tallow) at $0.40 per kilo; oleine (46.5% of processed tallow) at $0.18 per kilo; glycerin (5% of processed tallow) at $0.15 per kilo, would have totaled $558.40, without taking into account the transformation of stearin into candles. Thus, the gross margin for stearin production would have been $91.20 per day, equivalent to $27,360 a year (counting 300 working days). Even though these estimates are somewhat rough, as the earliest commercial costs reported date back only to 1870, it does not appear unreasonable to conclude that the investment, at least on paper, could have been rapidly amortized, and the business would have broken even within little more than one year. If one thousand kilos of tallow had been processed every day, instead of two thousand, a break-even point would have been reached in a little over two years.

A number of reports indicate that even before the candle factory building was ready, some activity had already started in the cottage basement. Indeed, Rossi reported that: "*… two boilers were set up in the basement where salami had previously been made, and work began .. In the meantime, the tenor Salvi arrived, became Meucci's partner, and the house with several lots was bought, where they immediately erected a special building for the candle manufacturing …*" However, we are convinced that the brick boiling-vat for tallow melting, which is mentioned in many reports, and which is analyzed in depth in the Appendix "History of Forest Cottage," was instead built from the onset outside, in its definitive site, near the corner between Forest Street and Maple Avenue. It was to remain there until Meucci's death. There is much evidence for this statement, but the main reason is that it was too large and too dangerous, besides being too foul-smelling, to be kept in the basement. It was more sensible to build it in its definitive site, on lot No. 1 (see the map on p. 400 in the Appendix "History of Forest Cottage,"), as, even after erecting the building for the factory, the boiling-vat could very well stay where it was, out in the open air.

The two boilers in the basement, mentioned by Rossi, were probably a steam generator - which is necessary for many of the operations in the making of candles, as shown in the aforesaid Appendix - and the autoclave for calcareous saponification. It is true, however, that in those times steam generators were also quite dangerous, even though they were very simple, as they were substantially similar to the Watt model of 1769. They were directly heated, over a high flame, and consisted essentially of a cylindrical boiler, with a 60-70 centimeter diameter, vertically placed, an external hearth and a smokestack. The flame and hot gases that were generated by combustion in the hearth, warmed the boiler walls directly for a portion of its height, below the water surface, and steam formed above this. The flame and hot gases were then discharged through the chimney, following a

path that allowed for part of the heat to be utilized. These generators had to be constantly monitored and correctly fueled by a skilled stoker, who was also responsible for their frequent and accurate maintenance.

We shall now briefly describe how in our opinion candles were provisionally manufactured in a first time. The rough tallow was delivered by butchers once or twice a week, in barrels. These were picked up at the Vanderbilt Landing of the ferry, in Clifton. Following this, the barrels were emptied of the tallow which was poured from above into the melting boiler (the one in the yard of the factory). There must also have been wooden scaffolding and a ladder, so as to allow to pour the tallow down into the boiler (see, for instance, the photograph on p. 432). The boiler had to be, as it certainly was, made out of copper, in order to withstand the corrosion due to fatty acids, but was coated with bricks, to better keep the heat. It was heated by a coal and/or wood fire. A worker had to stir continuously the mass during the fusion of the tallow and make sure that the temperature of the tallow stayed between 60 °C and 65 °C. The melted tallow floated over the mass and was removed with ladles; then it was poured into pails or tubs, to cool and to settle. As soon as it reached a temperature only slightly above its melting point (just over 40 °C) it was poured into rectangular basins where it hardened completely. At that point, the tallow cakes obtained were removed and utilized when needed during the following operations. The membranes, vesicles and other residual matter were removed from the bottom of the melting boiler and possibly pressed and shaped into cakes, to be later used or sold as livestock feed. The tallow cakes which were obtained from a load of one thousand or two thousand kilos of raw tallow, must have been of a quantity sufficient to feed the small plant for at least a few days or up to one week.

Owing to the size of the basement, the autoclave used for calcareous saponification (see Appendix “The Stearic Industry”), which was also made out of copper, should have been quite small, and partially set underground, like the first models by De Milly. Its capacity probably did not exceed 2 cubic meters, meaning that it could process not more than one thousand kilos of melted tallow at a time. Along with the fats (tallow, spermaceti and/or solid vegetable oil, such as palm oil, or illipe oil or the like), the following had to be put in the autoclave: water and milk of lime, roughly 50 liters each, for every hundred kilos of processed fat. As this mass had to be stirred continuously, steam also had to be introduced from above, through a tube which penetrated down to the bottom of the autoclave (see figure on p. 373). This pushed the interior temperature up to around 135 °C and the pressure up to 3 atmospheres. After seven or eight hours, the saponification process was completed, and the contents of the autoclave were separated into two layers. The

heaviest layer at the bottom contained glycerinous water and the upper layer contained calcareous soap. As this latter floated on top of the upper level, it was easily separated by spilling it on an underlying, lead-coated vat. Meucci probably did not process the glycerinous water, at least in his first plant and this water was probably eliminated as glycerin would only have given a small profit and, moreover, it would have required further processing.

To obtain a mixture of stearin and oleine from the calcareous soap, from which the oleine was to be later eliminated, an operation called *decomposition* was necessary, which consisted in a reaction of the calcareous soap with sulfuric acid. For this, about fifteen kilograms of concentrated sulfuric acid per one hundred kilos of processed fat were added to the vat mentioned above. At the same time, steam was introduced from the bottom of the vat, through a bored coil, so that the mass was kept boiling for a few hours. After this time, decomposition was completed, a mix of stearin and oleine floated to the surface and, after a sufficient lapse of time, calcium sulfate precipitated to the bottom of the vat, as a by-product of the reaction, in the form of a white crystalline powder that was either eliminated or sold. Following decomposition, an important step was washing the stearin and oleine mix (two *fatty acids*) which was performed in another vat, where the mass was made boiling for two hours in diluted sulfuric acid.

From this point onwards, another, completely different, working environment was necessary, as the purified fatty acid mix had to undergo a long process of crystallization into cakes. The process lasted about a week and a half, and had to take place in an area protected from air currents and sudden temperature changes. It is unlikely that Meucci would have divided the basement into two sections. Perhaps he may have used the tool-shed (already mentioned) for this second phase of the process. This tool-shed was located to the right of the cottage, as mentioned previously, so that the tubs containing the purified fat mixture must have been carried there from the basement. In this hypothesis, let us imagine that Meucci had placed the frames of trays (or *cabarets*, see Appendix “The Stearic Industry”) in the shed, onto which a worker poured the (melted) fat mix, allowing it to crystallize into cakes for some nine days. Incidentally, the inventory of goods sold to Captain Bennis (see transcription of the deed in the Appendix “History of Forest Cottage”) there is mention of three hundred and sixty tin pans, which may very well have been the *cabarets* referred to above. Following crystallization, the cakes were first wrapped in rough wool cloths and pressed, first in a cold-press then a hot-press (using two different presses) in order to expel the oleine component. This could then be sold to textile industries, or used to make soaps, which is exactly what Meucci did, as confirmed by many

sources. It could have been possible to avoid the hot-press, by repeating the cold-pressing step on the raw stearin obtained, after having broken it up, re-melted and re-crystallized it into cakes. In that period, there were already excellent hydraulic presses - both cold and hot (with steam-heated plates) - even though they could be difficult to transport and set up, as they weighed up to ten tons. By eliminating as much oleine as possible, with good presses, it was possible to obtain high-quality stearin, namely stearin which was whiter, harder and sounder.

The subsequent step, that is *clarification* of stearin, as explained in detail in the Appendix "The Stearic Industry," required two boiling steps of one hour each, the first in very diluted sulfuric acid, the second in water. For this, it was necessary to have two washing vats, similar to those described above, the second being placed underneath the first. Finally, stearin was removed from the second vat, placed in tubs, and then introduced into the modeling machine, on which the reels with the wicks had been previously inserted. It is likely that Meucci purchased the wicks from the Lyon-based company *Duparquet*, which, in that period, exported large quantities of high quality wicks, already chemically treated, worldwide. Preparing wicks on site would have been far too costly, as explained in the above said Appendix. As regards the modeling machine, Ettore Marazza (see Appendix) mentions one produced by *Schubert & Company*, 11 Vine Street, Brooklyn, NY. It could therefore be purchased right near Staten Island, but it is not known to what period Marazza made reference. It is also possible that at least in the beginning, Meucci used molds in groups, alternately immersed in hot water (when pouring stearin) and cold water (when forming and extracting candles), as explained in the Appendix. Extracting candles from the molds was often difficult, so that Meucci, some years later, took out two patents (see Appendix "Antonio Meucci's Patents until 1870") to overcome this difficulty.

It is not necessary to dwell on the subsequent steps to be followed for the finishing phases, as they are fully described in the same Appendix "The Stearic Industry." Suffice to mention that in that period, whitening of the candles following their extraction from the molds was performed by laying out the candles in the open air for a certain period of time, taking advantage of the sun and dew, similar to the way housewives used to bleach cloth by laying it out in the fields.

Garibaldi in New York (from a daguerreotype by M.A. & S. Root)

As better shown in the Appendix "History of Forest Cottage," Lot No. 3 (see the map on p. 400) was probably used for this purpose. It was located to the west of the cottage, but it probably had to be covered somehow in winter.

During the winter between 1850 and 1851, Garibaldi was hard at work helping Meucci with what he called 'the tallow

job.' Only once was Garibaldi overcome by dismay and … But let's hear the episode in his own words (from his Autobiographical Memoirs, reported more extensively in the Appendix "Giuseppe Garibaldi"):

"… I worked for a few months with Meucci - and, although I was his employee, he treated me like one of the family, with great loving-kindness.

One day, however, tired of making candles - and perhaps driven by my natural and usual restlessness - I left the house with the intention of finding another job. I remembered having been a sailor - I spoke a few words of English - and I headed for the coast of the island, where I could see some coasting vessels, loading and unloading goods.

I went to the first one and I asked to be embarked as a sailor. Hardly anyone paid any attention to me: everyone on the boat went on with their work. I tried again with another vessel. Same response. Finally, I went to another one where goods were being unloaded and I asked whether I could help out with the work; they answered they didn't need any help. 'But I'm not asking to be paid,' I insisted, to no avail. 'I want to work to shake off the cold' (it was really snowing): still no answer. I was mortified!

My mind took me back to the time when I had the honor to be in command of the Montevideo squadron - in command of the combative and immortal army! What was the use of it all? They didn't want me!

I rebutted the mortification and went back to work on tallow. Fortunately, I hadn't informed the excellent Meucci of my intention; hence, since no one besides me had been involved in my decision, no unpleasant consequences were entailed. Furthermore, I must admit that my kind employer had done nothing to force me to my untimely decision - he offered me nothing but kindness and friendship, as did Mrs. Meucci, his wife …"

Yet, Garibaldi's longing for the sea was obvious to all. And most of all, it was clear to Antonio, who, therefore, contrived a small remedy, which was much appreciated by his friend the General. He bought a small catboat with a felucca sail, and entrusted Garibaldi with the task of making it perfectly ship- shape.

Garibaldi was very skillful in doing this. He carried out the job, then painted the boat red, white and green. Roy Bredholt reported that the sail was also in those three colors. Garibaldi called the boat *Ugo Bassi*, the name of the chaplain who had been executed by the Austrians during the 1849 campaign. Let us report the words of Adolfo Rossi (op. cit., p. 166), who relates what he heard from Antonio Meucci himself as follows:

"… One of the first concerns of the new inhabitants of the island was to explore the territory and buy a beautiful boat with a felucca sail, which was painted in three colors, and given the name of the martyr chaplain Ugo Bassi. The boat was to be used for fishing and duck hunting, and Garibaldi would not let anyone climb on board until he had tested it in all ways and was fully satisfied with it.

He came into his own at sea and he soon said to Meucci: - 'Now, Captain Buontempo, let us do our job as fishermen. Let's go, the boat is waiting for us and the weather is good. Look at my work, and then see if you dare to say that I am not a good ship-builder.

The boat was perfect in all aspects and with a helmsman like Garibaldi was admired by all. It was, however, very tiring to use, because after every excursion it had to be pulled out onto ground, loaded on a wagon and taken home to protect it from thieves. Luckily, there were visitors who often helped to carry it on their shoulders, as every day many people came to visit our hero …

Garibaldi's tiny colony soon became a meeting point of all Italian exiles and political refugees of every nationality … the community grew with the arrival … of two brave members of the Italian Legion of Montevideo, Righini and Oregoni, who had also fought under the General's command in Italy. Oregoni was especially dear to Garibaldi, as he had a seemingly endless stock of anecdotes and witticisms, with which he would amuse any brigade. The three [the third was Major Bovi - Editor's note] *were recruited for the crew of the Ugo Bassi, and there certainly has never been a more likable and cheerful group of fishermen. They were later given the permission to shelter the boat at Vanderbilt Landing, and this meant not having to carry it back and forth onto land …"*

The nickname 'Captain Buontempo' (the expression 'buon tempo' meaning 'good weather,' in Italian), referred to by Rossi, was given to Meucci by Garibaldi, for, whenever Meucci exclaimed "Buon tempo!" he was actually inviting Garibaldi to go fishing. So, Rossi did not make it up for the nickname was actually true, as is proven by two letters from Meucci to Garibaldi dated 14 January 1861, and 27 April 1864 (see Appendix "Letters written or received by A. Meucci until 1871") respectively, where Meucci signed himself as: *"Your friend Antonio Meucci, Capitano Bontempo,"* obviously referring to their boating expeditions on the *Ugo Bassi*. Garibaldi's idea to call Meucci *Captain* at sea, as he called him *boss* on land, besides the association of ideas as Meucci was the owner of both the boat and the candle-making business, meant also keeping for himself the role of helmsman, which was

probably much more important to him than that of owner. On this subject we quote again Rossi (op. cit., p. 168):

"The last day that the General spent in North America was with the Meucci couple in their cottage in Clifton on Staten Island, together with Avezzana, Foresti and Forbes. At the time of leaving, he was visibly moved. — Adieu, Captain Buontempo — he said — remember your helmsman and your 'foreman' in the candle-making factory, who will never forget you. You will hear people talk about me, come and visit me wherever I may be, and I will welcome you as my boss…"

But perhaps the best nickname used by Garibaldi for Meucci in his Memoirs, beside the "excellent Meucci" in the paragraph mentioned before, was the following (see Appendix "Giuseppe Garibaldi"): *"A friend of mine, Antonio Meucci, a Florentine — and a worthy fellow — …,"* where the highlighting of *"and a worthy fellow"* between two hyphens is not by chance.

At last, Lorenzo Salvi came back from his tour in Havana at the end of January 1851. It ended, to his bad luck, with final break up between him and Don Francisco Marty. The latter had already replaced him with the tenor Geremia Bettini, back on 28 December, in the role of Edgardo in *Lucia di Lammermoor*, which had always been Salvi's pièce de résistance. These events had softened the over-paid tenor, whose voice was now in decline, in his consideration of the candle business, which had already been launched by Meucci. So, he decided to become Meucci's partner. On 10 September of that year, 1851, Salvi bought a lot from the Townsends for 1,800 dollars (lot No. 1 of the map on p. 400, in the Appendix "History of Forest Cottage"). The surface area of the lot was about 2,500 square meters and it was situated south of the cottage. In the same lot the candle factory building was to be erected, whereas the tallow boiling-vat had already been built. Subsequently, on 12 May 1852, Salvi and Meucci, half each, bought another lot (lot no. 2 of the map quoted above), paying a total of 4,000 dollars (of which 1,500 dollars as a mortgage to the owners), this second lot having a surface area of 1,000 square meters, and being the one on which stood the cottage. Finally, on 1 July 1853, always with Meucci, half each, Salvi bought a third large lot (No. 3 in the above said map) of about 5,500 square meters, to the west of the previous lots, for a total of 4,800 dollars (of which 3,300 dollars as a mortgage to the owners). This land was needed to shift some of the candle-making activities to it, such as the laying out (whitening) of the candles. Thus, as Meucci testified at the

Bell/Globe trial[12] [Answer No. 16] *"… the whole square block was purchased by myself and my partner Lorenzo Salvi, where a building for the manufacture of candles of my invention was promptly erected …"* The word "promptly" should imply that the building for the manufacture of candle was built on lot No. 1 during the summer of 1851, and came into use in the early winter. We have found a drawing of this building, seen from the outside, which is shown on p. 111. This drawing was made by the Italian painter Nestore Corradi around 1857, after the building was converted into a beer brewery.

Salvi had hired a boy as an all-purpose servant who, despite his youth, had already fought in Venice, during the uprising of that city against the Austrians in 1848, and who, after the surrender of the city on 24 August 1849, had escaped, reaching Boston after many adventures on 4 January 1851 (see *Il Progresso Italo-Americano* of 4 July 1907). Francesco Moncada, in his unpublished typescript (see bibl.) described him as a *"tall, strong young boy, with eagle-sharp eyes and a wide forehead scarred by a bayonet wound."* Indeed, Giovanni Morosini - as this was the young boy's name - had been wounded on his forehead by an Austrian bayonet during the uprising in Venice against the Austrians. Having heard that Garibaldi was at Clifton, Morosini traveled from Boston to New York and served first General Avezzana and later Salvi, with the sole aim of being close to his idol, General Garibaldi. Max Maretzek in *Sharps and Flats*, described him as follows:

"… Among the followers of Garibaldi was a young boy, then only known as 'Giovanni,' whom Salvi took into his service. Giovanni was a very bright fellow for his age, and good-humoredly carried the bundles for Signor Salvi to the theater, carried messages, brushed his clothes, and shined his boots. Giovanni often came to ask for boxes or seats for Salvi, and usually begged for a pass to the gallery for himself. After the departure of Salvi for Europe, I remember having seen young Giovanni working on the railroad on Staten Island. Several years after I met him in James Fisk's office counting railroad tickets. Still later he was heard to be the body guard of Jay Gould, and now is the five times millionaire, Giovanni B. Morosini …"

Another episode regarding cheerful Giovanni was told by Peter Ambrose Parodi in his manuscript (in English, see bibl.)

[12] We recall that, according to what was pointed out in Vol. 1 of this work, the Author decided to have Meucci's original answers translated from Italian into English by AIT, in the aim to faithfully match Meucci's original words. Consequently, the reader may notice some differences between our translation and that contained in the official records of the trial.

which contained his recollections of Antonio Meucci. This episode seems to prove that the surname Morosini was not actually his and was slapped on him as a joke by the tenor Domenico Lorini. Here it is:

"… A banquet offered by Meucci to some operatic Artists was presided by Signor Lorini, a Venetian tenor, [and] *was waited on by a handsome youth, known to the guests, under the familiar name of Nanni, also a Venetian. Nanni had been a cabin boy on board of an Austrian Man of war, from which he had taken what deserters call French leave. He after wandering in the sparsely settled village, was led to Meucci cottage, welcomed by the kind proprietor, sheltered, fed and finally employed as a member of the family to do chores about the house.*

At the dessert, Sig. Lorini toasted to the host and hostess, praising her for the Lucullan dinner she served, [then,] *turning to the Venetian waiter, as a token of the satisfaction of the diners with his services, bestowed on him as a tip, the glorious name of the great Admiral and Doge of Venice, Morosini. Nanny who was cultured and knew the history of his native city, was not offended by the apparent joke, adopted at once the illustrious cognomen, discarding his father's, went by it through life and became known as Morosini the Millionaire. He, as we will see further on, became the cabin boy of the greatest despiser of riches, Captain Giuseppe Garibaldi,* [and] *was in after years the obsequious Bravo of the great financier, Jay Gould …"*

As we have seen, Giovanni Morosini, who was to become one of the most important bankers in the United States, was not above a humble job in his youth, but always serving men of success, and this helped him very much to become in turn a successful man. Maretzek did not mention in his above-quoted episode the fact that 'Giovanni,' besides polishing Salvi's boots and working as an errand boy, also worked in Meucci's candle factory. Conversely, Henry Tyrrell (see bibl.) who visited Antonio Meucci towards 1884, reports what he learned about Morosini from Meucci himself:

"… Giovanni P. Morosini, whom to-day we know as a prominent New York banker, was in 1850 an adventurous youth seeking his fortune on Staten Island, and got a job at Meucci's. When he is in the mood, he can give piquant reminiscences of the days when he and an Irishman named Pat Fitzpatrick used to be sent out with Garibaldi to the old Vanderbilt Landing to bring up barrels of tallow, for the boiling-vat, the remains of which are still to be seen on the grounds of the old Lazzari place.

… Morosini, who accompanied him [Garibaldi, Editor's note] *as a common sailor, has often related how the Italians, going barefoot about the decks, would shudder in fear of the heavy hob-nailed shoes of the English navvies who came aboard to load on the coal. 'Look out, Nanni!' Garibaldi would cry, 'If they ever tread on your toes with those horseshoes, you'll be crippled for life!' …"*

The last episode almost certainly refers to the period (January 1854) in which Morosini, who had attended the Naval Academy in Venice and was an expert sailor, accompanied Garibaldi on the merchant ship *Commonwealth*, when the General definitively left the United States and sailed to Europe. Tyrrell's anecdote reveals that not only the Italian exiles worked in the candle factory, but also others, as it mentions an Irishman named Pat Fitzpatrick among those who went to bring up the barrels of tallow for the boiling-vat.

Little is known about the commercial organization, or the sales distribution of the candles produced by Meucci's candle factory. One mention was found, related by a historian of the *Immigration History Research Center* of the University of Minnesota, named J. Andreozzi (see bibl.). He states that Meucci had a candle factory (but it might have been a trading office) in New York on Bleeker Street, which still exists today in Manhattan, in the western section of Greenwich Village.

During the Christmas of 1851, the small Italian community in Clifton lived in cheerful harmony, as the factory building was completed, the machinery installed and production launched. There was also some sadness, however, because Garibaldi had left, taking with him Major Bovi Campeggi, his inseparable aide-de-camp. Garibaldi's departure had come almost as a surprise, in the previous spring, due to the sudden arrival in New York of his friend Francesco Carpaneto. As the readers may recall, Carpaneto had opened a subscription in Italy to buy a boat to be placed under Garibaldi's command. He had only managed to put together thirty thousand lire (roughly 90,000 dollars of 1990) which was definitely not enough for the purchase. Thus, at the beginning of 1851, he decided to buy a freight ship on his own, and with his own funds. The ship was the *San Giorgio*, which he ordered to leave from Genoa, where he had purchased it, in the direction of Lima, in Peru, where he would have caught up with it later. In the meantime, Carpaneto went to New York and proposed to Garibaldi that he accompany him on his journeys on business in Central America. Garibaldi could not wait to get back to sea and immediately accepted. Shortly after, he left Meucci's house and followed Carpaneto on board the American steamer

Prometheus, which set sail from New York for Central America on 28 April 1851[13].

A detailed description of Garibaldi's many journeys is contained in the Appendix "Giuseppe Garibaldi." The journeys were not only in Latin America, but also in China and in Australia, until his return to the United States in Boston on 6 September 1853, after an absence of about two years and a half. It is therefore hard to understand how, according to Henry Tyrrell (see bibl., 1907), Garibaldi could have delivered a speech in honor of Lajos Kossuth at the end of 1851. Kossuth was the leader of the unsuccessful Hungarian revolution of 1848. The speech was reported to have been given at the *Old Nautilus Hall*, in the town of Tompkinsville, near Clifton, but, according to our estimates, Garibaldi in that period was most likely to have been in Lima, being treated for the aftereffects of a serious form of tropical fever (probably, malaria) that he had contracted during the previous August in Panama.

While Garibaldi was at sea, truly sailing round the world, and as the candle factory was well on its way, Meucci had the opportunity of repeating the experiment of his *telegrafo parlante* (speaking telegraph), that he had first performed in Havana during "some months of 1849." At the Bell/Globe trial, Meucci's deposition on this fact is summarized by two answers, No. 17 and No. 538, as follows:

[Question No. 17] *When, and if any, what experiments did you make in electricity after settling at Staten Island, New York. If any, name them in their order, giving dates as nearly as you can, and make diagram?*

[Answer No. 17] *In about 1852, I placed the battery with several Bunsen cells in the basement of the cottage and I ran the electricity conductors from the battery to the first floor of the house. I took the instruments that I had brought from Havana Nos. 1 and 3, as I have shown in the sketch* [see Vol. 1, p. 306-307, Editor's note], *and I adjusted them to the conductor, repeating the same operation that I had performed in Havana. I spoke with my wife, and I obtained the same results that I had obtained in Havana, that is I received the transmission of the word not very distinctly, just as I had received in Havana during my first experiment. In that period, a few days later, I received the visit of a Spanish friend of mine named C. Pader.*

[13] According to Nelson H. Gay (see his paper of 1910 in bibliography), the news of Garibaldi and Carpaneto's departure from New York on board the *Prometheus*, in the afternoon of the 28 April 1851, was given by the *New York Tribune* of 29 April 1851. Roy Bredholt (see bibl.) refers that Garibaldi left Meucci's house on 8 April 1851, quoting an unpublished manuscript by Daniel Santoro, that we did not find.

He knew about my experiments in Havana regarding the speaking telegraph. He asked me if I had continued with the experiments that I had carried out in Havana and whether I had obtained the transmission of the human word through wire conducting electricity; [*I said*, Editor's Note] *that I had achieved the same results as in Havana, only that I needed to see and know some factory where telegraphic instruments were constructed, so that I could open my mind and be in knowledge of what was in use, in terms of instruments etc. Said Pader being acquainted with my friend Negretti, told me that they both knew a manufacturer of telegraphic instruments, living in Centre Street, by the name of Chester, and that they would take me to said establishment to let me observe the telegraphic instruments and have me furnished, by paying, with everything that I could need. After a few days, we were all together at said Chester's, and he showed me all the things necessary used then in the telegraphic art, and so I was put in knowledge, and my memory was opened to build some new instrument to improve the one I had made. Returning home, after some reflection, I constructed a first instrument, as I have marked in my affidavit No. 1.*

[Answer No. 538] *This apparatus* [Fig. 18, already shown on p. 318 of Vol. 1, Editor's Note] *I used in the first experiments of my invention in Havana and I repeated them with the same apparatus at Staten Island in 1851* …

As seen, the period in which the experiments with the *speaking telegraph* were repeated on Staten Island can be placed between 1851 (Answer No. 538) and 1852 (Answer No. 17). It is more likely that it was 1852 (or, perhaps, between 1851 and 1852), because at that time the candle factory was in regular operation and Meucci was more able to find some time to dedicate to his *pastimes* … This assessment is supported by the affidavit of Esther Meucci, sworn on 2 April 1880, which relates:

"… in 1852, at the request of Signor Padner [*Pader*, Editor's note,] *a gentleman who had seen my husband experiment while we were in Havana, and upon his promise to pay for the necessary material, my husband resumed his study of speaking at a distance through an electric wire, resulting for his greater facilities in a marked improvement in his power to talk through electric wire. His experiments for said purpose were conducted at irregular intervals, employing such time as he could spare from his regular business …"*

Also in an affidavit by tenor Domenico Lorini, sworn on 9 July 1880, the same episode was reported: "… *Through the philanthropy of a Spanish gentleman, Mr. Perder* [*Pader*, Editor's note], *he received some money to the object of buying in-*

Original letter of Gen. Garibaldi to Prof. Foresti, sent from Boston on 19 September 1859

struments to continue with the experiments which were every time more satisfactory …"

Contacts with Mr. Chester were considerably facilitated by the fact that he spoke French well, as is confirmed by the deposition of Dr. Seth R. Beckwith: [Answer No. 162]"… *Mr. Chester, who was able to speak French with him* [Meucci]…"

In order not to interrupt the logical evolution of the many Meucci's experiments on the electrical transmission of the spoken word, we have thought it useful to include all of the experiments on word transmission in a single chapter, further ahead, entitled "Trying and Trying Again." This chapter describes all of Meucci's experiments between 1850 and 1871. However, from time to time, as we have done in this chapter, a few particular episodes may be mentioned, linking the experiments to the everyday events at Forest Cottage.

When Garibaldi returned to the United States on 6 September 1853, in command of a cargo ship called *Carmen*, he still did not know that he was to suffer, almost like when he had arrived for the first time, two years before. In fact, as soon as he landed in Boston, he was told about two sad events. The first and the most serious was that his beloved mother, *mamma Rosa*, had died in Nice on 19 March of that year, while he was in the middle of the Ocean, sailing to Canton. The second was that the ship owner Pietro De Negri, who had given him the command of the *Carmen*, influenced against him by someone, had voiced doubts about his honesty. These insinuations were contained in a letter that Garibaldi found in New York a few days after his arrival. This was something that Garibaldi could in no way tolerate and he therefore informed De Negri that he had decided to resign from the command of the *Carmen* at once.

In his autobiographical memoirs, Garibaldi wrote that after this decision he spent "… *a few more days in New York, enjoying the dear company of my precious friends Foresti, Avezzana and Pastacaldi …*" Although he did not mention Meucci, it is certain, as Roy Bredholt and Nelson Gay reported (see bibl.), and as Meucci himself did (see below), that Garibaldi spent a part - if only a few weeks - of the four months between his arrival at Boston (6 September 1853) and his definitive departure for Italy (10 January 1854) in Meucci's cottage in Clifton.

From a letter written in Boston by Gen. Garibaldi to Prof. Foresti, it would appear that Garibaldi spent a long time in Boston, as he said "if possible I will return to New York." It seems likely that Garibaldi wished to find in Boston another boat to return to Europe. This letter, delivered by hand to Prof. Foresti by Mr. Speck (whom Garibaldi called 'Specchi') reads (translation from the original letter in Italian, reproduced below):

Boston, 19 September 1853

Dear Foresti,

We have had a bit of a good time here with Pastacaldi and we really missed you. Our dear Specchi was with us and he will bring you this letter. I am decided to work actively (of course, as much as I can) towards the reconciliation of Italians of whatever color, and I long to see you captain this purpose, especially in New York, where you are esteemed and loved by all. I should wish that you see Valerio, to whom I am writing on this occasion, and that you talk to him on this subject. I will write to Avezzana, Forbes, Gavazzi and, if possible, I will join you in New York.

Adieu, Brother, please, present my respects to your wife and love yours

G. Garibaldi

Not long after this letter to Foresti, it would appear that Garibaldi came to Clifton to stay with the Meuccis for some time, as it can be inferred from an amusing anecdote from Max Maretzek, drawn from his already cited book *Sharps and Flats.* Maretzek wrote that towards the end of the summer of 1853, as he had to go to Staten Island to convince the singer Henrietta Sontag, the wife of Count Rossi, to replace the soprano Bina Steffenone, who was ill, he passed by Clifton, hoping that Salvi would help him to convince her, because of the unrivaled charm that the tenor still exerted on women. Here is how Maretzek describes that episode:

"… Mme Sontag, the Countess, was living on Staten Island near the Narrows; it was nearly three o'clock before I arrived at her house … [after leaving her house] *I was out in the street, on my way to Salvi, who was staying in the candle factory of Meucci, now Bachmann's brewery. Mrs. Meucci informed me that I would find Mr. Salvi in the factory, the building next door. On entering there, a great surprise, a Homeric spectacle, struck my astonished eyes. There I beheld, in front of a large trough, with their arms bare up to the elbows, the perspiration on their brows, kneading hot, melted, and smelling tallow, Signor Lorenzo Salvi, the great tenor, Giuseppe Garibaldi, the great general, and our friend Meucci, the great inventor. The illustrious trio greeted me by extending their wet and greasy hands for a cordial shake, which on this occasion I politely declined. I made a hasty retreat, after begging the favorite tenor, the pet of the New York ladies, to immediately see Mme. Sontag, recommending him, however, to take first a sponge bath, to don clean linen, and to put some eau de Cologne on his handkerchief …"*

The reader should note that the location of the candle factory indicated by Esther to Maretzek is in *the building next door*. This is an additional proof of our reconstruction, which is presented in the Appendix "History of Forest Cottage," concerning the location of the building. The dates provided by Maretzek in his book are largely inaccurate, some of them are even wrong by a year or two (unless they are printing mistake). Luckily, there are reliable sources in the newspapers of that period and in other sources which make up for these venial shortcomings of the pleasant Max. It should also be stated that Lorenzo Salvi found Max Maretzek to be an excellent replacement for Don Francisco Marty as an impresario. In that year, 1853, Maretzek gave Salvi a contract for three full seasons: at *Niblo's Garden*, in the spring season (from 27 March to 6 May), at the *Castle Garden* for the summer season (11 June to 17 August), and again at *Niblo's Garden* for the autumn season (from 29 September to 18 December). He also engaged Salvi, in Mexico City, for the entire winter season of the following year (January-May 1854).

Just before leaving for Mexico City, Salvi informed Meucci that he intended to pull out of the candle-making business, asking him to return the money that he had invested. As was Meucci's will, Garibaldi was also present when they had this conversation. Indeed, as the reader may recall, Salvi had signed a promissory note for $3,500 in Esther's name, plus another one for $2,000, as a voucher for a loan granted by her to General Avezzana (see the already-mentioned sentence of Judge Scrugham in the Appendix "Summary and transcription of court proceedings"), which he could now return by yielding his shares of the land to Esther. But Salvi turned a deaf ear and, moreover, refused to consider the fact that the company at that time was obviously in the red, as it was still in its startup phase. In other words, Salvi wanted to break the partnership with Antonio Meucci, not caring for all the investments made by the latter - who had put all his money into the business, and had nothing left (so much so that he had to be helped by Carlos Pader to buy the material necessary for his speaking telegraph) - and for all of the inevitable losses in the startup phase.

At that point Garibaldi broke in. He turned to Salvi with great calm and courtesy: *"Would you allow a Lady to contribute to the Italian cause more than yourself?"* Garibaldi's long straight nose was like a marble wedge in front of Salvi's curly framed face, and in less than no time he looked like a child caught out by his father … *"All right General* - he quickly answered - *I shall do as you command … I hope that you'll appreciate my contribution …"*

The sale deed was ready on 1 May 1854 (see Appendix "History of Forest Cottage"). With it, Lorenzo Salvi sold Antonio Meucci his shares in the lots No. 1, 2 and 3, for the sym-

bolic sum of five dollars. However, as Salvi was absent, the sale deed was sent to Havana, where he signed it on the following 18 January 1855, in front of the United States Consul in Cuba. The deed was finally filed in Richmond County on 23 March 1855, more than one year after Garibaldi's departure. Salvi had, so to speak, taken his time, letting himself be chased throughout the Americas before signing.

The story of this sale, which has been related, including the Garibaldi's intervention, is confirmed by the answers No. 16, 304, 306, 307, 308, 321 and 350 of Meucci's deposition at the Bell/Globe trial, as well as by the deeds of sale, kept in the archives of the Court of Richmond County, and transcribed in full in the above said Appendix.

Garibaldi thus made Antonio and Esther a very big present. After all, they had given him such generous hospitality, and had done so much to help many other Italian exiles. It was a gift worth many thousands of dollars, as seen above. Moreover, as a further sign of gratitude, before leaving, Garibaldi left Antonio and Esther as a souvenir those objects that were dearest to him: his famous red shirt, worn during the defense of Rome (which is now in the *Museum of the Risorgimento* in Rome), some walking sticks, the already mentioned dagger with a silver handle, a brooch with a cameo, a bronze medallion, a brass box where he kept the cigars that he made himself, the famous dear horn carried against bad luck, and three large altar candles, one red, one white, and one green, made with his own hands, while working in the candle factory, which Meucci then put in a glass show-case. The macaw also stayed at the cottage, of course.

Regarding the red shirt, we have found the following passage in a letter from Antonio Meucci - cited by Henry Tyrrell (see bibl.) in the original Italian - addressed to his friend Celso Cesare Moreno, a famous scholar of languages and geography in Italy:

"Staten Island, 10 July 1882

… I see by the newspaper you sent me that Prince Torlonia desires to purchase the red shirt of General Giuseppe Garibaldi. Many Americans and English have asked the same thing of me, not only concerning this, but all the other objects once appertaining to the Hero which remain in my possession. But to all I answer No, as I will not make barter of such relics. I am extremely poor, but, come what may, I shall always religiously keep these souvenirs, so as to be sure that when I die they will not fall into unworthy hands …

Antonio Meucci."

In the last few months, before leaving for Europe, Garibaldi had not gone often to Clifton, as he was doing everything he could to return to Italy. He spent much time in New York, and on

several occasions went by train to Boston and to other ports, in the hope of finding a ship for Europe. He finally had the occasion to board an American merchant navy ship, the *Commonwealth*, which another Genoese friend of his, Captain Antonio Figari, resident in New York, had decided to acquire in Baltimore, MD and to place under his command.

However, American law provided that the captain of any ship sailing under the American flag should be a United States citizen. Garibaldi did not yet have American citizenship, although he had requested it in the early months of 1851, as shown by the pass reproduced below, which was issued by the Mayor of New York, A. C. Kingsland, on 2 April 1851, just before Garibaldi left New York for Central America.

This important document was reproduced by *Il Progresso Italo-Americano* (Supplement) on 24 January 1932, under the title "Giuseppe Garibaldi, Hero of the Two Worlds, was also a United States Citizen." In reality, Garibaldi never did acquire US citizenship, because he was never a resident for at least five consecutive years in the United States territory, which was the minimum requisite.

Provisional United States passport issued to Garibaldi in 1851

In fact, the pass reproduced above was written as follows:

"The bearer hereof Joseph Garibaldi has declared his intention to become a citizen of the United States of America, being at this present time of the age of Forty three years, five feet 7 inches in height, brown hair, hazel eyes, dark complexion and whose name is subscribed in this body of this instrument in his own proper handwriting, having occasion to pass into foreign countries, about his lawful affairs, these are to request all to whom these presents may come to permit the said «G. Garibaldi» [his signature] *to demeaning himself well and … to pass wheresoever."*

It is interesting to compare the features of Garibaldi that are reported in the pass with those related by other authors. The age is correct, as he was born in July, 1807, and therefore was forty-three years old. He is also described as being 1.70 meters tall, with brown hair, hazel eyes and a dark complexion. It is hard to understand why Giovanni Morosini and Roy Bredholt remember him with *deep blue* or *light blue* eyes, respectively, whereas Henry Tyrrell more accurately says that he had *full dark eyes.*

The above pass gave the bearer the same rights as an American citizen, and so Garibaldi thought that he could also obtain the command of a ship, sailing under the American flag. He therefore went to Washington, to request the authorization. He met there Domenico Mariani, who gave the following description of his meeting with Garibaldi (from his deposition at the Bell/Globe trial):

[Answer No. 9] *"… After 1853, I was in Washington with the opera company of the impresario Hacket, and one evening, while I was playing in the orchestra, looking up I saw Garibaldi; he was with Negretti, and he called me in a loud voice, motioning at the same time with his hand. When the performance was over, Garibaldi told me that he came to Washington to ask permission to hoist the American flag on his vessel then at anchor in Baltimore. He asked me if I had yet my leather belt (I had made four alike, one for me, one for Garibaldi, one for Salvi, and one for Meucci), because he wanted to exchange it, with his; and we exchanged. And he then gave two cigars that he had made himself. And then he told me that we should meet again on board of his vessel in Baltimore in a few days. Before he sailed, in fact, I went to bid him goodbye, and he started. That was about 1854."*

We know that Garibaldi did not obtain the authorization he had asked for, which had also been refused to him once before when he had requested it at Tangiers through the local American Consul. As Bredholt reports (see bibl.), in a letter written to an American friend on 9 March 1855, Garibaldi complained that he had not yet obtained American citizenship, despite the fact that in two visits he had been a resident for almost one year, and had sailed under the American flag. Garibaldi was, however, given the possibility of being second-in-command of the *Commonwealth*, as a special concession. Therefore, Garibaldi thought about having a friend of his, Giacomo Brizzolara, the Magnasco, appointed Captain of the ship. Magnasco was the famous and kind owner of the restaurant on Spruce Street, already mentioned several times, who did have American citizenship, but who obviously would not have been able to command a ship without Garibaldi, who therefore was the de facto commanding officer.

Unlike Garibaldi, Antonio Meucci obtained the American citizenship a few years after his arrival in New York. To be precise (see the Report of Referee Robert Emmet in the trial "H. H. Morange vs. Esther Meucci et al.," in the Appendix "Summary and transcription of court proceedings"), Antonio Meucci officially declared his intention to become an American citizen on 21 March 1854, and on 27 March of the same year his application was filed in the office of the Secretary of State of the State of New York. This fact is important with regard to his right, as an American citizen, to file a *caveat*[14] in 1871, instead of a regular patent application (unlike Alexander Graham Bell, who

[14] A "caveat" was a form of a pre-patent (not existing any more) in which the inventor stated the general outline of his invention.

only became an American citizen on 10 November 1882), as we shall see in Vol. 3 of this book.

THE LIGHT GOES OUT

Antonio Meucci did everything he could to keep the candle business going, at least in order to pay back the expenses he had incurred. He put advertisements in newspapers, such as the one below, published in the *Staten Islander* of 19 February 1853:

"A. Meucci & Co. Manufacturers of Chinese candles, Clifton, Staten Island, corner of Maple and Forest streets, respectfully inform the dealers of this county that they are extensively engaged in the manufacture of Tallow Candles, which they are shipping to the southern markets, and which they are putting up for retailers on the island, in lots to suit purchasers. They can also manufacture these candles to any given size and of any color."

This announcement is interesting because it confirms that the candle factory was situated on the corner of Maple Street and Forest Street and also that the candles were made out of tallow (hence, stearin), not out of wax or any other material. It also confirms that the candles were sent to southern markets, in particular to Cuba, as mentioned previously.

However, after Garibaldi's departure, everything seemed to fall to pieces. After just a few months, Meucci was forced to close down the candle-manufacturing plant, and he could not find anybody who would be interested in acquiring it (see his answers No. 321 and 322 at the Bell/Globe trial). He was left completely penniless, as he had spent all that he had to set up the factory and to give hospitality to Garibaldi and Bovi as well as the many Italians that came to visit them. The comment of Peter Ambrose Parodi (op. cit.) in this regard is very significant: *"… The bountiful, frequent and costly hospitalities of Meucci made a havoc in his once plethoric exchequer …"* It is true that he still owned the three lots, the cottage and the factory with its machinery. This meant that he had a considerable amount of fixed assets in his name, namely the real estate and the plant with its equipment, but no cash, which was necessary to make ends meet. In a letter from the USA (the first we were able to get hold of) addressed by Antonio Meucci to his brother Giuseppe in Florence on 14 November 1855, we read:

"If I do not write more often it is because I do not wish to give you more trouble than you already have, for I cannot but tell you that I find myself in a very critical situation, to the extent

that I might have to escape and go somewhere else. I am penniless and all that I have left now is the house, the land and the candle factory. But it is useless to speak of the latter, they cannot be sold. Now, I have started building pianos, but also this business is going badly. Thus, it seems that there is no luck for me, and everything I set out to do is bound to fail. Believe me, given my situation, I would rather be in my country, amid misery and cholera, than staying here …"

We do not think that the candle business failed for either technical reasons or (if not to a minor extent) owing to the introduction on the market of kerosene, which was being produced on an industrial scale for the first time in those years with the Young process. The reasons pertaining to the market, indicated in Meucci's letter to his brother Giuseppe (*they cannot be sold*), should be interpreted to a certain degree. As we shall see later on, candles sold well in the years between 1859 and 1867, and it seems unlikely that the demand from the marked should have been so low in 1855 with respect to 1859. Perhaps, Meucci did not utilize the right retail channels. Or maybe he had fallen into a network of speculators who controlled the raw materials and finished products on the market, both domestic and for export, and who did not allow him to make a reasonable profit. Another possibility is that, not having any more cash and not knowing where to turn to in the financial market to obtain the necessary funds during the start-up phase, he may have been forced to close down the business before it became profitable. Or perhaps it was all of these reasons together. Apart from that, it must be pointed out that anyone who wished to start up a business in New York had to learn the rules of the game, at a high cost. Particularly in that city, this meant gambling for high stakes. But Meucci was not that sort of man, and that is why he wrote to his dear Beppe that maybe it would have been better to escape and go somewhere else and to be home in the midst of misery and cholera rather than staying there.

As one misfortune always follows another, the candle factory was closed down at a time when Meucci was obliged to withstand an even harsher blow. When business goes badly, one usually says "take it easy, think about your health!" … Unfortunately, Esther's health gave way right at that time, and she would never recover again.

To better understand the seriousness of Esther's disease, we have included in an insert hereinafter a number of testimonies, mostly obtained from the Bell/Globe and US/Bell[15] trial

[15]We remind the reader that this trial was instituted by the Government of the United States against The American Bell Telephone Company, Alexan-

records. These testimonies show that Esther, who probably had a hereditary predisposition, came down with gout and rheumatoid arthritis, with increasingly intense and frequent bouts, starting from 1853. The disease passed from an acute phase to a chronic phase in the space of one year, and she was confined first to her bed and then to a chair for the rest of her life, until 1884, when she passed away. Thus, Esther suffered the physical pain - as well as the psychic disorders linked to the natural history of the disease - for a period of over thirty years.

der Graham Bell et al. to annul the two fundamental Bell's patents on the telephone.

TESTIMONIES ON ESTHER'S DISEASE

Deposition of Antonio Meucci
(from the Bell/Globe trial)

[Answer No. 35]… *about 1854 or 1855, I brought them* [the electrical conductors - Editor's Note] *to the third floor, through the exterior of the house; and from the window, through two screws, they entered the room called the Garibaldi room, where my wife from her room, she being sick with rheumatism, used to enter the Garibaldi room, and ring a bell in the basement. This was the signal that she wanted to speak to me or Mariani.*

[Question No. 61] *Please state what was the condition of your wife's health from 1853 or 1854 to 1860.*

[Answer No. 61] *She was always sick with rheumatism and gout.*

[Answer No. 64]… *After the departure of the General for Italy, I occupied his room, as I occupy it at present, and then the conducting wire was put from the exterior of the house up to said Garibaldi's room, where there was the rope ringing the bell with which my wife used to call Mariani in the basement to talk with the telephone.*

[Question No. 87] *What was the condition of your wife's health in 1860?*

[Answer No. 87] *Very bad.*

[Question No. 88] *Could she go from her room in the third story to the basement?*

[Answer No. 88] *Very seldom.*

[Question No. 550] *When Mr. Stetson wrote to you January, 1871, that he would come to your house, would remain all night with you and would test and try your telephone at any time you suggested, why did you not have him come?*

[Answer No. 550] *It is true that he wrote me he would come to make experiments. I couldn't accept; first, for my wife's sickness; second, I had no bed for him to sleep in ; third, because I had no money to entertain him; and then my wife was so tired of telephonic experiments that she told me to go and make them somewhere else, and not in the house.*

Affidavit of Antonio Meucci
(from the Bell/Globe trial)

… Somewhere about 1852 or 1853… I… ran wires from the basement of my house into the third floor or attic, the room my wife occupied …
1864 or 1865… At this time my wife was a more confirmed invalid than she had ever been before. Not wanting to trouble her, I got other persons to talk through this instrument with me…
In 1871… My wife was an invalid, and had been for very many years; most of the time she was confined to her room from chronic rheumatism …

[Referring to years from 1872 on, Editor's note] *My wife an invalid, I could not make any tests until Matilda came to live with us* [22 October 1875, Editor's note]
… After 1871… having an invalid wife…

Affidavit of Esther Meucci
(from the US/Bell trial)
I, Esterre Meucci… do hereby make oath… That since the year 1853, I have been a confirmed invalid for incurable rheumatism, which caused my husband frequent expenses, and always great anxiety…

Deposition of Domenico Mariani
(from the Bell/Globe trial)

[Question No. 10] *Please state how frequently you visited Mr. Meucci in Staten Island, say from 1851 to 1854?*

[Answer No. 10] *I was always there every summer; in winter I worked with the Opera Company, and in summer I lived with him.*

[Answer No. 18] *… I returned in 1856. I went to Meucci's; we exchanged greetings, and he told me that his wife was very sick. I asked him where she was, and he told me she was up on the third floor in the room near Garibaldi's room, and then he told me it was not necessary to go up to her; and he made me go down to the basement with him, and made me pull a bell rope. Near the other window, near which there was the kitchen table, there was the vase with wires* [*the battery*, Editor's note]*; the box was on the table. Meucci made me ring the bell and put the box to my ear. I did so; and as soon as I rang I heard, "Halloo, Mariani;" and I answered, speaking in the box, "How are you Meucci?" She answered she was better, and I replied saying that I came to cheer her up; and here for the first day the experiment ceased. Meucci made me observe the immense progress he had made, and repeated that we would ride in a golden carriage. Every day I spoke with the sick lady, and I promised her macaronis; she said she wanted a great deal of it.*

[Question No. 24] *Please state, from 1856 to 1858, how frequently, if at all, did you talk with Mrs. Meucci through the telephone?*

[Answer No. 24] *Many, many times, because we played. It might be hundreds of times, but I can't count them. I would ring the bell and speak to her; I said that Meucci was the devil because he had made such a thing, and many other jokes; above all on the cooking, on cooking the macaroni, the rice, the cutlets, etc.*

[Question No. 25] *Will you, please describe more fully how this talking was done?*

[Answer No. 25] *I would ring the bell, put the box close to my ear, and she would say: "What do you want?" I put the box close to my mouth and said: "Meucci, today I will make you two Milanese cutlets for lunch, and I am not going to send you coffee, drink a little wine." I put the box close to my ear and she would answer: "Bravo Mariani; you are a great man. You are the man who will cure me."*

[Question No. 26] *What else do you remember seeing, and having her tell you through the telephone?*

[Answer No. 26] *I always said to Mrs. Meucci that her husband had a great head, that he was the devil in person; that even Garibaldi had told me that he was a great man and would make a fortune. I always spoke with Mrs. Meucci through the telephone.*

[Question No. 27] *What words did you speak to her, that you remember, through the telephone?*

[Answer No. 27] *One day, after having cooked the dinner, I spoke with Mrs. Meucci and said, "Dear Meucci, tomorrow I won't make your breakfast, because I want to go shooting some woodcock, because Meucci wants to eat the polenta."*

[Answer No. 44] *In 1865, 1866 and 1867 I would spend 2, 3, 4 and sometimes 8 days there; in summer I would go and cook for Mrs. Meucci because she was ill …*

[Question No. 48] *Confining yourself to 1866 and 1867, state how frequently, if at all, did you talk through these instruments?*

[Answer No. 48] *I was in the house and I always talked with Mrs. Meucci and told her my critical situation, and she encouraged me by telling me that maybe they would become rich and then I would not have anything to worry about.*

[Question No. 55] *Please state, if you know, what the financial condition of Mr. Meucci was in 1873 and 1874?*

[Answer No. 55] *Extreme poverty. … In 1873 I went to Staten Island to visit Mrs. Meucci who was ill. We sat at table, and they told me in tears that they were in extreme poverty. Mrs. Meucci recalled to the memory the times of plenty, and added: "Of so much gold nothing is left us."*

Affidavit of Domenico Mariani (from the US/Bell trial)

… Mrs. Meucci on account of her swollen feet and limbs, sat most of the time in an arm-chair in her room, [near, Editor's note] *the Garibaldi room. She had close to her*

chair a table and there was a bell-wire running from her room into the Basement, so that she could ring when she wanted anything from the Basement …

Affidavit of Matilda Ciucci
(from the US/Bell trial)
… I remember the date when I first went to live with Mr. & Mrs. Meucci, it was the 22d day of October 1875… At the time I went there Mrs. Meucci had rheumatism, she could not work, she was just able to move about… Mrs. Meucci not being well, he often called me from my work to talk with him through these boxes …

Affidavit of Leonard D. Cunningham
(from the US/Bell trial)
… in the years 1872, 1873 and 1874, Mr. Meucci was very poor. I frequently saw Mrs. Meucci, always saw her when I called at the house. She was an invalid, generally in the chair and not able to go about. She needed nursing and attention …

Affidavit of Torello Dendi
(from the US/Bell trial)
… Mrs. Meucci was an invalid for many years. I know that she was an invalid from 1870 until her death in 1884. For five years she never moved from her chair unless she was lifted out. She could not lie down. I do not know the name of her disease — I am not a doctor …

Affidavit of Luigi Tartarini
(from the US/Bell trial)
… I know positively that Mr. Meucci was always in very narrow circumstances, caused by the frequent diseases of his wife …

Affidavit of Frederic Kassan
(from the US/Bell trial)
… I also knew him [Mr. Meucci] *very well during the year 1872, 1873, 4, 5, and 6. During this period Mrs. Meucci was a regular cripple, she was carried around considerable of the time in a chair, she had to be nursed all the time …*

There are many other testimonies on Esther's illness which have not been included because they are very similar to the ones quoted in the insert. Among them are some by Meucci himself (see Appendix "History of Forest Cottage"). He declared that following Garibaldi's departure, he took the General's room for himself, which was adjacent to Esther's. The reason for this decision, as is explained in the next insert, was that patients suffering from gout need to have the sheets and blankets raised above their body by means of small arches, generally made of wood at that time, to prevent contact with their toes and the other inflamed parts, so as not to increase the pain. The latter is so intense that it is often necessary to administer morphine, which was then already available. Later, in the chronic phase, the slightest movement of a bed-mate would have caused pain to the affected joints. Other problems also existed, such as bad-smelling perspiration, irritability, insomnia, and bedsores, that contributed to the decision of separating the beds.

The above testimonies allow us to establish with certainty that the onset of the acute phase of gout occurred to Esther in 1853. The disease was diagnosed in a chronic phase on dozens of occasions, which are well documented, from 1854 to 1884. The telephone link set up by Antonio Meucci between Garibaldi's room, next to that of Esther, the basement and the external laboratory was, as we have seen, of great use and comfort to Esther. As shown in many testimonies, she would use it to communicate with her husband or with Domenico Mariani. In her condition (her face and other parts of her body probably disfigured) she preferred not to be seen by the visitors to the cottage. Her conversations with Mariani, no matter how brief, were also of great help, especially because of Mariani's cheerful personality (he was three years older than her husband) which always managed to help her keep her spirits high. For instance, when Mariani said: *"… I replied saying that I came to cheer her up,"* Esther replied: *"Bravo Mariani; you are a great man. You are the man who will cure me."*

As explained in the insert on "Gout and Rheumatism" that follows, Esther needed to follow a diet poor in meat, fats, sauces etc. Unfortunately, this ruled out game, which was abundant on the island and cost virtually nothing. It comes as no surprise that Esther adopted the so-called Mediterranean diet, which is undoubtedly indicated in the case of gout. And Mariani, who apparently did most of the cooking, acted accordingly: *"… Every day I spoke with the sick lady, and I promised her macaronis; she said she wanted a great deal of it."*

Unfortunately, Mariani's company (and cooking) did not last long. As said in his deposition, in the years between 1851 and 1854, Mariani stayed with the Meuccis in the summer, while in winter he worked for the opera. However, after this period he left

for Boston as he was employed by the city's Academy of Music, and he stayed there until the end of 1855. He returned to the Meuccis' in 1856, 1857 and 1858 (Answer No. 17). He then left for a long period of almost six years, as he was hired, due to his height and impressive figure, by General Taylor as head drummer of the military band (Answer No. 16). He returned to New York a year before the end of the Civil War, in 1864. In the two or three years that followed, he would go to Clifton at irregular intervals, for a few days of the week, to cook for Mrs. Meucci, and he continued to do so until 1867 or early 1868 (Answers No. 42 and No. 44). Then his visits practically came to an end, except for a few rare occasions. Mariani himself became poor and their last encounters were always very sad. *"I visited Meucci in 1873 once or twice; afterwards I visited him sometimes in 1874. Then I didn't visit him any more until 1880, 1881 or 1882, when I brought him the Washington Gazette of June, 1882, announcing the death of Garibaldi …"* (Answer No. 53). Despite this, we can say that Mariani took care of and comforted Esther for nine years, with a few years' absence, in the period from 1851 to 1868.

GOUT AND RHEUMATISM

Gout

Gout is a very ancient disease, known since the time of Hippocrates. It is one of the many forms of arthritis - gout arthritis - and is linked both to individual constitution and to heredity. It essentially consists of abnormal deposits of uric acid in certain tissues.
Individuals who are constitutionally predisposed develop gout as soon as they reach a certain age (after about thirty, in men). External factors that favor its onset are a diet too rich in meat, offal, fish with high fat content, eggs and fats in general, as well as tobacco and alcohol abuse and a sedentary lifestyle.
In the acute phase the clinical manifestations of gout consist in bouts, which are at first episodic and then increasingly close. The patient does not suffer from any disorders between two successive episodes. The bouts generally begin at night and are sometimes triggered by factors such as the patient catching a cold, an excessively rich meal (especially too much meat), heavy drinking, a strong emotion or excessive physical effort. The patient is awoken by a sharp pain in the big toe, which soon thereafter begins to swell and turns red.
Usually, the patient develops a high temperature - about 40°C - accompanied by shivers, headache and nausea, which end after a few hours. The attack is repeated every night, for a total of six to ten days, and then does not occur again for a period of a few weeks, and at times even for a few months. The first series of acute gout episodes almost always involves the toe. Subsequent bouts may involve other joints such as the knees, fingers, elbows, shoulders and also the spine.
Chronic gout (or gout arthritis) generally sets in after a few years of repeated series of acute attacks. The most obvious manifestations are linked to the appearance of swelling or tophi on the joints, especially of the hands and feet. They may reach the size of a cherry, or even a walnut. Initially, the tophi are painful and soft. As they calcify, they harden and are no longer painful, but as they grow over the years, they lead to deformities and block or severely hinder the movement of the involved joints. The physical appearance of the person is distorted by bumps (also on the ear cartilage) and deformities especially of the fingers and toes which became rigid. Stiffness of the knees and/or the spine may lead to a complete inability to walk and bend, and at times the spinal column is blocked so that the patient is always curved forward. These serious clinical manifestations are compounded by disorders affecting the skin (eczema, pruritus) the liver, kidney, heart, bronchi (with frequent bronchitis and bronchial asthma) and the nerves (sciatica, facial and intercostal neuralgias); also frequent are

intense attacks of headache and insomnia, along with psychic disorders, irritability and quick temper, and attacks of melancholy.
In the acute phase, gout is treated with absolute rest in bed, keeping the sheets and covers suspended above the patient's body by means of special small wooden or metal arches, so as not to increase the pain of the toe. Also, injections of analgesics (morphine in the most serious cases), are administered. In this regard, morphine began to be available in the early eighteenth century, when it was extracted by the German chemist F. W. Sertürner *from the opium poppy. In the chronic phase, the therapy for gout is mainly based on diet, and the foods mentioned above are absolutely forbidden, as is the use of sauces and hot or fatty spices. As regards beverages, light wine, tea, and weak coffee are allowed; mineral waters with a diuretic action and thermal cures are highly recommended. Also, outdoor activity, possibly in hilly country, is recommended, but excessive physical exertion, cold and psychic stress are to be avoided.*

Rheumatism

The generic term rheumatism is used to indicate a number of diseases all of which cause inflammation and degeneration of joints, muscles, ligaments, tendons and bursae. Thus, rheumatic arthritis or articular rheumatism, bursitis, gout, lumbago, rheumatic fever, sciatica, spondylitis, etc., are all to be considered different forms of rheumatism. We shall dwell on the form of rheumatism that is of interest to this book, and which is also the most common, namely rheumatoid arthritis *or* articular rheumatism.

Rheumatoid arthritis

This infectious disease, whose etiology is still unknown, usually affects patients at an age of 35-40, chiefly women, and has acute manifestations in the colder and more humid months of the year (in our latitudes, from October to April). The acute phase is marked by the formation of nodules in the tissues surrounding the joints involved and by swelling of the joints, which become painful. However, it may also involve the myocardium, pericardium, endocardium, tonsils, etc. Similarly to gout, rheumatoid arthritis mainly affects the knee, elbow, shoulder, wrist, hand and foot joints, but the difference with gout lies in the fact that in general one or two joints at a time are affected, and the rheumatic infection moves from one joint to another over time. Rheumatic manifestations consisting in local pain and swelling are also associated with a slight fever, preceded by shivering, which is irregular over time but tends to increase every time a new joint is involved. There is also frequent

perspiration with a bitter smell and the formation of pimples, especially if the patient has delicate skin. The duration of the rheumatic attack ranges from a minimum of two-three weeks up to a few months. It tends to recur after a few months or years, and in its chronic phase leads to joint deformity and stiffening, finally compromising the patient's ability to move.
No effective therapy for rheumatoid arthritis existed until 1876, when Stricker *discovered the efficacy of sodium salicylate. Many years later, towards the end of the century (1899), aspirin was introduced, which also proved effective. Instead, sulfonamides (introduced by the German* Domagk *in 1935) and the more modern antibiotics have proven to be completely useless in controlling the disease. Today cortisone is used in association with sodium salicylate with success. As in the case of gout, suitable thermal therapy may be useful.*

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Christmas of 1855 could not but reflect the almost desperate situation which had been described one month previously by Antonio Meucci in his letter to his brother Beppe. Antonio and Esther were alone: Garibaldi and Bovi had left almost two years before, Salvi was in Havana, Mariani was in Boston, even though he had written that he would soon be back in New York.

But Antonio did not give in to despair. That morning he woke up early and shoveled the snow from the cottage to the factory - about thirty meters from door-step to door-step - opening a small path. Physical exertion and fresh air raised his spirits. As he was shoveling the last few meters, he thought to himself that there was no point in despairing, that everything was to be left to faith, and that life was a succession of sunny days and rainy days, strong winds and fine weather, times of plenty and times of misery … He wrote this later, on 16 April 1863, to his beloved Beppe: *"… I am philosophical and I always hope for the best, and I never get myself down, I believe in Fate … I am a fatalist and a philosopher …"*

When he reached the entrance to the factory, he shoveled off the snow from the eight large steps that led up to the front veranda. He pulled a large key out of his pocket and tried to open the lock. But it was blocked, due to the ice that had formed

during the night. So he pulled a box of wooden matches out of his pocket, picked up a piece of wrapping paper that was on the tiled floor, crumpled the paper and lit it. He then heated the key which he had left inside the lock, and waited a while. It was a new type of match, called *safety match*, and it had just been on sale for a few months. He recalled how his father, as well as himself before he left Florence, would use steel, rubbing it five or six times in order to spark a flame! Then, after 1831, the first matches with phosphorus tips were introduced … But his train of thought was interrupted abruptly, for he was about to burn his fingers … At last the key turned easily in the lock and he was able to enter. But … what had he come here for? … Oh, yes! … the candles … it must be a surprise for Esther. He could not help looking at the machines, the vats, the press, the molding machine: it was all in order - clean and still - and it seemed to be waiting just for something or someone to set things running, like a clock, waiting to be wound up … What a pity! … He looked about for the box of rejects, so as not to open the crates that were already nailed and ready to be shipped, if he would ever manage to sell them. He chose six of the largest and best, shaped them a little with a hand tool, polished them with spirit and wrapped them in a new sheet of wrapping paper. He then exited, closed the door behind him and went back home.

But Esther had prepared a surprise for him too. She had dragged herself out of her room, climbing down the stairs one by one, resting a little after every step, and had made it to the kitchen. With a great effort she had managed, all by herself, to put on her beautiful gray dress with white cuffs and had combed her hair as best as she could, trying to conceal the bumps on her ears caused by the gout. She set the table with an embroidered linen table-cloth that she had brought from Florence, still beautiful after twenty years since their departure. She laid the table with the silver cutlery and porcelain plates that she had bought in Havana with the money earned at the Gran Teatro. There were no flowers, true, but never mind! … She heard Antonio wiping his shoes on the doormat, and then banging his feet, to shake off the snow …

Antonio Meucci in 1885

Antonio could barely pass through the door, as he was more than one meter eighty (about six foot) in height, much taller than average, and he instinctively bent over. Although he was forty-seven and a half years old, he was still as tall and strong as an oak tree. He had let his dark beard grow thick, and with only a few sparse white hairs here and there it framed his face completely. He was starting to lose his hair around the temples, which revealed his wide forehead, in which his sweet blue-gray eyes, rare in an individual with brown hair, stood out.

Antonio hung his coat on the clothes rack, after jolting at the cry of the parrot, *"Viva l'Italia, fuori lo straniero!"* He was

holding the pack of candles under his left arm and a bunch of laurel branches with large red berries in his right hand. He had picked them from a large bush near the factory, shaking off the snow. He walked over to the parrot, which retreated shyly along the banister of the stairway that lead up to the attic. *"Hey, bugler, don't you recognize me? It is me, Meucci …,"* to which it replied *"roh … rohroh … roh-ucci … roh-ucci …"* Then he entered the dining room, at the left of the entrance hall, and thought to light a fire in the fireplace. He stopped on the threshold, astonished at the sight of the table, so elegantly set. *"Merry Christmas, Meucci …"* Esther said, poking her head out from the kitchen, which opened onto the dining room. *"What beautiful laurel branches, where did you pick them?"* She tried to move towards him, but it would have taken her too long, with her poor legs, so she remained leaning against the door-frame of the kitchen. *"Esther, my love, Merry Christmas to you too!"* Antonio was about to tell her that she should take care, that the doctor had ordered absolute rest for her. But he refrained, realizing that he would have spoiled everything. He put the packet and the laurel down on a bench and walked over to her, putting his arm round her neck, delicately, so as not to hurt her: *"Just like old times, right? … You are beautiful … You will see … I will drive you around in a coach, like a queen … if our luck turns, as I hope it will … I promise you ! And, after Garibaldi has freed Italy, we will return to our beautiful Florence, to our homeland! …"*

Domenico Mariani arrived just in time to celebrate New Year's Eve of 1856 with the Meuccis. Esther was always happy when Mariani came. That man's big heart (and imposing presence) filled her with hope and joie de vivre, as much as she could possibly have in her situation.

Mariani helped Antonio Meucci build the pianos, and indeed, when he arrived, he found many crystal bars which all needed to be tuned, as Meucci told him. But he needed someone to give him the notes. He would then grind them with a lathe, until they reached the exact length for the note it was to vibrate at, whenever it was struck. He also said: *"You see, Mariani, this is an advantage over regular pianos: these bars will no longer have to be tuned, as is so often necessary with piano strings."* Obviously, Meucci was building celestas, with crystal bars instead of steel (see Appendix "History of the Piano"). Mariani's deposition on this subject at the Bell/Globe trial, that we reproduce here below, is very amusing.

TESTIMONIES ON THE MANUFACTURE OF CELESTAS

Deposition of Domenico Mariani

[Answer No. 60] *… he made experiments on pianos with glass; he made them at night; he made a piano of five octaves. I gave the tone with the guitar.*
[Cross Question No. 61] *Did you see that piano?*
[Answer No. 61] *No, I didn't see it finished; but all the notes I gave myself with the guitar. I saw some small ones, but the one of five octaves I didn't see finished.*
[Cross Question No. 62] *About when was this?*
[Answer No. 62] *This was in the time that the candle factory was in decadence, and in the evening we had nothing else to do, and so we made these things of glass to spend the time and make experiments.*

Pianoforte with glass chords (Victoria and Albert Museum, London)

As regards the celesta built by Meucci with Mariani's help, hereunder is the opinion of Mrs. Rita Trecci Gibelli, Director of the *Laboratory of Ancient Musical Instruments, Restorers of the Museo Teatrale alla Scala* in Milan:

"In my opinion, the instrument mentioned is a celesta with crystal bars rather than metal ones. Outside it looks like a small table piano, in which the hammers do not strike strings but metal plates (or at times crystal ones) that have previously been tuned. This assumption is confirmed by the deposition of the guitar player Domenico Mariani when he said: 'he made experiments on pianos with glass … He built a piano of five octaves: I gave him the notes with the guitar … all the notes, I gave myself with the guitar. I saw some small ones [pianos]*, but the one of five octaves I didn't see finished. … in the evening we had nothing else to do, and so we made these things of glass to spend the time and make experiments.' To tune the metal or crystal bars it was necessary to remove material from the bars by rubbing them with a grind stone. To tune it perfectly another instrument had to give the note. Moreover, the 'things' mentioned by Maestro Mariani were simply bars, I presume, that were prepared in their leisure time, without using special tools."*

Subsequently, through Maestro Giampiero Tintori, the Director of the *Museo Teatrale alla Scala* of Milan, this author came into contact with Prof. Renato Meucci (sic!), a professor of History of Musical Instruments at the Conservatories of Milan and Vicenza. He mentioned an important publication by Rosamond E. M. Harding (see bibl.), which reproduces a *glass bar piano* (made with two rows of glass bars and related hammers, to save space) and gives quite a clear idea of the type of 'piano with glass things' mentioned by Mariani. This ancient

instrument which is reproduced above is on display at the *Victoria and Albert Museum* in London.

It is likely that the idea to build pianos and celestas was suggested to Antonio Meucci by his many friends (Salvi, Mariani, Lorini, Maretzek and others) who were involved in opera performances and felt the evolution of musical taste in the American population. The day would soon come when, just like in Europe, every young lady belonging to a well-to-do family would be given a piano. In the United States there were already a few piano factories, including that of Jonas Chickering (cited by Mariani in his answer No. 13 as an important manufacturer that existed in 1852) which met domestic demand, so that only a moderate quantity of pianos were imported from Europe. Moreover, an English-made piano would have cost, on the American market, over 250 dollars of the time (equivalent to about 3,750 dollars in 1990). As reported in the Appendix "History of the Piano," in 1853, two members of the German family Steinweg emigrated to New York and founded the company *Steinway & Sons*, which was soon to become famous and won the first prize at the New York exhibition of 1855.

Meucci himself played the piano quite well, as is confirmed in Daniel Santoro's interview with Matilda Nisini (who was already mentioned in Vol. 1 of this book) in 1940, which is reproduced ahead. Furthermore, a piano is known to have existed in the Meucci home already back in 1857, as it is mentioned in the bill of sale of the assets to Captain Bennis, which will be discussed hereinafter. Finally, when Meucci's assets were auctioned, on 20 April 1891, following his death, his piano was purchased by Matilda Nisini's mother at the price of seventeen dollars. After changing hands several times, this piano was traced and acquired by the *Garibaldi-Meucci Museum* of Staten Island, where it is currently on display (see the photograph in the following).

TESTIMONIES ON THE MANUFACTURE OF PIANOS

Deed of sale to Capt. John Bennis (14 May 1857)
… one small round table, one small Piano Forte, one Music Box …

Daniel Santoro's interview with Matilda Nisini (April 18, 1940)
… the living room contents: one home made piano, a flat square piano made by Mr. Meucci. Elizabeth, the servant girl played with one finger on it — Meucci played well; he used to teach me some Italian patriotic songs "La Banderra Tricolor è Sempre Bella" when he had company he used to make me sing it. There was a 3 piece parlor set with the piano; I recollect clearly the chair… the settees and the chair all made of rustic wood …
… Barsotti who took among other things a piano made by Meucci …

Auction sale of Meucci's goods [Richmond County Standard,
25 April 1891]
… Among them was a rustic eight octave [*six octaves*, Editor's note] *piano which Mr. Meucci made and which went for $17…*
NB. The auctioneer issued a statement to the effect that this piano was sold to Matilda Nisini's mother on *21* April 1891.

Prof. Renato Meucci and Mrs. Trecci Gibelli, mentioned above, examined the picture of the piano (with steel strings) built by Meucci, which is reproduced below, and both described this instrument as a *small table fortepiano*. Meucci had probably thought about selling an inexpensive instrument, for homes, like the first English table fortepianos, which had a single string per note and a single pedal - the forte - as is more extensively described in our Appendix "History of the Piano."

Piano with 49 keys built by Antonio Meucci at the end of 1855

Below is the detailed comment on this piano, given by Prof. Renato Meucci:

"The instrument that is illustrated presents some features that place it in a category the use of which is limited, namely that of experimental prototypes. In fact, it does not have a large enough extension to be used effectively in a normal concert performance. This is confirmed by the fact that, otherwise, the very shape of the small table piano would not have been justifiable in the year 1855. Instruments of this sort were built even later for the foregoing purposes and for some special uses.

A model very similar to Meucci's (with an even smaller extension) was used in the mid-nineteenth century by the famous orchestra conductor Sir George Smart who used it during his coach journeys, probably to practice some pieces with his singers during the long trips made necessary by the means of travel existing at the time. Thus, they were small instruments, with reduced extensions and poor sonority.

The model built by Meucci has an extension that can be deduced from the number of keys and strings, which are limited to the F1-F5 range. Obviously, it also has a single string for each key, which, along with its small size, is the main element to which one would ascribe its poor sonority. Unfortunately, from the photograph it is not possible to understand the type of percussion mechanics that characterizes the instrument, nor the mechanism and type of action of the dampers. Indeed, the small pianoforte would seem to be completely lacking in the latter devices, as no pedals or knee levers with which to set them in motion can be seen. This is also fitting considering the piano's small size. The space in the soundboard in which the hammers should move to hit the strings is in all probability right in front of the tuning pegs and the related bridges which are easily visible and are situated obliquely to the soundboard, to the left of which a tuning-key can also be observed."

Meucci and Mariani continued to make celestas and pianos throughout the entire winter 'as a pastime.' It was a task that did not require workers, if done on a small scale, as candle-making did. And, all in all, it did not even require a large investment in machinery. The most critical part was probably the framework, which needed to withstand tensions of the strings of up to five tons. But Meucci, as a former theater engineer, was used to designing and dealing with structures subjected to strong mechanical stress.

From the above, it would appear that the pianos built by Meucci were technically and aesthetically of the home-made type. On the other hand, Mariani said that they made them 'to pass the time,' and therefore they did not seem to expect their pianos to be relevant on a commercial basis.

BIRTH OF THE CLIFTON BREWERY

Winter was ending and the countryside was starting to turn yellow, the color that heralds spring. The primroses were starting to bloom, displaying their soft yellow petals, soon followed by the bright yellow flowers of the wild jasmine, the forsythias and narcissi with all the hues and shades of yellow, from yellow-green to golden yellow, yellow-orange and red-tinged yellow. The countryside was vested in the colors of the sun. Esther realized this, not only because of the changing landscape that she observed from her window overlooking the bay, but also because her aches, with the change of season, grew more intense.

Antonio had put announcements in *L'Eco d'Italia* and had spread the word around with his friends in New York, announcing that the machinery of the candle factory was up for sale (with the exception of the brick furnace near the corner between Maple Avenue and Forest Street, which could not be dismantled without being damaged). From time to time someone would come and take a look, but would then leave after having offered a pittance, at times only to 'soften' the seller.

One day an old acquaintance of Antonio Meucci turned up at the cottage, who could easily be recognized by his unmistakable shrill voice: *"Señor Miussi! … Señor Miussi! … Je suis Jim Mason … It's Jim Mason!…"* Who else would say two words in Spanish, two in French and two in American-English? Jim Mason. No-one else. *"Bonjour, Mr. Mason,"* Meucci replied in French, looking out on to the veranda. *"If you have come to sell something, you have picked the wrong time! I am flat broke!…"*

"Not at all" Mason answered, also in French *"I am here to buy, not to sell … I have heard that you are selling your candle-manufacturing machines … I am interested … may I have a look at them?" "Why of course!…"* Meucci hastily replied *"Just a minute, I will go and get the keys …"*

Mason looked carefully around the entire plant and at the machines in particular. He stopped to ask for explanations, voicing his appreciation from time to time, always addressing Meucci with great deference, almost with reverence. At the end of the visit, he seemed to hesitate a moment. Then, in a manner that was unusually shy for his personality, he said, staring at Meucci with a questioning expression: *"Señor Miussi … would you allow me … to be quite frank with you?" "Why? …"* Meucci said *"is there anything wrong? … go on, please speak out …" "Nothing at all, quite the contrary, Señor Miussi, everything is fine, only that … please do not take offense … you got it all wrong, from the very start … A mind like yours … should not have engaged in business dealings … You … you must only invent … in-vent! … Accounting, sales, purchases, wages … leave all that to others, like everyone else does here … And then*

… forgive me … here you must speak English, and not even English, but American, and not even American, New-Yor-kee-se! … If not … it is the end!" He paused, then lifted his index finger, as if to ask a question: *"May I add something?"*

Meucci was positively impressed. There was much truth in Mason's words. Maybe he was mistaken on his account, maybe the time had come to look beyond the narrow confines of the Italian colony and to rely on someone like Mason. *"If you please, Mr. Mason, feel free to speak … what you have said so far is true…"* Mason did not wait to be asked twice. He made a wide circular gesture with his hand, pointing to the ground surrounding the plant, and then said: *"You have told me that you are penniless … but you are wrong … here, you own more than two acres of land, with water supply, plus the cottage and the plant building, along with the machinery: do you know what all this amounts to? A capital of almost 30,000 dollars!…"* Meucci interrupted him, raising the palm of his right hand, as a gesture of denial: *"No, no, Mr. Mason, not another word … I will not touch the property … we have not come to that just yet …" "But of course, Señor Miussi, of course…"* Mason's voice became even more shrill: *"I am not suggesting that you sell … but …"* he changed his tone of voice, and became almost confidential *"How would you like to have … by tomorrow morning … 3,000 dollars … right here in your hands?" "A loan? No, I do not want a loan"* Meucci replied *"I would have to pay it back … and … and where would I get the money from?" "No, not a loan, Señor Miussi, not a loan!… a mortgage on the land, to be returned at your ease, and that can be renewed, naturally, with an honest person like a friend …"*

Seeing that Meucci hesitated, Jim Mason changed his tone of voice once again and became serious, almost reproachful: *"We are not in the America of the Spanish, Señor Miussi, we are in the United States! … Capital in the form of real estate is 'dead' capital …"* and he stressed the word 'dead' with a horizontal gesture of his hand. *"Over here, money must circulate, money is alive and must generate other money … It is not like in the South, where people hold on tightly to their land and die of hunger … Where do you think the wealth of the United States comes from?"*

Meucci found Mason's words quite convincing, but he wanted to give some thought to the matter. Perhaps he could use Mason for the brewing business that he was thinking about launching. Moreover, he had to see what Esther thought about it, since she was so attached to her property. So, though appreciating Mason's words, he asked to be given some time: *"All right Mr. Mason,"* he said, nodding in approval *"I believe that you are right on many points. Let me first sell off the machinery, and then we shall see …" "Consider it done!"* Mason broke in,

"you've just sold your machinery … I will buy it! …" He waited for Meucci to recover from his surprise, and then added: *"But … on one condition…" "What condition is that?…"* Meucci asked. *"That we set out on something big, something really big, that will make us earn not thousands, but millions of dollars!…"* He then pulled his watch out of his pocket, muttered something about he being late, apologized for having to take leave so abruptly, but promised to return a few days later with important news and with the final solution to all of Antonio Meucci's troubles.

Meucci had probably come up with the idea of brewing beer with a view to making the best possible use of the premises and machinery of the candle factory in a more profitable business. In effect, as shown in the Appendix "Brewing Beer," it would have been possible to use the following: the copper boiler for the saponification of tallow as a boiler for the wort; the many decomposition, sedimentation, washing and clarification vats of the candle factory as vats for mixing, decanting, fermenting and washing, to brew beer. Indeed, their sizes and structure, with acid-resistant lead coating, were just what it was needed. Moreover, the press could be used for filtering and separating the yeast, and all of the general equipment such as the steam generator, carpentry tools, lathe, etc., could obviously be of use in any sort of plant.

However, we believe that there were two other important considerations that led Meucci to embark on that business. Firstly, he did not want to repeat the same mistake of making a product that was difficult to sell, like candles. Beer was a safe product. It was easy to sell, especially lager beer, namely the one that is aged in a cold environment during the winter. It is true that there were hundreds of small breweries in the State of New York alone, but most of them catered to the small surrounding neighborhoods, and demand for that delicious and fresh beverage exceeded the offer by far. Moreover, there was no brewery - not even a very tiny one - on Staten Island, even though its population had already reached twenty thousand. It would have been possible, for instance, to supply the beer to all of the shops and bars of the island, starting with a couple of wagons transporting two dozen beer casks each. The beer could have been distributed three times a week, to keep it fresh. There were a number of delivery men in Clifton and Stapleton who delivered using large horse-drawn drays, to and from Vanderbilt Landing, and all over the island. But horses and coaches could also be purchased at reasonable prices, rather than being leased. Indeed, according to the testimony of a Louis Gros (see the Appendix "Summary and transcription of court proceedings," case Morange/E. Meucci et al.), the brewery founded by Antonio Meucci had at its disposal for carrying beer casks, two coaches,

the value of which amounted to $300, and two horses, worth $400 or $500.

The second consideration, not less important than the first, is that beer requires large quantities of water, and that the quality and purity of the latter are crucial in determining the quality of the beer that is obtained. The water in Forest Cottage was the best Antonio Meucci had ever tasted. Sipping it, he could imagine how good the beer would be. Furthermore, water was free back then. And so was the cold weather, which was helpful in order to economize in the cold-aging the *lager* variety in the wintertime. That winter (1855-1856), in particular, had been so harsh that the bay of New York had frozen over, impeding the sailing of ferry boats (see Appendix "The Staten Island Ferry").

HOW BEER IS MADE

Perhaps not everyone knows that good beer comes from good water. To understand this, consider that to produce a liter of beer, twenty liters of water are used in the different brewing phases, and the water must not be hard. Just like the water that Moretti beer draws from wells on its property, from the underground water tables that are 80 to 100 meters deep. This exceptionally pure water, the present availability of which is thirty times greater than the plant's current needs, is the first step in the entire processing cycle. Indeed, the first step is to collect the water and leave it to filter, to further reduce its "hardness." Then malt is ground, placed in a vat where it is mixed, and subsequently transferred automatically into a second vat, where fermentation takes place. Three other steps in three other different vats are necessary to filter the wort, boil it and add hops. Cooling down to 4-5 degrees allows for yeast seeding. After fermentation, the wort has become beer, and the following steps are only used to improve the quality of the beverage, enhancing it with good aging which may last from two to four months. At this point, the patient waiting is rewarded and the last part of the process takes place rapidly. Containers are washed and sterilized, filled, sealed and made air-tight and labeled at very high speed by independent units.

(Source: Birra Moretti, Udine)

Meucci thought that, to begin with, he could place several dozens of casks with a capacity of one hundred and sixty gallons in the factory basement (twenty two of these are listed in the deed of sale to Captain Bennis, discussed in the following).

Besides, at that time many breweries produced only ten thousand gallons of beer a year. Meucci had spent a good part of the winter making sketches in his laboratory (outside, in the shed to the right of the cottage) to understand as far as possible how the existing candle manufacturing plant could be made to meet the needs of the brewery, and at the end he was very satisfied with the results of his study. In practice, he could use everything, except for the molding machine, that should be sold, but he could even keep it, waiting for better times to re-open the candle business, one never knows …

Naturally, other investments would also be necessary for purchasing additional equipment. The reader may refer to the Appendix "Brewing Beer" to get an idea of it (see, in particular, the two block diagrams of the malt-house and the actual brewery). Moreover, as in the case of the candle business, cash was necessary to pay advances on the material and for the labor during the startup phase.

Jim Mason returned to Clifton a few days later, just as he had promised. This time, however, he was accompanied by a rather distinguished elderly-looking gentleman. Meucci was in the plant, soldering lead tubes with a torch, to prepare the new fixtures. He stopped as soon as he heard them coming upstairs, walked to the door, and saw the two men waiting on the porch. He greeted them and got the impression that he had already seen the elderly gentleman who accompanied Mason.

Workers of 'Bachmann's Brewery,' which took the place of the 'Clifton Brewery'

The gentleman in question stretched out his hand, and before Meucci could speak, said: *"Como está señor Meussi?… Soy Augusto Samanos, de la Habana, recuerda Usted?"* Of course, he remembered. He was a Cuban merchant, a friend of Don Francisco's, who was also wealthy. Augustus Samanos offered an advance of 3,000 dollars, in exchange for a mortgage on lots No. 1 and No. 2 (see the map on p. 400). He promised not to transfer it to anyone else without previous notice and gave his gentleman's word that no matter what happened, the cottage where Meucci lived (situated on lot No. 2) would never be touched. Meucci, who was perhaps accustomed to the loyalty and honesty of the Italian colony in New York, where one's word and a handshake sufficed to settle an agreement, accepted, without putting anything down in writing. However, the $3,000 were cashed in by Jim Mason, who took upon himself the task of administrator and who undertook to make the first purchases.

TESTIMONIES ON THE BEER MANUFACTURE

Deposition of Antonio Meucci (From the Bell/Globe trial)

[Answer No. 16]… *After about one year the candle business went wrong, and I decided to start a lager beer brewery. Not knowing well the English language, I was compelled to put my business, and the management, in the hands of a friend that I had known at Santiago de Cuba; his name was Jim Mason; he spoke English, French, and Spanish. This rascal used to make me sign great numbers of notes, which I did in good faith, and which I had to pay afterwards. Being short of money that I had brought, he induced me to take a mortgage of three thousand dollars on the property, from a certain A. A. Samanno* [Samanos, Editor's Note], *whom I had known in Havana. I lost much money in the manufacture of beer, and finally I was called in court, and was compelled to pay all the debts, and the property was sold.*

[Cross Question No. 310] *Did you have the brewery before Mr. Salvi left you?*

[Answer No. 310] *No, sir.*

[Cross Question No. 311] *Did you put the brewery on the same land that you and Mr. Salvi had owned together, or did you buy another piece for it?*

[Answer No. 311] *The same that was in communion with Salvi.*

[Cross Question No. 312] *You have spoken of a mortgage that you made of about three thousand dollars to Mr. Samano; did you make any other mortgages?*

[Answer No. 312] *I think that a second mortgage was given to a Mr. Morange, a lawyer that defended the suit of my wife, and to a Capt. Bennett* [*Bennis*, Editor's note] *that gave some money to my wife for my bad speculation. I don't remember well how it was, because it is many years.*

[Cross Question No. 320] *How long did you continue to have the brewery at Staten Island; when did you give it up?*

[Answer No. 320] *I think I kept it up for a little more than a year; and then the place was rented to a Louis Gross* [*Gros*, Editor's note], *a Frenchman, who took a lease for ten years at $600 a year, which Mr. Samanno collected himself in discount of the mortgage; but according to my account Mr. Samanno had all the profit and I nothing, and I remained always in debt for the mortgage.*

[Cross Question No. 323] *What became of it* [the candle factory]*?*

[Answer No. 323] *I sold everything to raise money, and I started the brewery. This was the time when Mr. Samanno took the mortgage.*

[Answer No. 327]… *Samanno said verbally, as a friend, that he would have taken care of my wife's interests, and would have reserved the house where we lived.*

[Cross Question No. 328] *After you ceased to carry on the brewery yourself, what business did you do next?*
[Answer No. 328] *I went walking, because I had no money.*
[Cross Question No. 329] *When did you begin to work after you gave up the brewery?*
[Answer No. 329] *I think in 1859.*
[Cross Question No. 351] *I find there is a mortgage of three thousand dollars, from you to Samanno, about May 1, 1866* [*1856*, Editor's note]*; is that the mortgage which you have referred to?*
[Answer No. 351] *Yes, sir.*

Affidavit of William E. Rider
(From the Bell/Globe trial)
… He [Meucci] *lived at Clifton, Staten Island, in a small house, and had owned a small brewery there, and a public garden …*

Affidavit of John Sidell
[Receipt for sales of goods]
(From the US/Bell trial)
Antonio Meucci, Clifton Brewery, Staten Island. July 30th, 1858 … [This proves that "Clifton Brewery" existed at that time]

The beer brewery set up by Antonio Meucci did not do too badly, not even from a business point of view. Indeed, it gave rise to what was later to become the large *Bachmann's Brewery*, which, many years later, in 1876, won the first prize at the Philadelphia Exhibition, celebrating the centennial of the United States' independence. From then on the Bachmann's beer was known as *Centennial Lager Beer.* The reader may refer to the chapters on the "Clifton Brewery," in the Appendix "History of Forest Cottage" and on "The evolution of beer in the United States," in the Appendix "Brewing Beer," to follow the steps that led Antonio Meucci's small *Clifton Brewery* to become the huge and famous brewery of Frederick Bachmann. As reported by *L'Eco d'Italia* on 15 September 1877, at the time when the article was published, *Bachmann's Brewery* produced about fifty thousand beer casks a year. *L'Eco d'Italia* described the Clifton beer as *"clear, slightly golden and bitter, always fresh and frothy and sparkling … about twenty drays deliver it every day on the island, in New York, Brooklyn, Williamsburg, Jersey City and Hoboken, and more than one hundred men work in the brewery …"* The *New York Daily Tribune* of 19 October 1889 (the day after Meucci's death) featured a short biography of Meucci and in the obituary notice it reported that the beer he produced was also exported to Cuba.

Returning to the Spring of 1856, the 3,000-dollar mortgage to Augustus Samanos was entered for lots no. 1 and no. 2 on 1 May 1856. According to Francesco Moncada's typescript (see bibl., p. 75) there was also a second mortgage for 800 dollars in favor of a certain Captain Bennis (as confirmed by Meucci in his deposition, Answer No. 312). In the same answer, Antonio Meucci made reference to a third mortgage, to the benefit of the lawyer Henry Morange, which, however, was raised later, as we shall soon see. Up to this point, everything was running smoothly, even though mortgages were always like swords of Damocles.

However, what happened immediately following the events narrated heretofore is so dreadful that we see ourselves forced to relate it to our readers as concisely as possible, to avoid to become emotionally involved.

A few months after a mortgage was raised in favor of Samanos, on 28 August 1856, with the pretext of having to pay suppliers (for equipment and raw materials) and salaries, Jim Mason made the Meuccis transfer lot no. 3 to him (see the transcription of the deed of transfer, contained in the Appendix "History of Forest Cottage"). As he took upon himself the $3,300 mortgage in favor of the Townsends, which had not yet been extinguished, plus the related interest (roughly three years at a 7% annual rate), which also had not been paid off yet, he did not pay the Meuccis additional money for it. As Esther related when she was summoned to appear before the court (see the Appendix "Summary and transcription of court proceedings" - Viollier/Meucci trial), the Meuccis, left penniless after having invested their money in the brewery, had trouble paying the interest on the mortgage raised on said lot no. 3, nor, of course, to extinguish it. So, Mason relieved them of this burden …

Among the investments made, it is worth recalling that Antonio Meucci had transformed part of lot no. 1, behind the brewery, into a public garden, where he built enclosures, benches, kiosks, porch roofs and the like. This was confirmed by William Rider (see his affidavit in the insert above) as well as by Nestore Corradi's drawing, reproduced on the next page, which shows that the aforesaid garden looks very much like a 'beer garden,' according to the custom in use at the time, for, indeed, breweries (especially the ones located in holiday resorts) annexed such pleasant grounds to the brewery itself (see bibl., C. L. Sachs, p. 49). In fact, in Nestore Corradi's drawing one can see, behind the brewery, four cheerful patrons toasting as they sit around a table under a porch roof, clearly located at the back of lot no. 1 (see map on p. 400). Furthermore, we know from the testimony of Louis Gros (see the Appendix "Summary and transcription of Court proceedings," case Morange/E. Meucci et. al.) that, in March 1857, he furnished the 'beer saloon' of the *Clifton*

Brewery with a piano, a large mirror and two billiard tables, always with the purpose to attract more customers, and to increase the consumption of beer at the brewery.

In the deed of transfer of lot no. 3 to Jim Mason, next to Antonio Meucci (who was officially the sole owner after Salvi's deed of transfer in his favor), Esther is also indicated as a selling partner and a cross which stands as her signature appears at the bottom of the deed. As a matter of fact, Esther claimed that she was the real owner of all the real estate under her husband's name, for he had purchased the latter with the money that Esther had entrusted to him just before leaving Havana. At first, Antonio had told her that she could not appear as the owner of the land as she was not a United States citizen, but now that Esther knew that such a condition was not required by the law, she demanded that all that was left of the property, that is to say lots nos. 1 and 2, including the buildings, fixtures and furniture, be put in her name.

Consequently, less than one month after lot no. 3 was transferred to Jim Mason, and precisely on 22 September 1856, the remaining lots nos. 1 and 2, including buildings, fixtures and furniture thereof, were sold for one dollar by Antonio and Esther Meucci to a certain William W. Badger, a resident of New York, with a clause according to which the same William W. Badger would sell the foregoing assets back to Esther Meucci alone, given that said assets had been purchased by her husband with the sum of $9,000 which belonged to her sole and separate estate (see the transcription of the deed in the Appendix "History of Forest Cottage" - "Transcription of the deeds of transfer"). In compliance with said clause, two days later, i.e. on 24 September 1856, William W. Badger sold back to Esther Meucci all of the assets that he had purchased previously, for the sum of one dollar, reiterating, in the deed of sale, that Esther Meucci was thus restored to the full property of what had always belonged to her and not to her husband (see the transcription in the foregoing Appendix). Clearly, after this transaction, it was possible for Esther to refuse any further request advanced by Jim Mason, as it was obvious that she did not trust her husband's ability to stand up to the latter.

'Clifton Brewery' and 'Forest Cottage' in a drawing made by Nestore Corradi around 1857

That Esther was right is confirmed by the fact that on 14 January 1857, Mason managed to get Antonio Meucci to sign a partnership agreement, in English, which stated that:

"… [a few lines are lacking, Editor's note] *make from this day a partnership for the working of the Brewery belonging to A. Meucci in Staten Island.*

Mr. Mason has the entire direction of the business, makes the purchases, attends to the money matters; he has the right to choose a Superintendency for the brewery, the books will be

kept by Mr. Mason, Mr. Meucci will work in the brewery to the best of his ability and agrees not to enter into any business engagements without the consent of his partner.

The profits of the Brewery after deducting all the expenses and interest on the mortgages $6500 will be equally divided. Mr. Mason will liquidate Meucci's old business, obtain a mortgage from M., pay the creditors in proportion, Mr. Meucci approving all Mr. Mason's doings according to conversation of this day between the two contracting parties and Mr. Violier [*Viollier*, Editor's note].

signed James Mason
signed Antonio Meucci
signed L. W. V."

It is likely that the initials *L. W. V.* belong to Louis W. Viollier, a friend of Mason's, that the latter involved in the management of the brewery. This contract was exhibited by Mason in his legal suit against Meucci, which will be discussed hereinafter. In addition to signing the foregoing contract, which practically gave Mason full powers over all of the brewery's financial, economic and commercial transactions, downgrading Meucci to the position of a worker (besides that of owner, if powerless), Meucci, in his capacity as the owner, signed a great deal of papers, including some promissory notes (drawn up in English), pursuant to his agreement with Mason. Indeed, as mentioned previously, at the Bell/Globe trial Antonio Meucci stated as follows (Answer No. 16): *"This rascal* [Mason] *used to make me sign great numbers of notes, which I did in good faith, and which I had to pay afterwards …"* (note that the Italian word *'soggetto,'* used by Meucci, which literally means *'character,'* was translated in English, by the interpreter appointed by the Court, with the word *'rascal'*).

On Monday, 16 February 1857, just one month after having signed the delegation of powers to Jim Mason, Antonio Meucci received an injunction presented by the Brown & Averill law firm of New York, requesting him to pay to Jim Mason the sum of 2,632.03 dollars, plus interest starting from 15 September 1856, as well as legal expenses. According to the injunction, Mason allegedly paid several bills on behalf of Meucci, between 24 March 1856 and 16 September 1856, which were only partly covered by Samanos' mortgage, and, moreover, on 15 January 1857, he allegedly paid to Pier, Parker & Co. a total $1,124.29, always on behalf of Meucci. The words *"on behalf of Meucci"* are to be understood as *"on behalf of Clifton Brewery, of which Meucci was the owner, but over which Mason had full control."* The injunction also spoke of several promissory notes signed by Antonio Meucci.

Incidentally, the fact that said injunction indicates that, on 24 March 1856, Mason had already started to run the brewery, is consistent with the period indicated by us as that in which *Clifton Brewery* was set up, that is, in early 1856. It is also worth highlighting that we were able to trace the bulk of the court documents mentioned in this chapter thanks to the precise indications provided by Dr. Francesco Moncada. Indeed, in May 1932, Dr. Moncada spent many days going through the Richmond County archives, and managed to get hold of some forty legal and land registry documents; furthermore, having a degree in Law, he could appreciate the importance of these documents and illustrated them in detail in his (unpublished) typescript, which is kept at the *Staten Island Historical Society* (see bibl.). The list of these documents is provided at the end of this volume, in the "General Bibliography," under the heading: "Legal and trial records." The reader will find a detailed description of the contents of these documents in the Appendix "History of Forest Cottage" - "Summary and transcription of court proceedings."

Within a few weeks from that date (16 February 1857), Antonio Meucci received other seven injunctions: one from James Mason, three from Pier, Parker & Sanders (malt suppliers), one from a Hermann Batjer (supplier of beer bottles), one from the already mentioned Louis W. Viollier, for payables in cash, and one from a Mr. Delos D. Pier (one of the foregoing malt suppliers). Overall, these injunctions amounted to a sum of about $6,000, inclusive of that requested with the first injunction forwarded by Jim Mason. All the plaintiffs were represented by the Brown & Averill law firm.

Antonio Meucci reacted to this attack on the part of his creditors first of all by attempting to take the brewery away from Jim Mason's control. Thus, as of February 15, 1857, he leased it to a certain Joseph Fells, who immediately ousted Jim Mason. However, five days later, on 20 February 1857, by virtue of the delegation of powers signed by Meucci, Mason sued Meucci and Fells for breach of contract and scheming to his detriment. In turn, on 9 March of the same year, Fells (perhaps with the intention to escape Mason's legal action) transferred his lease contract, for a period of nine years, eleven months, to a French friend of his by the name of Louis Gros, who was running a beer saloon in New York City.

With this last action taken by Mason against Meucci and Fells, Antonio Meucci accumulated a total of nine pending injunctions. A few days before receiving said summons, precisely on 17 February 1857, Antonio Meucci, advised by a certain Maestro Theodore Peressoni, a theater musician from New York City, entrusted his defense in all of the above-mentioned suits to the lawyer Henry H. Morange, also from New York City. As

Antonio Meucci had little money, he gave to lawyer Morange a down payment of $50, but he agreed to raise a mortgage of $500 on lots no. 1 and 2 (now belonging to Esther) in his favor. On 20 February 1857, three days after the visit of Meucci and Peressoni to lawyer Morange, the mortgage was registered in the Richmond County book of mortgages (see the transcription in the Appendix "History of Forest Cottage" - "Transcription of the deeds of transfer"). However, as we shall see, lawyer Morange not only turned out to be an ineffective counsel for the defense, but he even took advantage of the situation, contributing to stripping the Meuccis of all their belongings.

Details on all of the above-mentioned suits are contained in the Appendix "History of Forest Cottage" - "Summary and transcription of court proceedings." Suffice it to say that the sentences of the foregoing suits were all against Antonio Meucci, and lawyer Morange did nothing at all to defend his client. Indeed, the legal chicanery contrived by Morange was merely to convince Antonio and Esther to transfer all of their fixed assets and personal property to a trusted person immediately, so that, when the Sheriff would show up to collect the sums allocated by the Court to the various creditors, he would find himself before propertyless, hence insolvent debtors.

Thus, following Morange's advice, on 18 March 1857, Esther transferred lots no. 1 and 2, of which she had recently become the owner, to a certain Captain John Bennis from Brooklyn. On 14 May and 20 June 1857, all the personal properties of the cottage (including even the cutlery and linen) and of *Clifton Brewery*, as well as all lease rights of the brewery (see transcriptions in the Appendix "History of Forest Cottage" - "Transcription of the deeds of transfer"), were transferred to Captain Bennis. According to the deeds of transfer, Captain Bennis was to pay to the Meuccis the sum of $8,501 for the goods received, shouldering, furthermore, the two mortgages raised on said property, namely that of $3,000 in favor of Augustus Samanos, and that of $500 in favor of lawyer Morange. None of the three deeds of transfer mention a buy-back agreement, as asserted by Francesco Moncada in his typescript (op. cit.), or an agreement for the free use of the cottage granted to the Meuccis. Thus, the promise to sell the property back to Esther as soon as the litigations were settled as well as the agreement to allow the Meuccis to live in the cottage without paying rent must have been only verbal and, perhaps, had to be only verbal, otherwise the deeds of transfer could have been considered fraudulent. Also the sum of $8,501 was probably false and was indicated with the sole purpose to avoid inducing suspicions of connivance between the buyer and the sellers. Indeed, when summoned by Louis W. Viollier at the Viollier/Meucci et al. trial (see the Appendix "History of Forest Cottage" - "Summary

and transcription of court proceedings"), Capt. John Bennis denied that he had paid nothing for the transfers made to him by the Meuccis, as Viollier had claimed, and stated that he also paid some $900 in order to provide Esther and Antonio Meucci with means on which to live. Thus, it would seem that the only thing the Meuccis gained in reality from the transfers to Capt. Bennis was the allowance for their debts towards Bennis himself, which amounted to $900. This constitutes another confirmation that they were reduced to indigence before the period of the transfers to Bennis. On the other hand, Captain Bennis was chosen as the other party for those transfers because he had proven to be a friend on whose word they could rely. According to Moncada, lawyer Morange deemed it indispensable for the Meuccis to strip themselves of all their belongings for, given how the suits were proceeding, he feared that there was no way to prevent the creditors from claiming Esther's property, to make up for the debts (whether real or false) incurred by her husband. After the transfers to Bennis, instead, the Meuccis were absolutely, unassailably (and truly!) propertyless.

Lawyer Morange's forecasts promptly came true. All the sentences, with the exception of that of the Mason/Meucci-Fells suit, which we shall speak about hereinafter, were issued in the period between March and July 1857 and condemned Meucci to the payment of the sums claimed by the creditors, plus interest and legal expenses, for a total $6,021.34. And, for all of them, the Sheriff was forced to return to the Court the outstanding orders for the collection of the related payments, having acknowledged the insolvency of Antonio Meucci and his wife. Naturally, that wasn't the end of it for, as we shall see, the creditors didn't give up and once again resorted to legal action, with other measures.

As if this weren't enough, yet another misadventure befell the Meuccis as, a few days after the eighth sentence against Meucci was issued, precisely on 30 July 1857, lawyer Morange sued the Meuccis, claiming his fees, namely the $500 mortgage in his name on lots no. 1 and 2 (now owned by Captain Bennis), which he intended to collect by selling said lots at a public auction. We shall soon see what the disastrous consequences of this (tenth) suit were to be.

In the suit involving Morange, as well as in the Mason/Meucci-Fells suit still under way and in the four that would follow, Meucci was defended by lawyer George Catlin first and subsequently by lawyer William I. Street. The latter, as we shall see, proved to be an excellent counsel for the defense.

As regards the Mason/Meucci-Fells trial, which ended some two years after the first eight suits, it is useful to dwell on it more at length, as it was crucial for the fate of *Clifton Brewery.* Halfway through the trial, during the hearing of 15 October 1858,

after having heard the lawyers of the two parties, the Supreme Court decided to appoint a referee, in the person of Mr. Levi S. Chatfield, who would be in charge of collecting the testimonies and presenting to the Court a report with his conclusions. When Mr. Chatfield completed his assignment and presented his report, the Court convened, on 4 April 1859, and decided as follows (see the full transcription of the sentence in the Appendix "History of Forest Cottage" - "Summary and transcription of court proceedings"):
- that the partnership between Meucci and Mason be dissolved;
- that lawyer Jonathan S. Slanson of New York be appointed Receiver of *Clifton Brewery* and that, after having paid the legal expenses, settled all the payments and debts of the brewery, he should divide what was left between the two partners, Meucci and Mason, according to what was due to them;
- that Joseph Fells, upon the Receiver's request, pay to the latter the sum of $450 for the property (unlawfully) acquired with the brewery, with interests starting from 9 March 1857;
- that Mr. James Mason, the plaintiff, recover the costs incurred by him for the legal suit, amounting to $173.19, from the defendants Antonio Meucci and Joseph Fells.

The final hearing, once the Receiver completed his work, was held at 10 AM on 23 November 1859 and the case was officially closed on 26 November 1859. Thus, this latter is the official date on which *Clifton Brewery* ceased to be run by its founder, Antonio Meucci. However, as we have already observed, *Clifton Brewery* did not cease to exist, but, on the contrary, it passed into other hands and expanded until it became the large *Bachman's Clifton Brewery*[16].

In this regard, it is important to recall Meucci's previously-mentioned answer No. 320 at the Bell/Globe trial: *"I think I kept it up for a little more than a year; and then the place was rented to a Louis Gross* [*Gros*, Editor's note]*…"* If, indeed, we consider that *Clifton Brewery* was founded at the beginning of 1856, as said above, and that it was rented to Joseph Fells on 15 February 1857 and later on to Louis Gros on 9 March 1857, then the period of *little more than one year* during which Meucci said he had run his brewery would appear to match.

Thanks to Dr. Moncada's research, we have been able to put together the events that ensued, and which are barely mentioned in the Bell/Globe trial records. First of all, it is worth noting that Captain Bennis died on 6 October 1860, just three years after having entered into the agreement to purchase the Meuccis' real estate and personal property. His executors, Nina and Anita Cit-

[16] Although the correct family name of the owner was *Bachmann*, very often his name is found written in the English style as *Bachman*.

covich, transferred all the foregoing fixed assets (as well as all of the personal property) to a Chancey L. Brown. Mr. Brown, in turn, on 3 December 1861, transferred said assets to a lawyer by the name of John Moody. One can easily gather that the verbal promises made by Capt. Bennis to the Meuccis faded by and by, with the subsequent property transfers, which, what is more, didn't end with John Moody, as we shall see.

But let's get back now to the period (June-July 1857) in which the various creditors, unable to collect their outstanding debts on account of the Meuccis' insolvency, set out to find another solution. Once again with the support of the Brown & Averill law firm, each of them filed a new suit, suing Antonio and Esther Meucci as well as William W. Badger, John Bennis, the people of the State of New York, and Henry H. Morange. Of these, Antonio and Esther Meucci, William Badger and John Bennis were charged with having made fraudulent transfers of property, exclusively to the detriment of the plaintiffs; therefore, the latter asked the Court to annul said transfers of property and, likewise, to declare null the mortgage granted by Esther Meucci to lawyer Henry H. Morange, also because Mrs. Meucci did not have American citizenship and therefore didn't have the right to own real estate - nor, consequently, to transfer portions thereof - in the State of New York. The State of New York was sued, in turn, in order for the Court to prevent it from taking over the property concerned, should the purchase of the latter by Esther Meucci prove illegal and the land turn out to be no-one's property. In conclusion, this complex plan was aimed to safeguard the overall outstanding debts claimed by the plaintiffs ($6,021.34 plus other interests and legal expenses), hoping that the Court would agree to settle their outstanding debts *first*, claiming the mentioned real estate and personal property, and *then* meet all other requests, including the mortgage in favor of lawyer Morange, which, chronologically speaking, was raised after the debts claimed by the plaintiffs themselves were incurred.

The new storm of suits (four, to be exact) began on 27 June 1857, with legal action brought by Pier, Parker & Sanders, followed, on 25 February 1858, by the other three creditors, Mason, Batjer and Viollier. This time, however, the Court disagreed with the plaintiffs, judging absolutely legitimate and not fraudulent all of the deeds of transfer mentioned in the injunctions, and therefore deciding that the outstanding debts claimed by the plaintiffs couldn't be settled with the real estate and personal property in question. It is interesting to note that the Court acknowledged the validity of Esther's personal holdings as they belonged to her by right, according to the Spanish Law, which was in force in Cuba in 1850 and was recognized by the United States. Furthermore, Mason, Batjer and Viollier were sentenced to the reimbursement of legal expenses to Antonio and Esther

Meucci, while Pier, Parker & Sanders (evidently judged to be more in good faith) were not sentenced to such a payment. Dr. Moncada related that Mason, Batjer and Viollier were also defined *fraudulent creditors* by the Court. The sentences were filed, as regards the legal action brought by Pier, Parker & Sanders, on 28 March 1859, and, as regards the other three suits (joined in a single trial by the Court), on 19 March 1861.

However, it was the last suit, which was still pending, namely the one filed by lawyer Morange, that sent up in smoke all of the properties that had been saved by the judges of the four trials just closed. Note that Henry Morange had brought to Court not only the Meuccis and John Bennis, the owner of the mortgaged property at the time, but also all the other above-mentioned creditors, appealing to the Court to curb them from claiming the real estate with the $500 mortgage on it, at least until he collected said mortgage by selling it at a public auction.

This case, including appeals and various offshoots, went on for almost five years, precisely from 30 July 1857 until 7 April 1862. The Appendix "History of Forest Cottage" - "Summary and transcription of court proceedings" contains a detailed description of its various stages. Suffice it here to say that a first sentence ordering the sale of the property in question at a public auction was issued on 12 June 1858, and that the subsequent appeals, obtained by the cunning lawyer Street only served to delay the execution of that sentence until 10 September 1861, when the last appeal was concluded with the confirmation of the decision to sell the mortgaged property at an auction. The auction was thus set and held on 13 November 1861 at *Siegert's Hotel* in Clifton. After the auction, there existed the possibility that the buyer would ask the Meuccis to leave their house, which was built on one of these lots, so that, besides being penniless, at that point they would no longer even have a roof over their heads.

This is where Stephen Samanos, the son of Augustus A. Samanos (who was either deceased or an invalid in that period), who still had a mortgage of $3,000 on the property, came into the picture. According to Dr. Moncada's account, Stephen Samanos, with the help of the Sheriff, rigged the auction so that he would turn up as the only participant, thus winning the auction and buying the entire property for a total of $3,286.00. Of this sum, $729.50 were deducted to pay lawyer Morange's mortgage (of $500 plus interest), $318.16 were used to settle lawyer Morange's legal expenses, and $90.49 went to the Richmond County Sheriff, Mr. Isaac M. Marsh (who, according to Dr. Moncada, was additionally paid a good deal of money for his complicity). The remaining $2147.85 were deposited by Sheriff Marsh in Court, on 28 December 1861.

This money was immediately claimed by lawyer John Moody, the latest owner of the auctioned property, as well as, in part, by lawyer Street, who claimed the payment of $1,000.00 as his fee for the Meuccis' defense, and by Esther, who stated she had an outstanding debt of $800.00 with the deceased John Bennis. After various skirmishes between the claimants, which are described in detail in the previously-mentioned Appendix, on 7 April 1862 the Supreme Court adjudged the entire $2147.85 surplus money to lawyer John Moody, closing the case once and for all. Thus, Antonio and Esther saw their estate, which they had accumulated in the course of fifteen years of work in Havana, vanish in thin air, and, in just a few years from their arrival in New York, they were left without a home and without a penny. From then on, they had to rely on the generosity of their friends and place their trust in the promise of Stephen Samanos, now the owner of the cottage, to allow them to live in it without paying a rent and to sell it back to them some day, if luck were ever to come their way again.

There is no denying that the entire chain of events that led to a disaster of such vast proportions all began when Meucci and Mason became business partners in January 1856. No doubt, Mason was a scoundrel. But the primary cause of the disaster surfaces clearly in the answer given by Meucci himself on 17 August 1858, when summoned to appear before the Court at the Mason/Meucci et al. trial (see Appendix "History of Forest Cottage" - "Summary and Transcriptions of Court Proceedings"): *"… during the years 1856 & 1857… this Defendant* [Antonio Meucci] *had a very imperfect knowledge of the English language, and was almost entirely ignorant of general business (being by occupation a theatrical machinist & scene builder), … the Plaintiff* [Jim Mason] *spoke the Spanish language, with which language this defendant* [Meucci] *was conversant, and volunteered to assist this Defendant in his business …"* Another confirmation comes from the testimony of Maestro Peressoni at the Morange/Meucci et al. trial (see same Appendix): "*… I took him to Mr. Morange's office; Mr. Meucci could not speak English… I explained that to both Mr. and Mrs. Meucci… the bond and mortgage in the Italian language, before they signed it …"*

Thus, Antonio Meucci didn't know much about business and didn't speak English, and, needless to say, his wife knew even less; notwithstanding, the two of them signed papers written in a language they didn't know, believing the explanations given to them by someone in Italian, or trusting in the good faith of the other party. And, all this, in a city like New York, where even those who speak English and consider themselves smart can easily be swindled.

Before closing this chapter, we deem it opportune to clear up a detail regarding the biannual rent installments paid by Louis Gros to Augustus Samanos in the period between March 1857 and November 1861. This is what Antonio Meucci stated at the Bell/Globe trial (Answer No. 320): *"… the place* [i.e. the brewery]*was rented to a Louis Gross, a Frenchman, who took a lease for ten years at $600 a year, which Mr. Samanno collected himself in discount of the mortgage; but according to my account Mr. Samanno had all the profit and I nothing, and I remained always in debt for the mortgage."* According to the original deeds of transfer (see Appendix "History of Forest Cottage" - "Transcription of the deeds of transfer"), first of all it appears that Gros had agreed to pay to Antonio Meucci $500 every six months (not $600 a year) to rent the brewery, and then, that Meucci had to pay to Augustus Samanos $105 every six months as 7% annual interest on the $3,000 mortgage raised in favor of Samanos himself. Furthermore, according to said mortgage, Samanos was to insure the mortgaged property (against fire, theft, etc.), charging the annual insurance premium (that can be estimated at no more than $100) to Antonio Meucci.

Now, if, as Meucci stated, the rent paid by Gros was collected by Mr. Samanos directly as repayment of the mortgage (which fact could explain why Meucci didn't remember the actual amount of the rent), then Samanos received a sum three times higher than what he was entitled to. This abuse on the part of Samanos ended when the property was auctioned (13 November 1861), although said property was purchased by his son Stephen, so that father and son continued to collect Gros's rent, the only difference being that now the rent was theirs by right, as they had become the owners of the brewery. According to Dr. Moncada, the mortgage on lots no. 1 and 2 was then canceled by Samanos himself on 26 December 1864, thus six and a half years after it was raised and after the Meuccis had lost everything.

TRYING AND TRYING AGAIN

Any reasonable person facing an uninterrupted series of unsettling events, such as the ones that fell upon the Meuccis ever since their arrival in New York, would think that Antonio Meucci had much on his mind other than his *speaking telegraph.*

Yet, that was not the case, and indeed, exactly the opposite happened. Immediately after having set up and started work in his candle factory, Meucci turned his attention back to his speaking telegraph. At first, around the end of 1851, he repeated the experiment that he had tried out in Havana, as we have already mentioned. Then, he experimented with such a large

number of different solutions and variants thereof that it would make the task of listing them all too difficult for anyone, including himself.

Domenico Mariani complained about it good-humoredly. In fact, during the Bell/Globe trial, Mariani answered to question No. 11: *"During that time, from 1851 to 1854, when General Garibaldi was there, what, if anything, was Mr. Meucci doing?"* as follows: *"He had the candle factory, but business was bad. We were working, I, Salvi, and Garibaldi, because Meucci was almost always in his workroom making experiments …"* So, business was bad, and Meucci was almost always in his laboratory-shed near the weeping willow … running experiments! What experiments? Mariani himself clarifies this point in his colorful language in the following answer:

[Answer No. 13] *"In 1852 I went in Meucci's office and I saw him working with a box, and put in it a spool like those used by women for cotton. The first box I saw was black, and I think was made out of tin, but I am not sure. Meucci wound around this spool a thin string … After some time he told me that he was making a thing that would make us ride in a carriage and would make us rich. A little after he told me to go down to the basement, and that he would come soon … In fact he came and told me to sit near the window, and put in my hands this box, and told me to put it to my ear, and be attentive if I could hear something, after he had gone in his office* [the one in the shed, Editor's note]. *I stood near the window with the box, to which were attached two wires; I put the box near my ear and when he appeared at the other window and asked me if I had heard something, I told him that I didn't hear nothing but o-o-o-o."* And again:

[Answer No. 18] *"… In 1854, before I left, Meucci said: I will speak to you even if you go to Boston or to New York …"*

Thus, Meucci had a steadfast faith in his speaking telegraph. In 1852, he believed that it *"would make us ride in a carriage and would make us rich."* He was also firmly convinced, in 1854, that with the speaking telegraph it would be possible to transmit the spoken word over great distances: *"I will speak to you even if you go to Boston or to New York."* That is why amidst the many misfortunes that repeatedly and severely struck him, Antonio Meucci rushed to his laboratory, not so much to forget his bad luck, or out of pure recklessness, but because he placed his trust in the fact that the solution to all of his problems could come out of that promising invention. This put the many disasters he suffered in the background, giving his wife the hope that she would be taken care of properly and be able to pass a peaceful old age. As we shall see, with this aim in mind Antonio Meucci did not hesitate to spend his last savings - even if that

meant starving - thinking of the day when all of his misadventures would be nothing more than a sad memory.

In this chapter we shall attempt to report Antonio Meucci's various experiments on his speaking telegraph, in chronological order, as far as possible. As for experiments performed by Antonio Meucci in other fields, they are referred to in other chapters of this volume. The reader may notice that, when quoting Meucci's statements, either from his depositions or his affidavits, we explicitly or implicitly assume that they are true. Hence, we say "Meucci did" instead of saying "Meucci said he did" and so on. This stems from the fact that we have repeatedly verified that his assertions are confirmed by incontrovertible facts, or by third parties testimonies, a hint of which the reader himself can gather from the considerations reported around the end of this chapter.

The first experiment that Antonio Meucci performed in Clifton, which we have already mentioned, was made at the end of 1851. Speaking with his wife from the basement to the first floor and using the instruments that he had made in Havana, in his own words: *"… I obtained the same result that I had obtained in Havana, that is, receiving the transmission of the word — not very distinct …"*

Then came Carlos Pader's visit, and together with him and Gaetano Negretti, Meucci went to Charles Chester's shop in Centre Street, which we have already mentioned as well. Moreover, Antonio Meucci bought other implements from Gaetano Negretti, as stated by the latter in his affidavit: *"… I do further solemnly declare, that on and after Meucci's arrival in New York, in the year 1851, he being unable to speak the English language at that time, and often afterwards, I have bought for him some other implements for the same object, as he was continuing his electrical experiments …"*

Instruments built by Meucci in 1852 (Fig. 4 of his deposition, left; Fig. C of his affidavit, right)

After that visit to Chester's (Answer No. 17): *"… About the year 1852 … Returning home, after some reflection, I constructed a first instrument, as I have made in my affidavit …"* When David Humphreys, the attorney for the Globe Telephone Co. and for Antonio Meucci in the Bell/Globe trial, asked the latter to draw this instrument, he sketched the diagram shown above, to the left (Fig. 4 of Meucci's deposition). The corresponding diagram on his affidavit (No. 3 of the affidavit, dated 1852), also reproduced above, seems slightly different. In both cases the drawings showed static telephones, like those of the first experiment in Havana. They were made essentially of a copper tongue (in the center), to which a twisted string of two conductors is soldered, which comes out of the bottom of a tin box. At the top of the tin, a truncated cone-shaped opening is shown. The difference between the two instruments lies in the position and structure of a membrane, that was used by Meucci

for the first time, as it was not employed in Havana. In the instrument on the left side, the animal membrane (5) is placed below, underneath the wooden block (3) which supports the copper tongue (2). In the instrument on the right side, the membrane is placed at the top, just under the mouthpiece, with a hole in the center, under which a metal tongue is fixed (see its detail on the right of the figure) *"for the vibration when speaking into the mouthpiece,"* as declared by Antonio Meucci in his affidavit. Although it is not shown in his drawing, Meucci said in the same affidavit that the bottom of the tin tube of this instrument was made out of wood. In Answer No. 30 of his deposition, Meucci explained the function of the membrane drawn at the right side of instrument No. 3 of his affidavit: *"… an animal diaphragm with a hole in the middle and the hole covered by a metallic tongue that serves as a valve, opening and closing, for the oscillation of the word …"* Perhaps, Meucci had attempted with this contrivance to imitate the human speaking apparatus, just as he and other pioneers of the telephone attempted to imitate the human ear (and some, like Graham Bell, even used the ears of dead bodies).

As regards the results achieved with the instrument shown on the left of the above figure (Fig. 4 of his deposition), Meucci stated:

[Answer No. 20] *"The tubes were in duplicate; they were put in connection with the battery. One of said instruments was kept by my wife, and I had the other. We both spoke, and I obtained the conductivity of the word as before, in Havana, only a little more distinct. After some time I constructed, inside of the same instrument, different substances for the membrane, as fabric of cotton or silk, made impermeable in a bath of paraffin, and covered with plumbago, and I obtained the same result."*

Instrument built in 1852 (from 'The Electrical World')

We have found and reproduced here another diagram of a telephone, similar to the previous ones, which was dated 1852. It was shown in an article of the technical magazine *The Electrical World*, titled "Meucci's Claims to the Telephone," dated 28 November 1885. The author of the article reported that he had received the data from an interview given to him by Antonio Meucci, in French. As in the case of the other diagrams given in the same article of *The Electrical World*, which we shall mention further ahead, these drawings were not made by Antonio Meucci, like those of his deposition or his affidavit, but by a professional designer. The author of the paper described this instrument as being made up of a tin tube, with a wire wrapped around it, the tips of which were soldered to the copper tongue, as shown in the figure. We believe that this was the instrument exhibited

during the Bell/Globe trial as Exhibit No. 126 which Meucci described in detail in his answer:

[Answer No. 606] *"… It is a tube of tin, with the mouthpiece, to speak, of the same metal. At the bottom there is an animal membrane saturated with bichromate of potash to render it firmer. In the interior there is a small tongue of platinum soldered to a copper conductor, to communicate with the battery. The exterior of the tube is covered by insulated copper wire, forming something like a bobbin. One extremity of the wire goes to the interior, to the small tongue of platinum; the other to the battery…"*

The above description seems to refer to another static telephone, this time equipped with a coil (not actually short-circuited, as the drawing of *The Electrical World* would appear to show). This model might represent an attempt to introduce a magnetic effect in the static telephone, on the assumption that for that purpose a platinum tongue would serve better than a copper one.

A variant of this instrument was shown as Exhibit No. 129 at the Bell/Globe trial. In this variant:

[Answer No. 613] *"… the bobbin, in place of being outside of the tube is inside, and is wound around the wire to which the tongue is fastened. In the center of the bobbin there is a tube of sheet iron that becomes magnetized by the current. The extremities of the wire from the bobbin pass through the block and go to the battery."*

Antonio Meucci was much helped by Mr. Chester. In fact, he stated in his affidavit:

"… I became acquainted with Mr. Charles Chester, of Centre Street, who took much pains in showing me everything he had, connected with electrical matters, in his establishment. I often visited Mr. Chester, and we would frequently communicate to each other [in French, Editor's note]*, and exchange ideas on electrical subjects…"*

It was from his conversations with Mr. Chester that Antonio Meucci drew the ideas to experiment with his first electromagnetic telephones, as stated in his deposition:

[Answer No. 20] *"… I continued to make several other models, among which I constructed two, as in the drawing, Fig. 5. About this time, after my reflection and according to what I had seen in Mr. Chester's, it came to my mind to construct myself a bobbin of insulated metallic wire, and in the center of this bobbin I passed several steel wires as shown in the diagram that I am about to make (Fig. 5)."*

In this case the two drawings, that of the deposition and that of the affidavit, are quite similar. In general, the ones of the affidavit are neater as, according to what Mr. David Humphreys (counsel for the defendants Meucci and Globe) wrote in a letter to Hon. John Goode (US Acting Attorney General), the drawings were made by Antonio Meucci himself many years prior to the trial and were copied accurately by an architect named Palmer (*"drawings made by himself many years ago and copied accurately by Mr. Palmer, an architect in Exchange Place"*)[17]. However, the drawings of the deposition, although hand drawn before the US Commissioner John A. Shields by the seventy-seven-year-old Meucci, from memory, often provide more explanations of the various components.

Instrument built between 1853 and 1854 (Fig. 5 of Meucci's deposition, left, Fig. D of his affidavit, right)

Before continuing with our description of Antonio Meucci's many telephone models, we thought it useful to include hereunder a table with the complete list of all of the models (or parts) of telephones which were exhibited as hardware during the Bell/Globe trial.

[17]The full version of this letter, dated 27 October 1885, is contained in Vol. 3

Meucci telephone models or components, exhibited at the Bell/Globe trial

Exhibit No.	*Description*	*Year*	*Answer No.*	*Fig. No.*
101	*horseshoe magnet*		41	
102	*magnet with coil*		42	
103	*telephone model*	’53-’54	53÷55, 187÷189	10 *
104	*telephone model, mate to 103*	’53-’54	56, 187÷189, 638	10 *
105	*telephone model*	’52-’54	57÷60, 638÷640	11 *
---	*telephone model similar to 107*	’59-’60	30	7 *
---	*telephone model similar to 107*	1861	Affidavit	7 **
107	*telephone model shown to Mr. Grant (tempered steel core made by Demartini)*	< ’71	104÷108, 195, 207, 212, 217, 528, 572	14 *
108	*piece of loadstone*		109	
119 A,B,C,D	*#4 circuit breakers for the medical apparatus of Havana*	’44÷’48	531	15, 16 *
125	*telephone model*	’52÷’53	601	4 *
126a, 126b	*telephone model (a pair)*	1852	604÷606	3, 4 ***
127	*telephone model*	1854	607÷609	4 **
128	*telephone model*	1853	20÷22, 290÷293, 610, 611	5 *
129	*telephone model similar to 126*	>1853	613, 614	
130	*telephone model*	’52÷’60	616÷618	
131	*telephone model (with ear-like piece)*	’52÷’60	619	
132	*telephone model*		621÷623	
133a, 133b	*slightly different telephone models*		624	
134	*telephone model similar to 132*		625	
135a, 135b	*telephone models similar to 133*		626	
136a, 136b	*telephone model (a pair)*		627-8, 641÷645	19 *
137	*telephone model similar to 135*		629	
138	*telephone model*		630	
146	*telephone model (Havana No. 1)*	1849	14, 647	1 *
147	*telephone model (Havana No. 2)*	1849	14, 648	3 *
148	*telephone model similar to Fig. 5*		20-21, 649	5 *
149	*telephone model*	1856	31, 32, 650	8 *
150	*telephone model (core by Demartini)*	c1860	651, 652	
151	*telephone model - the best of all*	1864-65	76÷80, 653, 654	13 *
152	*telephone model*		83, 655	10 **
153	*telephone model*		83, 657	12 **

* Figures contained in Antonio Meucci’s deposition
** Figures contained in Antonio Meucci’s affidavit
*** Figures contained in the article published in *The Electrical World* on November 28, 1885.

As can be seen, twenty-six telephone models were exhibited at the Bell/Globe trial (four of which as pairs of equal or similar instruments), for a total of thirty instruments, plus seven separate parts. This figure is consistent with the one quoted in the affidavit of Charles Bertolino (a son of Antonio Meucci's dear friend, the Notary Angelo Bertolino), which is given on p. 160. In this affidavit he declared: *"… I saw in several instances over 25 models which said Meucci at the request of said Bennett, had recently reproduced with his own hands …"*

Getting back to the instrument reported above (Fig. 5 of Antonio Meucci's deposition), which was put in evidence as *Exhibit No. 128*, it was described as made out of a tin tube (1) externally coated with red paper, and with a pasteboard mouthpiece. Meucci, on the basis of what he had seen at Chester's, made a bobbin (2) with a wood or pasteboard reel, which had a bunch of steel wires placed inside, to make up the magnetic core (3). Around the reel he wrapped (Answer No. 22) *"… a certain quantity of insulated copper wire in order to give more resistance to the center of the steel wires … This bobbin, or this spool, caused the steel wires to be magnetized by the current coming from the battery."* The two ends (7) of the bobbin, went down to the base of the instrument and were connected to the battery by passing through a wood block (4). Also the steel wires of the magnetic core passed through the wooden block, probably to hold them firmly. Near the mouthpiece was stretched an animal membrane (5) with a hole in the center, as shown in the detail (6).

Incidentally, the reader should note the effective language used by Meucci. For example, today we would say that the number of turns of the bobbin are aimed *to increase the impedance*, instead of *"to give more resistance to the center of the steel wires,"* but this latter expression, in a time when the name *impedance* was unknown, seems to us not only very effective and precise, but also beautiful. The same is true for the definition of the electro-magnet: *"This bobbin, or this spool, caused the steel wires to be magnetized by the current coming from the battery."* And again (Answer No. 291): *"… the electricity goes through the conductor … connected with the battery, passes through the block …, turns around in the bobbin … and returns, passing again by the block …, to the negative pole of the battery …"* From this latter sentence, we can easily see how Meucci had a clear concept of an electrical circuit.

The results obtained by Antonio Meucci with this instrument were similar to those produced by the previous one, not very satisfactory that is, as was to be expected as he was using an animal membrane: [Answers Nos. 24, 25 and 28] *" … I obtained the same result as before; that is to say, the sound of the word more distinct … My wife stood on the first floor, and I in*

the basement … My wife… received the noise of the word … a little better than previously…"

Drawing *3x* of the affidavit is very similar to Fig. 5 of the deposition, except that in the affidavit it is stated that the tube is made out of wood instead of metal and it is also specified that the hole made in the animal membrane is used to form a valve in the middle.

The instrument mentioned in *The Electrical World*, which is reported hereunder, is also very similar to that shown in Fig. 5 of Meucci's deposition. In *The Electrical World* it is stated that it was built in the year 1853, and it also specified that the *valve effect* is obtained with a semicircular incision in the animal membrane. The author of the article also said that Antonio Meucci showed the instruments which he had built up to that point to General Garibaldi and that he talked with his wife from the basement to the attic.

Instrument built in 1853 (from 'The Electrical World')

Instrument built in 1853-1854 (Fig. E of Meucci's affidavit)

Another instrument from the same period, the drawing of which is given only in Meucci's affidavit, is shown on the left.

The instrument consists of a wooden block that is rounded and shaped as shown in the figure, with a hole in the center. The hole is filled with steel wires and magnetite, and around them there is a silk isolated copper wire, along all the length of the core. Near the mouthpiece (made out of pasteboard) there was a metal membrane instead of an animal one. Meucci noted in his affidavit that he used a metal membrane for the first time in this instrument instead of an animal membrane, and it was equipped with a spring, acting like a valve. In his deposition (Answer No. 608), Meucci commented on a very similar instrument, which was his *Exhibit No. 127*, dated between 1852 and 1853. It differs with respect to the instrument shown above in that in this case an *'animal membrane with a semicircular cut, so that the half of it acts like a valve'* is used, as in the model mentioned by the columnist of *The Electrical World*.

One of the many wholesale electrical hardware shops on Centre Street, today

The reader must not be surprised by these small differences in the descriptions of the many models mentioned in the documents of the Bell/Globe trial. They can all be justified, as is clarified by Meucci himself:

[Answer No. 29] *"Every time I had a little time, I dedicated it to new experiments. I ordered from Mr. Chester a quantity of pieces of steel magnetized, and of bobbins of several dimensions, and horse-shoes of steel for the interior of instruments, and others larger, to magnetize myself the pieces of tempered steel, to be put in the center of the bobbins. At the same time I tried several qualities of membranes; some of iron some of different qualities of fabrics and metals, and animal substances and wood, etc.; and I constructed several other instruments that*

were tried by me, with better results than previously; and I continued my experiments up to about the year 1871 …"

A previous model which aimed at experimenting with the magnetic effect and is dated around 1852-53 is illustrated in Fig. 10 of Meucci's deposition, reproduced here. It was exhibited (as a pair) as *Exhibits No. 103 and No. 104*. This model was not mentioned in the affidavit or in *The Electrical World* article, as its results were poor. Thus it only has a historical value. In fact, Meucci stated (Answer No. 54): *"… I obtained only the noise of the transmission of the word, and sometimes the words were distinct."*

Model dated 1852-53 (Fig. 10 of Meucci's deposition)

It was made out of (see Meucci's Answers from No. 51 to 56 and from No. 187 to 189) a metal tube (1) which was little more than five inches long. Inside there was a second tube (2) which was smaller and made out of pasteboard, filled with natural loadstone ground in the mortar. In the center of this, a large tempered steel wire was passed (3, 5) *"with two iron discs soldered to the extremities, to keep in the interior the fragments of loadstone. On the outside is formed a helix of insulated copper wire, on the same system as the bobbins …"* At the bottom of the tube there was the membrane (7) *"… sometimes of animal substance, sometimes of iron, sometimes of copper and sometimes of different materials. The membranes that are not metallic are sometimes saturated with bichromate of potash."* Finally, the tube was closed to the bottom by a cap ending in a binding screw (4) which had the purpose of keeping the large steel wire blocked in place, and also the core (2) at a convenient distance from the membrane. It seems obvious that the binding screw (4) did not fasten also the two ends (6) of the bobbin to the cap, as one of them was connected to the battery and the other to the second instrument.

Meucci also stated that: (Answer No. 51) *"… In the same shape I formed several tubes, some full of steel filings, some of carbon, and some of plumbago, in order to try which were the best conductors of electricity that were in communication with the battery from the lower part of the instrument."* He also said (Answer No. 188) that he had purchased the loadstone from a wholesale dealer named *Schieffelin & Co*., on the corner between William and Beekman Street, where a man named Fink was employed. In this regard, Meucci's comment on some of the pieces bought from Mr. Fink and from Mr. Chester, the latter being definitely superior:

[Answer No. 65] *"… From 1852 to 1853 or 1854 roughly, as I was not a professor, but only a worker, I looked through several textbooks, including one by Columbo* [*Coulomb*, Editor's note] *which talked about the natural properties of load-*

stone, which made it possible to magnetize any piece of tempered steel, making it permanently magnetized. Following this explanation I bought a large magnet from Mr. Fink, about 4 or 5 pounds, and over the side of this piece pointing to the north I passed the tempered steel pieces to obtain permanently magnetized ones. The result was never satisfactory until I came into possession of the pieces that I bought from Mr. Chester to magnetize the steel bars and horseshoes that I used for the instruments …"

Another model, dated 1852-1854 (Fig. 11 of Meucci's deposition)

Meucci's sentence: *"not being a professor but only a worker"* gives a good idea of the method that he followed in his experiments. He often stressed that he was not fond of theory, but that he *worked*, physically implementing many devices and trusting largely in the experimental method. For this reason we have entitled this chapter after Galileo's motto *"Trying and trying again."*

It is difficult to list the various telephone models made by Meucci in a strictly chronological order. He himself in his deposition continually said that (Answers No. 31 and 612): *"I have made so many that I cannot remember well …"* However, the model that is illustrated above (Fig. 11 of his deposition) and which was put in evidence as *Exhibit No. 105*, would appear to be similar, but perhaps precedent, to the one already illustrated in Fig. 5 of Meucci's deposition. This instrument was dated by Meucci *from 1852 to 1854*, and was the object of a comment by Mr. James J. Storrow, the attorney of the American Bell Telephone Co., in his cross examination of Antonio Meucci, with a trick question:

[Cross Question No. 638] (Showing witness Exhibits 104 and 105) *"Please look at Exhibits No. 104 and 105 referred to in your 56th and 57th answers. I perceive that in both of those the wire from the upper end of the coil is carried to the center stem just above the upper disk of iron, and is soldered there, and that the wire from the lower end of the coil is carried to the center just below the lower disk of iron and soldered there; that is so, is it not?"*

Meucci answered *"Yes, Sir."* But Storrow's question contains a serious mistake (a typing or transcription mistake?). Meucci's answers Nos. 56 and 57 applied correctly to the *Exhibits Nos. 103* and *104* shown above (Fig. 10 of Meucci's deposition) while they did not apply to the *Exhibits Nos. 104* and *105* quoted by Storrow himself in the foregoing question. The *Exhibit No. 105* (Meucci's Fig. 11, shown above) clearly has separate wires (4) of the bobbin (2) as confirmed by Meucci in his answers from No. 58 to No. 60: *"… conductors of the*

bobbin, passing through the block No. 5, to connect with the battery…").

Getting back to the instrument shown in Fig. 11 of Meucci's deposition, it can be seen that it is similar to that shown in Fig. 5, except that here the core (3) is formed by *"a cord of soft iron wires, surrounded by a spiral of isolated copper wire,"* with at the upper tip a platinum button (7). The membrane (6) was *"sometimes mineral* [i.e. *metallic*, Editor's Note], *sometimes of other substances that I have elsewhere indicated."* No one asked Meucci why he had used that platinum button (7) soldered to the head of an electromagnet, nor the coil (or helix) of insulated copper wire around the core (in addition to the bobbin), and why the core was made out of *a cord of soft iron wires*, instead of a bundle of straight wires. If they did, Meucci would have answered as usual, as, for example, in his Answer No. 255: *"I wanted to try; I tried so many, and I wanted to try this one also."*

Attorney Storrow continued to insist on those very few telephone models (two out of thirty) which seemed to have a bobbin in short circuit. Let us follow his cross-examination on this point:

[Cross Question No. 641] *"Among the instruments which you have testified about during the last two days of your examination, and which are now before you, is 136a. Will you please make a sketch of that instrument?"*

[Answer No. 641] *"Here it is."*

Instrument without date (perhaps 1852-1853), with a bobbin in short circuit

[Cross Question No. 642] *"Please explain the drawing, and state what each of the parts you have numbered is."*

Meucci's answer reiterates that given shortly before (Answer No. 627) to attorney Humphreys. That is, it was a tin tube (1) with a mouthpiece (2), at the bottom of which there was a diaphragm (3), made out of an *"animal membrane saturated with bichromate of potash to render it tenacious, with a small hole in the center."* As regards the underlying bobbin (4), it was closed above as well as below by two iron disks, soldered to the core made out of tempered steel, and *"of the two extremities of the metal wire which form the bobbin, one is soldered to the upper button, and the other to the under one"* (thus, almost in short circuit). Meucci added that the interior of the bobbin, between the two iron disks, was filled with various materials in the form of powder, such as *"natural loadstone, filings of iron, carbon, or any other material conductive of electricity."* Similarly to the model illustrated previously, the binding screw (7) clamps *"the steel tige and the conductor of the battery communicating the electricity."* Note that Meucci used the French word *'tige,'* for the steel stem (6), which passed through the bobbin.

Although this model was not explicitly dated, it is likely that it belonged to the first phase (between 1852 and 1853) of Meucci's experiments. At that time Antonio Meucci built most of his instruments, thinking of them as extensions of the battery's electrodes, essentially as static telephones, that is. In fact, to question No. 628: *"Please explain how you connected these with the battery?"* Meucci replied: *"The wires of the battery went into the binding screw, and they are screwed in, so that they carry the electricity to the bar in the center."*

We may conclude the examination of these very first models noting that the evolution leading from the pure electrostatic telephone of Havana to the electromagnetic telephone went through a number of hybrid intermediate models. In these intermediate models, the magnetic parts that were included (bobbins and cores of different types) were used sometimes in an electrostatic way. Or, when they were used correctly, the utilization of an animal membrane made them ineffective.

In this regard, it is important to note that although it was obvious that many of the models exhibited by Antonio Meucci at the Bell/Globe trial had provided mediocre results, they were nonetheless exhibited, notwithstanding the danger of being attacked by American Bell's lawyers. And this was done in perfectly good faith, with the only aim of showing the long and difficult path that led to the desired positive result.

At last, around 1856 (this is the date marked on drawing No. 5 of his affidavit, reported in the following) Meucci experimented with a first real electromagnetic telephone, using a horseshoe electromagnet. He obtained a result which he defined "very good" so that the instrument *"was always kept by my wife and me to speak …,"* which means that it was kept as a reserve, while others were being tested (Answers No. 31-33).

Said instrument is also represented in Fig. 8 (reproduced here below) of Meucci's deposition and was put in evidence as *Exhibit No. 149*. It was lodged in a cylindrical pasteboard box (1), three inches in diameter and three to four inches in height. On top of this there was the truncated-cone-shaped mouthpiece, embedded in a cover (which can be seen more easily in the drawing reproduced further ahead, taken from *The Electrical World*). This made it possible to close the underlying membrane completely and protect it, for instance, from outside dampness and from the breath of the speaker. The membrane (4) was made *"of metal, and sometimes of animal substance, or fabric of different qualities; the animal membrane constructed by me consisted of a piece of parchment saturated with paraffin and then passed through plumbago …"* (Answer No. 32). In the answer to a subsequent question Meucci clarified the reasons why the membranes were thus treated (Answer No. 573): *"Above the paraffin there was some plumbago, and this rendered the mem-*

brane electric as if it were metallic …" The horseshoe was made out *"of tempered and permanently magnetized steel, supported in the middle by a screw* (3) *at the bottom of the instrument …"* In his affidavit, besides specifying the year, 1856, when this instrument was constructed, Meucci added that the bottom of it was made out of wood.

Instrument built in 1856 (Fig 8 of Meucci's deposition, Fig. F of his affidavit)

The author of the article published in *The Electrical World* said that in the model which he illustrated (see fig. below), corresponding to the above quoted instrument (Fig. 8 of Meucci's deposition), an animal membrane was used, and that this caused a setback in the quality of transmission obtained, making the use of the horseshoe ineffective. However, taking into account the above-quoted Answer No. 32, it is obvious that the "very good" result mentioned by Meucci referred to the use of the metal membrane[18]. It should also be remarked that when Meucci stated that he had used an animal membrane, on which a little iron disk was applied in various ways, but facing the pole of an electromagnet, the result could be as good as the one obtained with an iron diaphragm.

Though the drawing published by *The Electrical World*, which is reproduced below, seems very similar to Fig. 8 of Meucci's deposition or to drawing No. 5 of his affidavit, the proportions are different, as the model shown below appears to be much longer, compared to the three-inch diameter and a maximum of four-inch height, indicated by Meucci in his deposition.

Similar instrument, built in 1856 (from 'The Electrical World')

Moreover, the supporting screw of the electromagnet is missing, and the latter appears to be impracticably embedded in the wooden block at the bottom. In his affidavit, concerning this instrument, Meucci said: *"… I do not recollect in particular how this instrument talked, but I don't think it talked very much, if at all. I know it did not talk as well as some I had made before …"* The discrepancy between this judgment and the "very good" result mentioned in his deposition is to be ascribed to the different types of membrane (animal or metal) that were used.

However, the path embarked upon in 1856 soon yielded good results. In fact, at a certain point, between 1859 and 1860, Meucci decided to buy telegraphic bobbins and magnetic cores from Mr. Chester, rather then making them himself as he had done until that time, and he immediately achieved excellent results.

Instrument built between 1858 and 1860 (Fig. 7 of Meucci's deposition, Fig. G of his affidavit)

The first instrument that he built in this way is illustrated in Fig. 7 of his deposition and in No. 6 of his affidavit. As anyone can see, this instrument is very similar to a modern telephone

[18] Meucci often used the terms *metal* or *mineral* as synonyms of *iron*.

receiver. It is thus worthwhile to report the full description made by Meucci himself.

[Question No. 30] *"About what year did you construct the instrument of which Figure 7 is a diagram, and will you please go on and state its construction?"*

[Answer No. 30] *"About the year 1859 or 1860. That was the first instrument that I made with the bobbin bought from Mr. Chester, as well as the first with the center of the bobbin made of a piece of steel, tempered and magnetized permanently, put inside of a circular box of pasteboard, with a wooden bottom, and with above it an animal diaphragm with a hole in the middle and the hole covered by a metallic tongue that serves as a valve, opening and closing for the oscillation of the word. And in the same instrument I tried several other qualities of diaphragms of several materials. This instrument has given me excellent results with a quasi-exact transmission of the word. No. 1, pasteboard box, with wooden bottom; No. 2, bobbin; No. 3, steel bar, tempered and permanently magnetized, passing through the center of the bobbin, which can be raised and lowered by means of the screw at the bottom; No. 4, animal diaphragm, with a hole in the center, with a metallic tongue of iron under it, serving as a valve; No. 5 bottom of the instrument in wood; No. 6, nut to raise and lower the center of the bobbin; No. 7, copper wire insulated, coming from bobbin, passing through the bottom of the instrument, to connect with the battery. This apparatus gave me good results, transmitting the word with the same facility without being necessary to connect it with the battery."*

Incidentally, it should be noted that with the word *center* (or *center of the bobbin*), Meucci indicated the *magnetic core.* It is also important to observe that this was the first apparatus that could be used without the battery (as was usually done many years later for the telephones on board of ships).

This instrument was the subject of many disputes between the attorneys during Meucci's deposition (see questions and answers from No. 208 to No. 219). According to attorney Storrow, the instrument was used to communicate from one office to another at the Globe headquarters on 15 Broad Street, New York, with the aim to give practical demonstrations of a telephone link to potential clients and visitors. This would have been a pretext to charge the Globe Telephone Co. for infringement of the Bell patent, something that Globe did not wish to provoke, as it first wanted to juridically establish the priority on the invention of the telephone and only later, possibly, begin to install and run telephones.

Attorney Humphreys even accused James Storrow or somebody of his entourage of having manipulated the instrument, but Storrow answered that he knew nothing about this. During the debate, Meucci was so confused that he stated that this instrument was not illustrated in his affidavit, whereas it was evident that drawing No. 6 of the affidavit was practically identical to Fig. 7 of his deposition, as shown above. Besides, here is the description of the instrument in question, as it is given in the affidavit:

"… Later, somewhere between 1858 and 1860, I made, as result of my experiments, an instrument marked in drawing No. 6. Here, for the first time, I used the bobbin and magnet, which I had purchased from Mr. Chester. Before this I had wound the bobbins myself. In this instrument the box was made of pasteboard, and the mouthpiece of pasteboard. The diaphragm was sometimes animal membrane and sometimes sheet iron. I tried, in this instrument, other diaphragm [*such as*] *silk immersed in a solution of plumbago. The magnet passage trough the spool and through to* [*the,* Editor's note] *box, had a thread upon it by which I was able to regulate its distance from the diaphragm. Like the other instrument, I connected it with wire and battery. This instrument talked well, far better than any I had before invented. I then thought my invention sufficiently perfected to introduce it …"*

The period indicated here by Antonio Meucci, between 1858 and 1860 (somewhat more extended than that in his deposition) is confirmed by the affidavit of an employee of Mr. Chester's, by the name of John Sidell. He found the registration of an order and the payments thereof for magnets, batteries and magnetic cores for bobbins, between 7 and 20 August 1858, as shown in his affidavit, which is reproduced below. A copy of this invoice was published by the *Telegraphic Journal and Electrical Review* on 11 October 1884 and by the *Scientific American* on 22 November 1884 (see bibl.).

Affidavit of John Sidell (21 July 1880)

National Archives and Records Administration,
College Park, MD - RG60, File 6921-1885, Box 10, Folder 1
(originally filed at the Interior Dept. file 4513-1885, Encl. 9)

I, John Sidell, Agent of the late Charles Chester, deceased, manufacturer and dealer in Electrical Material and Apparatus in the city of New York, hereby, make oath that I find entered upon the books of said Chester the following account of articles sold to Mr. Antonio Meucci, of Clifton, Staten Island, namely,

Antonio Meucci, Clifton Brewery, Staten Island.
July 30th, 1858. Loaned 1 California Gold Box. Returned.

Antonio Meucci, of Clifton Brewery, Staten Island.
Order Aug. 2, 1858. Delivered Aug. 10, 1858.
7 pairs Magnets on one Base, $50.00
Paid Aug. 2, 1858.

Antonio Meucci, of Clifton Brewery, Staten Island.
Aug. 14, 1858. 12 Cells Grove Battery, $1.50 $18.00
Altering Magnets and making new Cores, etc. $42.00
Paid Aug. 20, 1858. $60.00

And I further state that I make this affidavit without pay or promise of any compensation, and that I have no business interest with said Meucci and do not know the object of this affidavit.

John Sidell

Sworn to before me this
21st day of July, 1880
Antonio Bertolino[19],
(Seal) Notary Public, N.Y.C.

The drawing - which is reproduced here - and the related comment, reported by *The Electrical World*, are in agreement with those reported above in Meucci's deposition and affidavit.

Instrument built in 1858-1860 (from 'The Electrical World')

Also the date (1858-60), which is reported by *The Electrical World*, matches with the one given in the text of Meucci's affidavit, even though the drawing in the affidavit bears the year 1860 next to it. On the other hand, Meucci stated in his deposition: *about the year 1859 or 1860*.

So, by then Meucci felt ready to introduce his invention, according to his affidavit: *"… I then thought my invention sufficiently perfected to introduce it …"*. First of all, he asked a friend of his named Nestore Corradi, who was a painter and had traveled with him to Havana in 1835, as stated in his deposition (Answer No. 43)[20], and who lived in New York on Third Avenue at the time, to make him a sketch. In Meucci's own words:

[19] We believe that the first name of the Notary Public was erroneously copied, being very probable that it was Angelo Bertolino.

[20] In his manuscript, Peter Ambrose Parodi (op. cit.) relates that Nestore Corradi was a bass singer in Don Francisco Marty's Italian Opera Company and that, at the same time, he was very famous as a miniaturist, portraitist and painter of churches and parlors.

[Answer No. 49] *"Mr. Corradi, by my order, drew a figure, sitting in the position that I had told him; then I took his drawing, and in a sheet folded like the one I now use* (referring to a half sheet legal cap folded in the middle, and hereto annexed as Fig. 9), *I traced it against a window glass, I obtaining in such way the two persons, one in front of the other. I marked on the same paper, above the figures, a line of conductors conducting the electricity to the instrument that they held in their hands. Said electricity was produced by a battery of Bunsen. I make a drawing, showing one half of the scene, with one person (Fig. 9)."*

Facsimile of the sketch made by Nestore Corradi for Antonio Meucci in 1857-1858 (Fig. 9 of Meucci's deposition)

As regards the period in which the sketch was made, there are several indications pointing to the period 1857-1858. In his Answer No. 44, Meucci stated: *"I don't remember the exact epoch, but I think in 1857 or 1855* [*1858*?, Editor's note]*, I ordered him to make a drawing representing two persons …"* In his affidavit which is reported on the following page in the original English version, Nestore Corradi stated: *"… about the years 1857 or 1858 …"* Attorney Humphreys wrote in his already quoted letter to Hon. John Goode, accompanying a number of affidavits: *"… drawing made from a sketch given to him* [Corradi] *by Mr. Meucci in 1858 …"* Finally, in the circular issued by Globe Telephone Co. on 12 September 1885, it is stated that: *"… As far back as 1857, drawings were made …"*

In conclusion, considering the difficulty Antonio Meucci had in remembering exactly the dates during his examination (also on account of his age), we believe that the drawing can be dated between 1857 and 1858. The full drawing - traced by Meucci on glass, after having turned round Corradi's sketch and having added the electrical connections - is reproduced below, just as it was reproduced by Antonio Meucci himself in his affidavit.

Scheme of a telephone conversation (Affidavit of Antonio Meucci)

Affidavit of Nestore Corradi (3 April 1880)

National Archives and Records Administration,
College Park, MD - RG60, File 6921-1885, Box 10, Folder 1
(originally filed at the Interior Dept. file 4513-1885, Encl. 11)

I, Nestore Corradi, of the City and State of New York, an artist by profession, to the best of my knowledge and belief do hereby make oath, that I have been acquainted with Mr. Antonio Meucci, of Clifton, Staten Island, of more than thirty years, and that about the years 1857 or 1858, at the request of said Mr. Meucci I drew a sketch in duplicate representing a man in a sitting position holding in his hands two small apparatus of a concave form, attached to electric wires, to be used one by the mouth in order to speak in it, and the other to be placed to the ear in

order to receive sounds of human voice transmitted through the electric wire.

That the said Mr. Meucci, on the same occasion, told me that the same sketch represented one of the two persons he had to operate at each end of the electric wire for the transmission to a long distance of the human voice, so constituting a speaking telegraph, and declaring to me, that he, Meucci, had invented such speaking telegraph which he called Telephone[21].

That he was continuing his experiments on that matter in order to render it practicable.

And I further make oath, that this affidavit is entirely voluntary, and made without receipt of any payment or expectation of any compensation, and that I have no business interest with said Meucci, and for sake of mere truth.

Witness my hand this
3rd day of April, 1880

Nestore Corradi
3d Av.

Angelo Bertolino,
(Seal) Notary Public, N.Y.C.

A year or two after Corradi had made the sketch for Meucci, the latter went to see the director of New York's *L'Eco d'Italia*, Mr. G. F. Secchi de Casali, to show him his invention. In his affidavit reproduced below, Mr. Secchi de Casali stated that Antonio Meucci gave him a description of his invention to be published in his newspaper "around the year 1859."

Affidavit of G. F. Secchi de Casali (23 July 1880)

National Archives and Records Administration,
College Park, MD - RG60, File 6921-1885, Box 10, Folder 1
(originally filed at the Interior Dept. file 4513-1885, Encl. 9)

I, G. F. Secchi de Casili [Casali, Editor's note], of the City of New York hereby make oath that I am the editor of the semi-weekly newspaper The Echo of Italy, published in the City of New York, and that I have been well acquainted with Mr. Antonio Meucci, of Clifton, Staten Island, N. Y., since the year 1851, and that the said Meucci informed me in the year 1858 that he was the first inventor of the telephone, and he sent to me for publication about the year 1859 a statement of the fact which was

[21] Actually, it seems that at the time Meucci did not use the word "telephone" but "speaking telegraph" instead.

published in my paper about that time, a copy of which issue I cannot find as the files of said paper were since destroyed. And he also sent to me the annexed communication in relation to the same invention, which was published in our issue of March the 6th, 1880, of which the hereunto attached paper is a correct translation, and to which I have also signed my name[22].

I know since the year 1871 said Mr. Meucci has been very unfortunate and poor, and I believe him to be an honorable man.

In witness whereof I have hereunto set my hand and seal, this twenty third day of July, in the year 1880

(Signed,) *G. F. Secchi de Casali*

Sworn before me this
23d of July, 1880.
Angelo Bertolino,
(Seal) Notary Public, N.Y.C.

Unfortunately, as was declared by Secchi de Casali himself, the newspaper's archives were destroyed in a fire (see also Meucci's deposition, Answer No. 69). However, we do have an approximate text of the publication made, according to Secchi de Casali, "about the year 1859," which Antonio Meucci rewrote from memory during his deposition at the Bell/Globe trial:

[Question No. 67] *Presuming that we would be unable to procure a copy of the Echo of Italia, as I understand it, an Italian paper published in New York in 1859 and 1860, and from that time thereon, will you please state in your own way what that article contained.*

[Answer No. 67] *It is about what I have written; I don't remember the precise words, because it is many years; but the meaning is that : — "Antonio Meucci living at Staten Island has invented the way to transmit the human word by means of the electricity trough an electric conductor. He was since a long time experimenting on it and has obtained an excellent result. His method consists in using two instruments, one to transmit the word and the other to receive it. These instruments are quite easy to make. In their interior they have a spool of metallic wire, with a bar of tempered and strongly magnetized steel in the center, and a diaphragm above. These instruments being put in*

[22] This attachment was not found in the copy of the affidavit kept at the National Archives. We have found, however, the original paper on *L'Eco d'Italia*, titled "Il Vero Inventore del Telefono" (The True Inventor of the Telephone), of 6 March 1880, at the New York Public Library, fully confirming Mr. Casali's affidavit (see also Vol. 3 of this book).

connection with a battery of Bunsen or some other, transmit the human word exact, as it is spoken by the two persons that are in communication by means of the insulated metallic conducting wire."

The following affidavit by Paul DeMartini, foreman of *L'Eco d'Italia* at the time of the Bell/Globe trial, testifies on the efforts made to trace that important issue of *L'Eco d'Italia*, containing the above mentioned communication by Antonio Meucci.

Affidavit of Paul DeMartini (29 October 1885)

National Archives and Records Administration,
College Park, MD - RG60, File 6921-1885, Box 6, Folder 1
(originally filed at the Interior Dept. file 4633-1885, Encl. 4)

STATE OF NEW YORK

SS

NEW YORK COUNTY

I, Paul Denartini [DeMartini, Editor's note] of lawful age being sworn, say: That I am foreman in the office of the Eco d'Italia of this City. That as such foreman, all the advertisements therein come under my observation that the herein advertisements hereto attached in original was first published in said paper on the 16th of September, 1885, and continued daily until the 29th of September. The said advertisement in English reads as follows:—

ADVERTISEMENT

If anybody possesses even partially a collection of the Eco d'Italia from 1853 to 1862, he is begged to give immediate advice to the administration of the management of this paper.

Also that the following advertisement in the original Italian hereto attached, which being translated reads as follows:—

$100 REWARD

$100 reward to any one who will deliver at our office all the numbers of the Eco d'Italia which speak of the telephone of Mr. Meucci, from 1859 to 1862.

That said article has been published in said Eco d'Italia daily, from September 29th, to October 29th 1885. That so far we have received no answer from the first advertisement or the second advertisement offering the reward, and that as the foreman of

said paper, I know it to be a fact that no files of the paper remain in the office from 1853 to 1862.

I have been connected with the management of said paper since 1863, and it has been generally rumored and understood among the employees of the office as well as among other Italians in New York and elsewhere, that Mr. Meucci did invent a telephone, and did publish it in the Eco d'Italia sometime about 1860. The management are persistent in their efforts to find the old files of the paper, so that a description of the Meucci instrument may be produced therefrom as it was originally published.

Paul DeMartini

Sworn to before me and
subscribed in my presence
this 29 day of Oct 1885

Gilbert Mulleris
Commissioner of Deeds
N Y County

In Paul DeMartini's affidavit, it is stated that Meucci's famous article in *L'Eco d'Italia* had been published *"sometime about 1860."* The already mentioned circular of the Globe Telephone Company stated that: *"… In 1859 the results of his discovery were published …,"* in line with Secchi de Casali's affidavit (released in 1880), but not with that of DeMartini (released in 1885, at the time of the US/Bell and Bell/Globe trials, therefore, perhaps, more accurate in terms of the dates indicated). Meucci, on his side, stated (Answer No. 67): *"… I gave a copy* [of the article on *L'Eco d'Italia*] *to Mr. Bendelari about the year 1860."* And also (Answer No. 634): *"It seems to me that I published it before he* [Mr. Bendelari] *left; but it seems to me that I sent him the copies to Italy — I don't remember well …"* and (Answer No. 635): *"I don't remember if I gave it to him — I don't remember well — No, because it was not published yet. I believe I sent it to him in Italy."* Sticking to this latter hypothesis, and taking into account that it was established (Question No. 637) that Mr. Bendelari embarked from New York for Europe on 22 September 1860, we may assume that the article in question was published in *L'Eco d'Italia* not long after this date. More precisely, since until 1870 *L'Eco d'Italia* came out only on Saturdays, the possible dates, in 1860, might have been: 22 or 29 September; 6, 13, 20 or 27 October; 3, 10, 17 or 24 November; 1, 8, 15, 22 or 29 December; or, in 1861,: 5, 12, 19 or 26 January, if not later.

In his affidavit Meucci gave the following statement: *"… I felt anxious to have my invention first appear from my old home, and as Mr. Bendelari was going to Italy, my former residence, and as he was a merchant, I thought him able to bring the invention out in Italy, and these were the reasons that I gave it to him.* ***At this time*** *I published the fact that I had such an invention, in an Italian paper, published in New York, called 'Echo L'Italienne.'* [*L'Eco d'Italia*, Editor's note] *In this publication I stated that I had an invention that could talk over wire by electricity. I described that I used wire, batteries, and an instrument to talk through. I cannot call to mind a minuteness of my description in the articles referred to. I have lost the paper that contained it; but I remember that I called it my speaking telegraph, and think that I wrote a pretty full description, as Mr. Bendelari was to take several of these papers with him to Italy … I know that my statement about the publication is correct, as Mr. Bendelari went to Italy in 1860 …"* Moreover, in the already mentioned article published in *L'Eco d'Italia* on 6 March 1880, Meucci wrote, in the form of a letter to the Editor (translation from Italian): *"… You will remember that in the year 1860,* ***announcing the departure*** *of Mr. Bendelari for Europe in the Eco d'Italia,* ***I mentioned*** *the proxy which I gave to the same, so that he might propose my invention of the telephone, or speaking telegraph, to the Telegraph Companies …"*

From these last two statements by Antonio Meucci it would seem that the date of publication of the article concerning his invention of the telephone on *L'Eco d'Italia* should not have been much later than Mr. Bendelari's departure for Italy. This is why we have presumed that the article was published between the second half of September 1860 and the second half of January 1861. This does not exclude that Meucci had spoken with Mr. Secchi de Casali about his invention some time before the date of said article and, particularly, that this verbal communication occurred towards the end of 1859, as stated by Mr. Secchi de Casali in his affidavit. In this regard, one should note that while the first advertisement in *L'Eco d'Italia* required *"even partially a collection of L'Eco d'Italia from 1853 to 1862"* — with the intent to replace all the numbers missing from the archives of the paper — the second advertisement (the one that promised the 100-dollar reward) merely required *"all the numbers of the Eco d'Italia which speak of the telephone of Mr. Meucci, from 1859 to 1862."* As one can see, in the second advertisement the middle of the time frame in which it was believed that the publication concerned could be found is placed at the end of 1860, in agreement with our assessment, but with a greater extent (two years after and two years before the most likely epoch), to be sure.

From DeMartini's affidavit reproduced above, it appears that, despite the promise of a generous reward, no-one replied to the announcement that sought the issue of *L'Eco d'Italia* containing the description of Meucci's invention. Certainly, had that copy been found, it would have been a hard blow for the American Bell Telephone Company, since, despite the conciseness of the article, it should have provided a relatively good description of an electromagnetic telephone, a good sixteen years before the Bell patent. For this reason, the counsel for American Bell took advantage of the widespread organization of the company, boasting about one thousand Bell telephone agencies disseminated throughout the entire territory of the United States, and did its best to find the issue before Globe's lawyers did.

On 31 December 1885, a number of issues of *L'Eco d'Italia*, sparsely dated in the period between 1857 and 1881, were found and purchased for $125 by the American Bell Telephone Co. from a Dr. John Citarotto, a physician of Italian descent who was living in New Orleans, LA. In an affidavit released by the same Dr. Citarotto on 2 January 1886 (see bibl.), the issues sold by him to American Bell were listed in detail, and it turned out that many issues were missing from the above collection, among them the following: almost the entire year 1858 (less two issues), more than half of the year 1859 (33 issues out of 52), six issues from January to August 1860 and the entire month of December 1860 (five issues), as well as the entire years 1861, 1862 and 1863. In the same affidavit, Dr. Citarotto declared: "*… I have personally examined the files of said paper from the year 1857 to 1862, quite recently, with a view of finding out if there was any mention of Meucci, in connection with the telephone, or transmission of articulate speech by electricity, but found nothing therein; that is, in those numbers which had as per my receipt …*" Note, that Dr. Citarotto did not say in his affidavit whether or not he saw Meucci's article in the issues that were missing from his collection.

Dr. Citarotto did not depose as a witness for the American Bell. His receipt for the sold issues as well as his affidavit were attached as exhibits to a deposition by one Federico Garlanda, who had immigrated to New York in 1884, two years before his testimony, and who gave witness in favor of the American Bell. Mr. Garlanda testified that he had examined forty-one issues of L'Eco d'Italia of the year 1860 (out of fifty-two, since L'Eco only came out on Saturdays, at the time) and that he had not found any article on the invention of the telephone by Antonio Meucci. When attorney David Humphreys in his cross-examination asked Mr. Garlanda whether he could state that Meucci's invention had not been published in one of the many missing issues, Mr. Garlanda replied that he could not make any such statement.

One might ask what the lawyers of American Bell would have done if they had found the very issue of *L'Eco d'Italia* containing the mentioned publication, discovering, what is more, that it matched perfectly with the description of the instruments given by memory by Meucci in his above-mentioned Answer no. 67 (*"… In their interior they have a spool of metallic wire with a bar of tempered and strongly magnetized steel in the center, and a diaphragm above …"*). Backbiters would answer that said issue was concealed or suppressed, perhaps, together a number of issues (adjacent and not) with the purpose to mislead suspicions, repeating said clean-up operation wherever required. There were plenty of agencies in New York that could have undertaken such a "dirty job." In this connection, below is a copy of a letter sent by the Chief of the 'Public Order Copy Service' of the New York Public Library, Mr. Rocco Lombardo, to the Curator of the *Garibaldi-Meucci Museum* of Staten Island, Mrs. Carol Quinby.

This letter speaks of a unique fact, namely that several famous American libraries, like the New York Public Library, the Library of Congress in Washington, DC, and the Center for Research Libraries in Chicago, IL, have *L'Eco d'Italia* in their archives but, oddly enough, either they miss the numbers of the years 1853 to 1862 (the ones missing from the archive of *L'Eco d'Italia*) or their collection begins from 1863. Mr. Lombardo also states that in the course of his extensive bibliographic research on the topic concerning 'Meucci and the telephone' he often came across torn or missing pages dealing with said topics. Since it is known to this author that Mr. Lombardo is a serious and reserved person, and also has extensive professional experience, one must deduce that someone intentionally and illegally eliminated important judicial evidence of the period, thereby altering historical truth, to the detriment of contemporary and future generations.

Letter sent by Mr. Rocco Lombardo to Mrs. Carol Quinby (17 March 1995)

Enrico Bendelari stayed in Italy for about a year; he then returned to New York between the end of 1861 and the beginning of 1862. The story of Mr. Bendelari's mission in Italy is told by Antonio and Esther Meucci, as in the following insert:

TESTIMONIES ON MR. BENDELARI'S MISSION TO ITALY

Deposition of Antonio Meucci
(from the Bell/Globe trial)

[Answer No. 66] *About the year 1860, I was making several experiments for Mr. Bendelari who had a coral shop on John Street, trying to make the red coral pink. Around that period, Bendelari came to my house to observe the experiments that I had done and to see if I had obtained the color that he desired from the red coral. I showed him all that I had done till then and we talked at length. He told me that he was leaving for Italy and that he wanted to take some samples of my experiments because it was a very important thing. I told him that since he was leaving for Italy, I would have liked him to take with him and to propose to some telegraph company in Europe my speaking telegraph, which I had been studying for many years. Mr. Bendelari told me that he did not have much time to stay* [in Meucci's home, Editor's note] *because he was obliged to leave promptly for New York to take care of his business; however, he was kind enough to stay a little longer and I let him see one of the apparatuses that I had made, showing both the inside and the outside. I promised to give him an exact explanation of how it worked and I believe that I allowed him to take one of the apparatuses. The following day I went to the Eco d'Italia, and I gave a full explanation of my invention to the owner G. F. Secchi de Casali as exactly as possible for publication, and I asked him to let me have several copies, a few of which I then gave to Mr. Bendelari so that he could have my discovery reproduced in Europe, and obtain from some capitalist or telegraph company to put in operation my discovery of the speaking telegraph.*

[Answer No. 72] *I gave him the charge of proposing my invention of the speaking telegraph to any telegraph company, to have it carried out in any part of Italy or in any other European countries.*

[Answer No. 75] *When he returned, he told me that he had proposed my invention to many people and especially to a man in Naples whose name I do not remember, but that everyone laughed about me and that they did not believe in the results of my invention.*

Affidavit of Antonio Meucci
(from the Bell/Globe trial)

… I then thought my invention sufficiently perfected to introduce it, and at this time I got my friend Enrico Bendelari who was going to Italy to try to get me assistance to perfect my inventions, and to bring them into use, or to form a company, or to do with them what he thought best to bring them into general use, and afford me profit. I felt anxious to have my invention first appear from my old home,

and as Mr. Bendelari was going to Italy, my former residence, and as he was a merchant, I thought him able to bring the invention out in Italy, and these were the reasons that I gave it to him…

Affidavit of Esther Meucci
(from the US/Bell trial)
I, Esterre Meucci… do hereby make oath… That in 1860, my husband commissioned Mr. Bendelari, who was going to Europe, to try to interest some capitalists to aid him to develop his discovery … … on his return to New York, one year about after, [Mr. Bendelari] *said that he could not succeed, everybody remarking him that said discovery was not practical…*

Below is the affidavit released by Enrico Bendelari in 1880, while he was in Canada (of which he was appointed Consul General in 1885, according to what attorney Humphreys reported in his already quoted letter to Hon. John Goode, enclosing this and other affidavits in favor of Antonio Meucci).

Affidavit of Enrico Bendelari (13 January 1880)

National Archives and Records Administration,
College Park, MD, - RG60, File 6921-1885, Box 10, Folder 1
(originally filed at the Interior Dept. file 4513-1885, Encl. 11)

Dominion of Canada
Province of Ontario
City of Toronto

I, Enrico Bendelari, of the City of Toronto, in the Province of Ontario, and Dominion of Canada, Commission Merchant, do solemnly declare: —

1. That in the year 1860, I was resident in the City of New York, and carried on business there as importer and commission merchant, and that I have known Antonio Meucci, of Staten Island, State of New York, one of the United States of America, manufacturer, since the year 1860.

2. In or about the month of September, in the said year, A. D. 1860, I was about to go to Europe, when the said Antonio Meucci, informed me that he had discovered a means of transmitting words and sounds by electricity along telegraph or other wires, or a means by which persons at a distance could speak to each other along a wire.

The invention described by the said Antonio Meucci, appeared to be the same as that now known as the telephone; and the said Antonio Meucci desired me to take hold of the matter, and on my arrival in Italy to try and organize a Company, or obtain the necessary assistance to put his invention in operation.

3. On my arrival in Naples, I did apply to certain capitalists to assist in the matter, but they appeared to consider the discovery an impossibility, and declined to have anything to do with it.

My time being limited, I was obliged to return to New York without succeeding. One of the gentlemen to whom I applied, was Settinnio [Settimio, Editor's note] Volpicelli, Deputy PostMaster at Naples.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of Act passed in the thirty—seventh year of Her Majesty's reign instituted an Act for the suppression of voluntary and extra judicial oaths.

E. Bendelari

Declared before me at the city of Toronto, in the Province of Ontario and Dominion of Canada, this 13th day January, A. D. 1880.

W. A. Foster,
(Seal) Notary Public, Ontario.

Thus, according to Mr. Bendelari's affidavit, the Kingdom of the Two Sicilies, though known to be open to modern inventions, in the person of Deputy Postmaster Settimio Volpicelli, considered the invention of the telephone to be impossible, or impractical (or even risible, according to what Enrico Bendelari himself verbally reported to Antonio and Esther). On the other hand, similar statements were made by another well-known official of the British Post Office, Sir William Preece, Chief Engineer, who, immediately after Bell's telephone patent was issued (1876), declared: *"We don't need this American invention here. There are plenty of messenger boys in England."* It is, however, to be remarked that, since Bendelari left New York for Europe on 22 September 1860, he must have reached Naples not long before the end of October, that is, at the height of the Garibaldi's occupation of the Kingdom of the Two Sicilies. It goes without saying that, during Bendelari's visit, in Naples they had other matters to deal with than Meucci's speaking telegraph[23].

[23] As better shown in Appendix "Giuseppe Garibaldi," on 7 October 1860 Garibaldi and king Victor Emmanuel II made their triumphant entry in Naples. The war, however, came to an end only on 11 February 1861, when the last bulwark of Bourbon resistance, Gaeta, yielded to the Piedmontese army.

As anticipated in Vol. 1, Sec. 1 (Havana), Antonio Meucci had a misunderstanding with Enrico Bendelari a few years later, when an article was published by *L'Eco d'Italia* on 19 August 1865, drawn from the *Diritto* of Florence, which claimed that a man by the name of Innocenzo Manzetti of Aosta had invented the telephone. Meucci thought *"… that Mr. Bendelari had disclosed to someone what I had verbally communicated to him …,"* therefore, he wrote to him the letter that is reproduced hereinafter, and which was published together with Mr. Bendelari's reply in *L'Eco d'Italia* on 21 October 1865.

Letters Meucci-Bendelari
("Nuove Scoperte Italiane," L'Eco d'Italia, 21 October 1865)

Staten Island, 29 August 1865

Mr. E. Bendelari,
New York.

I read in *L'Eco d'Italia* of Saturday, 19th inst., an article taken from the *Diritto* of Florence regarding the discovery of transmitting the sounds and spoken voices by telegraph made in Italy by a Mr. Manzetti of Aosta.

Now this discovery being in every respect like the information I gave you four years ago in the house of Vincent Riveccio at the moment when you were going to return to the old country, I would like to know if in Italy you instructed somebody or spoke to somebody in regard to my ideas on such a thing.

I beg you to be so kind as to answer, because I wish to publish your letter, together with my system, in the *Diritto.*

Accept my greetings, and believe me your friend,

Antonio Meucci

P. S. Don't forget that your answer must testify how I in 1860 spoke to you in regard to my system of transmitting the word by Electric wire.

———

New York, September 15, 1865

Mr. Antonio Meucci,
Staten Island.

Very dear Friend: — I see from yours of the twenty-ninth August last, that the *Eco d'Italia* reprinted an article taken from the *Diritto* of Florence in regard to the discovery made by a certain Mr. Manzetti of Aosta, to transmit sounds and spoken voices by telegraph.

I remember very well that before starting for Italy in the year 1860, you spoke to me on this subject in the house of Mr.

Riveccio, that you had discovered how to transmit words by the electric wire. But being hurried to go, I had not time to see you again to gather all the information necessary on this subject.

I am very sorry to hear that your discovery has been shared by another genius; but know, for your guidance, that my business in Italy did not permit me to speak, hint, or communicate your idea to any person whatever.

Accept my distinguished salutations.

Your friend,
E. Bendelari[24]

In this reply - urged by Antonio Meucci, in order to have confirmation that Mr. Manzetti had not been told about his discovery - Mr. Bendelari makes no mention of his contacts with the Ministry of Posts and Telegraphs in Naples, as reported in his affidavit, perhaps because his confidential meeting with Deputy Postmaster Volpicelli could have nothing to do with Mr. Manzetti. Mr. Bendelari confirmed that he was in a hurry to leave, and this may explain why Antonio Meucci could not give him the copies of his article in *L'Eco d'Italia* before he left.

Originals of the announcements published in *L'Eco d'Italia* from 16 September through 29 October 1885

During Mr. Bendelari's absence, lasted about one year, Meucci admitted to not having built any other telephone models. The first that he made after Bendelari's return, was the one indicated as No. 7 in his affidavit, which is reproduced below.

Instrument built in 1861 (Fig. H of Meucci's Affidavit)

Despite the fact that the year "1860" is marked next to the drawing, the text of the affidavit reports that it was built in 1861. It consisted of a pasteboard box with a mouthpiece of the same material, featuring an animal membrane with a metal tongue, similar to that used by Antonio Meucci in the model shown in Fig. 7 of his deposition. The only difference between this model and that of Fig. 7 would appear to be the size of both the bobbin and the magnetic core, which in this model is both shorter and larger than in the previous one.

Around 1864-1865, Meucci built what he defined as the very best of all of the telephone models that he had built in his entire life. Let us report it in his own words, taken from his affidavit, sworn on 9 October 1885:

"… I did nothing further with my invention until after the return of Mr. Bendalari [*Bendelari,* Editor's note]*, which was, I think, about 1861. I made other devices soon after his return, which are marked in this drawing 7 and 8. The one marked "8," as I now recollect, I made about 1864 or 1865. This instrument was made from a soap box of boxwood; the cover*

[24] Bendelari's letter was also published by *Il Commercio di Genova* on 1 December 1865, together with a letter of protest by Antonio Meucci concerning Mr. Manzetti's claims.

was screwed on the top of the box; it had an iron diaphragm; the bobbin was large, and the magnet extending through, the coil had a thread upon it by which I could adjust it to the diaphragm. This was the best instrument that I had ever made for transmitting and receiving the words.

At this time my wife was a more confirmed invalid than she had ever been before. Not wanting to trouble her, I got other persons to talk through this instrument with me ; among whom I remember was Messrs. Mariani, Dendi and Lorini. I also had boys to work, and I used to have them talk through the speaking telegraph to me when I wanted to test it. I remember distinctly that we were able to converse very well with the above-named parties and others …"

The best apparatus built by Antonio Meucci in his life, dated 1864-1865 (Fig. 13 of his deposition)

This instrument was illustrated by Meucci also in his deposition (Answers Nos. 76÷80 and 653-654 and his Fig. 13) and was put in evidence as *Exhibit No. 151*. Antonio Meucci had some difficulty in remembering the dates, during his examination, but he remembered the structure perfectly. His deposition is given below:

[Answer No. 76] … *I bought several small boxes of box-wood used for shaving soap and introduced in it magnets, bob-bins mentioned above and mineral diaphragms, and obtained an excellent result in the complete transmission of the word. A copy of one of these instruments that I made in duplicate, exists at this moment at Washington.*

[Question No. 77] *Will you please make a diagram of this instrument that you have just described* [his Fig. 13, Editor's note], *marking and numbering it; and give, as near as you can, the date that you produced it?*

[Answer N. 78] *I think it was made from 1857 to 1860; I don't remember well.*

No. 1, soap box of boxwood with a screw cover. Above the cover I opened a mouthpiece to speak.

No. 2, a large bobbin containing a large number of feet of fine insulated copper wire. In the interior of said bobbin, a steel bar tempered and permanently magnetized.

No. 3, above-mentioned bar.

No. 4, metallic nut holding the bar, and by means of the regulating screw it can be lifted or lowered, in order to move it towards or away from the metallic membrane that is above.

No. 5, metallic membrane.

No. 6, conductor, coming out from the bobbin and passing through the bottom of the box connecting with the battery.

[Question No. 79] *Please state the way you used this in-strument you have just described, if at all?*

[Answer No. 79] *It was connected with the battery, and the connecting wires passed from the basement into the room on*

the third story called of Garibaldi; with this instrument many people spoke as they did with other and similar ones made of pasteboard. With this instrument spoke my wife, Mariani, and others of whom I can't remember the names.

[Answer No. 80] *That wooden box I bought, I don't well remember where I saw it; I think it was in Second Avenue, but I am not sure where I saw it. I had a number of them. Those of pasteboard were made by me in large quantities at several periods. The interior of the boxes were all pieces I bought from Mr. Chester, in the years that I indicated, and put in said boxes of pasteboard or wood by myself.*

Antonio Meucci's best instrument, made in 1864-1865
(Fig. I of Meucci's affidavit, left, and Fig. 9 of 'The Electrical World,' right)

For completeness, we reproduce below the drawings of the instrument in question, as they appeared in Meucci's affidavit (drawing marked **"I")** and in the already-mentioned magazine *The Electrical World* (their Fig. 9). One of the reasons of the success obtained with this instrument and other similar models was explained by Antonio Meucci as follows:

[Answer No. 640] *The best are those containing the bar of tempered steel in the center of the bobbin, that by means of the battery receive the electricity and form the electro-magnet. But above all these, the best that gave perfect results have been those made after 1860 with the bobbins and permanent magnets I bought from Mr. Chester.*

As Antonio Meucci stated that he had reached good results in 1858-60 and a perfect result in 1864-65, attorney Storrow asked him why, in those years, he did not file a patent application for his speaking telegraph. In the insert below we give Mr. Storrow's cross-questions and Meucci's answers on this subject.

WHY THE SPEAKING TELEGRAPH WAS NOT PATENTED IN THE 1860-1865 PERIOD

Deposition of Antonio Meucci (from the Bell/Globe trial)
[Cross-Question No. 339] *Why didn't you patent your speaking telegraph in 1860?*
[Answer No. 339] *Because nobody wanted to believe it was true, what I said.*
[Cross-Question No. 340] *Why didn't you patent it, in order to convince them?*
[Answer No. 340] *The money was wanted also; and then, besides, I was not yet certain, as I was later, of my experiments.*
[Cross-Question No. 341] *Why didn't you patent it in 1865?*
[Answer No. 341] *For the same reason. Then I was busy in other experiments I was making* [*paper pulp manufacturing,* Editor's note].
[Cross-Question No. 342] *What kind of experiments?*
[Answer No. 342] *Many persons came to ask me various things, and I always served them with a good will, working for nothing.*
[Cross-Question No. 343] *What kind of things did they ask you; what do you mean; what do you refer to?*
[Answer No. 343] *Various things they wanted to know; so many, that I can't remember; and even now it happens the same thing.*
[Cross-Question No. 344] *Who came to you about these other things?*
[Answer No. 344] *So many people that I don't remember, — Americans, Italians, and a little of everything.*
[Cross-Question No. 345] *Please to name some of them?*
[Answer No. 345] *I don't remember.*
[Cross-Question No. 346] *Do you mean you don't remember any?*
[Answer No. 346] *In 1865, I don't remember.*
[Cross-Question No. 347] *What things did you make for them?*
[Answer No. 347] *They brought me things to examine or to fix; things for the working of oil, and many other that I don't remember. I worked at so many things, that I can't remember.*

Apparently, perhaps due to the pressure exerted on him by Mr. Storrow, Antonio Meucci did not recall that during that period (1860-1865) he was overburdened with duties linked to his daily activities, that allowed him to live, as clearly appears from the impressive list of patent applications and caveats reported in the next chapter (see pp. 193 to 201). On the contrary, from a passage of his deposition, given above, it appears that he clearly remembered the help given to many persons who turned to him even for humble things like repairing a kerosene lamp or other

devices. This reveals another aspect of Meucci's personality, namely his great generosity towards others. What is more, he did it willingly (*"and I always served them with good will, working for nothing"*).

Among the instruments said to have been 'made after 1860,' there was one which was built 'before 1871' (see Answers from No. 104 to 108 in Meucci's deposition), which was put in evidence as *Exhibit No. 107*. It was shown, according to Meucci's deposition, to Mr. Edward B. Grant, Vice-President of the *American District Telegraph Company* of New York, and will be discussed more at length in Vol. 3 (New York, 1871-1889). The structure of this instrument is similar to that described above, the only difference being the proportions of the bobbin. It is shown in Fig. 14 of Meucci's deposition, which is reproduced below.

Instrument made by Meucci 'before 1871,' and shown to Mr. Grant

Its description, contained in Answer No. 108 of Meucci's deposition, adds nothing to what has already been said concerning Fig. 13 of the same deposition.

Concerning two other instruments which were illustrated in the previously-mentioned article in *The Electrical World*, no matching instruments have been found in Meucci's deposition, whereas two relatively similar ones have been traced in his affidavit. One of the two is dated 1864-1865 and it features a curious magnetic shunt, obtained in a toroidal core, which has a metal plate soldered to its center, facing the diaphragm (see the two drawings reproduced below). Meucci thus described it in his affidavit:

Instruments of 1864-1865, with a toroidal core shunted by a 'sub-diaphragm' (Fig. J of Meucci's affidavit; left, Fig. 8 of 'The Electrical World', right)

"… In hopes to still improve my speaking telegraph, I made other devices which are marked in the drawings hereunto attached, 9 and 10 … No. 9 is a pasteboard case with mouthpiece; the magnetized side is formed with a bundle of steel wires, and these surrounded by copper wires similar to a bobbin, as shown in No. 6 … [the] *interior wire of the bundle, which at the two extremities have a small metallic diaphragm soldered D; o-o is an animal membrane or metallic diaphragm …"*

The figure reproduced above, to the right, namely the model given in *The Electrical World*, differs from the model in the affidavit only in the shape of the container and the acoustic cavity above the membrane.

In the following instrument (No. 10 of the affidavit, Fig. 10 of *The Electrical World*), which was dated 1865, Meucci experimented with a 'bent horseshoe' magnet. He probably aimed to reduce the vertical dimension of the instrument, which was actually an interesting idea, that was to be exploited many years after the first Bell telephone patent. Indeed, as can be seen in the picture reproduced below, Meucci wanted the entire instrument to be contained in his shaving cream box. He had quite a number

of these boxes, that avoided him having to make a new box every time. The curved portion of the horseshoe was attached to the box by means of the screw 'e.' In the drawing published in *The Electrical World* (right, in the figure below) the two bobbins are easier to see, and there is one for each arm of the bent horseshoe.

Instrument of 1865, with bent horseshoe (Fig. K of Meucci's affidavit; left, Fig. 10 of 'The Electrical World' right)

The two other instruments shown below (the last two of Meucci's affidavit) embody some of the previous solutions, with variants involving the electromagnet. On this subject, Meucci pointed out in his affidavit: "… *These instruments were not improvements on the instruments I had made before. And although I continued my experiments up to 1871, I found I had made no particular improvements in the instruments previously made …*"

Concerning the instrument No. 12 of the affidavit (shown below), Meucci observed that: "… *This instrument is also similar to the others, with the difference in the magnetized bar, which is formed like a corkscrew in order to give greater length to the magnetic bar in a smaller space. On the top of this corkscrew is a bobbin fastened to a cross-piece of wood to prevent the magnetized bar breaking the bobbin …*"

As regards the other instrument, marked No. 11 in Meucci's affidavit, dated 1867, it was another experiment with the 'magnetic shunt,' as in the instrument No. 9 of the same affidavit, described above, except that in this case the magnet was rectilinear instead of toroidal.

Instruments dated 1865 (left) and 1867 (right) (Fig. M of Meucci's affidavit, with corkscrew magnet; Fig. L of the same affidavit, with magnetic shunt)

The latter two examples are not the last on the roughly chronological list of all the instruments of which a drawing is given in the available documents. There are another three, which were probably sketched on request of Globe Telephone Co., which used them for promotional purposes. Two of these were reproduced in the previously-mentioned circular, issued by Globe on 12 September 1885, at the end of which Antonio Meucci had certified the accuracy of the drawings reported in it. These two telephones are reproduced below; the model to the left is dated 1857, while the one to the right is dated 1867. Similar drawings of these two models were reproduced in an article in *The Chicago Tribune* of 9 November 1885 (see bibl.).

Two models of Meucci's telephones, dated 1857 and 1867, shown in the circular of Globe Telephone Co. of 12 September 1885 and in 'The Chicago Tribune' of 9 November 1885

The difference between the two models is the size of the magnet and bobbin and the shape of the acoustic cavity. In the second model also a metallic button, facing the magnet and attached to the diaphragm (perhaps an animal membrane) can be seen.

Incidentally, we would like to draw the reader's attention to the fact that in a modern telephone receiver the diaphragm must meet a remarkable number of requirements, often of a contrasting nature. In fact, it must be stiff enough to be able to respond in a rigorously proportional way to the pressure of the incoming acoustic wave, and for this reason its rim must be clamped very

tightly. On the other hand, it must also be light enough to offer a low inertial mass to the incoming wave, so as to undergo adequate displacement under the pressure of the acoustic wave. Finally, it must be maintained at a very small distance from the magnet pole, without however coming into contact with it.

At the beginning of this century, *ferrotype* diaphragms approximately 0.2-mm thick were used, with air gaps of around 0.1÷0.2 mm that could be regulated to the optimum position through an ad-hoc screw (as in almost all of Meucci's telephone models, from 1856 on). These figures were the result of experimental studies, following the work of E. J. P. Mercadier (1885) and others. Only later were complex mathematical studies of the motion of diaphragms under forced oscillations carried out, which made it possible to design diaphragms according to theory.

In this regard, it is worth noting that Antonio Meucci recognized the need to stiffen the animal diaphragms at once, saturating them with bichromate of potash. Moreover, though through an experimental procedure, he arrived at the solution of clamping the rim of the diaphragm with the screw cover of the famous shaving cream box, made of boxwood. Also, since his first models, he realized the existence of an optimal distance between the metal diaphragm and the magnet's pole, and he equipped all of his electromagnetic telephones with a screw to regulate this distance.

Getting back to the two telephones illustrated in Globe's circular, which are reproduced above, it should be said that they became famous, much more famous than the many others that were illustrated in depth in this chapter. They were reproduced by *The Chicago Tribune* on 9 November 1885, in an interesting report from Washington, DC, titled "Telephone Patents - The Application to Use the Name of the United States in a Suit against Bell - A Promising Movement to Annul the Patent and Break the Great Monopoly - The Claim of Antonio Meucci - Sketches and Illustrations of the Inventor's Instruments." This article covered the latest news from the preliminary hearings, which were being held in view of a trial to be instituted by the United States Government to annul the two fundamental Bell patents on the telephone, and stated that "*the most hopeful movement against the Bell telephone monopoly now is that of the Globe Company of New York,*" the company who purchased Meucci's inventions, quoted at length in the article.

Many years later, Guglielmo Marconi, who was then the President of Italy's CNR (National Research Council), commissioned the Galileo Laboratories of Florence to reconstruct the two telephones described in Globe's circular and he sent them to the International Exhibition "A Century of Progress" of Chicago, IL. This Exhibition was held in the month of March

Telephone models reconstructed by the Garibaldi-Meucci Museum in 1956

Telephone dated 1857, rebuilt under Guglielmo Marconi's instructions in 1932

Telephones dated 1857 (right), and 1867 (left), reconstructed by the Italian Post and Telecommunications Ministry in 1959

Meucci's telephone of 1857, as published by 'Scientific American' on 22 November 1884

Instruments rebuilt by the 'Guatelli Laboratory' of New York in 1990

1933, and the Italian pavilion at the exhibition displayed the two Meucci's telephones along with an enlarged photograph of the above-mentioned issue of *The Chicago Tribune* of 9 November 1885.

One original of the telephones that Marconi had rebuilt still exists today. It is on display at the SIRTI *Museum of Telecommunications* in Cassina De' Pecchi (Milan), and is reproduced above. In turn, when the Italian Ministry of Post and Telecommunications inaugurated its *Post and Telecommunications Historical Museum* in Rome in 1959, it also had the two telephones of Globe's circular rebuilt, which are shown in the photograph on the next page.

Finally, on 22 November 1884, *Scientific American* published an interesting article entitled "The Telephone Claimed by Meucci," featuring a drawing of Meucci's telephone, dated 1857, which was slightly different from the one contained in Globe's circular. However, it had the advantage of indicating the screw that regulated the air gap, as is clearly shown in the illustration.

Finally, a few years before the *Post and Telecommunications Historical Museum* of Rome was founded, and precisely on 20 May 1956, the *Garibaldi-Meucci Museum* was inaugurated on Staten Island. Thanks to the historical and artistic consultancy of the painter Lino S. Lipinsky, four of Meucci's telephones were reconstructed and put on display. Two of these were once again the two 1857 and 1867 models from Globe's circular, whereas the other two (at the center of the photograph reproduced below) were dated 1854. In effect, the model to the far left - which appears to correspond to Fig. 11 of Meucci's deposition - could be dated between 1852 and 1854. The other (with the horseshoe magnet) appears to correspond to Fig. 8 of Meucci's deposition, and, according to Meucci's affidavit, should be dated 1856, though it is always awkward to date all models exactly.

Another very recent reconstruction of the two telephones from Globe's circular was performed by a specialized laboratory in New York, known as the *Guatelli Laboratory*. It has a considerable reputation in that city as this laboratory reconstructed many of Leonardo da Vinci's famous machines for an exhibition organized by IBM. The two models of Meucci's telephones were commissioned from the *Guatelli Laboratory* by *De Nonno Productions Inc.*, with a view to making a movie on Meucci's life.

One naturally wonders for what reasons the various organizations mentioned above have had to reconstruct the different models of Meucci's telephones. In particular, one may ask what happened to all of the telephone models exhibited at the Bell/Globe trial, which were illustrated at length above. Let us remember that, according to the affidavit given by the previously-

mentioned Charles Bertolino, there were over twenty-five of these models (our list of Exhibits includes twenty-six) and they had been reconstructed by Antonio Meucci himself, with his own hands, five years before the Bell/Globe and the US/Bell trials were to begin, where they would subsequently be exhibited. In this regard, Charles Bertolino testified as follows:

Affidavit of Charles Bertolino (18 September 1885)
National Archives and Records Administration,
College Park, MD - RG60, File 6921-1885, Box 10, Folder 1
(originally filed at the Interior Dept. file 4513-1885, Encl. 6)

"… in the year 1880 while my father was assisting Mr. Meucci in the negotiation of his invention in Sound Telegraph with Col. W. W. Bennett, I saw in several instances over 25 models which said Meucci at the request of said Bennett, had recently reproduced with his own hands, as exact fac-similes of the various original instruments made years before in the different stages of his invention … As Mr. Meucci's attorney on October 22, 1883, while dealing with a syndicate who purchased Mr. Meucci's rights, I gave in the hands of Mr. W. W. Goodwin, President of the Globe Telephone Co., all the above instruments together with a number of affidavits relating to same, in exchange of certain considerations contained in contract of above mentioned date, between us and said Syndicate …"

Moreover, it is worth mentioning that in his deposition at the Bell/Globe trial, Meucci repeatedly stated that almost all the exhibits had been lent from Washington, DC, where they had been exhibited by attorney David Humphreys during the preliminary hearings at the US/Bell trial. Meucci said explicitly that the following models were in Washington: the two telephone models that he had made in Havana, the four models No. 9, 10, 11, and 12 of his affidavit and the Exhibits from No. 146 onwards, particularly stressing it for Exhibits Nos. 151, 152 and 153. Two or three of these models were actually made with original parts.

According to the procedure, all Exhibits were to be left at the Court's disposal for the duration of the trial. Some time after its conclusion, they could be returned to their legitimate owners. The sentence of the Bell/Globe trial was issued on 21 July 1887, that is to say a little more than two years before Antonio Meucci died. Then Globe appealed the sentence, but the appeal was dropped by Globe in 1892, as it invested all of its hopes in the much more important US/Bell trial. The latter, in turn, dragged on until 30 November 1897, when it was declared closed without ever reaching a conclusion, despite the enormous expenses borne by both parties.

This notwithstanding, we believe that a certain number of Exhibits were returned (perhaps through Globe) to Antonio Meucci, including his famous Memorandum Book, containing his notes on his inventions, an English translation of which was exhibited at the Bell/Globe trial as *Exhibit No. 109*. In fact, when Meucci's assets were auctioned, a year and a half after his death, and exactly on Monday 20 April 1891, the *Richmond County Standard* reported, on 25 April 1891, that "*… Frederick Bachmann bought for $10 the books and experimental instruments that Meucci used in constructing the telephone he claimed to have invented …"* After the death of Frederick Bachmann, that took place on January 1905, his heirs, who lived very close to Meucci's cottage, not only disregarded the importance of the objects acquired by their father, but also asked Meucci's executors to have the cottage removed from their land, since they needed the latter to further expand the brewery. They must have either thrown out those objects or given them to someone else, still unknown, who kept them, or simply they lost them. Therefore, it was thanks to the numerous drawings and descriptions contained in the records of the Bell/Globe trial that the above cited organizations were able to carry out faithful reconstructions of those two models, chosen among the many built by Antonio Meucci.

In order to complete this review of Meucci's telephone models, we should also mention those for which only a description without any diagrams exists. However, it should be noted that, after having achieved his most perfect production levels towards 1864-1865, Meucci's productivity, as was natural, decreased and was reduced to a very small number of models. There were, however, also other reasons accounting for this decline in productivity. In fact, Meucci stated in his affidavit:

"… In about the year 1868 I found myself reduced to little or nothing. At this time I had great difficulties in obtaining the necessities of life, and my material by which to continue my experiments. From 1868 to '71, I borrowed considerable money from my friends; my wife, from time to time, sold the most part of her jewelry which she had had from our marriage, also presents she had received while we lived in Havana. Little of this money I used in my experiments in sound telegraph, the balance we used for living purposes …"

Nonetheless, Forest Cottage was full of the telephones made previously, which worked perfectly. For instance, Antonio Meucci gave the following answer to a question concerning the existence of telephones in his house between 1871 and 1876:

[Answer No. 113] *"Certainly; there were some telephones of the best I had made; I don't remember if three or four were connected with the battery and were used by me, until the year 1880. To several friends that came to see me I showed my invention and spoke with them; among others, I remember Cunningham, Mariani, Matilda Ciucci, Benedetti, Conti, Egloff and Bertolino. I remember well that Egloff, speaking with Matilda Ciucci, sang the Marseillaise, that could be heard very distinctly …"*

These statements by Meucci are fully confirmed by the affidavit made by the persons mentioned in the foregoing answer, around the year 1880. It should also be said, as Meucci himself stated in a previous affidavit sworn in 1880, that after having filed his caveat at the Patent Office of Washington (28 December 1871), he no longer kept his invention secret: "… *From that time onward, he* [the affiant, Meucci] *spoke freely to almost every one he met and talked with of his invention …"*

In his deposition, the description of the remaining models, not illustrated with drawings, should have been made by Antonio Meucci in a chronological order, on attorney Humphreys's suggestion. But, as we have already pointed out, Meucci did not succeed in attributing to each of the many models illustrated in his deposition a precise date, with the exception of a few specific cases:

[Answer No. 620] *"I said that all these instruments were made by me from 1852 up to 1860. As all the pieces are mixed up, I cannot recognize which ones come before and which ones come after, but I can swear that all those instruments are reproductions ordered of me by Mr. Bennett in 1880 of the instruments that were in my house, and that my wife sold to Mr. Fleming in 1871 when I was in bed from the effects of serious injuries received in the explosion of the steamboat 'Westfield.' All I can do is decipher each of these instruments and give explanations of them."*

Thus, the descriptions reported hereunder should be generically dated in the period between 1852 and 1860, unless otherwise specified.

Exhibit No. 130 (see Figs. 3 and 4 of *The Electrical World,* only for the shape of the box)

[Answer No. 616] *"It is a tube like the previous one, with an animal membrane; and in the interior a worm of several iron wires surrounded by a helix of insulated copper wire, whose extremities pass through the wooden block to go to the battery."*

[Answer No. 617] *"I told you before, all these instruments were made between 1852 and 1860. Every time that an idea*

came to me to make a new thing I would put it in the instrument, taking away one to put in the other."

Exhibit No. 131

[Answer No. 619] *"This Exhibit 131 is a block of wood with the mouthpiece of the same material. In the bottom there is an animal membrane saturated with paraffine, and across the middle of it, on the under side, passes a metallic rope, on the center of which is soldered a small disk of platinum. At the bottom of the block there is a convex brass cover, in the interior of which there is a bundle of iron wires (bent in the form of a ring) with a round iron button soldered to the extremities. This ring is covered by a helix of insulated copper-wire, the extremities of which pass underneath and go to the battery. The interior of the block is made like a snail, and is of parchment, imitating the interior of the ear. Above, there is a metallic diaphragm. This also is a reproduction ordered by Mr. Bennett, and was in duplicate."*

It can be noted that in this model an earpiece imitating the ear auricle is used.

Exhibits No. 132 and No. 134

[Answer No. 621] *"Exhibit No. 132 is a tube of metal covered with pasteboard, with a wooden mouthpiece; at the bottom, an iron diaphragm and, below the tube, a convex cover of metal, in the inside of which is a bobbin made by me; in the center of said bobbin a tempered steel bar, not magnetized; the two extremities of the wire of said bobbin pass through the bottom to communicate with the battery."*

[Question No. 622] *"What is the screw, coming out of the bottom of Exhibit 132, for?"*

[Answer No. 622] *"It is a piece of steel bar, which I used for another instrument, and I put it in the center of the bobbin to try the effect."*

[Question No. 623] *"But what is the screw for?"*

[Answer No. 623] *"It was used to bring the rod closer or away from the diaphragm, and said steel bar had been used for another instrument, as I said before."*

We may note here that a non-magnetized core was used 'to try the effect.'

Exhibits No. 133a, 133b (see Fig. 8 from *'The Electrical World'* only for the shape of the box)

[Answer No. 624] *"These two instruments, No. 133a and No. 133b are alike. They are a globe formed out of two pieces of convex metal; on top of the globe, a mouthpiece to speak, made of wood; in the interior of the globe is soldered an iron diaphragm; in the lower part of the globe is a bobbin made by me*

of pasteboard, with an iron bar in the center; the extremities of the wires of the bobbin pass through the bottom and go to communicate with the battery. This instrument 133b is like the instrument 133a, differing from it only in having an animal diaphragm in the center of the globe, made of hog's bladder."

Exhibits No. 135a, 135b (similar to No. 133)

[Answer No. 626] *"These are two metal instruments similar to Nos. 133a and 133b, except the interior of the bobbin made by me has at the inside a tube filled in No. 133b, I think, with plumbago, and the other (No. 135a) has inside the bobbin, I think, either charcoal or iron filings. Having made so many of different kinds, and filled with various substances, I can't remember what there is inside of these two instruments. The diaphragms are as the two above spoken of, — one is animal and the other is metal."*

Exhibit No. 137 (similar to No. 135b)

[Answer No. 629] *"No. 137 is like No. 135b, except that it has a diaphragm of copper, and plumbago in the center of the bobbin."*

Here, Antonio Meucci tried a non-magnetic diaphragm and a non-magnetic core

Exhibit No. 138

[Answer No. 630] *"No. 138. There is a tin tube, lacking the external pieces. At the bottom of the tube a wood block which holds a paper tube full of coal, I do not know if vegetal or stone coal. Outside of said tube there is a helix or bobbin of insulated copper wire and the extremities of the metal wire of said bobbin pass through the block at the bottom and connect to the battery. Above said tube there is an animal membrane saturated with bichromate of potash, as I said before."*

Exhibit No. 150 (made after 1860)

[Answer No. 651] *"This is a little box of tin, with a cover to speak in. Under the cover there is an animal membrane, I believe, saturated with paraffin; and in the center of the membrane there is an iron button to render it conductive of the electricity from the battery. The stem of the bobbin is a bar of tempered steel non magnetized. It was manufactured by Mr. Demartini. There is a screw at the end of the bar, and a small hole to regulate the distance of the bobbin from the membrane, bringing it closer or further away. In the center of the tin box there is a bobbin of many ohms*[25]*, and the two extremities of it pass*

[25] The bobbins of the telephones in the early 1900s were made out of copper wire, 0.15 mm in diameter, insulated with silk, the total resistance of which was 190 ohm. This corresponded to roughly 335 m of wire.

through the wooden bottom of the box to connect with the battery."

[Answer No. 652] *"I believe after 1860. I do not remember exactly."*

With *Exhibit No. 150,* we have seen all the models described in Meucci's deposition and/or affidavit. At this point, all that is left for us to do is ideally to leaf through Meucci's famous *Memorandum Book* in which he took notes on his various experiments. When this book was exhibited at the Bell/Globe trial, Meucci exclaimed:

[Answer No. 110] *"I recognize it. It is a friend of mine, where I used to mark in notes the ideas that came to me concerning the telephone, and other memoranda, from 1860 to the present, when I gave it to Mr. Humphreys. Many pages are missing, because I used to tear them out when I needed them."*

It was an accounting book from the *Rider & Clark* Company, for which Antonio Meucci had worked, as we shall see. It was given to him by one of the owners, Mr. William E. Rider. Mr. James J. Storrow, the attorney of the American Bell Co., contested to Meucci the fact that the *Rider & Clark Co.* had been founded on 1 January 1863, and therefore it was impossible that Meucci had made any notes on that book prior to that date. In his second deposition, Meucci clarified this question as follows:

[Answer No. 3 of Meucci's second deposition] *"It seems to me, it was after the war, that is to say, 1864 or 1865. I used to keep in my pocket a little memorandum book, where I was marking all my experiments that I used to make in several branches of industry. I remember that one day Mr. Rider told me that it was better that I should copy in a large book all what I had written in the small book, and he himself gave me a book of the company of Rider & Clark. I took that book and I copied all what I had in my* [pocket] *memorandum book; also all what I had written many years back; part in ink and part with pencil; but many of those pages of the book were lost, as I lost my* [pocket] *memorandum book at the time when the fire took place in the brewery of Messrs. Mayer & Bachmann in Staten Island* [in 1881, Editor's note] *and all the things that I had in the house, such as models of the telephones and so forth, were put out in the yard by the firemen and the water drenched and ruined everything."*

Let us therefore extract some notes from Meucci's Memorandum Book, of which, however, only its English translation is

available to us. The original version in Italian was partially put in evidence at the Bell/Globe trial as *"Complainants' Exhibit Fac—simile Meucci Memorandum Book (Ex. 109),"* containing *"all the parts of said book Exhibit 109, which refer to the employment of electricity or the transmission of sound, and that the said photo-lithographs are accurate representations in all respects of the originals.*[26]*"* An attempt by this author to trace the above photo-lithograph at the *AT&T Archives* (5 Reinman Road, Warren, NJ) was unsuccessful. The answer received on 7 August 1996 through Internet email reads: *"In answer to the questions in your letter we do not have Meucci's Memorandum book here in the archives. It would have only been filed with the court."*

Therefore, we have to make to with the English translation. In reality, we have two English translations: one was made by the lawyers of Globe Telephone Co. and was put in evidence at the Bell/Globe trial as the *'Defendant's Exhibit no. 109.'* This exhibit, however, only contained the text of Meucci's Memorandum Book, translated into English, and *it did not include the drawings*, made by Antonio Meucci in the same notebook. In fact, the text is interrupted here and there by the word *'Drawing,'* to indicate that there was a drawing there in the original Italian text.

The second translation, which we were able to get hold of, is contained in an affidavit sworn by Michael Lemmi on 28 September 1885, which was exhibited at the US/Bell trial, and which contains a sworn translation of those portions of Meucci's Memorandum Book, concerning his experiments on his speaking telegraph, *inclusive of the drawings*. As we shall see hereinafter, these drawings proved to be extremely important.

Apart from the inclusion or not of the drawings, the texts of the two translations differ considerably in some points. The Exhibit 109 seems better in terms of language, whereas the Lemmi's affidavit appears to be more faithful to Meucci's original notes and more accurate from a technical point of view. In the insert hereinafter we shall quote Lemmi's translation, but, wherever required, we shall point out the differences with Globe's translation (Exhibit 109) in footnotes. Obviously, the illustrations are taken from Lemmi's affidavit.

Excerpts from Meucci's Memorandum Book

[from: *Affidavit of Michael Lemmi*, sworn on 28 September 1885, National Archives and Records Administration, College

[26] See, for instance, 'Deposition of Antonio Meucci,' kept at the New York Public Library (Annex), Part 1, p. 214, which is the last page of the records of Antonio Meucci's (first) deposition.

Park, MD - RG60, Year Files Enclosures 1885-6921, Box 10, Folder 1, 230/3/46/6 (originally filed at the Interior Dept. file 4513-1885, Enclosure 2); and from: *Deposition of Antonio Meucci*, New York Public Library, New York, NY]

[Page 1.] *"March 7th, 1862.*

Cylindrical wooden tubes and pasteboard with animal membrane and copper wire with a cotton wrapper is conductor, but not for a long distance.

Those in tin with raw membrane saturated with Bichromate of potash are the best. If the membrane is made impermeable is better as it prevents being moistened by the breath in speaking.

The copper wire wrapped with cotton saturated with salt water, Arabic gum and plumbago is very good, especially at long distance.

Uniting the two extremities of the wire with the earth, it becomes good conductor, taking the electricity of the earth and goes at long distance. The cylindrical tubes, filled with natural loadstone having a metallic conductor in the center, and the two extremities communicating with a metallic disk in the earth, have given a very excellent result, communicating the electricity of the earth from a pole to the other, and it is very simple.

Paper membranes are not very good, being under the influence of the moist produced by the breath.

A good sized wire, surrounded with a thin copper wire, put in the middle of the usual hollow tin tube will be a fine conductor of electricity and can be of good use for families to speak with and in large manufactories, &c. &c." [27]

Note: Meucci uses ground return and experiments *inductive loading* of the line for the first time (see the drawing hereinafter).

[Page 2.] *"20th May, 1862*

The wire saturated with any conductive substance is good to transmit the atmospheric electricity at long distance, but if this be helped by some galvanic batteries it will be yet better.

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[27] Lemmi's translation seems to us more accurate - and less ambiguous - than the one by Globe, in which latter the last passage is translated as follows: *"If a large cord be united with a very thin copper wire, when the rope is made it will be very conductive of the electricity, and could be used in families or factories to speak as they do now commonly with tin tubes."*

The wire wrapped in hemp saturated with a composition of plumbago, water and muriatic acid, gives a stronger conductor and transfers very well the sound of the voice.[28]

At the center of the wire, a strong magnetic iron protected by a bobbin do not need any battery at all and is a good conductor of the sound.

The cylindrical tube it is better be made of metal than pasteboard and the best membrane is the animal one saturated with bichromate of potash.

I do not find the Daniel's battery, so strong and quick as the Bussen's [Bunsen's, Editor's note] - *may be that the latter is so in cause of the charcoal or platine* [platinum, Editor's note] *they have in the porous tube.*

The circular iron piece made by Mr. Cester [Chester, Editor's note] *is very good and very magnetic, but if the interior bobbins were made with thinner wire, they would multiply the resistance for many miles more."*

Note: Meucci experiments with various types of conductors for the transmission line, also rendering a hemp cord conductive by applying a graphite coating. The third paragraph: "*At the center of the wire…*" clearly refers to his experiments with inductive load on the line, justified by the fact that he simulated the length of the line with a large reel of wire, presenting a large stray capacitance.

[Page 34] *"August 17, 1870.*

Several kinds of diaphragm Manilla paper, saturated with sulphoric [sulfuric, Editor's note] *acid and a part of water, stretched upon a tube and after dried, saturating it next with parafine or wax and plumbago, will make a good diaphragm.*

The same paper saturated with nitrate of silver and parafine or wax, as the one said before, is good.

Linen, cotton or silk saturated with a solution of nitrate of silver, starch and a mixture of parafine or wax, have proved to me to be good diaphragms; but to use them it is necessary to put a small disk of iron in the center, in order to have them in contact with the magnetic iron of the bobbin which communicates the electricity by his vibration when the sound pass through.[29]

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[28] Globe's version of this paragraph: *"The cord of hemp bathed with plumbago in water and muriatic acid is rendered very conductive, and transmits well the sound of the voice."*

[29] Globe's version of last sentence: "*in order that it can have action on the centre of the bobbin and communicate the electricity in its vibration when the sound of the word;"*

All these membranes must be kept stretched as the skin in a drum, but I have always remarked that they are too much under the influence of moisture, and by the frequent use they get elastic.

I have used these membranes under the bobbin putting a twisted wire made of two copper wires, and placing in the center an iron disk to combine with the magnetic bar of the bobbin.

(Written with pencil) To be adopted, for having long distance bundles of copper wire isolated with cotton or any other kind of wrapper[30]*, by this means I have obtained a distance of about one mile. (Here ends the writing with pencil).”*

Note: i) The observation on the iron button to be applied onto the diaphragm with the purpose to make it sensitive to the magnetic field generated by the bobbin is very important. ii) Antonio Meucci succeeds to transmit the spoken word at a distance of approximately one mile by using a reel of cotton-insulated copper wire.

[Page 35] *“September 3rd, 1870.*

Put in a tin tube or wooden tube a cylindrical paper envelope filled with cracked loadstone passing the conductor in the center, I found it to transfer very clearly the sound of the voice, keeping always the two ends of the conductor united to the earth.[31]

I made also the experiment by putting in the middle of said paper tube, some pieces of loadstone, surrounding it with some filed iron — it became strongly magnetic, and it is a fine conductor of electricity, as much as a bobbin. I used always the system of communicating the extremities of the conductor with the earth.”

[Pages 35 and 36] September 27th, 1870

“Experiment made the 27th inst. I put at the middle of the conductor, a magnetized horse-shoe, the two bars, that is to say, the two poles N. S. united to the conductor — it gave me good satisfaction, but if the conductor were of copper instead of iron, I think it would be better (to be tried) as to unite to the center of the conductor a strong bobbin, placing in the center of

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[30] Globe’s version of this sentence: *“To have a long distance adopt ends of cord of copper wire insulated in cotton or other.”*

[31] Globe’s version of this paragraph: *”Filled the tube of wood or tin with a cylindrical envelope of paper, and this filled with small pieces of loadstone, passing through its centre the conducting cord, and is very good, and conducts well the sound of the word, but always the two extremities of the conductor united to the ground.”*

said bobbin a strong magnetic iron bar, or if not placing it before the tube to transmit with one of the poles, the other pole being in contact with the earth. [Here drawings No. 1, No. 2, No. 3 and No. 4 are inserted, Editor's note.]

The experiments I made by these methods, are all very good, but they want to be tried more practically and I cannot do it for want of the necessary materials.[32]

The best methods are the bobbin or loadstone, but the horse-shoe is better to have it put before the instrument, be it the receiver or the transmitter, as that to receive the earthen electricity, placing the conductor as it is shown by drawing No. 4 which works like if it was helped by a galvanic battery.

If instead of hemp or cotton for wrappers of the conductor it is used a [bare, Editor's note] *metallic conductor, using the same method above described without any galvanic battery, the result will be the same, but I wish to form a constant dry battery of long durability …"*

Drawing contained in Meucci's 'Memorandum Book,' which was copied by Michael Lemmi and attached to his affidavit sworn on 28 September 1885

Hereinafter, that is on pages 37 seqq., notes on new ideas for a new galvanic battery follow, which we shall briefly mention in the following, as well as other notes on a *marine* (or *diver's*) *telephone*, dated 1872, of which we shall speak in Vol. 3 of this book.

Meucci's notes on pp. 35-36 of his Memorandum Book reveal a novel (unpublished till now) and extremely significant discovery, that of the *inductive loading* of telephone lines (a technique also known today as *pupinization*), according to which greater distance and better quality can be obtained by introducing inductors at specific intervals. It is worth recalling that he simulated the long distance with a reel of wire presenting a remarkable stray capacitance, hence he drew great benefit from the insertion of inductors along the line. According to his notes on page 2 (objected to by American Bell lawyers as they were dated before the book was given to Antonio Meucci by Mr. Rider), Meucci wrote that he had discovered the advantages of inductive loading since 20 May 1862, when he jotted down: "*At the center of the wire, a strongly magnetized iron protected by a bobbin do not need any battery at all and is a good conductor of the sound."*

[32] Globe's version of last sentence: *"I not having the necessary knowledge and the pieces that are needed."* Here, the word *knowledge* (omitted in Lemmi's translation) should be interpreted as *knowledge of proper persons* (as, for instance, Mr. Grant) who could furnish telegraph lines, in order to test Meucci's *speaking telegraph*.

Incidentally, it is worth highlighting that if, as was maintained by the lawyers of the opposing party, the transmission of sound occurred mechanically rather than electrically, the introduction of an inductor halfway through the line would have worsened rather than improved the quality of transmission. Meucci also reported in his notes of 20 May 1862 that the quality of the inductively loaded line was so good that the battery could be dispensed with. This result was later confirmed by his experiments of 27 September 1870; in fact, the electrical layouts adopted in these experiments, which were reproduced in Michael Lemmi's affidavit, clearly indicate that no batteries were used. Finally, in the drawings shown above one should note the ground return of the telephone circuit and, in drawing no. 4, the subdivision of the inductive load into two parts, which latter expedient would be adopted in commercial telephone lines only after the year 1900.

At the time of the various trials aimed at establishing who had priority on the invention of the telephone, nobody realized how important Meucci's notes on inductive loading really were, simply because no-one else knew about this technique. Indeed, as the following chronology shows, only in 1887 was the Englishman Oliver Heaviside able to predict, on the basis of mathematical considerations, that vocal signals could be transmitted without distortion by increasing the lines' self-induction. Notwithstanding, as is common knowledge, Heaviside's theory was not applied until 1899, when Michael Idvorsky Pupin (from whom the term *pupinization* derives), an American of Yugoslavian origins, patented the so-called *loading* of lines with inductors introduced in series on the lines themselves. As one can see, by applying Heaviside's theory, Pupin also unawarely applied the layout sketched by Meucci on 27 September 1870, which, on the other hand, was buried inside the roughly 18,000 pages of the records - never printed - of the suit brought by the Government of the United States to decide whether or not Bell's patents had to be annulled[33].

Lawyer Lemmi - who should also be remembered as a fighter at Garibaldi's side for the unity of Italy - by handing that document down to posterity, allowed (well beyond his expectations), to demonstrate the authenticity and credibility of Meuc-

[33] According to a letter by Charles H. Swan, Counsel for Bell Telephone Co., of 28 June 1915 (see bibl.), the records of this trial amounted to 5,000 typewritten pages for the Government's preliminary proceeding, in addition to 6,600 pages of evidence presented by the Defendants, 365 pages of replies from the Government until the end of the hearings and over 6,000 pages of documents exhibited in court, hence a total of over 17,965 pages. The case 'United States Government versus American Bell Telephone Co. and Alexander Graham Bell' began in 1885 and ended without winners or losers in 1897, as we shall see more in detail in Vol. 3.

ci's Memorandum Book and, consequently, the inventive genius of Antonio Meucci, who proved to be ahead of his time by at least thirty years. Furthermore, this document proves that it was not Antonio Meucci who stole other people's ideas - as was insinuated by his opponents - but that others could have (the use of the conditional is mandatory) taken them from him. We hope that the research we have conducted may serve to acknowledge Antonio Meucci also this merit.

Lastly, it is to be noted that, according to Michael Lemmi's affidavit, the two most fertile years for the *telectrophone* of Antonio Meucci were 1862 and 1870. This latter date agrees with the testimony of Peter Ambrose Parodi (op. cit.), who stated: "*I assert with full knowledge of the case that its predecessor* [of the telephone], *the telectrophone, was conceived in the Tacón Theater in Havana some decades before 1874 and was born at Clifton S. I. some years before 1875 …*"

We shall end this chapter with a review of the events which led Antonio Meucci from his first experiment in electrotherapy in Havana to the construction of a perfect electromagnetic telephone. However, the history of Meucci's speaking telegraph or telectrophone does not end with the events narrated in this volume, but will go on in the forthcoming Vol. 3.

CHRONOLOGY OF MEUCCI'S 'SPEAKING TELEGRAPH'

1844 - In Havana, Meucci draws up a four-year contract with governor Leopoldo O'-Donnell to galvanize swords, buttons, helmets, etc., for the army. For this purpose he acquires a large number of Bunsen batteries and other electrical equipment through Gaetano Negretti.

1846 - Meucci builds a medical apparatus for electrotherapy, with the aim to experiment Mesmer's and Bertholon's theories on animal magnetism and electricity.

1849 - During an electrotherapy session with a patient suffering from head rheumatism, who was sitting in a *third room*, some forty foot from his laboratory, Meucci heard a cry *"more distinctly than natural … I then put this copper of my instrument to my ear, and heard the sound of his voice through the wire."* The patient was holding a copper tongue in his mouth and received an electric shock of about 114 volts. His shout was probably transmitted due to the effect of the variable resistance of the saliva in the patient's mouth, similar to a liquid transmitter. Reception was probably obtained through an electrostatic effect. Subsequently, the patient's mouth was insulated with a cardboard cone, thus probably realizing a two-way static telephone. *"… From this moment this was my imagination, and I recognized that I had obtained the transmission of the human word by means of conducting-wire united with several batteries to produce electricity, and I gave it immediately the name of 'Speaking Telegraph.'…"*

1850 - Meucci decides to leave Havana for New York for several reasons, including that of perfecting his speaking telegraph. He reaches New York on 1 May 1850, but he is overwhelmed by the problems of the Italian exiles. He gives hospitality to Gen. Garibaldi and Major Bovi in Clifton, Staten Island, and he builds a candle factory to help the Italian exiles.

1851 (end) - Meucci repeats the Havana experiment in Clifton, achieving the same results, that is *"the transmission of the word not very distinct."*

1852-53 - Meucci develops the structure of his static telephone, including diaphragms of different types and bobbins (without magnetic core). He introduces important improvements in the structure of the acoustic cavity of the instrument. Together with Carlos Pader and Gaetano Negretti, he visits the shop of Mr. Chester, a wholesale dealer of electric and telegraphic supplies on Centre Street.

1853 - Meucci, inspired by the visit to Chester's shop, comes very close to the electromagnetic telephone: he makes a bobbin in a cardboard reel, in the hole of the reel he introduces a few steel wires (not magnetized) and finally utilizes *an animal membrane with a semicircular cut*. The result was similar to the previous ones: he *received the noise of the word.*

1853-54 - Meucci builds a large number of models, in which he experiments with different combinations of magnetic and/or electric cores and diaphragms, using plumbago for this purpose. At times, he surrounds the core with a coil

which is soldered to the core at the two ends. Finally, he decides to use animal diaphragms that are stiffened with bichromate of potash, and have a metal tongue at the center, which *serves as a valve, opening and closing, for the oscillation of the word.*

1854-55 - Meucci sets up a telephone link from his laboratory in the yard to the cottage basement and from here to Garibaldi's room on the third floor (attic) of the cottage.

1856 - Meucci gains his first success with an electromagnetic telephone model using a permanently magnetized horseshoe iron core, and he discovers that using an animal diaphragm the same instrument *does not speak.*

1857-58 - The painter Nestore Corradi prepares a drawing for Meucci, showing two persons sitting, with two instruments each, who talk by means of the electric wire and the battery. As better shown in Vol. 3, this drawing also shows how Antonio Meucci avoided the so-called "local echo" or "sidetone[34]," by separating the two directions of transmission. In fact, the drawing shows a ground return path and _two_ aerial lines, one for each direction. Also remarkable are the two Morse buzzers, to solve the problem of call signaling,

1858-60 - Meucci builds an electromagnetic telephone with bobbins and magnets purchased from Mr. Chester and he achieves *"excellent results, with a quasi-exact transmission of the word"* even without the battery. The screw that regulates the air gap appears for the first time; the bobbin is placed near the end of the magnetic core; an animal diaphragm is used with an iron tongue underneath.

1859, 9 April and 1860, 6 June) - Meucci files with the US Patent Office a caveat, and then a patent application on a *dry galvanic battery* invented by him, which latter, however, is rejected.

1860, 22 September - Enrico Bendelari leaves for Italy, with the charge of contacting Telegraph Companies that might be interested in testing Meucci's speaking telegraph. In the same period, or shortly after, Meucci publishes a description of his invention in *L'Eco d'Italia,* which he then would send to Mr. Bendelari in Italy.

1861 (summer) - Enrico Bendelari returns from Italy, with negative reactions from the persons contacted, especially the Deputy Manager of Telegraphs of Naples. Meucci builds an electromagnetic telephone which is similar to the previous one except that the bobbin is shorter and wider, and obtains good results.

1862, 7 March - Meucci experiments the earth return path, connecting a pole of the battery and an end of the receiving terminal to a *metallic disk in the earth*, and observes that this way he achieves transmission over a *long distance* (also owing to the lower capacity of the line).

1862, 20 May - Meucci now focuses on perfecting the transmission line, experimenting with various types of conductors and treatments thereof

[34]The sidetone effect was always present in early telephone systems, as the speaker heard his own voice in his own receiver.

and runs the first experiments with inductive load on the line, noting down in his Memorandum Book: *"At the center of the wire, a strong magnetic iron protected by a bobbin do not need any battery at all and is a good conductor of the sound."*

1864-65 - Meucci uses a shaving-soap box to build *"the best instrument that I had ever made for transmitting and receiving the words."* In it he uses *"a large bobbin containing a large number of feet of fine insulated copper wire,"* a diaphragm entirely made out of metal and well fixed at the rim by the box's screw cap.

1865-67 - Meucci experiments with other models, with different magnetic cores (bent horseshoe, corkscrew, toroidal with magnetic shunt, etc.) without achieving any further improvements.

1870, 17 August - Meucci obtains the transmission of the word at a *"distance of about one mile,"* using a reel of cotton-insulated copper wire.

1870, 27 September - Meucci successfully experiments with the inductive loading of the line: *"I put at the middle of the conductor …,"* making the four drawings reproduced in Lemmi's affidavit. He perceives the need to experiment with his various solutions in the field, that is to say on actual telegraph lines of the time. Also, in view of viable commercial applications for his *speaking telegraph*, Meucci notes down in his Memorandum Book: *"I wish to form a constant dry battery of long durability."*

1870-1885 - For the events of this period, we refer the reader to Vol. 3

1885-1887 - At the Bell/Globe trial in New York, the lawyers of both sides do not realize the importance of Meucci's notes on inductive loading or on sidetone suppression, simply because ... they had not yet been invented by others.

In fact:

1887 - Oliver Heaviside in Great Britain mathematically proves that the transmission of voice signals can occur without distortion if the self-induction of aerial lines or of the cables is increased.

1899 - Professor Michael Idvorsky Pupin of *Columbia University* applies the ideas elaborated by Oliver Heaviside in 1887 and proves that the performance of a telephone circuit can be greatly improved by inserting inductors in series with the line. Such a contrivance is known as (inductive) loading of the lines.

1900 (about) - Anti-sidetone (AST) circuits are developed more or less on the same epoch as the inductive loading.

1901, 22 March - The British Post Office is the first to introduce the inductive loading of telephone cables, in Great Britain.

1918 - George A. Campbell gives fundamental contributions with his nine patents on AST subscriber circuits.

THE NEW YORK PARAFFINE CANDLE CO.

While *Clifton Brewery* was coming to its end, as it were, and, at the same time, as we saw in the previous chapter, Meucci's telephone was becoming a tangible reality (though without finding any supporters), the tenor Domenico B. Lorini, who often visited the Meuccis in their home, was sincerely concerned to see the 'great talent' of his friend Antonio go to waste. Lorini had known the Meuccis ever since Havana. In the period concerned, in 1858 that is, tenor Lorini was thirty-two years old, and had recently become acquainted with a man by the name of William E. Rider, who had married his wife's sister. Rider was a little younger than Lorini (he was 27 years old at the time) and, coming from a wealthy family, he wished to undertake some profitable venture of his own. His father owned half of the Goodyear patents for rubber production, which earned him a very high income.

In early fall of 1858, Lorini took William Rider to Meucci's house, so the two could get to know each other. This is how Rider described that encounter at the Bell/Globe trial:

Affidavit of William E. Rider (20 April 1886)

National Archives and Records Administration, Northeast Region, New York, NY - Records of the US Circuit Court for the Southern District of New York - The American Bell Telephone Co. et al. vs. The Globe Telephone Co. et al. - Exhibits and Affidavits.

"… Lorini represented to me that Meucci was the inventor of various things, and a man possessed of a great deal of valuable knowledge, but in very embarrassed circumstances; and he solicited me to come to Meucci's assistance, representing that no doubt money could be made by giving him opportunities to develop his inventions.

I investigated Meucci's affairs, and found that he was in very embarrassed circumstances. He lived at Clifton, Staten Island, in a small house, and had owned a small brewery there, and a public garden; but the property was mortgaged, and there were law suits going on at the time about it, and it was going to be sold by judicial proceedings. He had a small engine[35] there also, which was covered by a chattel mortgage to Tagliabue.

I was impressed by the representations made by him, and by Meucci's own claims and statements, and I set to work to un-

[35] In his deposition (Answer No. 8), Rider said: *"in that shop was a boiler and lathe and some other tools"*.

tangle his affairs, and to furnish money to experiment with and bring out such inventions as he might have.

I made a contract with him in 1858 whereby I agreed to furnish money to perfect his inventions, and the patents were to belong to me, and Meucci was to share in the proceeds. My impression is that that contract was written; but I have been unable to find it, if it did exist in that form. I know, however, that we made such a contract, and that it was acted under for ten years or more.

My recollection is that I procured an injunction to stay the sale of Meucci's property at one time, but the general result was that a compromise between the different creditors was effected, the property was sold, and a sum of money, about three hundred dollars, was saved out of the property for Mrs. Meucci, besides the same amount to her lawyer, Wm. I. Street. This money I kept for her, paying her interest for it; and it remained for a long time in my possession, but was finally all drawn out by her. Some of Meucci's patents were in her name, and some small profits resulted to her from them, and I find that in January, 1863, she had $401.17 to her credit, which was subsequently drawn by her at different periods.

On the 10 of June, 1859, I paid off the chattel mortgage to Tagliabue for $326.82[36] … …

Our arrangement was that I should furnish the money for any of his inventions and we should share the profits, if I chose to pay the expenses of the patents …"

Rider's statements were confirmed in part in Meucci's deposition, which was given four months before. In particular, Antonio Meucci stated that he had entered into the contract with Rider, probably in writing (although he could not find it any more either), roughly confirming its contents.

The fact that Meucci's financial situation was bad is also revealed by a letter written by Meucci to his friend Garibaldi on 26 December 1859, in which he complained: *"… I am in a foreign country, where I have been living in misery since three years …"*, therefore, since the beginning of 1857.

As Rider declared in the same affidavit, *"Meucci was very prolific in inventions and took and applied for a large number of patents."* Therefore, as stated in the contract, he gave instructions to a patent attorney he trusted (and who was also his administrator), Mr. Edward S. Renwick, to work with Antonio Meucci and turn more than a dozen of his inventive ideas into patents, covering the expenses incurred for a part of them as we shall see in the following. However, it should be pointed out that, according to what he stated in his affidavit, Mr. Rider had the

[36] In his deposition (Answer No. 87), Rider gave a slightly different figure: $326.02.

right to select and pay only for those Meucci's inventions that he deemed advantageous.

The first patent application prepared by Mr. Renwick was filed on 15 November 1858, and the rights were granted by Meucci to tenor Lorini on the 28 of the same month. Shortly thereafter (as envisaged in the contract entered into with Rider), the rights were transferred to Mr. Rider. The patent (reproduced in full in the Appendix "Antonio Meucci's Patents until 1870") concerned a special plaster mold whereby to produce paraffin candles. It was granted on 25 January 1859, and was numbered 22,739. It should be noted that this was the first of a long series of patents which Antonio Meucci applied for and obtained in the United States of America. Besides the patent, Antonio Meucci elaborated a comprehensive project for a new candle factory, drawing also on the experience that he had acquired with the stearin candle factory that he had set up when he had worked in partnership with Salvi.

The new factory was founded in February 1859, and was named the *New York Paraffine Candle Co.*, with the aim, according to Rider's deposition (Answer No. 18), "… *to manufacture paraffine candles from paraffine, which was then an entirely new product, under Meucci's inventions.*" As had occurred in 1850-1851, for a few months the first paraffin candles were produced in the basement of Meucci's cottage. Then, seeing that the results were good, Rider rented a building not far from Meucci's cottage, where he transferred all of the machinery and production. At the time of his deposition, Rider did not remember exactly where the factory had been located. He only remembered that it was near Meucci's house, in a building that had hosted the *Old Carriage Factory* (a factory where wagons and carriages were produced), and that about a year later the candle factory was completely destroyed by a fire. After the fire, Rider transferred the production to Stapleton - a small town close to Clifton - where he rented and later purchased another building. Here also, like in the stearin candle factory, the factory produced candles of different types, including small candles for decorating Christmas trees and birthday candles (Chinese candles), as well as different types of soaps for various uses.

On the basis of the scant indications provided by William Rider - and with the valuable help of the Archivist of the *Staten Island Institute of Arts and Sciences*, Mr. Hugh Powell - we went through the local newspapers, printed in the years following 1859, and were able to find two long articles on the above mentioned fire and on the subsequent location of the *New York Paraffine Candle Co.* These articles are reproduced in full below, along with other interesting paragraphs extracted from two other articles. The last article, from *The Staten Islander*, contains the statements of a Staten Island lawyer, Mr. A. P. Ullman, who, as a young boy, often used to go to the *New York Paraffine Candle Co.*, as it was close to his home.

ARTICLES ON THE "NEW YORK PARAFFINE CANDLE CO."

1
The Richmond County Gazette,
24 October 1860

«Large Fire, and Accidents.— *Yesterday afternoon, at two o'clock, a fire broke out in the Paraffine candle factory of W. E. Rider & Co., in Amos street, near Vanderbilt Landing, Clifton, caused by the ignition of a quantity of grease, which had boiled over upon the floor. The building was speedily enveloped in flames, which were soon communicated to the adjoining premises of Mr. Dennis McCarthy on the east side, occupied as a carriage manufactory, and on the west side burned two dwelling houses, extending to the carpenter shop of Robinson & Mulford, all of which were entirely consumed, together with numerous surrounding sheds. Happily the buildings were considerably detached from the houses bordering Bay street, else the entire row must have been destroyed. There was scarcely any alarm given by the bells of the three villages, until the fire had made considerable headway, which may account in part for the tardiness with which the fire companies arrived on the ground. However, when they got to work, they did effective service. Engines Nos. 4, 5, 6 and 7, and the "Hooks," together with several hose companies - and last, though not least, the prompt and indefatigable 'Buckets,' all vied with each other in their efforts to subdue the raging element.*
The entire stock contained in the candle factory was destroyed. We have not learned whether it was insured. Mr. McCarthy saved his stock. Mulford & Robinson lost most of theirs - no insurance.
A sad accident happened to Mr. Thos. Berry, assistant foreman of the Bucket Company, while in the discharge of his duty. In attempting to descend a ladder which had been very insecurely placed against a two story frame house on Bay street, he lost his foothold, and fell a distance of twenty feet, striking upon the stoop, and injuring him by dislocating his collar-bone. Mr. Thomas Morgan also met with an accident the particulars of which we did not learn.»

2
The Richmond County Gazette,
Wednesday,
12 December 1860

«The New York Paraffine Candle Company — *in spite of the disastrous fire which ousted from their former location, have again commenced operations, and are now turning out candles at the rate of 1,000 per diem. The brick building in Stapleton, formerly occupied by the "American Screw Factory," has been refitted and prepared for their use, and upon a visit to the*

establishment, we found things in complete working order. Under the gentlemanly conduct of Mr. Meucci, who has charge of the works, we made an interesting survey of the premises, and were surprised at the number of distinct operations which must be gone through with before a box of candles is made ready for the market. First, the material (which is the residue of coal oil after kerosene has been expressed from it) is melted down in immense vats or jars; from this it is taken out in dippers with long spouts, through which it is poured into perpendicular molds. The wick is already hanging in the mold, and the candle having hardened around it, is taken out and cooled in water. After this operation, it is carried to the floor above, where the wick being cut, and passing for this purpose through some half dozen female hands, it is subjected to the action of a rapidly revolving knife, which rounds it off and gives it a symmetrical appearance. After this, being scraped, and smoothed, and polished, it is declared finished, and sent to the packer, who stores it away in a box, in company with hundreds of others, to be sent off to market.
And why will people make light of such a business as this, and call candles wick-ed *things?*»

3

Notes by SIIAS from:
The Richmond County Gazette
of 21 October 1863

From a description of a parade of the Staten Island Fire Department held yesterday: "A large and beautiful double wreath was presented to Neptune Hose No. 1, by Mrs. Schaffer, of Tompkinsville, and a similar favor was bestowed upon No. 8 by the Wood Road girls employed in Meucci's Candle Factory, Stapleton…(The wreath was presented to Clifton Engine Co. No. 8.)"
Note by SIIAS: This may be connected with the N.Y. Candle Co., which see: New York Paraffine Candle Co. - (W. E. Rider & Co. - Mr. Meucci Manager.)

4
The Staten Islander,
6 January 1926

«Island Italian Invented Phone, Claims Ullman, Huguenot Lawyer.
… In 1858, Antonio Meucci and General Garibaldi
… carried on the manufacture of sperm candles, some of which, I remember were five or six inches long of the colors of red, green, yellow and white, used for decorating Christmas trees, etc..
Their factory was located near the then called Vanderbilt Steamboat ferry landing on a street called Amas [Amos, Editor's note] *street, about one hundred and*

fifty feet west from Bay St. and about five minutes' walk from my home. I was then a child between eight or nine years of age and a very frequent visitor to their factory … Antonio Meucci was about five feet seven inches in height, weighed about two hundred pounds, with a very large head and wonderfully intelligent, bright and penetrating, kindly expressive grey eyes. His manner was gentle, frank, warm and magnetic …
After Antonio Meucci and General Garibaldi disposed of their candle factory, Meucci rented a building at Stapleton, the adjoining village where he made hats out of wood-pulp, and worked on a model of a piano he made out of glass, and where he invented and manufactured barometers."

Location of the 'New York Paraffine Candle Co.' until October 1860

The first article of the Richmond County Gazette tells us that the fire broke out at two o'clock in the afternoon, on 23 October 1860, and that the factory was situated in Clifton, on Amos Street (currently Norwood Avenue), close to the Vanderbilt Landing for ferryboats. From the statements of lawyer Ullman, we gather that the candle factory was situated some fifty meters west of Bay Street, the road that runs along the beach.

With the help of the 1874 Beers Atlas of the area (which indicates the Robinson carpenter shop and the shops and houses on Bay Street, which, according to the *Gazette*, were not damaged by the fire), we have drawn the map reproduced above which should give a relatively accurate picture as to the location of the New York Paraffine Candle Co. prior to the fire.

As regards the fire alarms mentioned in the *Gazette*, it is worth recalling that at the time there were observation posts in every village, at times in the church belfries. A watchman would ring an alarm bell whenever he spotted a fire in the surroundings. In that period, fire-fighting was considered a brotherly commitment involving the strongest men of the community, who volunteered in the fire brigades and emulated each other in courage and speed of intervention.

Race of fire brigades, with pump and hoses, in an 1854 lithograph

For instance, Philip Hone reported in his already-mentioned "Diaries of Old Manhattan" that different brigades would race, competing against each other, to be the first to pour water on the fire (with hand-operated pumps, although after 1860 the first steam pumps began to be used). They would generally arrive on foot, as illustrated in the lithograph reproduced above, dragging along a cart with the pump and another one with the hoses (as well as one with ladders, which is not shown) in a sportive speed race.

More often then not, they would find themselves before threatening individuals (the so-called 'plug-uglies') who stood by the water outlets near the fires, sent ahead by rival brigades in order to prevent other teams from using said outlets.

New York City will never forget the biggest fire in its history, broke out on 16 December 1835, which completely destroyed almost all of the southern part of Manhattan. Another famous fire in Manhattan was that of the Crystal Palace, which was supposed to be built with fireproof or incombustible material and which was nevertheless destroyed by a fire on 5 October 1858, in just one quarter of an hour.

On Staten Island, the first volunteer fire brigades were organized just before the tremendous Manhattan fire of 1835. As the writer Frances Winwar recalled in his paper "The Monument in Staten Island: Meucci, Garibaldi and the Telephone" (see bibl.), Meucci himself and General Garibaldi were both volunteers at Staten Island's Fire Department. The only fire that was not quenched on Staten Island - because such was the will of the residents of the island - was that of the Quarantine Buildings, in September 1858, that we have already mentioned.

The first article of the *Gazette* reproduced above mentions the *Hooks* (also known as *Hook and Ladder*), namely brigades equipped with hooked ladders, as well as the traditional *Buckets* (or *Bucket Brigade*), the brigades that formed a chain and passed buckets from hand to hand. The parade of the Fire Brigade described in the *Gazette* of 21 October 1863, is very impressive and amusing. The young girls and women of the town offered a wreath to every team, acknowledging their proven courage. For instance, the girls of 'Meucci's candle factory' (the fact that it was *Meucci's* and not *Rider's* is meaningful indeed) donated their wreath to *Clifton Engine Co. No. 8*, which probably did the most to quench the fire that broke out in the previous site of the New York Paraffine Candle Co.

In his Answer No. 334 of his deposition at the Bell/Globe trial, Meucci stated that the materials and machinery of the factory were insured. In his Answer No. 353, he added that the insurance company paid compensation for damages amounting to a total $11,000, and that Mr. Rider used that money to purchase the building for the new factory at Stapleton, not far from the previous one. This is where Antonio Meucci began to manufacture candles once again, only one month and a half after the fire in the first factory, as reported by the *Gazette* on 12 December 1860.

The same paper mentioned a turnout of one thousand candles per day, but it did not specify the address of the new factory. It said that it was a brick building, which was previously occupied by the *American Screw Factory.* However, in the following issue

of the *Gazette*, dated 21 October 1863, mention is made of the 'girls of Wood Road,' who worked at Meucci's candle factory in Stapleton. We weren't able to identify a Wood Road in Stapleton in the maps of the epoch. However, in his deposition at the Bell/Globe trial, Domenico Mariani said (Answers No. 64 and 65) that the factory was *"near the shore … near the ferry-house, between the second and third landing."* As the second (Stapleton landing) and the third (Clifton or Vanderbilt landing) were only little more than one kilometer apart (see the map on p. 48), it must have been one of the few streets existing in that area, namely, either Harrison Street, Quinn Street, McKeon (now Tompkins) Street, or Brownell Street.

The description of the visit made by the reporter of the *Gazette* to the new premises of the New York Paraffine Candle Co., which had just become operational after the fire, is very interesting. In particular, the paragraph that describes the operations performed in candle manufacturing justifies the ample space that has been dedicated to this subject in the Appendix entitled "The Stearic Industry." The *Gazette*'s definition of Antonio Meucci's demeanor as "gentlemanly conduct" was shared by everyone who had had the opportunity to meet him, including Mr. Ullman, according to his interview with *The Staten Islander*. Another testimony was given by the already mentioned Peter Ambrose Parodi who became Antonio Meucci's friend in 1870. In this regard, Mr. Parodi expressed himself as follows in his manuscript (see bibl.): *"… I had then the opportunity to know his social life, his pleasing manners, his hospitality …"*

Mr. Ullman was interviewed when he was about eighty years old, and some of his recollections were somewhat hazy. In fact, he confused the New York Paraffine Candle Co. with the first factory of 1850-1854 set up by Antonio Meucci and Lorenzo Salvi when Gen. Garibaldi was there, which he couldn't possibly recall since, as is stated in the article, he was born in May 1849. Meucci's height does not appear to be correct either, as many photographs available (see, for instance, the one on p. 432) show that he was certainly taller than 1.80 m (six foot). On balance, however, all his other recollections are convincing.

The New York Paraffine Candle Co., as Mr. Rider himself admitted, continued to operate until well after 1866, but, always according to Mr. Rider, Antonio Meucci remained linked to him until 1869 on account of the previously-mentioned contract. According to a clause in the contract, Meucci was entitled to receive five per cent of the profits of the candle factory. However, as no profits were reaped until the end of 1863 (and Mr. Rider testified that the losses in the first year amounted to $25,000), until that date Meucci had to settle for his salary as the factory manager, which only amounted to $15 a week. Evidence of this is given in the following excerpts from letters written by Antonio Meucci between 1859 and 1864, which have been selected also with the aim to give testimony of the events that took place in that period.

EXCERPTS FROM ANTONIO MEUCCI'S LETTERS (1859-1864)

To Gen. Garibaldi
(23 September 1859)
"… Now I am working at a factory where I have made a new invention for new candles made from stone coal [*paraffin*, Editor's note]*, but I do not know how it will end up but I hope it will go well, and then you'll be happy …"*

To his brother Giuseppe
(20 December 1859)
"… Now, as you know, I have obtained a patent ... for a new invention of Candles extracted from stone coal, which they call paraffin candles, but my critical situation has forced me to find through Lorini a company of Americans, his relatives, thus in my old age I have to work like a slave for a mere 15= dollars a week, that here is a porter's salary, and to live I am obliged to do this. For three years I have been in litigation with my creditors and I haven't seen the end of it, and I don't know how it will end up, though I have put everything in my wife's name, but her complaints to me are such that even death would be better; I have sold or pawned everything , and I do not even have enough money to buy a piece of bread, to protect my wife and to set aside something for her to live on, were I to die, but I am always reproached, and this shortens my life. This is what happens, when a man does good business and is lucky, then everyone says that he is a man who knows how to look after his interests, but if, on the other hand, his business and luck run out, then they say that he is a thief and a fool …"

To Gen. Garibaldi
(26 December 1859)
"... As I have obtained a patent for manufacturing So-called Paraffin candles - made from stone coal, that is - I have taken the liberty to send you, through our Friend Negretti, a sample of this new Genre as I hope that you will accept it, so you could examine this new branch of Industry. But my misfortune as well as that of all of us, Italians, is that of being in the hands of Foreigners in the new and in the old world. I reduced myself to work like an apprentice for a mere $15 a Week, much to my shame, but in my present situation I am obliged to do this.
In the box that Negretti is shipping you, when you'll open you'll find two Large candles on top, made of the same substance, but they are not very attractive because the molder did not do a good job - plus two tricolored Candles - and a box of white candles - a piece of Coal where this substance is situated, and a cloth with some Paraffin as it comes out from Coal through Distillation. This substance forms in the oil that is burned in lamps [*kerosene*, Editor's note] *and it gives off light as that of grease, as you shall see from the candles that you will light. In the same box there is a false bottom and under it you will find a rifle that*

Negretti will mention in his [letter]*…"*

To Gen. Garibaldi
(14 January 1861)
"... I am also giving him a box with large Church Candles, one green, one red and one white, and I hope that the Good Chaplain Gavozzi [*Gavazzi,* Editor's note] *will light them when he will sing the Te Deum in Rome or in St. Mark's in Venice.*
Here Political affairs are causing disunion in the United Stated and all trade is paralyzed; I don't know how it will end up.
Given my age and my past bad business, I don't know if they will ever make me see my Italy again, which I am longing for so much after your happy outcome. Glory to you and to your Endurance and to all those brave men who never abandoned you and I hope you will come to an end, when accomplishing the final Redemption ..."

To his brother Giuseppe
(16 February 1863)
When you receive this letter Send a letter to Genoa to the following Address: To Mr. Stefano Canzio, Fratelli Canzio Co., Shop-keepers in Porto Franco Genoa claiming A Box of Samples of Paraffin Candles, with the Box marked No. 2, letters G.M. and you pay the expenses. The Box contains 5. Cardboard Boxes of 6. &: and one of these three colors plus Church Candles of one &: you will tell me if they are to your Satisfaction …

To his brother Giuseppe
(16 April 1863)
"... You believe that at 37 soldi [*cents,* Editor's note] *the candles are expensive. You must know that now they cost 40= to 43, due to the War expenses, therefore do not think about this anymore ... You will always be poor in your Speculations and for yourselves and Always in the hands of Foreigners, who make the Speculations for yourselves, it is a true shame … Be united in the arts and Commerce, and You will be Happy. Italy lacks for nothing, I regret I am old … As to the candle making in London, I don't know what to tell you, but I think that Someone from the Company here screwed me up and went there to teach to the Hypocritical English my way of making Candles, but now I shall Know through Negretti … I Hope to see Italy before I die and embrace you all …"*

To his brother Giuseppe
(31 March 1864)
"... you never have told me anything about the candles whether they were appreciated and whether they are like those of London ... my business is always neither good nor bad, here the war is destroying us ..."

During the Bell/Globe trial Rider gave different figures of Meucci's wages, both in his deposition, in which he stated (Answer No. 22): *"… the salary in the beginning was $20 a week …"* and in his affidavit, in which he stated: *"… Meucci was employed by me on a regular weekly salary, which, I think, was twenty dollars a week …,"* we don't know whether the *"I think,"* could mean that he didn't remember it well. Note that in his testimony William Rider declared that (Answer No. 159) *"Meucci was superintendent"* of the factory. It must be taken into account that Mr. Rider testified in favor of the American Bell Telephone Co. against Antonio Meucci and that, perhaps, he had to avoid giving the Court the impression that he had exploited Antonio Meucci. At any rate, even a salary of twenty dollars a week would have been humiliating, for the superintendent of a factory that produced one thousand candles a day, with a turnover of about 2,800 dollars a week, at the prices indicated by Antonio Meucci in the letter to his brother of 16 April 1863.

Besides the issue of Meucci's salary, Mr. Rider stated that he had never known about Meucci's experiments with the telephone, though he did say that he had visited Meucci many times and had also been to his house, having lived for one year near him, in Clifton. But Meucci denied this (Answers Nos. 504 and 505), stating that Mr. Rider had always lived in New York and never on Staten Island.

We thought it useful to plot, in the diagram below, the consumer price indexes in the United States for all of the last century and a good part of this century, taken from the *Bureau of Census - Historical Statistics of the US*, published by the Department of Commerce, Washington, DC. This graph highlights the inflationary effect of the Civil War (April 1861 - April 1865), which peaked at the end of the war and then declined slowly, taking more than two decades to return to the pre-war levels. As can be seen, the same occurred during the war against the British, in the years 1812 to 1815. Therefore, Meucci's statements in his letters of that period: *"all trade is paralyzed …* [prices rise] *due to the war expenses … here the war is destroying us …"* fully reflect the situation of that period.

Inflation of the dollar between 1800 and 1988 (index of 1850 = 1)

Meucci's longing for Italy is moving (it recurs in almost all of his letters), particularly risen after the expedition of the Thousand, which led to the unification of the Italian Peninsula, with the sole exceptions of Rome and Venice. These are the cities where Meucci hoped that one of Garibaldi's chaplains would soon be able to celebrate the Te Deum with the candles manufactured by his New York Paraffine Candle Co. If Antonio and Esther Meucci could have afforded it, they would have returned to their native city, Florence, which was united to Italy by a popular vote on 22 March 1860, and was later to become even

the capital of the country, as of June 1865. *"… I hope to see Italy before I die and embrace you all …"* At any rate, he was sending a rifle in the false bottom of the candle crate. His statement *"… my misfortune as well as that of all of us, Italians, is that of being in the hands of Foreigners in the new and in the old world …"* was bitter, but true.

Three years after the paraffin candle factory became operational, William Rider admitted that he was making profits and that he therefore had started to give five per cent of them to Antonio Meucci, in the following amounts:

[Rider's deposition, Answer No. 87] *"December 31, 1863, $747.78*[37]*; June 30, 1864, $529.35; and December 31, 1864, $779.36; total, $2,058.49."*

[Rider's affidavit] *"… This money was paid to Meucci by my firm Rider and Clark, as he wanted it …"*

It should be underlined that, although it operated in times of war, the company did very well. Moreover (see Rider's Answers Nos. 106 to 111), Rider never suffered financial troubles for the entire period that he exploited Meucci's inventive genius. Besides, the success of the New York Paraffine Candle Co. proves that Meucci's idea to set up a candle factory in 1850 was not unreasonable. It is also worth mentioning that as soon as its industrial production began (after 1855), paraffin cost much less than both stearin and wax. Below is an extract from Meucci's Memorandum Book on this subject:

[page 56] *"2 July 1880 …* [the price of] *paraffine is between eighteen and twenty cents, wax between twenty-five and thirty-five …"*

[page 59] *"… Distilling this peat it gives an oil very dark and thick which crystallizes a substance like wax or paraffine of a yellow color. The peat oil purified by the heat is good to make candles, mixing with it another material about ten per cent, be it stearine or paraffine, etc…"*

[loose page, after page 63] *"… The paraffine costs eighteen to twenty cents per pound, and the yellow wax costs from thirty to thirty-five cents a pound. My composition of mineral wax will only cost from three to five cents per pound …"*

From these notes, the industrial vision of Antonio Meucci is apparent, as here, as in other passages of his Memorandum Book, he devoted special attention to the cost of materials and processes, and indeed later on (pp. 59 and loose page after p. 63) he came up with a mixture of mineral waxes that was even more convenient than paraffin. Thus (as, on the other hand, was acknowledged on several other occasions) it appears that he ran

[37] In his affidavit, Rider declared a slightly different figure: $749.78.

the New York Paraffine Candle Co. with skill and efficiency, not only from a technical point of view.

According to the statements of a witness for American Bell, Federico Garlanda, already mentioned, Mr. Rider was steadily mentioned in the yearbooks of companies of New York City from 1860 to 1867 (see the insert below), that is, during the time that he was connected with Antonio Meucci. Mr. Garlanda was sent by attorney James Storrow to examine said yearbooks, in order to prove that the company *Rider & Clark* was mentioned there only since 1864 (it was, however, officially operational as of 1 January 1863). This was aimed to prove that all of the notes prior to 1864 (or 1863), reported by Antonio Meucci in his Memorandum Book - which was originally one of the *Rider & Clark* accounting books - were false.

However, Mr. Garlanda's deposition, of which we have reproduced the paragraph that is of interest below, also proves that either Mr. Rider or the *Rider & Clark Co.* were in business only for the period in which they took advantage of Meucci's work and creativity, and for the products invented by Antonio Meucci, and neither before nor after that.

Quotations of William E. Rider from 1860 to 1867 in the yearbooks of the New York Companies

[From the deposition of Federico Garlanda, given on 19 April 1886 - Records of the US Circuit Court, Southern District of New York, case "The American Bell Telephone Co. et al. v. The Globe Telephone Co. et al." - National Archives and Records Administration, Northeast Region, New York, NY]

[Answer No. 11] *"I have looked in the directories* [*of New York*, Editor's note], *and found the name of William E. Rider in the directories as follows:*

Directory, year ending May, 1860	*W. E. Rider, treas., 16 Beekman.*
Directory, year ending May, 1861	*W. E. Rider, pres., 16 Beekman.*
Directory, year ending May, 1862	*W. E. Rider, pres., 16 Beekman.*
	and candles, 51 Broad.
Directory, year ending May, 1863	*W. E. Rider, oils 51 Broad.*
Directory, year ending May, 1864	*W. E. Rider, oils 51 Broad.*
	Rider & Clark, mer., 51 Broad.
Directory, year ending May, 1865	*Rider & Clark, mer., 51 Broad.*
Directory, year ending May, 1866	*Rider & Clark, mer., 51 Broad.*
Directory, year ending May, 1867	*W. E. Rider, oil, 51 Broad.*

After 1867 it was no longer Rider & Clark."

The foregoing yearbooks show that Mr. Rider and *Rider & Clark Co.* had an office on 51 Broad Street, in New York City, for almost the entire period considered. It must therefore be implied that Mr. Rider had to stay there most of the time, being Antonio Meucci fully engaged in the management of the factory in Staten Island, as also indicated by the newspapers mentioned above. During his deposition at the Bell/Globe trial, Mr. Rider was cross-examined on this subject, as follows:

[Cross-Question No. 147] *"How frequently did Meucci come in and see you when he was working, when you had your store here in the city?"*

[Answer No. 147] *"When I lived at Staten Island I saw him every day, twice a day."*

[Cross-Question No. 148] *"But when you commenced business up here in the firm of Rider & Clark, how frequently did he come in to see you?"*

[Answer No. 148] *"I went down to Staten Island every Sunday, and sometimes I would go down in the week time."*

This is further evidence of the fact that Antonio Meucci was involved full time in running the New York Paraffine Candle Co. It must be pointed out the Mr. Rider's partner, John S. Clark, was only involved in the financing of the enterprise. He died some time after October 1865, when he broke up his partnership with William Rider, for reasons connected to his health, recovering at the same time his invested capital.

As stated by Antonio Meucci in his deposition at the Bell/Globe trial (Answer No. 595), the candles produced by the New York Paraffine Candle Co. were shipped to the warehouse of *Rider & Clark Co.* on 51 Broad Street, as was the Meucci's patent oil, which will be discussed later. Therefore, it was Mr. Rider who took care of the sales.

Of utmost importance are those parts of William Rider's and Antonio Meucci's depositions at the Bell/Globe trial, regarding Meucci's famous Memorandum Book. We know from Mr. Rider's affidavit that this book was *"… a bound blue-ruled blank book, bought of John H. Duyckinck … The book is marked on its back 'Ratings. No. 1: R. & C.'…"* where *R. & C.* stands for *Rider & Clark.*. We report in the following insert some relevant excerpts, and it may be interesting to know that Mr. Rider's examination was conducted by attorney Edward N. Dickerson, whereas his cross-examination was conducted by attorney David Humphreys.

TESTIMONIES ON MEUCCI'S "MEMORANDUM BOOK"

Deposition of William E. Rider (from the Bell/Globe trial)

[Question No. 78] *Mr. Meucci said in his 594th answer, "I think on reflection that I found myself with Mr. Rider in the office and I asked him once for an old book for my memorandums, and he (Mr. Rider) gave me this book." Do you remember that particular incident yourself?*

[Answer No. 78] *I have no recollection of it.*

[Cross-Question No. 177] *Don't you remember that you cautioned him that he ought to keep memorandums of his inventions where they would be secure so that they would not be lost?*

[Answer No. 177] *He kept his memorandums in his books which he kept in his pocket.*

[Cross-Question No. 178] *And don't you remember that you gave him this book — this Exhibit No. 109 that we have here — in order to jot them down from his little pocket memorandum book that he had?*

[Answer No. 178] *I don't remember nothing of the kind; I don't know how he came in possession of that book there.*

[Cross-Question No. 179] *Mr. Meucci is a man, is he not, that you would never suspect of taking anything that didn't belong to him?*

[Answer No. 179] *The last man in the world that would take anything that didn't belong to him, if he knew it.*

[Cross-Question No. 180] *You don't wish to be considered as stating that Mr. Meucci took something that didn't belong to him in any manner when you say that you don't know how he came in possession of this book?*

[Answer No. 180] *It must have been given him by Mr. Clark or somebody else.*

[Cross-Question No. 181] *What kind of memorandum book was that little book that he had?*

[Answer No. 181] *It was an ordinary little plain leather book — a common cheap book; it was a book that might have had one hundred or one hundred and fifty pages in it.*

[Cross-Question No. 182] *It is a long time to consider now, nearly twenty years ago, but I wish you would think, is it not the fact that you saw him noting down his inventions or thoughts, as they occurred to him, in a memorandum book, and that you suggested to him that he ought to have a better book to keep his inventions in and to note down his thoughts as they occurred to him with regard to inventions, and that you said, "If you will come to the office, I will give you a larger and better book and you had better transcribe," or, "you had better jot down what you have got in your little memorandum book into a better book, where they can be permanently kept?"*

[Answer No. 182] *I don't remember any conversation like that.*

[Cross-Question No. 183] *And do you not remember*

that along in 1863, or thereabouts, he did so?
[Answer No. 183] *I don't remember it. I might have said so, but I don't remember anything at all about it. I know that he kept a memorandum book, and supposed that was sufficient; I should suppose it was, because he took this book out from time to time and read to me what he had written down.*
[Cross-Question No. 184] *In a great many things Mr. Meucci was very methodical, was he not?*
[Answer No. 184] *Very, in some things.*
[Cross-Question No. 185] *And he was very careful about noting down what he did invent and that might be valuable?*
[Answer No. 185] *As far as I know he noted down everything in his book that he carried in his pocket. He always had it handy and noted things in it. I never saw him note anything down in that book (Referring to Exhibit 109.)*
[Cross-Question No. 186] *When did you first notice that he was carrying a little memorandum book?*
[Answer No. 186] *It must have been about the first time that I saw him. I requested him to write down as he went along.*
[Cross-Question No. 187] *Oh, you did request him to write down?*
[Answer No. 187] *Yes.*
[Cross-Question No. 188] *Did you ever get hold of those little memorandum books that he carried in his pocket?*
[Answer No. 188] *He used to take it out and read to me from it; it was in Italian, and he would take it out and translate it into French; I couldn't understand Italian very well, and he would translate into French and I would understand it.*

Deposition of Antonio Meucci
(from the Bell/Globe trial)
[Answer No. 594] *I believe that once I was with Rider in the office and I asked him for an old book for my notes and Mr. Rider gave me this one. I had another smaller note book, but I have not been able to find it again. Perhaps it was lost with all the rest in the fire. Mr. Clark did not have anything to do with me, he was Mr. Rider's partner in the oil business, and not in my business. I believe that Mr. Rider gave me this book in 1859 or 1860."*

Antonio Meucci's second deposition
(from the Bell/Globe trial)
[Question No. 3] *In your examination you have stated that you could not state when you received the memorandum book from Mr. Rider, but think it was along about 1859 or 1860. Mr. Rider has testified, I believe, that you know, that it was along about 1864 when he gave you that book. Since hearing what Mr. Rider said, have you been able to refresh your memory so as to*

remember the circumstances under which that book was given to you by Mr. Rider? [Answer No. 3] *I believe that it was after the war, that is 1864-65. I kept a small memorandum in my bag where I noted down all of my experiments in different branches of industry. I remember that one day Mr. Rider told me that it would have been better to copy all that I had written in the little book into a big book, and he gave me a book of the Rider & Clark company. I accepted the book and copied all that I thought useful from my memorandum, also from a period way back, partly in ink and in some parts using a pencil, but many of the pages of said book were lost, just as I lost my memorandum when there was a fire in the Mayer and Bachmann beer factory in Staten Island, and all of the objects that I kept in my house, like telephone models etc., were put in the yard by the firemen, and the water drenched and ruined everything.*
[Question No. 4] *I understand you, then, to say that you copied out of your pocket memorandum book into this larger memorandum book the dates, as well as the substance, and that your pocket memorandum book was destroyed by the fire or by the water?*
[Answer No. 4] Yes, Sir.

It can be seen that despite the fact that William Rider was a witness for the opposing party, he could not help expressing words of esteem for Meucci, such as "*The last man in the world that would take anything that didn't belong to him, if he knew it*" and also that Meucci was very methodical and noted everything down in his pocket memorandum, which he always kept at hand. These expressions of esteem and respect for Meucci, especially concerning his honesty, are not the only ones pronounced by William Rider in his deposition. In the insert below we reproduce some other meaningful statements, considering the fact that Mr. Rider had no interest in giving such testimonies.

We also learn from the insert above that Meucci and Rider spoke French together, as had been the case with Mr. James Mason and Mr. Charles Chester. Obviously this entailed great risk, as we will see once more in the next chapter, because all business deals had to be delegated to whoever could speak English, without counting the official documents, contracts and other commitments (like the various promissory notes, which Mr. Mason made Meucci sign). Fortunately, this time Antonio Meucci did not risk losing his capital (also because he no longer had any capital), but, on the other hand, he was obliged to accept a low salary.

ANTONIO MEUCCI'S CREATIVITY, JUDGED BY AN ADVERSARY

Deposition of William Rider (from the Bell/Globe trial)

[Cross-Question No. 151] *He was inventing something or other all the time, was he not?*
[Answer No. 151] *I think he was; there is no question about that.*
[Cross-Question No. 152] *You considered him a genius, did you not?*
[Answer No. 152] *I considered him a genius at first, but afterwards I considered him rather an impractical genius.*
[Question No. 29] *Did Mr. Meucci carry on experiments there* [*in the factory,* Editor's note] *in his different inventions?*
[Answer No. 29] *Yes; Mr. Meucci carried on the manufacture of candles under these inventions, and he had a room there that was fitted up for the purpose of developing any other inventions that he might make; it was full of all sorts of paraphernalia.*
[Question No. 31] *Did he make application for patents and obtain patents for inventions he was making at that time?*
[Answer No. 31] *He made a great many inventions, applied for a great many patents; some were granted and others rejected.*

In order to better specify the consistency and variety of Meucci's inventions in the period considered (from 1858 to 1866), a list is given below (with shortened titles) of all the patent applications filed during that period. The patents granted by the Patent Office are indicated with an asterisk. A brief comment on each patent application follows.

As can be seen, in the period considered (1858-1866) fourteen patent applications and two caveats were submitted, nine of which were granted. The texts of the applications which were transformed into patents, complete with drawings, are contained in the appendix "Antonio Meucci's Patents until 1870."

It is deemed opportune to explain to the reader that the patent applications that were rejected (according to the terminology used by the United States Patent Office) must not necessarily be considered a demerit of the inventor submitting such application as, for instance, the rejected application may embody an invention that was already patented by others (of which the applicant may not have been aware) or the Patent Office Examiner judged it not sufficiently 'innovative' or, more in general, not satisfying the requirements of the patent laws in force at the time (in this regard, see the appendix "Patents and Patent Laws" in Vol. 3).

Patent applications filed by Antonio Meucci from 1858 to 1866

* 1. 1858, 15 November - Patent application: “Manufacture of Candles”
2. 1859, 9 April - Caveat “Galvanic battery”
3. 1860, 6 June - Patent application: “Dry galvanic battery”
* 4. 1860, 6 June - Caveat followed by application “Apparatus for molding candles”
* 5. 1862, 7 May - Patent application: “Lamp burner”
* 6. 1862, 16 June - Patent application: “Oil for paints”
* 7. 1863, 3 April - Second patent application: “Oil for paints”
* 8. 1864, 12 September - Patent application: “Paper pulp”
* 9. 1865, 17 January - Patent application: “Wicks from vegetable fiber”
* 10. 1865, 21 February - Second patent application: “Paper pulp”
11. 1865, March, - Patent application: “Manufacture of hats”
* 12. 1865, 3 August - Third patent application: “Paper pulp from wood”
13. 1866, Spring - Patent application: “Preparation of rush plaques”
14. 1866, Spring - Patent application: “Hat bodies from vegetable fibers”
15. 1866, Spring - Patent application: “Tapered hat bodies.”

* *Patents granted*

COMMENTS ON MEUCCI’S PATENT APPLICATIONS AND CAVEATS

1
Patent application “Manufacture of Candles”
filed on 15 November 1858, granted on 25 January 1859, No. 22,739.
Patent attorney: Edward S. Renwick.
Witnesses: Samuel L. Badgeley and W. E. Rider.
Assigned to Domenico B. Lorini, on 29 November 1858;
assignment filed at the Patent Office on 24 February 1859, Book Z4, p. 29.
It describes a special mold in plaster of Paris, which presents the advantage, with respect to metal molds, of withholding lubricating oil and makes it easier to separate the molded candle from the mold.

2
Caveat “Galvanic Battery”
filed on 9 April 1859, and followed by:

3
Patent application “Dry Galvanic Battery”
filed on 6 June 1860. Rejected.
Patent attorney: Edward S. Renwick.
It is to be noted that the first battery with a solid depolarizer, the first step towards modern dry batteries, was introduced by the French chemist Georges Leclanché in 1868 (see Vol. 1, p. 392); this goes to show that Meucci was very far-sighted also in this field of technology.
In his deposition, Meucci answered the questions of attorney Storrow (Answers from No. 391 to 393) saying that the battery in question

“was applied to several branches of industry,” and that he had made some experiments - at his own expense - also to apply it to locomotives. It does not appear from Meucci’s deposition that he was thinking about electric traction (as it was stated by others), rather that he was highlighting the fact that a vehicle in motion is subject to strong vibrations and bumps, and that a traditional (two fluid) battery was not suitable, as part of the fluids might be lost.

Mr. Rider, on his side, made quite different statements, both in his deposition and in his affidavit, which was in all ways similar to his deposition. Here are a few of them:

[Answers No. 55 and 56]

"When I first knew him, or shortly afterwards, he told me that he had invented a dry battery which was a very valuable invention, and it could be used to run locomotives or any other kind of machinery where there was vibration; that the advantage was that there was no fluid to spill, and it would always be constant. And he suggested to me the advisability of trying it on locomotives; I took some little interest in it and told him to go ahead and buy whatever apparatus was necessary. He went up to an electrician named Chester, in Centre Street… and he bought some apparatus there. During the time he was making these experiments I called to see Chester and talked to him about it, told him what the invention was; and after I had told him what the invention was, he told me… it couldn’t be patented and was of no value whatever; and on the strength of that I abandoned it and stopped furnishing money.”

Now, if Antonio Meucci’s statements are true, then we must think that Mr. Rider attempted to discredit Meucci, letting the Court to believe that he was a visionary and that perhaps the material purchased at Chester’s shop was to be used for this prototype of dry galvanic battery and not for Meucci’s experiments on the telephone. However, according to the already quoted affidavit by John Sidell, we know that on August 1858 (before Antonio Meucci ever met Mr. Rider) magnets and bobbins were purchased by Meucci at Chester’s shop, hardly having something to do with setting up a dry galvanic battery.

The interest of Antonio Meucci in batteries dated from 1844 when he first used them in his electroplating factory in Havana. Since then, he was continuously using a great deal of batteries, so he could well see their defects and there is no wonder that his creative mind dedicated some thoughts to this important tool of his various experiments. For instance, we find in his Memorandum

Book the following notes, dated 27 September 1870:

[pages 36-37] *"… I desire to form a dry battery and that it be constant and of long duration.*
I think that forming some round disks of sulphate of copper with four per cent. of bichromate of potash as negative pole, and a positive pole — this made with sulphate of zinc with four per cent. of bichromate of potash as the previous, and forming something like a Volta's pile between said disks — to separate them a disk of absorbing pasteboard, this also bathed in a solution of bichromate or common salt and all this pile in a column protected by a lining of any porous substance, be it canvas, pasteboard, china or other equivalent material.
The conductor of the first disk at the bottom will communicate the negative electricity, being of sulphate of copper, to a disk of carbon also in the form of a disk and that of the sulphate of zinc at the upper part will communicate the positive electricity. It will be made also of carbon or if not the two conductors above described will be of platinum.

Another
Made some round disks of pasteboard; on one side of them a surface of oxide of zinc dissolved in water and gum and the solution of sulphuric acid in much water. The other disk has a surface and stratum of lamp-black dissolved as above in water and gum and a solution of bichromate of potash, water and sulphuric acid.

[Notes dated 1872, pp. 37-39]
Another
Disks of pasteboard, and with them some disks of sheet zinc, thin as above, and the disk of pasteboard bathed in the same sulphuric acid diluted in water, and united together with the one of the lampblack, forming the pile.

Another
Disks of pasteboard bathed in salted water and put with a disk of tin-foil and united with those of lamp-black as above…

… The battery formed of disks of oxide of zinc, does not work well and is not good …"

4
Caveat "Candle Apparatus"
filed on 6 June 1860, followed by:

Patent application
"Apparatus for molding candles"
filed immediately after the caveat, granted on 25 September 1860, patent No. 30,180.
Patent attorney: Edward S. Renwick. Witnesses: Eugene Sieber and David Whiting. Assignor: The New York Paraffine Candle Co.; assignment filed at the Patent Office on 28 May 1860, Book U5, p. 66.

It shows a device for paring and polishing candles, with a candle guide and automatic feeding of the candle towards the device. It should be noted that candles had to be aesthetically attractive in order to be marketable.

5
Patent application *"Improvement in Kerosene-Lamps"*
filed on 7 May 1862, granted on 12 August 1862, patent No. 36,192.
Patent attorney: Edward S. Renwick. Witnesses: William E. Rider and David Whiting.
Assignor: Antonio Jané of Brooklyn; assignment filed at the Patent Office on 13 May 1862, Book N6, p. 390.
It shows a special burner for kerosene lamps, which did not require the usual glass tube. Although Mr. Rider had signed as witness, he was not the assignor of this patent, the expenses of which were paid for by a Spaniard named Antonio Jané, a friend of Meucci's. Antonio Meucci made the following statements in his deposition at the Bell/Globe trial (Answer No. 401): "… the Spaniard paid. Rider had nothing to do with this patent. The Spaniard asked me, as many others used to come and ask, for improvements in various things, in order to obtain patents, giving me one half of the profits, and paying themselves the expenses. Mr. Jané asked me to make a lamp to burn kerosene without using the glass chimney for the Negroes in Havana. Then I made this invention with two metallic points, which developing the electricity in contact with the flame, rendered it clear and without smoke."

6
Patent application "Improvement in treating petroleum and other oils to produce a vehicle for paints and varnishes"
filed on 16 June 1862, granted on 9 September 1862, patent No. 36,419.
Patent attorney: Munn & Co. Witnesses: R. Gawley and Timothy Shine.
Assignor: Antonio Jané of Brooklyn; assignment filed at the Patent Office on 12 June 1862, Book O6, p. 207.
This patent also was paid for by Antonio Jané, although Rider & Clark produced and marketed this oil, which was available in the Broad Street warehouse, as stated by William Rider (Answer No. 37). It is a procedure whereby it is possible to obtain siccative oils (see, in the following, the chapter "Antonio Meucci's Patent Oil" and the Appendix "Oils and varnishes") from petroleum, kerosene etc., treating them with hyponitric acid (the way to obtain it is indicated) and subsequently with linseed and fish-oil, to make them more consistent.

7
Patent application "Improvement in preparing hydrocarbon liquids to serve as vehicles for paints"

filed on 3 April 1863, granted on 26 May 1863, patent No. 38,714. Patent attorney: Munn & Co. Witnesses: J. W. Coombs and M. S. Partridge. Assignor: Esther Meucci, A. Meucci's wife; assignment filed at the Patent Office on 13[38] March 1863, Book R6, p. 413. It is an improvement on the previous patent, based on the use of hypochloronitric acid instead of hyponitric acid, followed by the same treatment with linseed oil and fish-oil to obtain greater consistency. The advantage of using hypochloronitric acid (and the method of preparation for it is indicated) is that it provides greater siccative properties and consistency, and also has the advantage of acting as a decolorizing agent of the oil being treated. For more details, see, in the following, the chapter "Antonio Meucci's Patent Oil" and the Appendix "Oils and varnishes." Interestingly enough, this patent was paid for and the rights were assigned to Antonio's wife, Esther.

8
Patent application "Improved process for removing the mineral, gummy, and resinous substances from vegetable material"

filed 12 September 1864, granted on 18 October 1864, patent No. 44,735. Patent attorney: Edward S. Renwick. Witnesses: William E. Rider and John S. Clark. Assignor: W. E. Rider; assignment filed at the Patent Office on 26 November 1864, Book S7, p. 17. This was the first of the three patents obtained by Antonio Meucci concerning paper manufacture, and more precisely the preparation of the pulp, which is used to make paper. These patents will be discussed more at length in the forthcoming chapter "A card to play." Let us also recall that in the Appendix "The history of papermaking" the broad subject of this patent is dealt with in depth. In brief, this patent indicates the treatment of wood - crushed and soaked in water - with the gas which is obtained by pouring a mixture of muriatic acid and nitric acid on oyster shells (calcium carbonate) and iron scrapings, that is: carbonic acid, chlorine, oxygen and nitrogen. The reaction must take place inside an autoclave, in which the wet wood is placed and from which air is extracted through a vacuum pump before introducing the gases mentioned above. Once the reaction is completed, the wood is soaked for twenty-four hours in a bath of caustic soda, or potash, after which it undergoes the usual bleaching, washing and pressing treatments, etc.

[38] In Cross-Question No. 405 to Antonio Meucci an erroneous date was given by attorney Storrow, namely: 18 March 1863.

9
Patent application “Improved Mode of Making Wicks”
filed on 17[39] January 1865, granted on 28 February 1865, patent No. 46,607. Patent attorney: Edward S. Renwick. Witnesses: David Whiting and Edward S. Renwick. Assignor: William E. Rider; assignment filed at the Patent Office on 12 January 1865, Book S7, p. 344.
Although not explicitly stated in the title, the patent refers to wicks for kerosene lamps. The invention consists of a method of preparing said wicks, generally in sheet form, using paper pulp, to which other substances were mixed, such as powdered charcoal, which gives a brighter flame, as the charcoal powder becomes incandescent in the flame. The patent makes use of the method previously patented to obtain paper pulp and consists in spreading a layer of pulp on a mesh-sieve (of the same type used for hand-made paper), and then cutting it into strips, which are then wrapped in gauze. The low cost of making these wicks is highlighted, compared to the cost of wicks made with plaited cotton. In his Answer No. 410 at the Bell/Globe trial, Antonio Meucci declared that this patent was later assigned by William Rider to the ‘Perth Amboy Fiber Co.,’ as better explained in the following chapter “A card to play.”

10
Patent application “Improved process for removing the mineral, gummy, and resinous substances from vegetable fiber”
filed on 21 February 1865, granted on 28 March 1865, patent No. 47,068. Patent attorney: Edward S. Renwick. Witnesses: W. L. Bennem and Edward S. Renwick. Assignor: William E. Rider; assignment filed at the Patent Office on 11 February 1865, Book R7, p. 389. This patent was subsequently extended to Great Britain (No. 758 of 1868) and to Italy (3 November 1869), at the expense of the Perth Amboy Fiber Co. (see Antonio Meucci’s deposition, Answers Nos. 413 and 414).
This patent is a variant of the previous patent concerning the production of paper pulp for the manufacture of paper. Said variant consists in submitting the vegetable material (for example wood) first to a dry treatment, using the same gases as in the previous patent, and then treating it in the wet state, following the method outlined in the previous patent. Another improvement consists in adding oil to the caustic soda, with the aim of giving more elasticity to the fiber. Another improvement consists

[39] In Cross-Question No. 409 to Antonio Meucci an erroneous date was given by attorney Storrow, namely: 15 January 1865.

in bleaching the pulp with chloride of lime, all the steps of which are given in detail. This patent, the text of which - as in the case of the previous ones - is given in full in the Appendix "Antonio Meucci's patents until 1870," is very interesting especially for the many details it gives concerning the construction of the plant and the precise indications linked to the process itself and the quality and quantity of ingredients used. In his Answer No. 408, Meucci stated that also this patent was later assigned by William Rider to the Perth Amboy Fiber Co.

11
Caveat "Manufacture of hats"
filed on March 1865. Patent application filed at a later date (see below).
Patent attorney: Edward S. Renwick.
Although the text of this caveat is not available (as is the case of all patent applications which were not granted[40]), we know from Answer No. 37 of Rider's deposition that it dealt with the manufacture of hat bodies from vegetable fibers, probably based on Meucci's patents on paper pulp making. In his Answer No. 416, Meucci stated that the expenses for this caveat were borne by William Rider.

12
Patent application "Improved process for making paper-pulp from wood"
filed on 3 August 1865, granted on 13 March 1866, patent No. 53,165.
Patent attorney: Edward S. Renwick. Witnesses: John S. Clark and Francis J. Rayé. Assignor: David Whiting; assignment filed at the Patent Office on 15[41] March 1866, Book A9, p. 307; witnesses to the deed: William E. Rider and James C. McAndrew.
This patent is the third one concerning the process for making paper pulp from wood, which consists in soaking the crushed wood (preferably pine or spruce wood) in a solution of five per cent nitric acid and five per cent hydrochloric acid, for a period of three to five days, so that the wood becomes brittle and will break easily. Then the wood is removed, washed and treated with caustic soda, as in the two previous patents. Also straw can be treated in the same way, after it is boiled for two to three hours in a solution of soda-ash (anhydrous sodium carbonate), which is necessary to break the bonds

[40] The US Patent Office provides copies of all granted patents, but not of the caveats nor of the patent applications that were not granted, with very few exceptions. Usually, said documents were destroyed, or handed over to either public libraries or National Archives.

[41] In Cross-Question No. 411 the erroneous date given by attorney *Storrow* is March 13, 1866.

between the fibers. Finally, in the patent it is also stated that the process described is applicable to hay, leaves of trees, Indian corn, weeds, old rope, and other vegetable substances.
This patent also was assigned to the Perth Amboy Paper Co., through a man by the name of David Whiting, who was a friend of Rider's, and whose name will also recur as a witness to the contract with Associated Press which will be discussed hereinafter.

13
Patent application "Preparation of rush-plaques"
filed in Spring 1866. Rejected. Patent attorney: Edward S. Renwick.
We know of the existence of this patent application from attorney Storrow's Cross-Question No. 417 to Antonio Meucci. Another mention was made by William Rider in his Answer No. 37, where he stated that Meucci had made an invention concerning the manufacture of fibers suitable for making ropes from vegetable material. With Meucci's method, all sorts of weft could be made and therefore it was used for preparing the straw seats used for chairs, sofas, etc.

14
Patent application
"Manufacture of hat bodies"
filed in the Spring of 1866. This application probably followed Meucci's caveat of 1865 on the same subject. Rejected. Patent attorney: Edward S. Renwick.
Information on this patent application comes from attorney Storrow's Cross-Question No. 418 to Antonio Meucci. Another mention was made by William Rider in his Answer No. 37, in which he reported that Meucci had made an invention concerning the manufacture of hat bodies from vegetable material. Lawyer Ullman, mentioned previously, also told to a reporter of "The Staten Islander" that Antonio Meucci "made hats out of wood-pulp."

15
Patent application
"Tapered hat bodies"
filed in Spring 1866. Rejected. Patent Attorney: Edward S. Renwick.
Information on the existence of this patent application was given in attorney Storrow's Cross-Question No. 419 to Antonio Meucci. It probably concerned a variant of a similar patent application, mentioned here above.

The above list does not include many of Meucci's other creative activities, for which he did not file any patent applications or caveats (sometimes, because he did not find a investor). These other activities may include, for example, the already-mentioned method for decolorizing red coral to make it pink, which was developed for his friend Bendelari, as well as his research in Havana linked to electroplating, electrotherapy, the chemical conservation of bodies, etc.

In addition to inventing, Antonio Meucci had a great passion for astronomy. Indeed, Domenico Mariani stated in his affidavit: *"… I remember that Mr. Meucci had a telescope for which he paid $280 …"* It must have been a professional instrument, as its value today (1990) would amount to roughly 4,200 dollars.

We are also convinced that traces of many other inventions or technical initiatives by Antonio Meucci have been lost. For instance, the following letter, sent to General Garibaldi, which can be dated around 1864, mentions the manufacture of ammunition for guns and cannons.

AMMUNITION FOR GUNS AND CANNONS

Letter from Antonio Meucci to Gen. Garibaldi, dated around 1864 (Museo Centrale del Risorgimento, Rome)

… I have a fabrication of shotgun bullets and Field Cannon balls, which I intended to submit to the Government here = but I have been told that I have to run all the experiments at my own expense and that I must form a battery belonging to the Artillery or the army, which is impossible, so I thought to mention it to you, lest you should think they may be Good for Italy, and I enclose their description herewith.
Please accept my most devout compliments per Your F ∴
Anto Meucci

[Editor's note: The symbol ∴ denotes the highest degree reached by Antonio Meucci in the Free-Masonry. We wish to recall that also Garibaldi was a Mason. "F" probably stands for "Fratello," meaning (Masonic) "Brother."]

Explanation for the balls

The gunshot bullet is oval-shaped, it weighs some two ounces, and it is wrapped in a cotton sheath smeared with tallow. It is loaded like all common bullets. When it exits the shotgun it splits into two or four parts, without losing its trajectory = the cannon ball is also oval-shaped like the bullet, it is wrapped in a cover of thick sail-cloth and it is loaded like regular cannon balls, but when it exits the mouth of the cannon it splits into two parts which are attached by means of a chain of a certain length, that is held inside said cannon ball. The length of the chain is between one and two meters = the cannon can be of 4-6. or 8 = [inches, Editor's note]

Antonio Meucci

In Vol. 3 of this book we will give an account, similar to the one given above, on Meucci's patent applications and other inventions made in the period from 1871 to 1889. As we shall see, it will feature fifteen more patent applications, which prove that Antonio Meucci's creativity was vital until his very old age.

Of course, to the activities described above, Meucci's experiments in the field of the speaking telegraph must be added, which we have extensively described in the previous chapter, though Meucci himself declared that, during most of the time in which he was connected with Mr. Rider, he was too busy to also engage in patenting his said device. We only wish to recall that Mr. Rider was not obliged to accept (and pay for) every invention made by Antonio Meucci, nor was the latter obliged to

communicate or propose every invention he made to Mr. Rider. This notwithstanding, as we have referred in the preceding chapter, Antonio Meucci was always ready to help persons who turned to him for repairing a kerosene lamp or other devices.

It is a pity that, despite his great generosity towards his fellow men, his relationship with his wife Esther was so tense. It had always been so on account of their financial situation, basically because Esther did not trust him on these matters. The reader will recall the statement that Esther had made him sign before leaving Havana, and also that she entrusted a large sum of money to the tenor Salvi, instead of her husband. Therefore, it comes now as no surprise that Esther entrusted some of her money to Mr. Rider's care, as the latter declared in his affidavit (see p. 175): *"… This money I kept for her, paying her interest for it …"* This was confirmed by Antonio Meucci in his deposition (Answer No. 358): *"… My wife had some money of her own. In order that I should not use it in my experiments, she had given it to Mr. Rider knowing that I would spend it in making experiments."* Mr. Rider, in turn, confirmed, in his Answer No. 113, that Mrs. Meucci had told him not to give that money to her husband. It seems that around 1865, Esther had problems getting her money back from Mr. Rider. The latter, however, denied this in his cross-examination led by Mr. Humphreys, adding (Answer No. 101): *"… The last* [*she drew*, Editor's note] *was some several years afterwards; she bought a lot of coal of a man down there, and I paid the bill."*

Antonio suffered because of this, as we gather from his letter to Giuseppe, quoted above (see p. 183): *"… her complaints to me are such that even death would be better … but I am always reproached, and this shortens my life …"* On the other hand, if Esther had not taken care of saving at least the money with which to buy coal, he would have lived … without any heating. On the other hand, we have seen that four of Antonio Meucci's patents were assigned to his wife Esther, which means that she paid for the expenses (though she earned very little from them), and this reveals her trust in her husband's inventive genius.

In 1862, a girl was hired to work for the Meuccis. Her name was Maria De Gregorio (often mentioned as *Mary Gregory* or *Maria Gregory*). Her main task was to take care of Esther, also because Antonio spent a great deal of time outside of his house, working for the New York Paraffine Candle Co. Mary stayed with them for about ten years, that is until after the explosion of the *Westfield* ferry, in which Antonio Meucci almost lost his life. Maria Gregory's affidavit sworn on 7 October 1885, and found among the papers relating to the US/Bell trial, is very interesting, and is fully reproduced below.

Affidavit of Maria Gregory (7 October 1885)
National Archives and Records Administration,
College Park, MD - RG60, File 6921-1885, Box 10, Folder 1
(originally filed at the Interior Dept. file 4513-1885, Encl. 20)

STATE OF NEW YORK
NEW YORK COUNTY

I, Maria Gregory, being duly sworn, depose as follows:—

I reside at 215 Mott Street, New York City. When I was a young woman I went to live with Antonio Meucci, Staten Island, State of New York, as a hired girl in his family. I went to live with the Meucci family about the first years of the War. I lived with them, nine or ten years. Mr. Meucci's house had a basement, a ground floor and attic, making the house three stories in height.

The Kitchen where I did my work was in the Basement. Mr. Meucci had a workshop in the basement adjoining the Kitchen. There were wires running from his workshop up to the attic, and into Mrs. Meucci's room. This room was called the Giribaldi [Garibaldi, Editor's Note] Room. In the Shop Mr. Meucci had a number of boxes something larger than a tea cup. They had spools of wire in them.

In the corner of the shop were jars about the size of small fruit jars. They had wires coming out of the top of them and went up into the attic. I once went into the Shop, and asked Mr. Meucci what those boxes the other things were for. He told me to mind my own business and go away. I felt bad because he was so cross to me. I then went up stairs and told Mrs. Meucci that I wanted to leave the family. She said to me "Don't mind what Mr. Meucci says — he has so much in his head to think of and you must not trouble him." She then told me that the boxes were to talk through over wire.

While living with Mr. Meucci, I often heard different persons talking through the boxes with Mr. Meucci, who would stay in the basement, and the other person who talked would be on the Third Floor or Attic. I heard Mr. Meucci and the persons talking, say, that it was a very good talking machine. I know that Mr. Meucci worked a good deal of his time on the boxes and things that Mrs. Meucci said was an invention of his to talk through. The boxes were the same that he and other persons used when they talked through them. I can't remember the names of the persons who talked in the boxes, except Torello Dendi who was often there. I remember his talking, also a fleshy man [Domenico Mariani? Editor's Note] who used to come often and talk a good deal.

At the time he was sick from the effects of injury, the family were very poor, and Mr. Meucci had a large number of instru-

ments or machines being those he and others had used for talking through. He had them in a box, he was very choice of them. Needing money very badly in the house, I told Mrs. Meucci that I could sell these talking machines for something, and she told me to get somebody to buy them. I went out and got John Fleming a dealer in second-hand goods at Clifton, Staten Island to come over and see them, and Mrs. Meucci in my presence sold them to him for something over five dollars; Mr. Meucci was sick and knew nothing about the instruments being sold and I left before Mr. Meucci knew about the same. He had property when I first went to live with him, but became poor before I left. I know he was very poor as Mrs. Meucci during the last years I lived there, sold things of her own from the house. I also know that Mr. Meucci was very poor from 1871 to the last part of 1876.

her
Maria X *Gregory*
mark

Subscribed and sworn to before me
this 7th day of October, 1885

Edward C. O'Brien,
Com'ner. of Deeds,
City & Co. N.Y.

Maria Gregory died just before 1889, as was stated in Antonio Meucci's last will (see Vol. 1, p. 141). She must have been very fond especially of Esther, as she remained at their service even when they could no longer afford to pay her. Her story about the time when Meucci told her to mind her own business, after she had asked him what was contained in the boxes from which wires came out is amusing.

From Florence, besides the good news of the marriage of Antonio's brother Giuseppe with the very young Maria Daria Teresa Lazzeri, which was celebrated on 17 October 1858, followed by the birth of their first daughter Fanny Maria Vittoria, on 22 January 1860, sad news started to arrive. Only a few months after the birth of little Fanny, and precisely on 20 May 1862, Antonio's mother, Pepi Maria Domenica, died at the Hospital of S. Maria Nuova, in Florence. Less than two years later, and precisely on 4 March 1864, his father Amatis passed away too, at the age of about 86.

Amatis must have been ill for one year already, as, in his letter dated 16 April 1863, addressed to his brother Giuseppe, Antonio wrote: "*… I am very sorry to hear about our Father's situation, he must suffer very much …*" Then, shortly before his death, Amatis' condition must have greatly improved, as can be deduced from the letter that Antonio wrote to his brother

Giuseppe on 31 March 1864 (see the full text in the Appendix "Letters written or received by A. Meucci until 1871"):

"Dear Brother,

I have received two letters at once, one, that is the first, giving me news about you, as well as our Father and the rest of the family, which were excellent, the Second announcing the death of our poor Father; this one I was expecting any moment because one cannot live an old man. I am old too, but death does not trouble me because I have worked so much, but I see that despite all my efforts, I will never be able to recover the fortune I had; never mind …"

The speed with which the second letter arrived is surprising. It was probably sent immediately after Amatis's death (4 March) and it reached Staten Island just before Antonio's reply (31 March); therefore, it took less than one month. Obviously, not only were steam packet ships very fast, but the mail service on land was accurate and prompt. Sometimes I wonder how our ancestors managed to act so fast, before the telephone was invented. Part of the answer lies in the speed of postal delivery, as well as, obviously, in the flash of the telegraph service.

«ANTONIO MEUCCI'S PATENT OIL»

At this point in Antonio Meucci's life story, which, as we have seen, was marked by very few joys and much sorrow, I must confess to the reader a weakness of mine. As I was disturbed by the unusual sequence of misfortunes that befell our poor Antonio, one day I went to see a lady in Turin, who, rather as a hobby, had specialized in elaborating horoscopes by means of a computer. I gave her Antonio Meucci's birth data but I did not disclose his identity, although it was obvious to her that this was a person (perhaps a famous one) who had lived in the past century. My aim was to see if and what unlucky stars were to be found in our Antonio's horoscope. However, I was disappointed; first, because the lady had caught on, as it were, since the horoscope that she had elaborated was … too close to reality, in a great deal of details, and then, because if there were any bad stars, they were just … a bit twisted.

Nonetheless, there was one thing that struck me about that horoscope, and that was the innate interest of the person for all things having to do with *light.* I could not help thinking back to the limelight in the theaters of Florence and Havana, the two (or three) candle factories and the patent for the kerosene (which he called "oil of stone coal") lamp, hence his interest in oils in general, his curious scrutinizing of the lights of the firmament with

his telescope and, why not, his love of research, his desire to shed light upon the unknown, and, finally, his love for justice, which brings to light misdeeds and makes the light of truth shine brightly … But perhaps mine is an infatuation of sorts (unconscious, though, as I have tried to stay as objective as possible).

In the previous chapter, we mentioned two Meucci's patents concerning oils to be used for paints and varnishes, which were granted in September 1862 and in May 1863, respectively. The first one was assigned to Antonio Jané and was attended by the *Munn & Co.* Law Office; the second was assigned to Esther Meucci and was attended by attorney Edward Renwick. In Vol. 3, we shall find a caveat on refining mineral oils, which was filed in April 1874 and assigned to a gentleman named Giuseppe Tagliabue, the patent attorney being, in this case, Mr. Thomas D. Stetson. We, therefore, see that this line of research on oils was of a steady interest to Antonio Meucci, probably following pressing market demands.

Although Mr. Rider did not pay for any of the patents on siccative oils or varnishes, according to the statements made by attorney Storrow (Cross-Question No. 595 to Antonio Meucci), both the candles and the oils were shipped to the *Rider & Clark Co.*, on 51 Broad Street, New York City, which acted as a sales agency. This is confirmed, in the case of siccative oil, by the circular in four languages (English, French, Spanish and Italian), which illustrated its properties. A copy of this circular was enclosed in a letter written by Antonio Meucci to his brother Giuseppe, on 13 March 1864 (see Appendix, "Letters written or received by A. Meucci until 1871"). In the following, we report both the transcription of the circular in English and the photographs of two original circulars, in English and in Italian, on display at the *Museo Storico PT* in Rome. Note, in particular, in the circular in English, the stamp *RH Allen & Co.*, corresponding to what Meucci calls *Allen House* in a subsequent letter to his brother Giuseppe, dated 27 August 1864 (see Appendix). Incidentally, Antonio wrote in his letter of 13 March 1864: "… *paper money here is worth no more than 30 Soldi to the Scudo* … [i.e.*thirty cents to the dollar*, Editor's note]." This confirmed the more than 100 per cent inflation rate which had affected the dollar at the peak of the Civil War, as also shown in our graph on p. 185.

CIRCULAR "ANTONIO MEUCCI'S PATENT OIL"

For preparing Paints and preserving Wood, rendering it proof against dampness, and the attacks of insects, also for the destruction of all kinds of insects.
This oil is a good and cheap substitute for linseed oil, and can be used without turpentine. It is superior to linseed oil for resisting the action of air and water. An application of paint prepared with this oil to brick buildings renders them water-proof and prevents dampness. For vessels this oil is particularly recommended, as being superior to other oils, as no acid or alkalis enter into its composition, and it being a mineral oil, it adheres better to wood, and resists more effectually than vegetable oil the action of the sea air.

Directions for using the oil

For the first coat, mix the paints to be used, either ground or in paste, with the oil and add some litharge or any other drier. For the second coat, apply a little boiled linseed oil, or any kind of drier.
In using ground paints first mix them well with Meucci's Oil, and in applying the paint use some boiled linseed oil as above.
In applying the oil for the preservation of wood, either for buildings or otherwise, give it two or three coats, using a sponge or brush, and be careful that the wood be very dry; and for this operation it will be unnecessary to use any kind of paint or drier.
To prepare wood, either for buildings or vessels, it should be put in a place expressly fitted for the purpose and where it can have a temperature of 200° Fahr., in order to take away the air remaining in the pores. This done apply the oil with a brush or sponge until the wood is completely covered with it, and then it can be used when necessary. The pieces of wood for vessels should be ready made, before being covered with the oil.
If there are no conveniences for drying wood as above, an exposure to the heat of sun will answer, and when it is thoroughly dried the oil can be applied.
For preserving telegraph posts, two or three coats applied to the part to go underground will be sufficient to preserve them for several years.
This oil can be used without fear of endangering the health of the most delicate either in house, stores or hospitals, as it has no bad smell or any obnoxious property.
This oil is of two kinds, Number 1 and Number 2. No. 1 is adapted for white or light paints; and No. 2 for dark or black paints, and for preserving wood. Using both together the paints will be better, but for preserving wood the No. 2 is sufficient, without any other preparation.
The patent Oil preserves wood not only from rotting, but also preserves it from the attacks of insects of all kinds.
Its efficiency is warranted if used as directed.
For further information apply to

Antonio Meucci Patentee.

And for orders to
Rider & Clark,
No. 51 Broad Street, New York.

Circular "Antonio Meucci's Patent Oil" in Italian and French ● and in Spanish and English ●

PATENT OIL (FROM MEUCCI'S MEMORANDUM BOOK)

[Page 3.] *"May 20th, 1862*

Various methods adopted by me, Antonio Meucci, for the oil for colors, paper, etc.

PATENT FOR THE OIL

The oil, vegetable or mineral, is put in a large tank of wood, and through it a current of gas is made to pass, in order to oxidize it. The gas is obtained by decomposing the nitric and muriatic acids, putting into them some iron and some fecula [*starch,* Editor's note] *and thus obtaining a strong flow of hypochloronitric gas: after a while the oil is entirely transformed and changed in color and odor. It is then washed in much water or in an alkaline solution and loses all the acidity acquired, and mixed with some gum or boiled linseed oil, it can be used to preserve wood, to destroy the insects produced in it, and also for paints, but these must be first ground with boiled linseed oil, because it is not good for dry pulverized paints.*

It is excellent to saturate new timber in order to avoid rottenness, even if the timber is exposed to moisture on the ground or in water.

TO SATURATE NEW TIMBER

Put the timber in a specially adapted room, where it is possible to bring the temperature of the timber at about 100° Farh [*200 °F,* as specified in Meucci's patent, Editor's note]. *When the heat has penetrated in the cavities of its pores the air contained therein is forced out; instantly the timber is bathed with said oil, giving two or three coats with a brush or a sponge; immediately the oil takes the place of the dislodged air and penetrates in the cavities of the pores.*

If there is not the above convenience, it can be done by the aid of salt [*sun,* Editor's note].

It is very useful to saturate timber with this oil for use in the building of vessels and other things exposed to moisture.

[Page 4.] *All the hydrocarbons are good for this purpose, but the best is cotton seed oil, it being better than the linseed oil.*

For 20 Bbls. of 40 gallons crude oil, be it coal oil or other, 40 lb. of nitric acid at 38B^{è} and 10 lb. of muriatic acid at 18B^{è} are sufficient; the two acids are put together in a retort with two necks, one of which will take the gas to the oil and the other will be used to introduce into the retort small pieces of scrapings of soft iron, little at a time, in order to keep constant the flow of the gas, up to the complete saturation of the oil — this will be known when it has changed color, becoming green …"

As shown in the Circular, orders were to be placed with *Rider & Clark*, 51 Broad Street, New York City.

Meucci's notes on pages 2 and 3 of his Memorandum Book, reproduced above, concern his first patent on siccative oils and they are dated 20 May 1862, only one month prior to the filing of said patent. According to Meucci's Answer No. 3 in his second deposition at the Bell/Globe trial (quoted on p. 191), he must have copied these notes from his pocket notebook, since he received the bigger Memorandum Book from *Rider & Clark* some time between 1864 and 1865. It was, therefore, natural that he also copied his other notes dated 7 March 1862 and 20 May 1862 (quoted on p. 161-162), regarding his telephonic experiments, made in the same period.

About two months before filing his first patent on siccative oils, Antonio sent his brother a long letter, from which some paragraphs have already been quoted. Other paragraphs are given below, which refer to oil, but also to the events of the war, with mordacious comments on the inflationary printing of currency, and also on certain *worms* - the enemies of Italy - which could be destroyed with his patent oil. There is also an interesting comment on coke stoves, used in the United States, which Meucci thought about marketing in Italy, where people got blisters on their thighs by warming themselves by antiquated braziers.

Letter to his brother Giuseppe (16 April 63) "*… to maintain the troops and the war it is necessary to spend a daily sum of 2 million and a half, not francs but Scudi, without considering what they steal = Here bank notes are printed with a Steam-powered machine, so Imagine how much money the Government can print in one day … here everyone steals, as all Governments do = the same that sentence Thieves to jail, while they, that come from the Cacco* [*wealthy*, Editor's note] *family can do anything they want = If a poor man is in debt, he loses his honor. If the Government and the Rich make debts, they are Honored, you see what a fine world it is!*

… you tell me that lamp oil stinks. I do not say the contrary, but the stink of this oil is better than that of a small olive-oil lamp, and moreover its light is like that of gas. This would Rightly be one of my Speculations to come and do over there, both for the oil and for the lamps, but I see that it is useless to talk about it = Just like the Stoves here that burn stone coal [*coke*, Editor's note] *and warm houses, and not like the old braziers which burn and blister your thighs …*

The fault is not yours but of those who have the money and are wealthy, who love to see … Italians … make no progress. These are your enemies; destroy them, these harmful … Worms … my oil would be good to destroy them because in my

Last few Experiments I have noticed and proven that it is Very good for killing insects that form inside wood, such as bugs, and woodworm, of which I will send you an Explanation later …"

We refer the reader to the appendix "Antonio Meucci's Patents until 1870," for the full text of his patents on siccative oils and to the appendix "Oils and Varnishes" for a review of the state of the art of the related techniques. We wish, however, to report here the opinion expressed by a teacher of History of Chemistry, Prof. Luigi Cerruti of the Turin University, on the relevance of Antonio Meucci's innovations in the oils sector.

THE OPINION OF AN EXPERT ON MEUCCI'S PATENTS FOR OILS

In 1862 and 1863, Antonio Meucci obtained his two American patents on the preparation of hydrocarbon mixtures to act as solvents for paints. In those years, European researchers and technical experts were paying much attention to the American oil industry which was getting under way. Their interest was such that even single commercial products were studied at length by the best scientists. J. Wiederhold published between 1862 and 1863 a number of papers in which he analyzed the properties of a commercial product coming from the United States, which had been launched on the market as a substitute for turpentine. Thus, it is obvious that Meucci moved on the crest of the wave, as it were, in a very promising direction.
As regards the technical details of the patents, it may be said that treatment with acids was a normal procedure in refining petroleum and its derivatives. Instead, the use of the formula NO_2Cl_2 for "hypochloronitric" acid appears quite curious, as it cannot be related - whatever the choice of the oxygen equivalent was[42] *- to either of the two known nitrogen oxychlorides (NOCl, NO_2Cl).*
Also because of the presumably variable results, due to the uncertain and extremely variable composition of the raw materials, it is not possible to say anything else on the "chemistry" of Meucci's patents. However, to fully comprehend their importance, one must bear in mind what E. Kopp, one of the most famous European experts, wrote in 1862: "It must not be forgotten that the exploitation, processing and transport of mineral oils is still carried out in a rather primitive way. It is an industry which is now taking its first steps, and which in effect is only two or three years old."
Thus Meucci was a pioneer also in this field.

Prof. Dr. Luigi Cerruti
Associate Professor of
History of Chemistry,
Faculty of Sciences MFN,
University of Turin

[42] In that period, some used the equivalent 8 for oxygen, whereas others used the equivalent 16.

A CARD TO PLAY

Only a few years had elapsed since the New York Paraffine Candle Co. was set up, yet already a new line of activity based on new patents by Antonio Meucci was looming. The first patent, which sparked the new activity, was filed on 12 September 1864. However, the preliminary experiments had been carried out already in spring of that year, in Meucci's *sanctum sanctorum*, at the Stapleton factory. This new branch of industry, as Meucci called it, was paper making, or better the production of paper pulp, from which paper is made.

Meucci was certainly familiar with the so-called *mechanical pulp* from wood (which he called *ground wood*), according to the Keller-Faherty patents of 1845, and with the *caustic soda* processes, which had been introduced in France in 1852 by Coupier and Meiller, and in England, in 1854, by Watt and Burgess. Said processes (see the Appendix "The history of papermaking") were the only ones used, also in the United States, in the period in which Meucci was granted his first patent, in the year 1864. These processes aimed at obtaining chemical pulp from wood instead of rags, which latter, by that time, were no longer sufficient to meet the industry's demand. One had to wait until 1866, to use an improved process, the *acid sulfite* process (or *bisulfite* process), patented by the Tilghman brothers from Pennsylvania; this process, however, only yielded wholly satisfactory results in 1872, when it was perfected by Mr. Ekman from Sweden. It is also worth recalling that the renowned *sulfate process*, which excelled over all others, was first introduced by Mr. Dahl many years later, namely in 1884. This brief history clearly shows that Antonio Meucci's patents on paper pulp making were very advanced.

The two main shortcomings of the soda process, which was in use at the time of Meucci's first patent, were the low yields and poor mechanical properties of the pulp - thus of the paper - obtained. On the other hand, the use of wood as raw material for paper making was very attractive, since large forests were available on the American continent. In fact, 90 per cent of the paper produced worldwide today is obtained from wood. Meucci's three patents (granted on 18 October 1864, on 28 March 1865, and on 13 March 1866, respectively) integrated the soda process: basically, after chopping the wood, the latter was treated in an autoclave with hydrochloric and nitric acid (that he called hypochloronitric acid), in order to remove the gummy and resinous substances from the wood fibers, producing at the same time a bleaching effect, thanks to the action of chlorine. In his second patent, Meucci introduced further improvements to the process, and he also found a way to reduce the fragility of the paper - which was typical of the soda process - by mixing a

certain amount of cotton seed or olive oil to the caustic soda. Moreover, this patent also indicated the ways to further bleach the pulp, where necessary, by means of chloride of lime. In his third patent, Meucci extended his method in order to render viable the processing of inferior vegetable material, such as straw, hay, leaves of trees, Indian corn, weeds, old ropes etc.

In the Summer of 1864, while Antonio Meucci was still experimenting with his first two patents in Stapleton, his friend Domenico Mariani went to see him. The latter had gone to Clifton to cook for Mrs. Meucci, for she was ill, as he had done many other times in the past. In his deposition at the Bell/Globe trial, Mariani related about his visit to the Stapleton factory, where Meucci was experimenting with *wood paper* (as Mariani called it) as follows:

[Mariani, Answer No. 42] *"I don't remember well, but I think that I came back the year he had made the invention of the wood paper. I can't remember the year. I was playing at the Academy of Music, and I went to pay a visit to him, remaining with him only one day. I remember also that on this occasion he played on me a trick enough to make one die of laughter. I went to see the factory and he showed me the barrels of the wood used by him to make paper. I had my mustache dyed; he came to meet me, and he put his hand on my mouth; the dye from the mustache disappeared as by enchantment, because he had some chemical preparation in his hand. I was somewhat mad. After that I went away; and I didn't see him until 1871 …"*

[Answer No. 63] *"I don't remember anything else but the factory of wood paper, when I went to visit it and Meucci put his hand to my face and made my mustache become white."*

Apparently, his friend Antonio applied his chloride bleaching agents also to … Mariani's mustache! One is almost led to believe that his unruly spirit, which he had been accused of by the Santo Spirito Police Superintendent of Florence, after the reckless launching of rockets from the merlons of the Palazzo Vecchio, had not disappeared completely after all these years. The antic was branded in Mariani's mind, to the extent that during his deposition the only thing he remembered about the *wood paper* was the bleaching … of his mustache.

As already shown in the Appendix "The history of papermaking," the introduction of rotary printing presses in New York as of 1845 made it possible for newspaper printers to print tens of thousands of sheets per hour. This brought printing costs down, thereby entailing a sharp rise in the demand for paper.

The *Associated Press* (AP) was the first newspaper agency founded in the United States. It was set up in 1848 as a cooperative of six New York newspapers which aimed to share ex-

penses during the war with Mexico and avoid each one sending a reporter of their own to the front. During the Civil War, for similar reasons, forty-three newspapers from the South of the United States joined forces, thereby founding the *Press Association* (PA). Sometime after the end of the Civil War, the New York Associated Press accepted a number of regional newspapers as members and thus became the largest news agency for both domestic and international news operating on the territory of the United States. Its primacy remained unrivaled for about fifty years, being only challenged after 1900, when two agencies were formed to compete against it: the *United Press Association* (UPA), founded in 1907, and the *International News Service* (INS), set up in 1909, which merged many years later, in 1958, into the *United Press International* (UPI).

Headquarters of the 'Associated Press' at 145 Broadway & Liberty Street, in 1865

William Rider must have been astonished when, in Fall of 1864, Antonio Meucci presented him with a sample of paper that was produced with his wood pulp, obtained from spruce wood, a type of tree that was and still is very common in the north-eastern regions of the United States, as well as in Colorado and in Oregon, or, farther, on the Mountains of Mexico, in Canada, and in Alaska, considering North America alone. Mr. Rider immediately grasped that it was a good business and thought to contact Associated Press. Through them it would have been possible to influence almost all of the agencies that operated in the printed paper sector. It seems apparent from the reports below that Rider did not have trouble convincing Associated Press to enter into a contract.

At the time, the headquarters of Associated Press were on 145 Broadway, which is also where the offices of the American Telegraph Company, the ancestor of the powerful Western Union Telegraph Company - which was said to exert a certain control over Associated Press (probably on account of the close interrelation between the press and the telegraph service) - were situated. The AP General Manager, David H. Craig was a very intelligent and capable man. He received William Rider and Antonio Meucci in his studio, and walked over to them with an outstretched hand and an open and warm smile. He turned to Meucci with deference, speaking in French, so that also Rider could understand. *"Monsieur Miiussi, I have seen your sample … I'm very impressed! … If you can guarantee the same quality in large-scale production and at a low price, as Monsieur Rider has told me, you could become one of the wealthiest men in America …"*

Who knows why David Craig reminded Meucci of Alessandro Lanari. Perhaps it was his subconscious, which made him hope he had come across someone like Lanari (or even Don Francisco Marty), someone who, at a certain point, would cast him a life belt just as he was about to drown. It had been so with

Lanari. It had been so with Marty. Would it be the same with David Craig?

On 16 March 1865, the contract with Associated Press based on Antonio Meucci's patents was signed. It is reported in full in its original version hereunder. It was signed for Associated Press by Mr. James B. Brown, Mr. Craig's son-in-law, who was acting on behalf of Associated Press (see Answer No. 3 of Mr. Craig's deposition at the Bell/Globe trial). We don't know why Mr. Brown was appointed. In his deposition (Answer No. 50) Rider said that: *"… as it was suggested, Mr. Craig couldn't very well take it* [*the contract*, Editor's note] *in his own name, he suggested Mr. Brown; we agreed to that."*

MEUCCI-RIDER-BROWN CONTRACT (16 MARCH 1865)

Deposition of William E. Rider [National Archives and Records Administration, Northeast Region, New York, NY, Box 486 A, B]

Memorandum of Agreement *made and entered into this sixteenth day of March, A. D. (1865) one thousand eight hundred and sixty-five, by and between Antonio Meucci, of Richmond County, and William E. Rider, of the City and County of New York, parties of the first part, and James B. Brown, of Peekskill, Westchester County, party of the second Part.*

WHEREAS, *Antonio Meucci has invented a certain process for obtaining from wood and other fibrous materials, fibre or pulp suitable for manufacture into paper for which process certain Letters Patent have been issued by the Government of the United States, in which invention and patents, said William E. Rider, has a certain interest; and whereas, said parties of the first part desire to sell and said party of the second part desires upon certain conditions to purchase the same so far as they may be useful in the manufacture of paper.*

Now then, this indenture witnesseth, that for and in consideration of the sum of one hundred thousand dollars to be to them, the parties of the first part, in hand paid as hereinafter provided by said party of the second part, the said parties of the first part agree to sell, and by fit and appropriate instruments to convey and guarantee to said party of the second part, the exclusive right within and for the United States to own and use such invention, and such process so patented as aforesaid, so far as the same may be adapted to or useful in the manufacture of paper, and to that end to assign to said party of the second part the patent of said Antonio Meucci, dated the 18th day of October, 1864 (one thousand eight hundred and sixty-four), and numbered 44,735, and also a certain other patent granted March, 1865, dated …… …… , and numbered …… …… , in so far as said patents may be applied to or useful in the manufacture of any species of paper.

The said parties of the first part upon the consideration aforesaid and the premises of the party of the second part hereinafter contained, further covenant and agree to sell and convey to said party of the second part any and all reissues of said patents, or either of them, or any improvements in the process of extracting or preparing the fibre from wood or other fibrous materials, or any patents upon said improvements so far as the same may be adapted or applicable to the manufacture of paper, and they hereby authorize the said party of the

second part in their names, or the names of either of them, or otherwise, to make application for any such reissues or any patent upon such improvement, provided, after written notice said parties of the first part refuse or neglect for the space of ten days to apply for such reissue or patent on said improvement. The parties of the first part, upon the consideration last aforesaid, further covenant and agree that there have been no sales or conveyances made of said patents, nor any part thereof, nor any licenses or right to manufacture thereunder, granted, other than such as are now of record in the Patent Office of the United States at Washington.

To test the utility of said invention, said parties of the first part, upon the consideration last aforesaid, agree within forty days from the signing of this contract to erect all the apparatus and machinery essential for that purpose, and within fifty-five days of the date of this contract, and within fifteen days from the commencement of the process of manufacture, to produce to the satisfaction of the committee hereinafter mentioned, by the use of the process so patented as aforesaid from spruce wood alone, one thousand pounds of pulp, white, clean, and soft, and with fibre as long and strong as the samples selected and furnished, which samples are to be inclosed in two packages, sealed and marked with the signatures of each of the parties hereto, one package to be deposited with the parties of the first part and one with the parties of the second part, and only to be opened in the presence of the respective parties hereto, or upon their written consent. The parties of the first part, upon the consideration last aforesaid, further agree to satisfy said committee that said pulp or fibre, of the quality aforesaid, can be produced in large quantities and of uniform quality from the dry wood, at a cost, on Staten Island, of not to exceed five and one-half cents per pound, exclusive of the cost of the wood, delivered in bulk at the works.

The parties of the first part further agree, upon the consideration last aforesaid, to produce, to the satisfaction of said committee, within said fifteen days, from straw and corn husks, by said process, under said patent, one thousand pounds of pulp, white, clean and soft, and with fibres long and strong as the samples selected and furnished; said samples to be identified, marked, sealed, and deposited in like manner with the other samples hereinbefore mentioned.
The parties of the first part, upon the consideration last aforesaid, further agree to satisfy said committee that this last mentioned pulp or fibre

can be produced in large quantities and of the qualities aforesaid, uniformly and at a cost not to exceed four cents per pound, exclusive of the cost of the straw and the corn husks delivered in bulk at the works.

The parties of the first part further agree, upon the consideration last aforesaid that if the purchase herein provided for is made, then, for the period of twelve months from the completion of said experiments, the said party of the first part will protect said party of the second part in the said patent, and the exclusive use thereof, for the purposes aforesaid, and will hold said party of the second part harmless of and from any and all actions at law, suit in equity, relative to the said patent, and the manufacture carried on thereunder, provided only said suits or actions be commenced before the expiration of said twelve months. Should such suit result in establishing the validity of said patent, then the party of the second part shall refund to said party of the first part the disbursement actually and bona fide *made in carrying on said litigations, not to exceed ten thousand dollars; but if, on the other hand, said patent is declared invalid on any material point, then said parties of the first part hereby agree to refund to said parties of the second part or his assigns, one-third part of the purchase money, to be paid as herein provided, such repayment not to be made until the final decision of the Court of last resort, should such litigation be brought before it.*

To secure such repayment the party of the second part may deposit said one third of the purchase money in the New York Life and Trust Company, or some other similar institution to be agreed on by the parties, to be converted into Government Bonds of the United States, there to remain to be delivered either to the said parties of the first part, according as the same shall belong to the one or the other under the provisions of this contract.

In consideration of the foregoing premises and agreements, the party of the second part agrees immediately upon the execution of this contract to deliver to the parties of the first part the sum of five thousand dollars which shall be considered as part payment of said purchase money of one hundred thousand dollars, provided said purchase is made.

It is mutually agreed that Messrs. Richard Smith, of the "Cincinnati Gazette," J. Medill, of "Chicago Tribune," and S. H. Gay, of the "New York Tribune," shall constitute a committee, to whom the experiments and the test hereinbefore mentioned shall be referred and if said party of the first part shall not

succeed in satisfying said committee, or two of them, by means of said experiments of the various matters in regard to which, by the terms of this contract, they are to be satisfied, then, within five days from the close of said experiment, they shall so report and the party of the second part may elect to pay up the remainder of his purchase money, or to demand back his five thousand dollars, and if they shall so report, and said party shall demand said sum, the parties of the first part hereby agree to refund said sum within twenty-four hours after such demand, and this contract shall be null and void.

If said committee shall report that they are satisfied, in regard to said matters they shall so report, or if said party of the second part shall elect to purchase, then within ten days after the termination of said experiments, said party of the second part or his assigns, shall pay to said parties of the first part ten thousand dollars; and within thirty days from the finishing of said experiments eighty-five thousand dollars, but one-third of the foregoing amount of one hundred thousand dollars is to be paid into the New York Life and Trust Company, or some other similar institution to be agreed on by the parties, there to be had as an indemnity against any unfavorable result of the litigation as hereinbefore provided.

If, after a report favorable to the claims of the party of the first part said party of the second part shall neglect to pay up said sum of ten or eighty-five thousand dollars respectively, the amount previously paid shall be forfeited, and the right to purchase said invention shall cease.

The party of the second part hereby agrees, that if the report of the committee upon the matters hereinto them submitted should be favorable to said parties of the first part, then upon a notice of six days, the party of the second part shall, in addition to said one hundred thousand dollars, refund the actual disbursements paid out by said parties of the first part in making such experiments, not to exceed twenty-five hundred dollars, and the apparatus and other material used in making the experiment, shall become the property of said party of the second part.

Should the report be unfavorable, said party of the second part shall not be bound to pay said expenses unless he should choose to complete said purchase, but in that event he is to pay the same.

It is mutually agreed that said experiments shall be carried on under the supervision of any person agreeable to the parties of the first part to be appointed by said party of the second part, to whom said party of the first part hereby agrees to impart all

information. It is further mutually agreed, that should any differences arise between the parties in regard to matters not referred to said committee, then each of the respective parties hereto may select an arbitrator, to whom the matters in dispute may be referred to, and if they cannot agree they shall themselves select a third, and the parties hereto shall be bound by a decision of the said arbitrators, or any two of them.
It is further mutually agreed, upon the consideration last aforesaid, that if said parties of the first part shall fail to satisfy said committee of the various matters of which they are to be satisfied, as herein provided, no action for damages shall be maintained against said parties of the first part by reason of such failure.

It is further mutually agreed and understood, upon the consideration herein named, that the parties of the second part shall not manufacture, sell or convey to others the right to sell or manufacture any of the pulp or products of this invention suitable for making paper, to any place outside of the said United States, excepting Canada, Nova Scotia, New Brunswick, Newfoundland, and Prince Edward's Island; and it is distinctly understood that this sale of rights under said invention, as herein provided, is only for the use and sale of said products within the said United States and the provinces aforesaid; and that the party of the first part reserves to themselves the right to manufacture and vend the products of said invention, so far as they may be applicable to paper for exportation to places beyond the limits of the said United States and the provinces aforesaid; but it is mutually agreed that the manufacture last aforesaid shall be limited to one factory, to be located in the State of New York, and the right to manufacture in said factory shall not be assignable but shall cease whenever the said William E. Rider shall cease to own and control said factory.

And it is further mutually agreed and understood, that the parties of the first part shall have the right to use any improvement on this process, so far as they may apply matters other than the production of pulp for paper.
In testimony whereof we have hereunto set our hands and seals the day above written.
ANTONIO MEUCCI [L. S.]
WM. E. RIDER [L. S.]

In the presence of
DAVID WHITING[43].

It is further mutually agreed, that in estimating the costs of the products referred to in this agreement the price of the chemicals or materials shall be estimated according to the wholesale rates current in the City of New York at the date of this agreement.
WM. E. RIDER
ANTONIO MEUCCI.
Witness:
P. G. GALPIN.

[43]Mr. Whiting's signature as a witness can be noted.

We learn from the contract that Mr. Brown was a resident of Peekskill, NY a small town on the East bank of the Hudson River (about fifty miles north of the Battery, on the road to Albany). Furthermore, we note that with that contract Associated Press merely underwrote 'a promise' to pay one hundred thousand dollars to the first party (Rider and Meucci), on the condition that pre-production were launched beforehand - at the expense of the first party itself - to demonstrate the industrial value of the two patents (the first, No. 44,735 which had already been granted, the second, with number and date left blank, which was expected to be granted in a few weeks). The contract also envisaged the transfer to Associated Press of any other patent in this field, possibly granted in the future. Associated Press also 'advanced' Rider and Meucci the sum of five thousand dollars with which to implement the envisaged pre-production. Said sum, however, was to be returned should the results not be considered satisfactory.

The conditions of pre-production were extremely demanding. Indeed, according to the contract, the first party was committed to erect all the apparatus and machinery within forty days from the signing of the contract and, within fifty-five days, to produce one thousand pounds (approximately 450 kg) of pulp, of the same high-quality as the samples furnished. This applied both to the pulp obtained from spruce wood, as raw material, and to the pulp obtained from straw and corn husks. It also had to prove to the committee that the first type of pulp cost five and a half cents per pound, and the second type four cents per pound.

It is worth noting that, for both types of pulp, Antonio Meucci had furnished samples that were considered excellent (*pulp, white, clean, and soft, and with fiber as long and strong as the samples selected and furnished*), which were safeguarded, in order to compare them with the pulp coming from pre-production. This means that Meucci's samples embodied the high-quality requested by Associated Press and that it only was to be demonstrated that such good characteristics were reproducible at a satisfactory cost.

The committee of experts that was to judge whether said pre-production complied with the contract, and report to Associated Press within five days from the termination of pre-production, was comprised of representatives of three newspapers, all belonging to Associated Press. They were Mr. Richard Smith of the *Cincinnati Gazette*, Mr. J. Medill of the *Chicago Tribune*, and Mr. S. H. Gay of the *New York Tribune*. In addition to this committee, the contract envisaged that *"… said experiments shall be carried on under the supervision of any person agreeable to the parties of the first part to be appointed by said party of the second part, to whom said party of the first part hereby agrees to impart all information."* This clause, however, seems

to us very dangerous, not having Rider nor Meucci any guarantee that Associated Press would not be induced to reject the result, having already acquired the know-how for free. In our days, many companies think that the patent protection is not sufficient, hence they strive to protect their know-how, prohibiting any third party to spy their actual implementation of the patent. We cannot blame Antonio Meucci for this carelessness because, according to the contract between Meucci and Rider, the latter could do as he pleased with Meucci's patents (which he had paid for), provided he would gave him half of the profits.

Even in the case of a positive outcome, other clauses favorable to Associated Press were included in the contract. In fact, a sum equal to one third of $85,000 was to be deposited with the *New York Life and Trust Company* for a twelve-month period, starting from the end of the experiments, as a guarantee against any litigation concerning the patents. This means that the risk inherent in the outcome of legal proceedings was borne entirely by the *first part*, Associated Press running no risk whatsoever. The only concession made to Rider and Meucci was that as the contract was limited in territorial terms to the United States and Canada, they could export and/or sell the patent rights to other countries.

Notwithstanding the above risks, Antonio was (naively) in seventh heaven and was already sure he could count on one half of those one hundred thousand dollars. He had no doubts whatsoever that he would be able to satisfy Associated Press. Therefore, five days after signing the contract, he wrote the following letter to his friend Garibaldi:

LETTER FROM A. MEUCCI TO G. GARIBALDI (22 MARCH 1865)

[Museo del Risorgimento, Milan]

Dear General,
After a very long silence, finally I pick up my pen again to give you some excellent news. I hope that you have good news for me as well. The reason why I have waited so long to write is that I wanted to tell you about my new discovery, and I did not want to mention it until I was sure about the results and about the experiments conducted by the Press Saint, which has acquired my patent for paper manufacturing for the sum of $one hundred thousand, for all the United States. With my invention, after having conducted many long experiments, I managed to disorganize and remove all Mineral and Resinous substances from wood, as well as from all vegetable substances, so that their fibers and filaments are suitable for the arts of Weaving, for paper manufacturing &., and can replace cotton and linen rags, and also be used to make Felt Hats and whatever one fancies. I have enclosed a sample of the first experimental paper which was made by the Company that has purchased my Patent, and

Sample of paper and dry pulp, enclosed in the letter to Gen. Garibaldi (Meucci's writing says: "Paper produced with this pulp without glue from pure spruce wood" These samples still exist and are currently on display at the Museum of the Risorgimento in Milan)

they also say that with my discovery it is possible to make paper of any quality, both for newspapers and for Writing, without uniting any substance of Rags. Hence, the sample that I am enclosing is produced without any sizing or Glue, and it is made out of the most common wood found here, which is called Spruce, although all types of wood are suitable - as is Hay = Cane, &. I have obtained the patent for 17 years and I have also applied for it in England, but I would very much like to do something with our Beautiful Italy. That is why I ask you to use your Influence to encourage Investors and those Paper Manufacturers that there exist, and I am sure that you will do all that is possible, so that I would apply for the Patent there= General, it seems impossible that one should become rich when one is old. Thanks to destiny, it is better late than never = I read in the newspaper that you have received a present from the English people, appropriate to your merits, and I rejoice for this.
I also enclose two portraits of your Captain Bontempo = one in aristocratic clothes and the other dressed as a firefighter, in the company of my faithful dog, a symbol of loyalty =
You have never answered the letter that I sent to London, through Negretti's hands, and which contained the Diploma of Honorary Member of the Fire Brigade to which I belong. They are now sending you the Badge they all wear, namely the medal that the Committee awards you.
Note/ The process whereby to obtain filaments that I have discovered, which I mentioned above, does not require the use of any machine, unlike the old methods adopted in America as well as in Europe till now, so that setting up a factory does not cost very much.
This is all for now. My wife and I send you our very best regards.
Believe me, yours

Anto Meucci

This letter by Antonio Meucci is very important on many aspects. The reader has surely understood that the *Press Saint* is nothing else than Associated Press, a true goddess of the Press. Meucci also said that Associated Press had made experiments on the paper that he had patented and that, indeed, the sample sent to Garibaldi was *"a sample of the first experimental paper which was made by the Company that has purchased my Patent, and they also say that with my discovery it is possible to make paper of any quality."* Thus, according to this letter, by 22 March 1865, all basic tests had already been successfully performed by Associated Press, giving Antonio Meucci another reason to be optimistic. So, he rejoiced in that he was going to become wealthy, if in his old age. He probably had not read or understood the contract well, or perhaps Mr. Rider had not fully ex-

plained its contents to him. The latter hypothesis seems more plausible since, during the Bell/Globe trial, it clearly appeared that Meucci was not entirely familiar with the terms of the contract, which he had signed nonetheless, with his usual confidence in his fellow men and notwithstanding his poor knowledge of the English language.

The simple and effective technical language used by Meucci in the above letter is to be highlighted: *"I managed to disorganize and remove all mineral and resinous substances from wood, as well as from all vegetable substances, so that their fibers and filaments are suitable for the arts of weaving, for paper manufacturing, etc. …"* We also learn that the paper was produced *without glue*, not requiring the operation known as *sizing* (the addition of glues) in the jargon of the paper industry. Moreover, the note at the bottom of the letter, *"unlike the old methods adopted in America as well as in Europe till now"* confirms what we stated above as to Meucci's knowledge of that period's state-of-the-art technology.

The reader who should wish to see with his own eyes the paper and pulp made in March 1865 with Meucci's patent may do so at the *Museum of the Risorgimento* in Milan, on Via Borgonuovo 23. The two samples are kept with the original letter from Antonio Meucci to Gen. Garibaldi dated 22 March 1865.

Finally, for what concerns the mention made in said letter of the Fire Brigade, it is a pity that the portrait of Meucci dressed as a fireman with his faithful dog was lost. We discovered that the brigade which gave the diploma of honorary member to Giuseppe Garibaldi was the *Hook & Ladder* Brigade of Staten Island. Indeed, *L'Eco d'Italia* of 16 June 1865, which published Garibaldi's reply to Meucci's letter, reported that *"Recently the 'Hook & Ladder' Fire Brigade of Staten Island nominated Garibaldi an honorary member and sent him the medal of the Brigade."* Garibaldi's answer to Meucci's letter, which was sent only 18 days after that of Meucci, is given below:

LETTER FROM G. GARIBALDI TO A. MEUCCI (10 APRIL 1865)

[Published by *L'Eco d'Italia* on 16 June 1865]

"Caprera, 10 April 1865
My dear Boss,
Notice how ingratiating I am now that I know you have become a wealthy man. But you are truly a great man, my dear Meucci, and I congratulate you on your wonderful discovery.
I shall certainly write about your invention and see whether there are Italian paper manufacturers who might be interested in taking advantage of your useful discovery. Please say a word of gratitude to the Fire Brigade for the honor they have bestowed upon me. Thank you for the portrait, the medal, etc. Speck, who is here with me, and all the family send their warm regards to you and to your gentle wife Esther. I am always
Yours

G. Garibaldi"

Pencil portrait of Garibaldi in Caprera, with his autograph and dedication to Antonio Meucci

Garibaldi, in turn, sent Meucci a portrait of himself, dedicated to "*My dear boss Antonio Meucci.*" The portrait was made by George T. Tobin from the famous photograph of Garibaldi taken by G. Isola around 1864 (little more than a year after the Aspromonte disaster). From this photograph, which was damaged by time, a beautiful painting was also made by the artist Mantegazza, which is on display at the *Museum of the Risorgimento* in Milan and which we have reproduced in the Appendix "Giuseppe Garibaldi," p. 311.

Conversely, the original of Tobin's drawing, reproduced below, seems to have been lost, although an excellent copy is featured in the article by Henry Tyrrell "Garibaldi in New York" of 1907 (see bibl.), from which we have taken it. The caption of this figure in Tyrrell's article says that Garibaldi gave this portrait to Meucci after the liberation of Rome (1870).

Perhaps Garibaldi really tried to have Meucci's pulp patents applied in Italy. In fact, on 13 October 1865, Meucci wrote a letter to a paper manufacturer in Genoa, named Ignazio Corbellini. He sent him two samples of his paper, one obtained from wood and the other from straw. Meucci's letter was published by *L'Eco d'Italia* in New York on 21 October 1865, and with a few slight differences also by *Il Commercio di Genova* on 1 December 1865. The date of this letter was only reported on *Il Commercio di Genova*. It reads as follows (see complete text in the Appendix "Letters written or received by A. Meucci until 1871"):

LETTER WRITTEN BY A. MEUCCI TO I. CORBELLINI (13 October 1865)

Mr. Ignazio Corbellini,

Arenzano (Genova)

… I am answering your letter dated 27 August last which I was not able to do before because I was in Ohio State, in a paper factory, and your letter was only delivered to me upon my return. I have not received any letter from the gentleman whom you say was looking for me to apply my paper patent. As regards asking Prof. Botta, allow me to tell you that I think it is useless, as I have written on this subject only to my friend G. Garibaldi.
With the first sea captain sailing for Genoa, I will send you samples in greater quantity … The two samples of paper that I enclose are made of pure Wood and of pure Straw respectively. Intelligent as you are, you will notice that I have no need to use rags as the main base material. I will prove that all of the discoveries made on this subject have not succeeded in finding the way to disorganize and remove the mineral, resinous and gummy substances which soil wood and vegetable fibers. What they have obtained so far is ground wood and not filaments, and that is why they are forced to add rags to give the paper tenacity and elasticity
… In your letter I have found a piece of white paper, please tell me what it is and whether you have sent it as a sample. Forgive me for this long letter, I have taken advantage of your kindness, and please do not hesitate to command me, I shall be pleased to serve you, and accept the greetings of a friend.

A. Meucci

From this letter, it would seem that Antonio Meucci was "in Ohio State, in a paper factory" at the time (around mid-September) when Corbellini's letter arrived. However, according to our reconstruction, we believe that Meucci was in Hohokus, NJ, at the time, having been in Ohio until the end of May. At any rate, he was certainly away from home, when he received said letter.

The reason for his journey to Ohio depended on the fact that Associated Press - although this was not explicitly envisaged in the contract - claimed the right, through the famous *committee of three*, to select the place where the plants for pre-production were to be set up, as we learn from the deposition of William Rider (Answer No. 43). And the committee chose the town of Steubenville, in Ohio, which is located near to the border with West Virginia and is about one hundred miles from Cleveland,

and more than five hundred miles from New York. On the other hand, this town was more or less at the same distance from Chicago, IL, Cincinnati, OH, and New York City, where the headquarters of the three newspapers to which the three committee members belonged, were located.

Thus, Meucci left Clifton soon after signing the contract and lodged in a hotel in Steubenville for the entire duration of the pre-production trial, that is to say for at least fifty-five days plus the five days needed for preparing the report, plus another three to four days for the trip to Steubenville and back[44]. Overall, he must have been away from home for a little over two months. In effect, William Rider stated (Answer No. 94): *"The experiments at Steubenville were carried on in April and May, 1865."* Mr. Rider also stated that he accompanied Meucci to Steubenville and that he stayed there part of the time, whereas Meucci remained there all of the time, together with two workers that he had taken with him from Stapleton. Besides, (Rider's Answer No. 120), a ton of wood pulp made by Meucci was sent from Stapleton to Steubenville, by means of the express courier *Adams Express*.

At the end of pre-production, the very worse that could be expected actually occurred, and that is that Associated Press said that the experiment had not satisfied the committee, and therefore asked for the five thousand dollars paid to Rider in advance to be returned, as we learn from Mr. Craig's affidavit. Rider, in turn, rebuffed the negative assessment made by Associated Press (Answer No. 44): *"Meucci and myself went there, and I spent part of the time, Meucci spent the whole time, of two or three weeks … I refused to pay, for reasons which I thought were good. Brown sued me, got a judgment, which I settled afterward by giving him a lien upon my real estate."* In other words, it seems to us the same old story according to which, if the case was brought to Court, the party that wielded the greatest economic power and could therefore afford the best lawyers would end up winning. It had not been wise to go against Associated Press. Rider should have thought about it beforehand, taking adequate precautions, and especially avoiding that Associated Press acquire the know-how without he having the certainty that they would pay.

However, in conclusion, Antonio Meucci was the one who lost the most. He had not seen a penny of the five thousand dollars paid in advance, as admitted by William Rider himself, who stated (his Answer No. 98): *"Mr. Meucci … was not present when it was paid. It was paid to me at my office, the $5,000, and that was in accordance with the terms of the con-*

[44] At the time, trains were traveling at a gross average of twenty miles per hour.

tract." Answering to attorney Humphreys's question as to how much money Meucci had received for his paper patents, Rider stated that (Answer No. 95): *"There was no money except his board and expenses."* He then added that Meucci naturally continued to receive his salary ($20 a week) during and after the experiment. In his deposition, Meucci gave a different version:

[Meucci's Answer No. 357] "… *Mr. Rider made a contract with one Cregg* [*Craig*, Editor's note]*, conveying him the patent to make paper for the sum of $100,000, to be paid in installments of $10,000 a month. On the signing of the contract $10,000 was paid to me by the company; instead of putting in my pocket the $5,000 of my portion, I gave the full amount to Mr. Rider who converted it to its own use, besides a certain amount that my wife had given him for safe keeping. I was sent to Steubenville, Ohio, to organize the paper factory. About this time happened the surrender of Richmond; some of the capitalists in the company that had purchased the patent failed, and after two months I was compelled to come back to my house, without a penny of benefit as usual."*

However, we are led to believe that the version given by Mr. Rider is more correct, mostly because Meucci, in reality, stayed out of the negotiations and contacts with Associated Press. In effect, Rider, when cross-examined by attorney Humphreys, was very vague about whether he had informed Antonio Meucci on the financial budget of the Steubenville enterprise:

[Cross-Question No. 125] *Have you ever rendered him* [Meucci] *an account of it?*
[Answer No. 125] *I can't remember rendering a written account of it, although my impression is I did.*
[Cross-Question No. 126] *Did you ever keep an account of it?*
[Answer No. 126] *I did at that time, yes.*
[Cross-Question No. 127] *What has become of the account?*
[Answer No. 127] *Lost with other papers in twenty-five years, or twenty years.*

Naturally, Antonio Meucci felt betrayed by Rider, as he had only received his meager weekly salary and a refund for his travel and hotel expenses, whereas it seems likely that a fair amount of the $5,000 advanced by Associated Press had ended up in Rider's pockets. Meanwhile, Meucci's dreams of becoming wealthy in his old age, which he had shared with his friend Garibaldi, went up in smoke, *as usual*.

General Edward Robert Lee

The statement by Antonio Meucci concerning the bankruptcy of *some of the capitalists in the company*, following the Rich-

mond, VA, surrender which put an end to the Civil War, marking the victory of the Union over the Southern Confederates, is worth commenting. In effect, the fall of Richmond and the ensuing surrender of the Confederate General Robert E. Lee to the Union General Ulysses S. Grant, took place on 9 April 1865, exactly twenty-four days after the Meucci-Rider-Brown contract was signed. The fall of Richmond happened about two weeks before the beginning of the Steubenville experiment. It may have been true that part of the companies belonging to Associated Press were in economic trouble on account of the disastrous conditions of the United States at the end of the war. There followed a period of profound economic depression and a long reconstruction phase, lasting from 1865 to 1877. The assassination of Abraham Lincoln, who died on 15 April of 1865 (Meucci heard the news in Steubenville), made the situation even worse. And perhaps even more difficult was the following presidency of Andrew Johnson, a moderate Southerner, who soon clashed with Congress over the criteria to be adopted in the difficult endeavor of the (especially political) reconstruction of the country. Friction with Congress led to a request of impeachment of the President. He was the first President of the United States to be impeached, and this gave rise to a period of serious political instability in the nation, with disastrous consequences on its economy.

Abraham Lincoln

According to all history treatises, the costs of the Civil War were colossal. We quote, as an example, the opinion expressed by two famous historians, James G. Randall and David Herbert Donald in their book "The Civil War and Reconstruction" (2nd edition, 1973): "… *Billions of treasure (Federal, Confederate, state, local, and unofficial), untold retardation of economic development, ruined homes, roads, buildings and fields, billions of dollar-value in slaves wiped out, a shattered merchant marine, and a wretched intangible heritage of hate… and intolerance…*" In monetary terms, the cost of the war was assessed at twenty billion dollars, and the destruction produced was considered to be *by far the most devastating in the history of the United States.*

Assassination of Abraham Lincoln

Despite these good reasons, supporting Meucci's thesis, we do not believe that they were essential in determining the negative outcome of the contract with Associated Press. We remain of the opinion that Rider was not cautious enough in preventing the transfer of know-how without having sufficient guarantees at hand. Although it might have had nothing to do with the above mentioned events, it might be interesting to note that Mr. David Craig left Associated Press in the Fall of the following year, 1866, and that from then on he worked in the telegraph sector (perhaps in the same building), where he was to remain until the

time of the Bell/Globe trial (see David Craig's deposition at the Bell/Globe trial, Answer No. 42).

Once the Civil War was over, Staten Island brimmed with initiatives aimed to reorganize means of transportation and especially to encourage the urbanization of the island, which numbered some thirty thousand inhabitants at the time. The first stretch of railway between Clifton and Eltingville had been inaugurated back in 1860. By 1865 it had reached Tottenville, at the southern tip of the island, facing the town of Perth Amboy, in New Jersey. The new *Staten Island Railway Ferry Company*, which was founded in the month of February 1864, provided a regular service between Manhattan and the three landings in Staten Island (St. George, Stapleton and Clifton). Service was provided from seven o'clock in the morning until six o'clock in the evening, with frequent runs lasting about half an hour and providing rapid transfers to and from the nearby railway stations, both in Manhattan and in Staten Island.

In the years that followed the end of Civil War, a horsecar service was also set up along the entire north-eastern coast of Staten Island. The horsecar line passed along Bay Street (New York Avenue back then) very close to Meucci's cottage. A well-known Staten Island businessman, Erastus Wiman, built a huge Casino in St. George, with many attractions, including concerts, variety shows and even a field for the Indian ball game called *lacrosse*. Indeed, Staten Island was becoming something of a little Switzerland, easy for New Yorkers to reach.

On his return from the Steubenville experiment, Meucci prepared and filed his third patent on pulp making, titled "Improved Process for Making Paper-Pulp from Wood." The patent application was filed in record time (on 3 August 1865), but it was only granted several months later, and precisely on 13 March 1866, with the number 53,165. Here, the name of David Whiting comes up again, to whom the patent was assigned, two days after it was granted, and that is on 15 March 1866. We shall see later to what new developments this was linked. This patent of Meucci's, as previously stated, besides indicating a new method for the production of paper pulp from wood, also indicated how to process straw, hay, the leaves of trees, Indian corn, weeds, old ropes and other cheap vegetable matter.

On his part, after his disappointment with Associated Press, William Rider, who was still convinced of the value of Meucci's patents (or, perhaps, even more convinced than before), rented a factory at Hohokus in New Jersey, in the month of September 1865. He wanted to start up a business on his own in the paper manufacturing sector. We have not found Hohokus in the current maps (there is the Hohokus River, about twenty-five miles north of Elizabeth, NJ, which has, however, nothing to do with it). Meucci, in his deposition (Answer n. 372), did not remember

about Hohokus, so lawyer Storrow remembered that it was *"down on the marsh near New York."* From this we can deduce that it could have been situated near today's Secaucus, which is located some three miles west of West New York[45]. Since the rent was $30 a day, which was relatively expensive for the time, a few weeks later, and precisely on 1 October 1865, William Rider (Answers No. 39 to No. 42) purchased another factory, in partnership with a man called T. H. Conkling, in New Durham, NJ, about one mile west of West New York.

It is to be remarked that almost the entire coastal area, which represents 40% of the surface of New Jersey, is flat and is characterized by sandy and muddy, sometimes marshy, soil with shrubbery, typical of such terrain. A swamp plant called sedge was very widespread. It had strong and resistant fibers, and its leaves were used to make mats or cover bottles. Meucci working with only two men in the small factory in New Durham, managed to develop a process for the treatment of sedge, in order to obtain a pulp that would be suitable for the production of paper or of fibers for weaving (Rider's Answer No. 39).

Sedge plant

It should be specified that in normal times, in a nation like the United States which had abundant wood and forest products, there was not much interest in obtaining paper from annual plants instead of wood. In fact, although they are less expensive than wood, production costs are generally quite high. Nevertheless, history has taught that in times of war (and after a war) there have always been new attempts to utilize annual vegetables to manufacture paper, due to the increased prices of the more valuable raw materials. The notes given in the Appendix "The history of papermaking" point out that after the proposal advanced in 1861 by the Englishman Thomas Routledge concerning a process to treat esparto grasses, Antonio Meucci was the first to experiment extensively and with success processes whereby to obtain pulp from a large number of annual grasses, as proven by the many notes in his Memorandum Book, which are summarized in the insert below.

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[45] Thanks to information supplied by Mr. Richard Grigonis of New York, we were subsequently be able to trace Hohokus, NJ (or Ho-Ho-Kus), about 3.5 miles west of Hillsdale, NJ. We also found the following citation (see: http://www.specialproperties.com/hohoinfo.htm): "During the 1800's, Ho-Ho-Kus became a center of industrial and commercial activity with mills producing textiles, grains, paper, and lumber developing along the banks of the Ho-Ho-Kus Brook and the Saddle River."

PAPER PULP MAKING FROM MEUCCI'S MEMORANDUM BOOK

The Appendix "Antonio Meucci's patents until 1870" includes 23 pages from Meucci's Memorandum Book dedicated to paper making (from p. 6 to p. 32, less a few missing or blank pages). From p. 33 onwards, other subjects are dealt with. The above notes are the English translation of Meucci's notes, as reported in the records of the Bell/Globe trial.
Page 6 bears the date of Meucci's first paper patent, 18 October 1864. The following pages, though probably in chronological order, do not bear any dates. Due to the abundance of the notes in question, in the comments that follow we shall keep to a few highlights, and refer the demanding reader to the full text, which is contained in the above mentioned Appendix.
On page 6 it is said that the idea of using what Meucci called hypochloronitric acid (or aqua regia[46]) came to him from the observations of the action of marsh gases on vegetables. He then recommends chopping the wood as finely as possible, following the veins, to avoid cutting the fibers. On this subject, Meucci gives more details in his patent granted on 28 March 1865 (his second paper patent), where he recommends cutting the wood perpendicularly to the veins in pieces three inches long (about 7.5 cm) and then obtaining splints along the veins that are 'about the size of match-splints.'
On page 7 and in the pages that follow, thus at the time of his first patent, Meucci started considering the use of other vegetables besides wood, such as: straw, hay, cane, reeds, flax, hemp, tow, weeds, herb or grass or cane from the marshes, grass growing near the sea and called salt grass, and seaweeds. He devised a more delicate process, so as not to damage the fibers (or, as he called them, the 'filaments'), which he thought utilizable also for making cloth (or, as he said, for 'the arts of spinning'), or woven seats or felt for hats and other uses.
As regards pulp obtained from wood, Meucci stated on p. 9 that he preferred fir or poplar, because 'because its cost is less, and the loss of weight, if it is dry before commencing operations, is about one-half.'
An interesting detail concerns treatment with caustic soda, which is performed (p. 8) by bringing the solution to a boiling point, and 'when boiling, little by little the wood saturated with gas is introduced into it, the mass is stirred continually, either by steam or by hand, in order to divide the fibers of the wood.'
Moreover, in several passages Meucci mentions

[46] We remind the reader that *aqua regia* is a mix of nitric and hydrochloric acid that, among other uses, is capable of dissolving gold and platinum.

refining pulp before feeding it into the paper making machine. For example, on p. 9 it is written that: '…t he pulp is completely ground to the necessary point and is put in the trough that feeds it to the machine to make it into paper.'
Meucci did not limit himself to describing the process in detail, but also indicated how to build the machinery. Some of it was of his own invention, such as the machine for the production of so-called hypochloronitric gas (p. 10), for which he also made a drawing. Unfortunately, as we have already mentioned, in the records of the Bell/Globe trial, only the text of Meucci's Memorandum Book was reported, without the drawings.
On p. 11 of Meucci's Memorandum Book the manufacturing cost (excluding the cost of wood as raw material) is estimated at $22 per ton of pulp. To this, it was necessary to add the cost of about two tons of dry wood (being the estimated yield of fifty per cent). As one English ton is equal to 2,240 pounds, the manufacturing cost per pound of pulp produced amounted to 0.98 cents, against a 5.5-cent total cost, requested by Associated Press. It is therefore easy to understand why Antonio Meucci was so optimistic about the results of the Steubenville pre-production trial.

On p. 13 of his Memorandum Book, Meucci explained in detail - in relation to his second patent which was granted on 28 March 1865 - how, by pouring vegetable oil into the alkaline solution to form a lather, it happened that 'when the fibers are put in this lather, be they of wood or any other substance, when they are entirely disorganized they remain very flexible and elastic like those of cotton.'
On pages 14 and 15 of the Memorandum Book, the manufacture of wicks from paper pulp is dealt with, according to Meucci's patent granted on 28 February 1865. This subject is very interesting from a technical point of view, even though it was not followed by any industrial applications.
Pages 17 to 20 (page 16 is blank) contain many interesting details, some of which prove that Meucci was a precursor of the modern paper-making techniques[47]*. For example, Meucci indicated on p. 18 how to recover the lye as follows: 'the acid liquid of aqua regia after the first time will always serve, and will not consume more than what can be absorbed by the wood in the vessel.' He also indicated the use of direct steam to warm the mass to 150 °F. The*

[47] See the opinion expressed hereinafter on this subject by an expert in the field, Dr. Clemente Nicolucci, General Manager of the *Favini* paper factory in Rossano Veneto.

composition of aqua regia is also given (‘3 parts of muriatic acid at 18 °Bé, 1 part of nitric acid at 36 °Bé as found in commerce’) and of the alkaline bath (‘100 pounds water, 2 pounds caustic soda, 1 to 2 vegetable oil; the whole thing made to boil, forming a soap’).
On pages 20, 21 and 22, under the title “Herbs from the marshes, or other qualities, to obtain long fibers for spinning or making ropes,” Meucci indicated how to treat a particular type of grass - which in Italy is called ‘sala,’ or ‘erba spada’ or ‘borsa,’ and which is used by basket weavers - to obtain long and strong fibers, with which ropes can be woven, for instance. The processes are long and tedious, and they aim at not compromising either the resistance or the length of the fibers, though ridding them of the encrusting and gummy substances they contain. Meucci used two iron cylinders for a first pressing, ‘which must be smooth and corrugated,’ while he used a pair of hard rubber cylinders for final dehydration. Meucci recommended not using chloride of lime for bleaching, as it attacks the filaments and reduces their resistance, suggesting bland alternatives instead. As for the rest, he utilized his usual process with hypochloronitric gas, followed by his alkaline soapsuds. Finally, Meucci suggested a variant to this process, in which he used a sulfonitromuriatic instead of hypochloronitric bath, as it was more suitable for flax, hemp and other grasses.
On p. 23, Meucci explains the processing of “grass of the marshes - sedge - seaweeds.” Curiously, his original notes on this page were in English, instead of Italian, as was the case for the rest of his Memorandum Book. Here is a passage from these notes: ‘When this [the grass, Editor’s note] *is dry, it is passed through a machine invented by me, composed of a pair of rubber cylinders, and through these two cylinders there is a comb composed of blades of steel cutting; the first cylinder forces the herb to pass the head in the comb that cuts it, following its vein, and compels it to pass back to the cutting blades… as shown by the figure here marked.’ Naturally, as we already said, the drawing is missing. As he is speaking of sedge, we may deduce that these notes were written in or after 1866, when there was a plan to set up a paper factory at Perth Amboy, as we shall see. In the same page, Meucci also indicated how to color the paper pulp with light hues.*
On page 24, he specified the more energetic treatment of wood and cane, using his new sulfonitromuriatic acid solution . Its recommended composition was 12 pounds of sulfuric acid, 6 pounds of nitrate of potash, and 6 pounds of water, to be

dissolved in 100 pounds of water with 12 pounds of common salt. And, once again, he underlined the recovery of the lye. He then indicated a variant for the treatment of flax and hemp, which he recommended should be planted and gathered 'in good moon.'
On pages 24 and 25, we find a calculation of the cost of treating one ton of hemp, flax or tow, as follows:

Pounds 2,240 of raw flax,	$25.00
A man to pass it to the machine that breaks it	$ 2.50
Steam used for the machine	$ 2.00
Pounds 2,000 acid solution that can absorb the first bath	$ 5.00
Pounds 2,000 alkaline solution mark 3 °Bé,	$ 2.40
Animal or vegetable oil 1 % on 2,000 pounds alkali	$ 2.50
Work of three men at 2.00$	$ 6.00
Steam and coal	$ 3.00
	$48.40

According to the table above, and assuming a yield in pulp of 50 per cent, 1120 pounds of pulp would be obtained from one ton of raw flax, at a cost of $48.40, therefore at a unit cost of 4.32 cents/pound. This cost was slightly higher than the 4 cents/pound requested by Associated Press to process straw or corn husks, which, however, had a much lower cost, as raw material, compared to flax, which was known to be much more expensive ($25 a ton from the table above).
On p. 25, directions are given on how to prepare hemp or flax, or Indian jute, in order to obtain fibers with similar characteristics to those obtained from cotton.
Page 26 is blank. Page 27 gives an estimate of the expenditure for a plant in Africa for the preparation of paper pulp from date palm, as requested to Antonio Meucci by a certain Mr. Chindinico (see the table below).
The note that follows the schedule is of interest. It tells the buyer that it would be possible to save two thousand dollars for the steam boiler, using instead large iron containers to boil the water, but that 'with the steam everything is done more quickly, and you are sure of the good result, and two thousand dollars more or less does not make much advantage for a new speculation that can give you many millions of interest.'
Page 28 is blank. Pages 29 to 32 contain a long chapter under the heading "Improvements in the work of treating hemp, flax, etc." It indicates even more effective

baths than the previous ones and the plant conditions that speed up the shift from one phase of the process to the next, placing the tanks in the proper way, also in terms of height, and recovering the lye with pumps. Also in this case, unfortunately, the drawings are missing. We are certain that today they would have been of remarkable historical interest. It is also to be remarked that pulp bleaching is obtained by means of gaseous chloride, bubbling in a 1 per cent solution of caustic soda in water, all brought to boiling point by direct steam and finally washed repeatedly with pure water.

SCHEDULE OF THE EXPENSES TO BE MADE IN AFRICA, AND GIVEN BY ME TO MR. CHINDINICO:

One steam boiler of 100 horsepower,	*$2,000*
One steam engine of 24 horse-power,	*1,000*
One steam pump,	*300*
15 tanks of hard wood, with rubber tubes in the holes, furnished with double bottom,— of the capacity of a ton, —surrounded by iron hoops, and the thickness of wood from 2 to 3 inches	*1,500*
A wooden pump	*100*
2 Machines with two iron cylinders like those for crushing sugar cane	*400*
3 Machines to separate the filaments from the mid-rib of the date, at $300 each	*900*
	$6,200
Expense for chemicals for one ton of material,	*$30*

Meanwhile, in the Spring of 1866, a small consolation after the failure of the negotiations with Associated Press arrived in the form of the payment to Antonio Meucci of five per cent of the profits of the New York Paraffine Candle Co. for the period from October 1865 to April 1866. This amounted to $3,290.28, very much increased with respect to the preceding years (it was $2,058.49 from 1863 to 1864, as we mentioned before). It was a breath of fresh air for the Meuccis - which, however, came from candles and oil, rather than paper - and it enabled them to pay their debts with shop-keepers and suppliers, and especially to pay the arrears of the wages to faithful Maria Gregory. By this time Mary took care not only of Esther but also of the whole house, given that Esther was paralyzed and Antonio Meucci was away for such a long time, first working in Stapleton, then in Steubenville, in Hohokus, and in New Durham.

In the Summer of 1866, for the first time since his arrival in New York back in 1850, Meucci became directly involved in Italian political events, or better in the reactions of New York's Italian community to the outbreak of Italy's third war of independence. In fact (see also the Appendix "Giuseppe Garibaldi"), in June 1866 Italy, allied with Prussia, declared war on Austria. Garibaldi was preparing to take an active part in the conflict with his famous *Cacciatori delle Alpi* (Alpine Huntsmen). The war came to a rapid conclusion, as already by 26 July Austria asked Prussia for an armistice. As a consequence, Garibaldi, who was waging battle in Tyrol, was ordered to suspend his military action. Garibaldi replied with his famous *"Obbedisco"* (*"I obey"*) and the armistice with Italy was signed shortly thereafter, on 12 August 1866.

Not expecting such a rapid conclusion, from the outset New York's Italian colony was pervaded by the sacred flame of the struggle for the unity of Italy, for the achievement of which only Rome and Venice were to be annexed. Thus, an *Initiative Committee* was rapidly set up in New York which, with an appeal to the Italian colony issued on 15 June 1866, convened an assembly for 22 June in order to decide on immediate forms of support for Italy's third war of independence. The appeal was signed by the President, B. Massimiliani, Vice-Presidents G. F. Secchi De Casali, C. Orsini, P. Piatti, R. Prati and the Secretary, Achille Magni. As can be seen, the historical leaders of the colony, as it were, had changed. Piero Maroncelli and Luigi Chitti had died before the Meuccis arrived in New York. Also Prof. Felice Foresti had returned to Italy, where he died in Genoa on 14 September 1858. Others such as Filopanti, Righini, and Oregoni had already left for Italy to fight by the side of General Garibaldi. Others were too old to fight, even just with words.

The assembly of the colony was held at the *Germany Hall*, on 291-293 Bowery, at eight o'clock in the evening of 22 June

Antonio Meucci, new spiritual leader of the Italian colony of New York

1866. The assembly immediately divided into two factions: the first, comprising the so-called aristocrats, only suggested collecting funds to be sent to the Italian government (led by the Baron Bettino Ricasoli at the time); the second was in favor of setting up a Corps of volunteers, well trained and armed, to be sent off to fight in Italy. The latter faction got the upper hand and Antonio Meucci was unexpectedly nominated President of New York's *Permanent Central Committee* that replaced the *Initiative Committee*, which was dissolved on the evening of the same assembly. The Vice President and secretary were appointed in the persons of B. Massimiliani and A. Magni respectively, M. Vanni was nominated treasurer and other members included the following: C. Orsini, E. Bendelari (the famous coral merchant, a friend of Meucci's, already mentioned previously), P. Pisani, M. Muzio, P. Piatti, G. Frazza, G. Susini, R. Prati and G. Barbetta. Significant is the absence of G. F. Secchi De Casali, the Director of *L'Eco d'Italia*, who probably sided with the other party. This is confirmed by the fact that he did not publish an appeal-letter from Antonio Meucci to the Italians in America (dated 22 June 1866), which Antonio Meucci was nonetheless able to have printed and distributed, with the heading: *"Since L'Eco d'Italia did not dare to publish the following letter, I had it printed to demonstrate that in this free country the press is nobody's private domain. —A. M."* (See Appendix "Letters written or received by A. Meucci until 1871").

The *Permanent Central Committee* issued an announcement dated 7 July 1866, which was addressed to all the Italians of America, calling on them to collect funds and send them to the President of the Committee, Antonio Meucci, at 51 Broad Street, New York City. It may be noted that this address was the same as that of William Rider's office, formerly the headquarters of Rider & Clark.

A few days later, precisely on 20 July 1866, Meucci wrote a long letter to Baron Ricasoli. We only have an English translation of this letter, made in 1976 by a certain Joseph Zappulla, who found it in the archives of the Italian Foreign Ministry. It was then published, together with the aforesaid appeals, by the newspaper *La Parola del Popolo* of New York, in September 1976 (see bibl., and also a reproduction in the Appendix "Letters written or received by Antonio Meucci until 1871"). The article on *La Parola del Popolo*, issued on the occasion of the celebration of the bicentennial of the American Independence, was aimed to highlight the reactions of the various American ethnic groups to the political events that took place in their countries of origin over the last two centuries.

Here is Antonio Meucci's letter to Baron Ricasoli and one of his addresses to the Italians of America (which was one of the three documents attached to his letter to Baron Ricasoli).

MEUCCI'S LETTER TO PRIME MINISTER RICASOLI (20 JULY 1866)

To His Excellency
Baron Bettino Ricasoli
Prime Minister of His Majesty's Government
in Florence

New York, July 20, 1866

Excellency:
I regret to take up some of your time, so precious at this period, but knowing the goodness of your heart I hope you will pay attention to the words addressed to you even from New York by one of your fellow-citizens.
When we received the news that Italy had declared war on Austria, all those who nourish patriotic sentiments repeated the cry of Parliament: Viva la guerra! Viva l'Italia!
Many young men who fought in the regular army or under Garibaldi and who now live in this city or in the nearby communities, have expressed a great desire to return to Italy and contribute with their blood to the cause of our independence — just as those from Alexandria, Egypt, have done.
Their desire found a resonant echo in many of our compatriots who formed an Initiative Committee in order to organize an expedition of volunteers and collect funds for the passage of these men anxious to return to Italy to fight, after being accepted by the proper authorities and aggregated to the armed forces. In order to avoid any possible complaint of violation of the international law, the Initiative Committee published an appeal to the Italians of New York which I am enclosing.
This appeal produced good results and soon 500 of our compatriots, the most numerous group of Italians ever assembled here since the revolution of 1848, gathered at the designated place. I took part in the meeting, although I haven't participated to any such assembly for the past seventeen years [therefore, since Meucci's arrival in New York, Editor's note]. *Our countrymen, cognizant of my long-standing and cordial friendship with General Garibaldi, and perhaps moved by the desire to demonstrate their esteem and love for that great man, insisted that I accept the chairmanship of a Permanent Committee which was nominated that evening and which was composed of well-liked and popular men.*
Some resolutions were proposed and adopted, among them one so emphatically worded of sending Italian volunteers to Italy.
However, the organization of this Permanent Committee prickled the sensibility of certain members of the well-to-do aristocracy who had not been included in the Committee because some refusals had been foreseen since these persons do not accept a popular vote but want to impose their will on others.
A few speeches worthy of the occasion were made; some collectors were nominated,

and the collection of contributions was initiated.
In the meantime, since the number of the volunteers was increasing, an Enrollment Committee was formed, charged with the task of verifying the certificates of the volunteers, submitting these men to a medical examination and ascertaining that they would qualify for military duty according to the regulations issued by the Ministry in Italy regarding the volunteers.
Seeing that those who wanted to return to Italy were too many, it was decided to hold another meeting among the Italians of New York to solicit other contributions.
We also sent out the enclosed appeal to the other Italians of the United States, and finally, at the suggestion of several friends of Italy who are not Italian citizens but love justice and liberty, these were invited to attend a third meeting — this time an international one.
During this meeting which we had called for the purpose of urging everyone to cooperate with us, many people, including a Mexican and a Frenchman, asked to be heard — as it is the custom here. These men did not limit themselves to talking about the purposes of the Committee, but praised Italy and cursed the man who had oppressed and was still oppressing their countries, that is, the Emperor of the French.
I gave a short speech (3) which I am enclosing too. The other Italian speakers limited themselves to the main subject, praised what the other patriots had accomplished, and paid homage to the King and to Garibaldi — who had not only contributed to the cause with money as our local magnates wanted us to do, but also by offering the blood of their sons. Some speakers expressed their admiration for the magnanimity of those of our compatriots who, imitating the ancient Romans, have left their seats in Parliament to join the army as volunteers. Former Minister Sella[48] has done so and was highly praised.
The following day the Committee was harshly criticized in an article printed in the Courrier des États Unis — a newspaper that is very servile to its master. The Committee replied with a dignified letter, and the newspaper admitted that the Committee could not be held responsible for the opinions expressed by some Mexican or French individuals. The American press, which is more used to freedom of speech, reported the proceedings of the meeting faithfully and without any comment.
In these days, in order to collect more funds, the Italian opera singers now in America are planning a series of opera performances whose proceeds will be given to our cause.

[48] Mr. Quintino Sella, Secretary of Treasury from 1862 to 1865 and again from 1869 to 1873.

The performances will begin on Monday, July 16 and will end on Saturday with a matinée.
While we are making as many efforts as we can to add a link of our great chain of national unity, it is painful to notice that a certain ambitious clique, unable to understand the people, is refusing to join us and is criticizing our plan of sending volunteers to Italy.
These persons cannot realize the greatness of this gesture nor appreciate the satisfaction of seeing an Italian banner brought to the battlefield by Italians from New York. They only wanted us to offer money so that they, being wealthy, would be considered the most generous, little caring that they would crush the noble aspirations of so many of our humble men who have already fought for Italy.
From what these people are saying we have good reasons to believe that they, having money to spend and being known in Italy, have instigated some members of the Italian legation in Washington, and have written, or induced others to write, to the Minister in Florence in such a way as to put our movement in a very bad light. It seems that in these letters even the most innocent and innocuous facts have been distorted and severely commented, thus trying to ridicule our actions and discredit the purity of our patriotism.
I have found a confirmation of the worthiness of our movement in your circular to the Prefects of the Kingdom of Italy whom you urged to encourage all demonstrations of patriotism so that in all foreign countries would prevail the universal conviction that all Italians are united in wanting the independence of Italy as one nation. This conviction would give courage and enthusiasm to our soldiers.
Yes, Excellency: it is very painful for me to see that those who should encourage and guide such demonstrations are just the ones who increase our difficulties, reproach those who participate in the movement, disdain to join it and hinder the good-willed people whom they deride and of whom they would make a laughing stock in case our noble efforts should fail.
If however we should succeed in sending a group of volunteers to Italy, I would ask Your Excellency to impart in advance the proper orders so that they would be greeted with enthusiasm; and I hope that you will never allow the intrigues of ambitious people and the insinuations of a semi-Jesuitical clique to succeed in disregarding and perhaps insulting the patriots who do not only honor themselves, but add to the glory of our fatherland.
Excellency! Every good Italian living in this country rejoiced at the announcement of your appointment as Prime Minister, in the certainty that you will always uphold the

honor of our country and distribute praise and blame justly, keeping your soul uncontaminated by the influence of corrupt cliques and of evil individuals who, instead of love for their homeland, nurse in their hearts nothing but ambition, and love for money and for high positions.
With the sense of the highest esteem I declare myself
Devotedly yours,

Antonio Meucci,
President of the Permanent Committee of the Italians of New York during the Italian war of Independence.

Antonio Meucci's address at the International Meeting
(July, 1866)

The struggle between despotism and liberty began with the battle of Custoza. Our brothers have already shed their blood to free Venice from the foreign yoke. Garibaldi, man of destiny, the leader of a hundred battles, the popular warrior, left his solitary refuge of Caprera to rush to the battlefield. Fighting against the Austrian army, he defeated it and like a flash of lightning will continue his mission. The time has already come to prove that the words Italian Unification are not vain and that we are not unworthy of our ancestors. Do not let yourselves be deceived by the enemies of our sacred cause. Be firm in your resolve, because when the citizens wish to better serve their country with their purse rather than with their body, then the nation is on the edge of ruin. With indolence and money one can only obtain soldiers to enslave the country and representatives to sell it.
Italians, lovers of liberty: The hour for action has struck. Let us be united and think that if Italy loses this struggle, our name will be weighted down with a burden of scorn hard to bear.
At this time the means of action must be real strength and not historical remembrance.
Hatred and difference of opinions must be stilled. The desire to serve our country must unite us all. Let us not hope in the intervention of Napoleon, which we do not want. We must take up the struggle with our own forces and, by our unity, perseverance and courage, we must realize the dream of the past centuries — the unification of Italy.

Antonio Meucci

[From: Tomasi, S. M., *The Unification of Italy: Meucci's Views from New York*, La Parola del Popolo, New York, Year 68, Vol. 26, Sept.-Oct. 1976, pp. 179-182]

Note how Meucci stressed to Prime Minister Ricasoli that this was the very first time since his arrival in the United States that he was taking part in political meetings, which he had always steered clear of up until then. Also interesting is the hostile attitude towards Italy's alliance with France - which Garibaldi personally objected to - because of the obstacle that the latter represented to the annexation of Rome to the rest of Italy (see the Appendix "Giuseppe Garibaldi"). The reaction of the *Courrier des États Unis*, published in New York, to this attitude taken on by Antonio Meucci and his supporters was not delayed and indeed its resentment lasted until Meucci's death. In fact, in a brief obituary notice dedicated to him, unlike most of New York's daily newspapers, that paper used a sarcastic tone as regards his claimed invention of the telephone.

Over five hundred volunteers rallied around Meucci, armed to their teeth and well trained from a military point of view, and ready to set sail for Italy. The Italian opera singers were as generous as usual, and collected more money than would have been offered by the wealthy magnates of the Italian colony, who were as reluctant to shed their blood as they were ambitious to display their generosity. The news of the Battle of Custoza, in Italy, which took place on 24 June 1866 and is mentioned in Meucci's appeal to the Italians of America, probably reached New York through the first transatlantic telegraph cable, which worked perfectly that year. Or, perhaps, it was the news of the armistice with Austria that was received via transatlantic cable. At any rate, the Italian Corps of New York, especially after Garibaldi's *"Obbedisco,"* had no reason anymore to leave for Italy. So, the *Permanent Committee* was dissolved and Meucci returned … to his inventions and to his experiments.

Around Fall of 1866, it seemed that a good solution was in sight towards enterprising an important paper manufacturing business, with Antonio Meucci's patents. Indeed, it occurred that Mr. James C. McAndrew, a merchant of Staten Island, who had known Antonio Meucci for many years (he often met him in Stapleton or at the ferry landings of Clifton, Stapleton or St. George), bumped into him again in Stapleton and asked him why he had been away for so long. Meucci told him about what had happened with Associated Press and the experiments that he had carried out at Hohokus and New Durham. McAndrew listened carefully. When Meucci finished speaking, McAndrew said with some caution that he had an idea on how to exploit the paper business. Meucci was curious, and asked him what his idea was.

"You see, Mr. Miiutchi, my idea is: first (and he raised the small finger of his left hand, as the Americans do) *you must also manufacture paper, not just pulp; second* - and he raised his fourth finger - *the paper factory must be built not only close to a*

river, by the water, that is, but also close to the raw material, wood or other plants that you intend to use. Now, there is a lot of sedge around Perth Amboy, and we will only do them a favor if we get rid of it for them. If we set up a factory there, shipment wouldn't cost us a cent. Naturally, a large capital is necessary, and I know Rider doesn't have it. But I know where to get it, if needed. What do you say? Talk it over with Mr. Rider and let me know…"

Meucci replied that he liked the idea and that although he only had experience in making pulp, and not paper, he could run the entire factory anyway. He also said that it was indispensable to talk to Mr. Rider, as he was the assignor of Meucci's patents. William Rider agreed, especially because with an invested capital of about thirty thousand dollars (the amount that McAndrew had alluded to) the profits would be much greater than those he would gain with his small factory in New Durham, which was all that he could afford with his own capital alone.

Sometime in 1866, a first contract was signed by William Rider, Antonio Meucci and James C. McAndrew. The location for the new factory was chosen in Perth Amboy and Meucci elaborated a plan for the plant, utilizing a continuous machine of the Fourdrinier type for the manufacture of paper (see Appendix "The history of papermaking"). At the same time Rider closed down (or sold) his New York Paraffine Candle Co. probably to derive capital for the new venture. Besides, Antonio Meucci could not run two factories at the same time, also because he had to travel one and a half to two hours (taking the train from Clifton to Tottenville, plus the ferry from Tottenville to Perth Amboy) to get from his house to the new factory in Perth Amboy and as many to get back, so that, sometimes, he stayed at a hotel in Perth Amboy for a night or two, or even for the whole week (at his own expense, as he declared).

The new company, baptized *Perth Amboy Fiber Co.*, was officially founded in early 1867. We do not know the exact date on which it was incorporated, although James McAndrew stated in his deposition at the Bell/Globe trial (Answer No. 3) that it was: *"Early in 1867."* However, as Meucci's patents were transferred to the Perth Amboy Fiber Co. on 11 February 1867 (see Meucci's deposition, Cross-Question No. 359), this means that the company had already been incorporated by that date (although Meucci had been working there since the previous fall, to prepare the plant). The partners in the business were, besides James McAndrew, who had put up the first share of capital (about thirty thousand dollars), Antonio Meucci, William Rider, who also contributed the first two Meucci's patents, and probably also David Whiting, who owned Meucci's third patent. Indeed, also this latter patent, which was granted on 13 May

1866 and was assigned to Mr. Whiting on 15 March 1866[49], was made available to the Perth Amboy Fiber Co. (see Meucci's deposition, Cross-Question No. 411). Antonio Meucci was the superintendent of the company, with an initial weekly salary of $40 (which in times of high inflation was worth about one half, as has been said). At a later date, Meucci's salary was cut back to $20 a week (equivalent to about $300 in 1990), the same he had gained from the New York Paraffine Candle Co. According to James McAndrew's deposition (Answer No. 46), Meucci also owned a large number of shares of the company, being one of the three shareholders (Rider, Meucci and McAndrew). In his deposition, Antonio Meucci said (his Answer No. 249) that he had been offered $100,000 in shares, but that in the end he only received $75, after turning to a New York lawyer named Lorenzo Ullo, a good friend of his, whom we will talk about in Vol. 3 of this book.

Around 1870, Alexander McAndrew (a second cousin of James McAndrew's) came into the picture, in that he joined the company as majority shareholder, putting up fresh capital for over one hundred thousand dollars, which was deemed necessary to expand the company. Thus, he was appointed President of the company and remained in office until the company was dissolved, around 1875. James McAndrew, who had run the company up until that time, was replaced by Alexander's oldest son, Shirley McAndrew, though retaining his capital share in the company. According to his deposition, he formally closed his accounts with the company on 21 December 1870, but in practice he had ceased being involved in its management long before. Before leaving, James McAndrew paid for the extension of Antonio Meucci's two patents No. 44,735 and No. 47,068 to Great Britain, joining them into a single patent, pertaining in particular to the production of paper from sedge (see McAndrew's deposition, Answers Nos. 14 and 54). This patent was granted in Great Britain as No. 758, probably in 1868[50]. However, as of 1870, the annual fees were not paid and the patent expired. The same patent was extended also to Italy, where it was granted on 3 November 1869.

Shirley McAndrew was a very pleasant and likable man, and he became good friends with Meucci, whose creative genius he admired. We will find Shirley's signature as witness of Antonio Meucci's famous caveat "Sound Telegraph." Co-signatory of

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[49]The assignment bore the signature as witnesses of William E. Rider and James C. McAndrew.

[50]In the list of Antonio Meucci's patents supplied by the US Patent Office and exhibited at the Bell/Globe trial, a patent "British No. 758 of 1865" is quoted, but the year must have been mistaken.

the caveat was Mr. Frederick Harper, chief engineer of the Perth Amboy Fiber Co.

According to Mr. Rider's testimony (Answer No. 59), the initial agreement, before Alexander McAndrew joined the company, was that half of the profits would go to Antonio Meucci and William Rider and the other half would go to the other partners in the company (James McAndrew and David Whiting, to our knowledge). After Alexander McAndrew came into the scene, the breakdown of the profits was reviewed in the sense (not better specified) that Rider's and Meucci's share was reduced in favor of the new majority shareholder. However, no profits were declared either in the beginning (which was logical, on account of the start up of the business) or later, until 1871, when Antonio Meucci left the Company.

At first, the factory only produced paper pulp. However, according to Antonio Meucci's deposition, the pulp was produced not only from marsh grass but also from wood. Of great interest is the fact that waste-paper was recycled too (Rider's Answer No. 145), from which the Perth Amboy Fiber Co. manufactured wall paper.

Meucci stated that (Answer No. 364) the *Perth Amboy Fiber Co.* employed between ten and twelve workers. According to his deposition (Answers No. 138 and 139), Mr. Rider would go to the factory a couple of times a week, in the beginning. However, he subsequently lost interest in it, to the point that after about a year he no longer showed up. At the Bell/Globe trial he stated that he left because he did not see any profits and because he realized that ventures with Meucci were a failure. When attorney Humphreys asked him why it had taken him eleven years to realize that they were a failure, Mr. Rider replied (Answer No. 171): *"I was constantly discovering that; I was hiring machines and investigating his patents, and in one after the other I would lose my money, and then something else would turn up. I had faith in him."* Mr. Rider also stated (Answer No. 92) that on 21 December 1871, he had transferred all of Meucci's patents that were in his possession to some gentlemen from Newark, on Meucci's own request, as a favor to him. Then, he tried his luck in the mining sector. Actually, nothing else is known of William Rider until the Bell/Globe trial, in 1866, when he was still working in the mining sector.

Instead, Antonio Meucci remained with the Perth Amboy Fiber Co. until 1871. In fact, we have a letter written by him to lawyer Thomas Stetson dated *"Perth Amboy N. J. Dec. 22nd, '71"* whereby he returns the application of his well-known caveat "Sound Telegraph" to him, signed. However, Meucci also declared that he ended his collaboration with the Perth Amboy Fiber Co. in the same period, without explaining the reasons why, though they aren't hard to guess. At the time of the

Bell/Globe trial, Alexander McAndrew was probably deceased, and his son, Shirley, had moved to Spain, according to what James McAndrew stated in his testimony, given in favor of American Bell.

On the subject of paper manufactured from sedge at Perth Amboy, James McAndrew made the following statements, during his cross-examination, conducted by Mr. Humphreys:

[Cross-Question No. 38] *You made good paper, did you not, out of sedge?*

[Answer No. 38] *No, it never made good paper.*

[Cross-Question No. 39] *Then why did you continue it longer than long enough to experiment that fact, for a month or two?*

[Answer No. 39] *I guess it kept on a year or two after we knew the paper was bad. A man that manufactures, generally expects to improve his process and improve the article he turns out; and it is usually so. Practice makes perfect.*

[Cross-Question No. 40] *How soon did you find out that the paper was not a good or merchantable article?*

[Answer No. 40] *It was merchantable for the price; but it was so very inferior; it was poor paper; it was too brittle. Meucci's process was abandoned; it was absolutely abandoned. His process, — in a few words I think I can almost explain it to you. His process was that this stuff was put into an immense retort forty feet long, with a cylinder, a revolving thing, and the acids were put in here with this cut sedge. Eventually that was all thrown out and we just made paper in the common, ordinary way that paper-makers make it — boiling it in open boilers.*

[Cross-Question No. 56] *So, if I understand you correctly, you commenced the sedge business down at Perth Amboy about 1867, to manufacture paper from Mr. Meucci's said process?*

[Answer No. 56] *Yes, sir.*

[Cross-Question No. 57] *And you continued to manufacture paper in that manner for a time, perhaps a few months or a year?*

[Answer No. 57] *Oh, more than that; two or three years; and then the process was changed, and we continued for two or three years more.*

[Cross-Question No. 58] *Then you abandoned Meucci's patent entirely?*

[Answer No. 58] *No, I couldn't say we abandoned that entirely, because the same machinery was used, with the exception of the rotary. We boiled in open kettles in place of his closed kettles*

[Cross-Question No. 59] *What I mean is, you abandoned Meucci's process for making paper from sedge?*

[Answer No. 59] *No, we continued making paper from sedge, but we modified his process.*

We could not expect that James McAndrew's deposition be in favor of Antonio Meucci. It was not so bad, however, also because of the skills displayed by attorney Humphreys in his cross-examination. Moreover, McAndrew was wrong when he claimed that it was better to work with open boilers instead of close kettles (i.e. autoclaves), as foreseen in Antonio Meucci's patents. Indeed, as we have shown in the Appendix "The history of papermaking," all subsequent processes for the manufacture of paper pulp, up to those adopted today, were carried out in autoclaves.

We have asked an expert in paper manufacturing, Dr. Clemente Nicolucci of *Cartiera Favini*, especially competent in the processing of annual plants, to give us his opinion on Antonio Meucci's patents on paper pulp making and we obtained the comments that we reproduce in the following insert.

MEUCCI'S PATENTS ON PAPER PULP MAKING, ASSESSED BY AN EXPERT TODAY

Rossano Veneto, 26 April 1993

With his three patents (1864-65-66) Antonio Meucci is to be considered one of the innovators in paper making. He is indeed to be classified among the founders of the modern paper making industry. After the 1844 patent by Keller on mechanic pulp, Meucci's patents represent an anticipation, and allow one to foresee, in addition to bleaching, also the acid bisulfite process (Tilghman, 1867) and the sulfate alkaline process (Dahl, 1884), as well as the variations on the CTMP and semi-chemical pulps. As in the case of the telephone, he sowed well but what was harvested was even worse.

Cartiera Favini S.p.A.

Clemente Nicolucci

(Manager, Production and Innovative Projects)

It should also be remarked that, beyond any doubt, around 1870 there were difficulties in processing annual vegetables - which were certainly greater than those encountered in processing wood - since the problem is still open today, as shown in Appendix “The history of papermaking.”

We have already said that we do not know exactly when and why Meucci definitively left the Perth Amboy Fiber Co. In his deposition, Meucci himself stated (Answer No. 524) that he stayed *six or eight months* after the Westfield ferry explosion, of which we shall speak hereinafter and which took place on 30 July 1871, hence he might have left some time between January and March 1872. However, from the testimonies reproduced hereinafter (only a partial list, out of very many others), it appears that Antonio Meucci did not have any income whatsoever since 1870, therefore, though he went to Perth Amboy now and then, he did not get paid. It could be that for a good part of 1870 he had somehow managed to make ends meet, but it is certain that in fall of the same year he was flat broke, more than he had ever been in his entire life: things had not been this bad even in Florence, when he had lost his job as assistant gatekeeper. Luckily, though, in his misfortune, Antonio Meucci had many friends; they were not wealthy but kind-hearted and they found the way to help him, often without letting him know, and without ever humiliating him. Naturally, it was always a matter of small sums, just enough for him to meet the necessities of life.

TESTIMONIES ON THE POVERTY OF ANTONIO MEUCCI FROM 1870 ONWARDS

Deposition of Antonio Meucci
(from the Bell/Globe trial)
[Question No. 91] *Please state what your means of procuring subsistence were in 1870 and 1871?*
[Answer No. 91] *Several friends used to raise collections for me, giving me about from thirty dollars to forty dollars a month, and that was not even sufficient for the household expenses.*
[Question No. 151] *Please state in your own way what means of support you had from 1870 to 1880.*
[Answer No. 151] *Part was furnished by some friends, and more was given by the Supervisor of the Poor of Staten Island.*

Deposition of James McAndrew
(from the Bell/Globe trial)
[Cross-Question No. 27] *Isn't it a fact that he quit your employ there in the manufacture of paper along about 1868 or 1869, not later than 1870 at the outside?*
[Answer No. 27] *No, I think not; I don't think so.*
[Cross-Question No. 28] *Isn't it a fact that when he did quit you, he had no means of subsistence whatsoever?*
[Answer No. 28] *That I don't know, sir.*
[Cross-Question No. 44] *You said, a moment ago, that when he quit being in your employ he had no means?*
[Answer No. 44] *I said I didn't believe that he could have had any means; he never was a man that I understood had means. I think Meucci was always poor ever since I have known him. I have known Meucci for the best part of thirty years, and I should judge that he never had any money in his pocket at any time.*
[Cross-Question No. 61] *That was about the time Mr. Meucci quit, 1870?*
[Answer No. 61] *No; he was there years after that; he was there all the time my nephew was there. I can't speak positively about that, because I wasn't there, you know; but I am pretty sure he was there years after that; but I couldn't swear to it. I could give the date of the first money I ever paid him in that concern.*
[Cross-Question No. 62] *But of your own knowledge you don't know how long Mr. Meucci remained there after you ceased there in 1870?*
[Answer No. 62] *No; I don't know how long. I can find that out though, if you want to know. I believe he was there some years afterwards.*

Affidavit of Frederick Bachmann
(from the US/Bell trial)
I, Frederick Bachmann, being duly sworn says, I am a resident of Staten Island. I first became acquainted with Antonio Meucci of same place in 1866. My Brewery was adjoining the residence of said Meucci, and my residence was also very near his house. When I first became acquainted with him, he was in moderate circumstances. He devoted his time in inventions. Through

the years 1868, 1869, 1870, I was in his house very frequently, and saw him almost daily: During this period he became quite poor. About the years 1869 and 1870, I know he had to sell his watch and chain to purchase things for the house… from 1870 to 1876, and much of the time since, he never was able to raise a dollar in money, except that which was given to him for the purposes of paying his living expenses…

Affidavit of Nicola Barili
(from the US/Bell trial)
I, Nicolo Barili, … do know that in the years 1870, — 71 — 72 — 73 — 74 — 75 — 76 — he [*Meucci*] *was very poor, and that the Garibaldi Lodge of Masonry, No. 542, of which I was the Master, furnished him with some money which I gave him …*

Affidavit of Torello Dendi
(from the US/Bell trial)
… I was intimately acquainted with Mr. Meucci. I visited his house frequently — about once a week. I know that he suffered from the explosion of the ferry-boat Westfield in 1871, as near as I can remember. I visited him when he was sick in consequence of the injury. At this time he was so poor that he had nothing at all and I assisted him with a dollar or two myself very often. I know of his condition up to about 1880. During this time he was still very poor and I sometimes helped him. Mr. Meucci had no business from 1870 up to the present time, excepting to work on his invention …

Affidavit of William W. Goodwin
(from the US/Bell trial, dated 13 November 1885)
… William W. Goodwin being duly sworn deposes as follows. That he is a resident of the State of New Jersey, doing business in Phila and New York and is President of the Globe Telephone Company of New York. Affiant states that he is personally acquainted with Antonio Meucci and knows of his own knowledge and other sources what he believes to be true that said Meucci is and has been in a state of extreme poverty since about the year 1870: that from creditable information he believes it to be a fact that all patents or applications for patents obtained or applied for by the said Meucci since the date above mentioned has been accomplished through the assistance of others and that he has not received any profit therefrom except… for a lactometer and hygrometer… Affiant has been informed and believes that Meucci has not received any consideration for his patents or applications since 1865 except that heretofore mentioned …

Affidavit of Frederic Kassan
(from the US/Bell trial)
… I have known Antonio Meucci, of Staten Island something more than 15

years. I knew him when he was injured by the explosion of the Steamer Westfield, at this time he was very poor, I was in his house and its appearance was one of great want. I also knew him very well during the year 1872, 1873, 4, 5, and 6. During this period Mrs. Meucci was a regular cripple, she was carried around considerable of the time in a chair, she had to be nursed all the time. My place of business during the years above mentioned was very near Mr. Meucci's house, which gave me an opportunity to know the pecuniary condition of Mr. Meucci and his family. I also visited them. I know that Mr. Meucci had no business and was in poor health of advanced age and could not do much of everything, and that he received donations from his friends, which was the only visible means of support he had …

From the testimonies above, we may deduce that Antonio Meucci broke away gradually from the Perth Amboy Fiber Co. In fact, as we have already said, Meucci's salary, which was $40 a week in 1867, was cut down to $20 a couple of years afterwards. Since he definitively left the Perth Amboy Fiber Co. at the beginning of 1872, we can imagine that the reduction in salary to $20 took place in 1869. The reduction in Meucci's salary could by no means be justified by a lower inflation rate. We have made a brief analysis of the salaries and cost of living in the United States for the period that is of interest to us (1850-1890), which we summarize below. We can see, from the table of *Consumer price indices* (already shown as a graph on p. 185) that, despite the fact that the Civil War had ended in 1865, the index was still 1.54 in 1868 and 1.46 in 1870. The salary cutback was therefore forced upon Meucci under some other pretext. This, as well as the fact that he received no salary since the explosion of the *Westfield* ferry (end July 1871), that he had to pay for his travel and stay at Perth Amboy, and that his health was very compromised after the incident, made the rest to make Meucci quit his job at the Perth Amboy Fiber Co.

WAGES AND COST OF LIVING IN THE UNITED STATES FROM 1850 ONWARDS

Consumer price indices, relative to 1850

Year	Index	Year	Index
1850	1	*1880*	1.12
1860	1.04	*1885*	1.04
1862	1.15	*1890*	1.04
1864	1.80	*1900*	0.96
1866	1.69	*1920*	2.30
1868	1.54	*1940*	1.62
1870	1.46	*1960*	3.41
1872	1.38	*1967*	3.85
1874	1.30	*1970*	4.47
1876	1.23	*1984*	12.0
1878	1.11	*1988*	13.7

Some wages (1880, except otherwise indicated)

Wages of an apprentice boy/week	$3.00
Wages of a good shop-assistant/week	$7.50
Wages of a book-keeper/month	$75.00
Wages of a miner in Colorado/day	$5 to $10
Wages of a worker in the *Bachmann Brewery*/month[51]	$45 to $65
Wages offered for the construction of the dam in Croton (1895)[52]	
ordinary worker, white/day	$1.30 to $1.50
ordinary worker, colored	$1.25 to $1.40
ordinary worker, Italian	$1.15 to $1.25
Commissioner of Patents/year (1874)[53]	$4,500
Office employees and guards of the Patent Office/year	$720
Fees of an opera singer[54]	
exceptionally good (Adelina Patti)/evening	$6,000
good (Giulietta Grisi)/evening	$250
good (Lorenzo Salvi)/month (for an average of two recitals per month)	$2,000

[51] Working 15 hours a day.

[52] Figures provided by R. Gambino (see bibl.).

[53] Figures provided by D. S. Chisum (see bibl.)

[54] Figures provided by *L'Eco d'Italia* of 25-26 February 1883 (see bibl.)

A few exchange rates (1880)

1 dollar = 5 Italian lira
1 pound = 4 dollars = 20 Italian lira

Some prices (1880, except otherwise indicated)

A pound of meat in Clifton (1860)	$0.10
A pint of beer in Denver	$0.10
A room in a small hotel in New York, per night	$1.25
A bed in a lodging house in New York, per night	$0.25
An inexpensive breakfast	$0.25
A (daily) newspaper	$0.02 to $0.05
A handkerchief	$0.05
An inexpensive shave	$0.05
A good pair of shoes	$1.50
A good lunch	$0.30
Transatlantic telegram, per word	$1.00
A popular book	$0.35
Entry ticket to a Museum	$0.10
Ticket for the opera (only entrance, 1853)	$1.00
A crossing on a packet ship from New York to Liverpool (1851)	
in normal cabin	$130.00
in large cabin	$300.00

Invoice of a famous lawyer for a business trip (1886)*

July 31st	Cabs to Office & Station	.50
	Supper	.85
	Ticket to Quebec	11.00
	Sleeping Car	2.00
	Lunch	.50
Aug. 1st	Breakfast	.50
	Hotel at Montreal	2.00
	Omnibus to & from Hotel	.50
	Parlor Car to Quebec	.75
	Supper	.85
	Omnibus to Hotel in Quebec	.25
Aug. 2nd	Hotel in Quebec	3.40
	Ticket to Boston	11.00
	Stateroom on Boat	1.00
	Supper	.85
Aug. 3rd	Breakfast	1.00
	Telegrams	.70

Drawing Car	.75
Dinner	1.00
Supper	.60
	========
TOTAL	US $ 40.00

*Figures given by G. Lawrey (see bibl.)

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We also believe that once Meucci had trained the workers to use the machines, and in particular a bright foreman like Frederick Harper (who remained his devoted friend), he was no longer needed in the factory. Meucci was probably given an office for a certain period of time, where he would go perhaps in the hope that he could continue making experiments on other inventions, as he had done in Stapleton. After the disaster of the *Westfield*, and his many-months absence from the work, he might have realized that it was useless to continue going to Perth Amboy. He could not even recover anything from his shares, and was obliged to turn to lawyer Lorenzo Ullo to oblige Alexander McAndrew to give him a refund, as stated by Meucci himself in his deposition at the Bell/Globe trial:

[Cross-Question No. 249] *Did that company* [Perth Amboy Fiber Co.] *ever own the patent* [for paper pulp manufacturing]*?*

[Answer No. 249] *It owned the patent. I transferred it for $100,000 in shares; but at the end I didn't get but $75, from lawyer Ullo.*

Coming back to 1870, we should remind that this was a prolific year for Meucci's speaking telegraph, as we pointed out in the chapter "Trying and Trying Again." Having loosened his ties with the Perth Amboy Fiber Co., he frequently went to his laboratory in his cottage, experimenting on a number of configurations of his instruments, changing diaphragms, magnets, of the battery, and of the transmission line, achieving fundamental results:

— On 17 August 1870, he succeeded in transmitting the spoken word at *"a distance of about one mile,"* using a reel of cotton-insulated copper wire, as noted down on p. 34 of his Memorandum Book[55].

— On 27 September 1870, he successfully experiments with the inductive loading of the line: *"I put at the middle of the conductor …,"* making the four impressive drawings reproduced in Lemmi's affidavit (see p. 168). He perceives the need to experiment with his various solutions in the field, that is to say on actual telegraph lines of the time.

He continued to make notes in his Memorandum Book, up to p. 37, at the bottom of which he jotted down notes on a telephone for deep-sea divers, which are dated 1872, and which therefore will be dealt with in Vol. 3 of this book.

In the same year, 1870, an intelligent young man, Leonard D. Cunningham, had become a frequent guest of the Meuccis. Antonio Meucci had met him in New York at a meeting of the previously-mentioned *Permanent Committee* for the liberation of Italy, where he could not help noticing that young supporter of the freedom of oppressed peoples. Leo spoke French quite well, therefore it was easy for him to converse with Meucci. He volunteered to help him writing letters or preparing documents in English, and also ran errands for him in New York. This is shown in his affidavit, a passage of which is reproduced hereunder:

Extract from the affidavit of L. D. Cunningham (10 October 1885)

National Archives and Records Administration,
College Park, MD - RG60, File 6921-1885, Box 10, Folder 1
(originally filed at the Interior Dept. file 4513-1885, Encl. 13)

[55] It can be easily verified that Meucci seldom marked dates in his notes, unless they were memorable dates.

"I, Leonard D. Cunningham, having been duly sworn, depose as follows:

I am a resident of the City of New York. I first became acquainted with Antonio Meucci of Staten Island in the year 1866 … During the year 1870, I became more intimately acquainted with Mr. Meucci and being myself able to speak the French language to some extent, and Mr. Meucci speaking French well and English very badly, I assisted him as his friend in writing letters for him and doing any other business that he asked me to do. I remember that during the year 1870 and early part of 1871, Mr. Meucci gave me drawings and descriptions of articles that he wished to purchase or have made to be used in perfecting his arrangements for "sound telegraph" as he styled it. To get these articles, I called upon Mr. Chester and Mr. Tillotson, manufacturers of electrical apparatuses. I remember among the things that he wanted and exhibited in the drawings that I have spoken of, were coils of wire, batteries, magnets and tubes made in the shape of mouthpieces. I found that these articles could be purchased at Mr. Charles Chester's in Centre Street: Mr. Meucci knowing Mr. Chester well afterwards went there and made the purchase himself …"

Leo became a regular guest at Forest cottage (which by then everyone had started calling *Garibaldi's cottage*) and indeed he often slept over after having helped Meucci until late at night (see Meucci's deposition, Answer No. 284). There was always a guest room in the attic of the cottage (the one which had previously been Major Bovi's bedroom).

At the end of September 1870, the news arrived of the conquest of *Porta Pia* and the entry of the Bersaglieri in Rome (without Garibaldi, who was fighting in France against Prussians …). The dream of a united Italy had come true at last and the Italian community of New York rejoiced. Meucci was almost carried about in triumph and his eyes shone with joy and emotion. Esther was happy too, though she was also sad because she could not fathom how and when they would ever manage to save up the four or five hundred dollars they needed to finally return to Florence, now that they had not to be afraid of the police of the Grand Duchy. In fact, Antonio was jobless, and they did not even know how scrape up a few dollars to buy some food or pay their dear Mary!

A ROUND TRIP

Misery and hunger hardly had any effect on Antonio Meucci. He was used to it. It seemed to him like getting back to normal when he was penniless, just like in his youth, in Florence, if it weren't for the pain that he caused his wife. Antonio was capable of working ten or twelve hours a day, eating only a piece of stale bread. But he could not stand the thought of denying Esther what she needed - indeed he loved her almost as much as

he loved his speaking telegraph and Italy. And there was also Mary, who, fortunately, was supported by her husband Giuseppe, who did not complain too much about the fact that his wife didn't earn any wages.

Another aspect of Antonio's personality was that he never asked anyone for help, not even in the hardest moments, as he was never discouraged, as he wrote to his brother Giuseppe in his previously-mentioned letter sent on 16 April 1863: "… *I don't even ask anything of myself, I am philosophical and I always hope for the best, and I never get myself down, I believe in Fate … all was lost, but as I said I am a fatalist and a philosopher …*"

Ferry landing in Manhattan, as it was in 1853

Antonio thought that perhaps he had made a mistake in putting himself in the hands of the local fauna, so to speak, even though his first experience with the Italian colony (the candle business in 1851-1854) had gone badly, also because he was not acquainted with the New York business world. On the other hand, what advantage had he drawn from guys like Mason, Rider, Craig, and McAndrew? Miserly wages, promise of dividends and of astronomical earnings, which sooner or later vanished into thin air. Or, even worse, swindles and Court cases, on account of which he had lost his property …

There were in Manhattan many wealthy Italians who could have helped him develop his inventions, such as Angelo P. Agresta, Archisi, R. Benedetti, Angelo Bertolino, Angelo Zilio Grandi, Alessandro Panizzi, Giuseppe Tagliabue, Angelo Antonio Tremeschin, Nicola Vanni[56] and many others. On some Sundays, Antonio would go and visit one of them, proposing one of his innumerable inventions, or asking if they had any specific requests to submit to him, anything that required a new invention. But most Sundays Antonio stayed at home to look after the *Garibaldi cottage*, which was regularly visited by dozens and dozens of Italians, infatuated with Garibaldi. In the past, he had been able to offer something to the visitors, perhaps a glass of wine, or, when he had it, a pint of his own beer. Now it was the visitors who offered him something (or better, they offered something to his wife, as they all knew that he would have spent everything at Chester's shop).

The ferryboat return ticket from Clifton to Manhattan cost ten cents, the price of a pound of meat. So Esther often told his husband that he had to choose … But that was easy for Antonio: giving up meat was not a problem for him. How often his mother had cooked and boiled the bones discarded by the butchers that still had invisible bits of meat on them, to make a … broth. And then, if his business had gone well - and sooner or later his luck was bound to turn - they would have been able to buy as much meat as they could eat.

In Manhattan, the mooring of the ferryboats for Staten Island was not where it is today, but a few hundred meters further

[56] Perhaps a relative of M. Vanni, Treasurer of the *Permanent Committee*, quoted on p. 242.

north-east, along South Street, right in front of Whitehall Street. In fact, it was also called *Whitehall Street Terminal*.

The area of 'Whitehall Street Terminal' today

Next to the docks of the *Staten Island Ferry*, there were also those of the ferryboats for Brooklyn. It was possible to go under covered passageways from the Whitehall Street Terminal to the stations of the elevated railways, the famous *Els*, a brief history of which is given in the insert below. In the period that we are dealing with (1871), the Els were replacing horse-cars. In 1868, the first El had cut Greenwich Street in half (lengthwise), so to speak. It was soon followed by the Bowery, then by South Street and many others. Several years later, in 1884, it was possible to gain access to four Els through covered passageways from the Whitehall Street Terminal. This made it possible for ferryboat passengers to quickly reach almost any point of Manhattan. To take advantage of this practical form of transport, the ferries of *Jersey Central*, which belonged to the Baltimore & Ohio Railroad Company (known for short as *B & 0)* landed at Whitehall Terminal. The overcrowding of ferries at this terminal - especially after the serious 1901 accident (see Appendix "The Staten Island Ferry"), in which a *Jersey Central* ferry rammed into the *Northfield*, sinking it in a few seconds - convinced the New York Municipality to take over the ferry transportation service, removing it from the control of private owners.

THE NEW YORK ELEVATED RAILWAYS (“ELS”)

A horsecar down Centre Street, heading towards Harlem (1841)
(Note the “First Judicial District Court” building to the left, on the north side of “City Hall Park”)

In the first decades of the last century, the need was felt in the large cities of Europe and America to provide rapid means of transport to get across the cities themselves, in order to save business men time and to speed up all the city activities.
Previously, as of 1832, the Harlem Railroad Company of New York began to construct a series of horsecar lines which made it possible to transport more passengers faster, thanks to the lesser friction of the iron railway tracks as compared to vehicles on wheels, traveling on the normal road surface, like the famous omnibuses. Already in 1837, the same company experimented with the first steam tram, on the same railway lines as its horsecars. In the 1830s and in the following years, horsecars extended to other large cities, and their presence was considered a symbol of progress. A horsecar service was established along the north-eastern coast of Staten Island around 1866.
Surface traffic (trams and all other vehicles) soon became too heavy for the streets of large cities, thus limiting their expansion on the territory. Therefore, alternative solutions were studied, which resorted to the use of several street levels. London, thanks to its essentially clayish subsoil suitable for digging tunnels (and thanks also to the availability of the necessary capital) adopted the renowned solution of railways below the street level (subways); the Metropolitan Railway of London was inaugurated in 1863 and it utilized steam locomotives (naturally with some inconveniences due to the smoke).
The essentially rocky soil of New York (as well as the lack of sufficient capital) led to opting in favor of elevated railways. The first one - which was called ‘El’ by New Yorkers, the contraction of ‘elevated railway’ - was inaugurated in 1868, and it linked Battery Place to Cortland Street, along Greenwich Street. Immediately thereafter, a second El was opened along the Bowery, a road where thousands of poor immigrants lived piled up in dormitory-dwellings to begin with, and which deteriorated further after being crossed by the El. Indeed, although the designer of the Els, a civil engineer by the name of Charles T. Harvey, was credited with having reduced traffic congestion on the streets, he was soon criticized on account of the disadvantages entailed in that solution, namely the noise and the damage to the environment, the losses incurred by the owners of the buildings adjacent to the Els, whose property lost in value, downgraded due to the foregoing reasons.
The Els were built on iron structures (columns and beams), or they were made out of reinforced concrete, or on

embankments. The trains were made up of two to a maximum of ten wagons. The sidewalks of the stations were on the same level as the pavement of the compartments, and the carriages had many doors on both sides, to allow passengers to rapidly and comfortably board or descend from the trains. Tickets were sold on ground, rather than on board the trains, to further speed up the flow of passengers.

The elevated metropolitan railways increased in number starting from 1870, first of all in New York and then in Boston and Chicago. In 1890, with the supervision of engineer T. C. Clarke, New York tackled the problem of building an integrated system of surface and elevated railways. The solution adopted in Boston in 1897 was also very interesting. It consisted in a metropolitan railway, which used horsecars, undoubtedly considered cleaner than the steam-driven metropolitan railways.

The elevated railway along Sixth Avenue (1879)

Complaints concerning the Els eventually led to the idea of using subways. This, however, did not occur in New York before 1904, when it had also become possible to draw advantage from electric traction, which was less polluting. It is worth noting that by that time, London, Berlin and Paris already had extensive underground networks using electric traction. New York was followed by Philadelphia in 1907 and Chicago in the early 1940s. The Moscow metropolitan railway was inaugurated in 1935. The period of strong expansion of the underground metropolitan railways, which gradually replaced the Els, lasted three decades, from 1900 to about 1930. Following this date, a number of factors - including the birth and growth of the automobile industry - slowed down the construction of underground railways, which was only to be resumed many years later, because of the heavy traffic caused by motor cars.

A few interesting and picturesque paragraphs drawn from Rossi's book (see bibl.) are given below. They refer to the Els, as seen by two Italian friends who had just landed in New York in 1881.

"… 'Following the columns of one of these elevated railways - I said to my friend - we will soon arrive at the City Hall and Press Square, that is to say the center of downtown Manhattan which, unlike uptown, is built in a very irregular fashion.' And in the midst of the noise produced by the coming and going of cars and trains, deafened by the characteristic roar of the metropolis, still in that dazed state felt by those who set foot on ground after a long journey at sea, we advanced mechanically, our nose turned up, our eyes wide-open.

… at last we saw from up close the famous railways built

on the level of the first and second floors of the houses. On the rails supported by thin cast iron columns, set some ten meters apart, the trains raced one after the other, minute after minute, as thousands of horses, carriages, and indifferent people transited below, without even raising their eyes. What does it matter if the machines tire with their never-ending noise, if they release, through the windows, clouds of smoke into apartments, if families have to lower the curtains to conceal their intimacy from the eyes of those traveling in the wagons? These are trifles to the Americans, compared to the advantages that the elevated trains offer to the businessman who goes in a hurry, namely the convenience of going from the Battery to Harlem, that is to say from the southern end to the northern end of the city, some twelve miles apart, in less than half an hour.
… a rather peculiar walk for foreigners, in downtown New York, is the Bowery, the large road of retail business, which is the most characteristic and densely populated. The Bowery presents a double long and straight line of shops and bar rooms; the sidewalks are cluttered with goods and signs. In the middle of the road, below is the deafening noise of carriages and horses, while above the trains of the elevated railroad race one after the other. Dust and mud, crowds and noise, day and night …"

Chronology

1832 - The Harlem Railroad Company of New York inaugurates the first horsecar line on iron tracks, which will replace the omnibus
1830-1840 - Horsecars spread both in New York and in many other large cities
1837 - The Harlem Railroad Company of New York experiments with a steam car, along the same track as the horsecar
1863 - The first underground metropolitan railway is inaugurated in London with steam locomotives. Due to the rocky soil of New York, elevated railways (Els) are preferred
1866 - A horsecar service is set up along the northeastern coast of Staten Island
1868 - The first elevated railway is inaugurated in New York, linking Battery Place to Cortland Street, down Greenwich Street. The inhabitants along the sides of the elevated railways complain about the noise, smoke and the loss in property value
1870-1890 - The Els increase in number, in New York, Boston and Chicago
1890 - New York deals with the problem of integrating surface traffic and elevated railway traffic
1897 - Boston inaugurates an underground metropolitan railway with horse-drawn cars
1904 - New York inaugurates its first subway, with electric traction. It is followed by Philadelphia in 1907 and Chicago just after 1940

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The ferry between Manhattan and Staten Island still exists today and it provides a very good service. When this author went to the United States in 1990 to do research on Antonio Meucci, he traveled on it dozens of times, although it was possible to get to Staten Island by car, through the suspended road on the Verrazzano Bridge.

The ferry ride gave me the opportunity to relax, and allowed me to think calmly, to turn things over in my mind freely, for about half an hour. Moreover, the round trip ticket only cost a quarter of a dollar.

On the route to Staten Island, the ferry passes at about half a mile from the Statue of Liberty, which, however, did not exist at the time of our story, as it was inaugurated on 26 October 1886. Resting against the handrails that run along the broadside of the ferry, I let the wind caress me (the warm October breeze still allowed it) and I enjoyed looking at that crowned woman, standing tall on her pedestal, whose strong arm stretched out bearing a rather heavy torch: that of freedom. Thinking about Meucci's misadventures, I reflected on the fact that it was precisely freedom that allowed evil to proliferate. I acknowledged it myself every day, observing the arrogance of the sinister-looking types I came across on the subway - especially after sunset - whose behavior challenged the confines of law and order right before the very eyes of hundreds of unarmed citizens.

The Statue of Liberty from the ferryboat sailing towards Staten Island

So - I asked myself - is a dictatorship or, at any rate, less permissive laws, perhaps better, with all due respect for that woman by the powerful arm? I instinctively thought about the animals that live in the forest. Their lives are not governed by laws, as we understand them: yet their instinct for survival allows them to find remedies against violence, without however violence being always defeated. Therefore, it would appear that in a system based on freedom it is necessary for one to quickly identify who the predators are and to develop the necessary strategies in order to save oneself from them (I am obviously not speaking of those who side with the predators). But to a novice all this requires time, and one often starts to understand and adopt the right defense only once it is too late, when irreparable events have already occurred. I myself, though I am not exactly a tenderfoot, underwent several burning swindles in New York.

Indeed, I did not only abandon myself to philosophical speculations. Another recurrent thought that came to my mind was that of the serious disaster that befell Meucci when he was boarding on the Staten Island ferry. Precisely, on Sunday, 30 July 1871, the *Westfield* ferry, which was anchored at the Whitehall Street Terminal, was destroyed by the sudden explosion of its steam boiler, which killed and wounded a large number of its four hundred passengers, already boarded. Among them was Antonio Meucci, who had gone to visit Leo Cunning-

ham. As Mr. Cunningham himself stated (see his affidavit on p. 282) Meucci left at noon to go home, and headed for Whitehall to take the ferry.

The explosion took place exactly at 1:15 PM., as G. W. Hilton reported in his book titled "The Staten Island Ferry" (see bibl.). In his opinion, it was the worst disaster in the long history of the ferry. Also T. P. Costa and D. R. Prignoli, in their article "Via Steam to Staten Island" (see bibl.) wrote that "*the ferry suffered its most tragic catastrophe.*" Hilton added that "*Many of the four hundred passengers aboard were women and children embarked for an afternoon's outing.*" The number of deaths registered that day was either sixty-two or sixty-six (according to two different sources), while the wounded were more than two hundred. Of the latter, one hundred and twenty-three (Winwar, see bibl.) were hospitalized and registered in the hospitals, but only a part of them survived, so that, in the end, the deaths rose to about one hundred. The less seriously wounded who returned home were not registered.

The *Tribune* came out the next day with the headline "The Boiler exploded." It reported that: "*… Most of the passengers were congregated almost directly over the boiler, on the southerly part of the boat, in order to catch the fresh breeze blowing … The main deck was forced upward for a considerable distance, the beams and heavy planks torn into fragments …*" Mrs. Frances Winwar (a writer who received the Pulitzer Prize) wrote that "*… a disaster which in its time had the impact of a modern hydrogen bomb …*" In another article, titled "Incidents of the Explosion," the *Tribune* also reported that: "*… An elderly Italian named Meucci, a former partner of Garibaldi when the latter was in the candle-making business on Staten Island was severely scalded about the face and neck. He was removed to Park Hospital …*"

A more extensive and detailed report was published thirteen days later by *Harper's Weekly.* The article is given below in full, along with a drawing which was made a few minutes after the explosion by an artist named W. Long Palin, who was on the hurricane deck of the *Northfield* ferry, which was anchored alongside the *Westfield.* The drawing shows that some of the shipwrecked were led to safety over a board placed between the two ferryboats, towards the bow of the *Westfield,* close to the place where the explosion had taken place. The description given in *Harper's Weekly* is so impressive, that we have decided to reproduce it just as it was written so as to let the reader feel the emotion of the event, which was so realistically portrayed by the anonymous reporter. The article says that at the time of the explosion the pilot was in one of the pilot-houses (the Westfield was symmetrical, or *double-ended* as it was called). He was right above the boiler that exploded, and was miraculously uninjured.

Our Appendix titled "The Staten Island Ferry" shows a photograph of the *Northfield*, which was built in the same Brooklyn shipyards as the *Westfield* only one year later (1863), and was in all ways similar to the *Westfield.*

"Happy are those who died instantly!" - exclaimed the reporter of *Harper's Weekly* referring to the passengers who were thrust into the air by the explosion, and who then fell back onto the ruins of the deck or into the sea, from a height of over ten meters. Those who remained alive among the ruins were severely burnt by the hot steam released by the explosion, and which surrounded the mass of survivors, enveloping them in an incandescent cloud. In a flash, the wreck of what had once been the *Westfield* had turned into a chorus of agonizing moans of a crowd suffering tremendous pain, and of muffled cries of the dying.

Hereinafter we also reproduce the articles of *Frank Leslie's Illustrated Newspaper* as well as a second article published on *Harper's Weekly,* giving dramatic descriptions of the disaster.

THE WESTFIELD EXPLOSION (30 JULY 1871)

An Appalling Disaster
[Harper's Weekly, New York, Saturday, 12 August 1871]

About half past one o'clock Sunday afternoon, July 30, the Staten Island ferry-boat Westfield *was lying quietly in her slip at the foot of Whitehall Street, New York. Over four hundred souls were on board, lured by the delightful weather from their crowded homes to breathe the pure sea air and enjoy the grass and shade of the uncontaminated country. Every thing was in readiness for the start. The captain was at his post, the engineer was on his way to the engine room, men were standing ready to unhook the chains, when suddenly there came a terrible crash, and in an instant the steamer was a wreck. The huge boiler had exploded. Those who witnessed the disaster say that there was first a dull, crunching sound, somewhat like that made by the fall of a large building, followed immediately by the sharp hiss of escaping steam. The main deck was forced upward for a considerable distance; the beams and planks were torn into fragments. Many of them were thrown high into the air, and fell back a confused mass into the hold. The pilot-house, which was directly over the boiler, was hurled into the air to great height, and, falling back upon the hurricane deck, was shattered to pieces. The pilot was in the house and yet, strange to say, aside from a few severe scratches and contusions and a severe shock, escaped unhurt. He could scarcely believe that he was not mortally injured as he crawled from the ruins and saw the havoc and desolation that had been made. The heavy smoke-stack was also blown in the air, and fell into the general wreck. The escaping steam filled the boat, and many were scalded who would have otherwise escaped unhurt.*

The part of the boiler which gave way was opposite the fire-box, and toward the bow of the boat. Such was the force of the explosion that a piece of the upper half of the shell of the boiler, twenty feet in length, and weighing over two tons, was hurled forward a distance of twenty-five feet, and lodged in the bow. The fracture apparently started at a place where the boiler was patched to cover a defect.

A majority of the passengers were collected on the main-deck directly over the boiler. These were blown into the air to the height of thirty or forty feet, falling back into the wreck or into the water. Happy those who died instantly. Scores of men, women, and children who escaped the full force of the explosion were immediately enveloped in a scalding cloud of steam. The scene on the boat was harrowing. Groans and loud screams of agony came from the scalded, wounded, and dying. Parents were eagerly seeking for children, children

for parents, friends for friends. Many in their panic leaped overboard, some were rescued by boats that surrounded the wreck, while others sank at once, and were drowned.
The Police and Fire departments were called upon for assistance, and at once furnished men and means to convey to the hospitals such sufferers as could be moved. A pitiable sight they presented when brought upon the docks. Many had the skin almost entirely scalded from the face, neck, and breast. Others had lost portions of their hair, from the scalp being literally parboiled and peeling off. Others were covered with ghastly wounds, and all were begrimed with soot and dust. As fast as possible the sufferers were removed to the hospitals, where the utmost that surgical skill could do was done to relieve them. In spite of every attention, many died after their removal. The number of the victims has not been fully ascertained. It was thought that between forty and fifty were killed outright, that the list of fatalities may be swelled to a hundred by deaths in the hospitals.
The cause of the explosion has not been ascertained. Various surmises are afloat in regard to it. Only two months ago the United States inspector of boilers examined the boiler of the Westfield *and pronounced it safe. The engineer, a colored man, is said to be capable and trustworthy. He states that just before the explosion took place he found the water in the boiler all right, and the steam-gauge indicating a pressure of twenty seven pounds. A fragment of the boiler picked up on the dock was pronounced by good judges to be unsound iron. It was taken to police head-quarters to be produced before the coroner's jury, when the questions of cause and responsibility will be fully inquired into. The jury will be composed of business men and practical mechanics, able to render an intelligent verdict, and to place the blame for this sad calamity where it belongs.*

The scene showing the Westfield, immediately after the explosion (drawing by W. Long Palin, made from the hurricane deck of the Northfield, in real time, for Harper's Weekly)

Terrific explosion, at the Battery, of the Staten Island boat "Westfield"
[Frank Leslie's Illustrated Newspaper - Supplement, 12 August 1871, pp. 373-376]

One of the most appalling catastrophes which ever took place in this city occurred July 30th, at the foot of Whitehall Street, by which a large number of persons were killed, and a still larger number maimed for life. The ferryboat Westfield *ran into her slip about a quarter past one. She had but few passengers on board when she arrived, but she had taken down to the island an hour before fully seven hundred persons. This time an immense crowd of excursionists were impatiently awaiting her arrival behind the gateways. In two minutes*

after the gates on the pier had been thrown open, the forward part of the boat was literally packed with men, women, and children. It was now lacking three or four minutes of the time for leaving the port. The engineer started from the pilot-house, as the bells were to be rung to "Go ahead." The lines were cast off, the gang-planks drawn in, and the pilot stood at his post, when of a sudden there was a loud crash, a sound of hissing steam, and the boat shook from stem to stern, and in a second the forward decks were thrown high into the air, and fell in all directions in a thousand pieces. The boiler had exploded. The scene that ensued beggars description. The entire wheelhouse flew upward like a bomb; the hurricane-deck in front of it and alongside of it was torn into shreds, and scattered in every direction. The deck beneath, near the bow, was rent asunder by the force of the concussion. The boiler crashing into the forward part of the hull, carried with it everything that lay in its way. The heavy timbers of the deck were broken asunder as if they had been reeds; while the entire hold was laid open, and down in the midst of all the heap of broken iron and broken rails — away down in the hold, from which the steam was gushing in thick, suffocating clouds— lay a struggling mass of men, women and children!

The hurricane-deck forward of the shaft was hurled in fragments into the air, every person on it being carried along with it, and falling either dead or horribly mangled on the lower deck or into the waters beneath. The smoke-stack fell at the same moment, the wheel house crashing down at the same time, and the combined weight of the two crushed in what little remained of the decks, the whole mass falling into the hold below, carrying down with it every unfortunate who had not been flung into the river by the explosion.

The hull, after the explosion, seemed to be a crater, one rim of which was at the line passing through the center of the vessel from wheel to wheel. At the further end the flooring of the main deck was lifted several feet from its position as far as the curve of the stern extended, but between this and the middle of the boat everything had been blown high in air and had then fallen back into the hold in a confused mass, the smoke-stack falling on the top of the heap. The boilers were in plain view almost from the first, and were seen to be thrown diagonally across the boat, so that one end rested several feet beyond the line of the keel. A bystander states that he actually saw two men fall into the water headless, and three others without the slightest vestige of an arm or leg.

The police-boat and boats from Governors Island were soon on hand, and their crews worked energetically to save those who had been thrown into the water by the explosion, or who had in the terror of the moment sprung overboard. A very large number were saved by the boats, and everything was done that could be done to alleviate the sufferings of the wounded, who were brought ashore and laid upon the wharves.

In a short time after the dreadful accident the streets near the pier began to fill up with an excited crowd. An hour after the occurrence there were fully five thousand people in the vicinity of the Battery, and it was as much as the Police could do to keep them back from the slip where the shattered boat was lying. As quickly as it could be, the wounded were taken in wagons and ambulances to the nearest station-house — that in New Street — where they received all the attention that the surgeons could bestow upon them, and were afterward sent to the hospitals.

The "Westfield," and the cause of its explosion

The Staten Island ferry-boat Westfield *was built in 1863, and measured 220 feet over all. She carried low-pressure beam engines of ten foot. The boiler, which was tested by the United States Inspector, John K. Mathews, on the 15th of June last, was built by the Secor Ironworks. The usual cold water test was applied, and to all appearance there existed no flaw. The* Westfield *had one safety valve, 28 inches area, which only allows 25 pounds pressure per square inch. In addition, she was furnished with one locked safety-valve, as prescribed by law, loaded to 27 pounds per square inch. The object of the "locked safety-valve" is to guard against the indiscretion of the engineer, and to this end the United States Inspector seals the valve so that as soon as the steam mounts beyond the pressure allowed it blows off. The engine is low pressure, with cylinders 50 inches in diameter and 10 feet stroke of piston; boiler 24 feet long, 10 feet in diameter, and 12 feet width of front. Last year's certificate expired on the 19th of June, and the Inspectors had been notified, and examined the ship, issuing their certificate on the 15th of June. A flaw must have existed in the shell of the boiler, for it is very unusual for boilers to burst in the shell, most of the flaws occurring near the furnaces or in the steam-chest. The end of the shell was driven by the force of the explosion into the hull of the ship, but no other part of the machinery was injured. The engines are placed at one end of the boat and the boilers at the other. The force of the explosion was not sufficient to seriously injure the hull of the vessel. There is much comment upon the fact that, while the Inspector's certificate gave 25*

pounds' pressure of steam as the limit of the allowance, the engineer admitted that the boilers were subjected to 27 pounds' pressure, five minutes previous to the explosion.
It will be remarked that the end of the boat where the engines are situated was toward land, with the boiler-end out toward the water. The explosion was not loud, nor was its force very great, as the upper and hurricane-decks only are blown away, the solid hull of the steamer escaping without much injury. Many of the poor people who clung to pieces of the wreck, received serious injuries during their fall, and the blood poured freely from their wounds. Those whose good fortune had kept them in the rear part of the steamboat rushed back to the landing-stage in terror for their lives; but as soon as the panic had abated, many of them returned to afford assistance. At the moment the boiler burst, men and women and pieces of the wreck could be indistinctly seen high up in the air through the clouds of steam that for a moment obscured the view. In an instant the steam cleared away, and revealed the scene of horror. The pilot, who occupied the pilot-house, immediately over the boiler, was blown up into the air, and came down on the hurricane-deck, miraculously escaping without sustaining the slightest injury. Henry Robinson, the colored engineer, was standing in the rear pilot-house when the explosion took place, and escaped without injury. So slight was the force of the explosion, that Captain Freeland at first thought one of the South Ferry boats had run into him; but the cloud of steam dissipated this notion, and revealed to him the extent of the mischief. Almost as soon as the vapor had cleared away a number of gallant boatmen were on the spot, making brave efforts to save the poor wretches who clung desperately to pieces of the wreck; or grappled or dragged for those less fortunate, whose injuries rendered them insensible. About fifty persons were thus rescued and landed in safety. Many were able to walk away with the assistance of friends. Many reached their homes by means of the Belt Railroad cars, which pass the Battery. Henry Robinson, the engineer, says that at twenty minutes past one o'clock he went down into the fire-room, and saw Patrick Finnegan, one of the firemen, and inquired how the water stood. Finnegan answered him that it was all right; but in order to see for himself, he approached the boiler, tried the third cock, and found the water flowed, and therefore considered that everything was right. On quitting the fire-room, Robinson went to the engine-room, and saw that the boiler carried twenty-seven pounds of steam, and then left, going on to the dock. In a couple of minutes Robinson again went

on board and into the pilot-house, where the captain was standing. After a few minute's conversation in the pilot-house, Robinson was about to descend, when the explosion took place. The only cause which Robinson could assign for the catastrophe was the existence of a patch on the boiler, which, he thinks, may have given way, though he says that he examined it so late as Thursday, and that it appeared to be then in a safe condition. Beyond this, Robinson could not give any explanation of the explosion. The following is a full list of the crew of the Westfield*, and the injuries received by them: Captain— Isaac Freeland, not hurt. Assistant Pilot— James McGee, slight wound. Engineer— Harry Robinson, not hurt. Firemen— Robert Casan, slight hurt; Patrick Finnegan, seriously injured. Deck hands— Joseph King, not hurt; Michael Agnew, not hurt; James Holiday, not hurt; Charles Rent, slight wound. Cabin boy, chambermaid, etc., uninjured.*

At the moment we go to press, sixty-six deaths have been computed. The victims are nearly all from the noble industrial class of America, while a piteously large proportion are the wives and children of these hapless men. Among the badly-injured are Colonel Meucci, formerly a partner of General Garibaldi in the famous candle factory on Staten Island; a bride and groom, named Bartel, only arrived from England three days before the disaster; five out of seven children, belonging to a family named Nelson were saved, one found dead, and the other supposed to be drowned. Frederick Haggerty, of Brooklyn, was blinded by scalding; but the varieties of horror incident to the explosion were too many and too sickening to be dwelt on. A poor suffering woman, Adelaide O'Connor, lay on the hospital pallet, crying in her agony to the surgeon, Dr. Alexander, "Oh, doctor, give me something to stir my heart! —doctor, give me something to stir my heart!" A little baby, not more than eight months old, the upper part of whose skull was converted into a pulp, was tearing and scratching its face with its tiny little hands. Over one hundred surgeons volunteered their services to aid the sufferers; these included the Police-Surgeon Andrews, ex-Deputy Coroner Shine, Dr. Healy, Dr. McEwan, of the Eastern Hotel, Dr. Estes, and others. Dr. Amable, of the Park Hospital, and his assistants, rendered valuable aid. Priests and ministers of the Gospel were also unremitting in their attentions.

Professor Marc Chenevière, one of the victims of the catastrophe, kept a French and English school at 246 Clinton Street, Brooklyn. Next morning it was a sad sight to behold many of his little pupils' standing in front of the house, gazing wistfully at the

closed windows, and talking in low tones of the kind master who should never instruct them again.
Among the many incidents was the remarkable escape from death of a horse, a valuable animal, owned by a gentleman who was at Staten Island for a pleasant drive. The horse was attached to a light wagon, and was standing in the forward part of the boat, near the spot where the force of the explosion spent itself. The wagon was completely demolished, and the horse was thrown down and buried beneath a pile of débris. Everybody thought he was killed or fatally injured; but after the rubbish with which he was covered had been removed he started to his feet thoroughly scared, trembling in every limb, and apparently suffering great pain. His hide had been completely scalded off, and great patches of parboiled blisters were visible about his body, particularly about his haunches and legs. There has been nothing to equal the Westfield *horror in our waters since the burnings and explosions of the* Henry Clay *and* Reindeer *steamboats, many years ago, on the Hudson River. The cause of the present explosion seems to have been a patch on the boiler— one of those economical devices that save the expense of replacing entirely a boiler that has already served its time. The boiler that exploded had been in use nine years, according to the testimony of the engineer, so that it had endured considerable wear and tear. Among the witnesses of the scene, two— J. H. Parker, Lieutenant of the Revenue Service, and Lewis Flock, of the Park Police, were of special advantage to this establishment in kindly adding their experience to the observation of our artists, Messrs. Berghaus and Taylor. They both preserved in memory a clear tableau of the awful scene, which they had witnessed from a close standpoint, Lieutenant Parker being at the time on the Revenue Cutter adjacent to the Ferry, and by their suggestions enhanced the completeness and accuracy of the drawings we present* [not included here, Editor's Note].
Inspectors Mathews and Boule commenced an examination on Tuesday by order of the Secretary of the Treasury, Captain Belknap, U. S. Supervising Inspector-General of steamboats, has received a telegram from Secretary Boutwell, directing him to make a most searching examination into the cause of the explosion.
Coroner Keenan will begin his investigation in about a week. To examine all accessible facts, and ascertain where the responsibility of this disaster justly belongs, will be the duty of a sworn jury. Why the steamer was not supplied with the registering steam-gauge as required by law; how long the engineer was absent from his

post; what was the condition of the fires when he left; what the possibility of an increased pressure in his absence; what the value of the Inspector's certificate— all these and other considerations which determine the direction that a verdict must take, belong to the jury of inquest.

Grappling for the Dead

[Harper's Weekly, New York, Saturday, 19 August 1871, pp. 765-766]

For several days after the terrible disaster on board of the Staten Island ferry-boat Westfield *the docks around Whitehall Slip presented a most sad and pathetic spectacle, which Mr. Eytinge has admirably realized in our illustration on page 765* [not included here, Editor's Note]. *All the available standing-place for several blocks above and below the slip which afforded a view of the river was occupied by an eager crowd of persons watching the movements of those who were engaged on grappling for the bodies of those victims of the disaster who had been blown into the water or had jumped overboard in the panic caused by the explosion. Dense and motley as it was, the crowd was most quiet and orderly. Every one seemed to be awed into silence. There was no loud talking, no pushing. Only now and then, when a body was raised to the surface, a pitying murmur, almost like a groan, was audible, that seemed to be wrung from the heart of one of those silent watchers. Even the newsboys and boot-blacks, usually so vociferous, glided about among the crowd as if they had suddenly been stricken dumb.*

One of the most pathetic sights was an aged Irishwoman, who had perhaps lost her only son, the stay and comfort of her declining years. She sat on the very edge of the dock, her head resting in her hands, and her tearless eyes fixed on the men in the boats. She was not weeping, but a low moaning sound that escaped her lips told of the depth of her anguish. Close by her side sat another aged woman of the same race, who kept murmuring, "O God! O God!" Every one around them was moved to tears by their desolate sorrow. Several compassionate people spoke kindly to them, but could get no answer. They did not seem to hear.

While our artist was sketching, the body of a beautiful young girl was brought up by the grappling-irons, and gently lifted ashore. She had long golden hair, and was dressed in white. Few were so stern as not to weep when she was laid on the plank, and rough hands little used to tenderness gently and reverently composed her dress and hair, and then covered the inanimate form from sight.

The Ferry boat explosion

[Frank Leslie's Illustrated Newspaper, August 19, 1871, pp. 381-382]

We resume our interesting and authentic illustrations of

the terrible explosion on the Westfield*, a disaster in which the public interest increases rather than diminishes. Our photographer has secured an accurate view of the disemboweled boat, of the portion of the boiler remaining jammed in the hold, and of a piece of the same preserved at the headquarters of Police, concerning which an expert (Thurston) testified that it was a strong piece of evidence, showing the explosion was caused by "furrowing." The investigation of the case has been going on before Inspectors Leonard H. Boole and William Hill. The Coroner's Jury will sit on the day this paper appears. The general summing up from the evidence so far indicates that the generation of too much steam in a boiler almost completely worn out and a faulty steam gauge were the combinations that produced the disaster on the* Westfield*. An expert (Mr. Lighthall) testified, on Thursday, that "the safety-valve was in a shocking condition." It was so badly corroded that it could not be relied upon as an indication of the pressure. The maker of the boiler testified that it was more than twelve years old and worn out. Old boilers, however, provided with imperfect gauges, are doubtless traveling on all our lines of ferry and railway, and bearing from time to time, as this one did, the test of inspection. The immediate cause of the* Westfield *explosion is almost as much in the dark as ever. A significant point, brought out in the examination of N. W. Williams of a Philadelphia Association of Engineers was, that unequal expansion, as has been frequently suggested, was the real cause of the explosion. Mr. Williams's theory is, that the impurity of the water in the boiler occasioned a higher temperature at the bottom of the boiler than at the top. The lower side is hotter than at the water-line; this inequality of temperature produces a corresponding inequality of expansion; and this was sufficient to produce the explosion under a pressure of only twenty-seven pounds, which is, at least, what the* Westfield *carried. This consideration, however, would apply doubtless to multitudes of boilers which we keep in use every day, and which do not explode. The best lesson so far educed is the necessity of having such ticklish parts of the machinery changed promptly after the period at which iron is known to lose its integrity.*

From our artist's sketch-book we reproduce a couple of scenes immediately following the calamity [not included here, Editor's Note]. *One represents the sickening recognition, by relatives, of the disfigured and mutilated victims; the other, far less to the credit of our common humanity, depicts the ghouls and vampires who used this terrible occasion for the practice of their nefarious calling.*

Note that in the article published in *Frank Leslie's Illustrated Newspaper*, Antonio Meucci is mentioned (as Colonel Meucci, presuming that he had fought with Garibaldi) among the few personalities who had been victims of the disaster. This goes to show that he was indeed well known in New York.

To ascertain the causes of the disaster, an inquiry was opened. The impact on the public opinion was such that the strangest hypothesis were put forward, just like that of *Harper's Weekly*, which speculated that part of the boiler had given way right where it had been patched sometime previously to cover a defect, or that the iron sheet was of bad quality. During my crossings on board the ferry, I was so lucky as to meet Captain Theodore Costa at the *St. George Terminal*, on Staten Island. For many years Captain Costa had been the commander of the Staten Island Ferry and, having retired, he was now curator of the *Staten Island Ferry Museum*, located at the St. George Terminal.

The 'Staten Island Ferry Museum' at St. George

Captain Costa, who was clearly of Genoese origin, given his family name, had made investigations on the Staten Island ferries from a technical and historical point of view, starting from their early times, when the first Dutch settlers used the *Charons* (as he called them) to transport people on unsafe canoes across the bay. We have summarized his paper in the already mentioned Appendix "The Staten Island Ferry." It is interesting here to underline his opinion on the causes of the *Westfield* disaster, which are different from those given in the newspapers back then, under the emotional involvement of the moment. In fact, it was discovered by the ferry company that the explosion of the boiler on board the *Westfield* was due to the boiler's safety valve, which was intrinsically hardly reliable. Following the disaster, studies were made to create a new type of valve, which definitively solved the problem.

Captain Theodore Costa

With a certain pride Captain Costa told me that following the *Westfield* tragedy, ferryboats were no longer commissioned from the Brooklyn shipyards, but from those of Clifton instead. He also recalled that the only landing on Staten Island had been for a certain time the *Clifton Landing*, which was very near to the already mentioned *Quarantine Landing*. The *Clifton Landing* was later known as the *Vanderbilt Landing* and then as the *Third Landing*, when the *First Landing* and the *Second Landing* were added in St. George and in Stapleton respectively.

As we have reported in the Appendix "The Staten Island Ferry," the *Staten Island Railway Ferry Company* which ran the ferryboat service at the time of the Westfield explosion, was forced to declare bankruptcy as it could not face the Court cases for damages brought against it. Meucci himself turned to Leo Cunningham to ask him to find some lawyers who would help him claim damages, but he obtained nothing.

But let us go back to that ill-fated afternoon of 30 July 1871. As the *Tribune* wrote, Antonio Meucci was brought to the Park Hospital. However, when the doctors visited him, they shook their heads and thought immediately to notify his family, as his life was in danger. *"At least"* they must have told Mr. Giuseppe Gregory, who had come with his wife Mary to get him *"he will die at home. There is nothing more that we can do for him here, except give him morphine to soothe the pain, but this is something you can do at home too."*

Antonio was between life and death for almost three months. Below are the statements of some of those who saw him during that terrible period, in addition to his direct testimony.

TESTIMONIES ON MEUCCI'S HEALTH AFTER THE WESTFIELD EXPLOSION

Deposition of Antonio Meucci
(from the Bell/Globe trial)
[Answer No. 90] *"… In the year 1871, I was on board the ferryboat "Westfield," of Staten Island, when her boiler exploded, killing more than one hundred persons. I was seriously wounded; remained in bed for about three months…"*

Affidavit of Antonio Meucci
(9 October 1885)
(from the Bell/Globe trial)
"… I was burned nearly over my entire body, especially my face, head and hands. My life was despaired of; my friends thought I would die. I was confined to my house a few months …"

Affidavit of Esther Meucci
(2 April 1880)
(from the US/Bell trial)
"… in the month of July, 1871, my husband was nearly killed by the explosion upon the Staten Island ferryboat, the Westfield … He was confined to his bed for more than two months, and owing to his age (he being now over 70 years old) he has never recovered from the effect of his shock and injuries. He was unable to obtain any compensation or payment for the damage he sustained from the Ferryboat Company. Subsequently we have been in great poverty since that time, frequently deprived of the necessaries of life, and would have been in danger of starvation if it had not been for the frequent gifts from our generous friends. We are now in debt to the sum of more than $1000 for the necessaries of life, and for expenses for sickness, some of said debts, dating back to the year 1871 …"

Affidavit of Leonard Cunningham
(from the US/Bell trial)
"… In 1871, I think in July, I don't know the date but I know it was on Sunday, that I was in company with Mr. Meucci and he left me about 12 o'clock to go home and on that date the Steamer Westfield exploded and Mr. Meucci was very severely injured. I called upon him at his house a few days after his injury, found that he was being attended by a physician and friends and I was unable to see him. I did not see Mr. Meucci again until some time in the latter part of 1871 when he came to New York; I then met him. At this meeting, Mr. Meucci asked me if I could not put him in connection with some lawyers who could assist him in procuring damages against the owners of the Steamboat Westfield …"

Circular of Globe Telephone Co.
(from the Bell/Globe trial)
"… At the time of the explosion of the steamboat "Westfield," in 1871, Meucci was one of the passengers, and was so seriously injured that his life was despaired of; the skin peeled from his entire body, and his hair and beard scalded off; and so destitute was he that he became the recipient of assistance from

the overseers of the poor, receiving a dollar a week from the county as late as 1880 …"

Affidavit of Ferdinando de Luca[57]
(from the US/Bell trial)
"… in consequence of the explosion occurred on board the Staten Island ferry-boat the Westfield, in July, 1871… he [Meucci] *was almost fatally injured, and had to undergo a very serious and long illness without any indemnity, which reduced him to an almost complete destitution … During my residence in New York, several Italian gentlemen, and myself in my official and private capacity, assisted him with money and other necessaries of life, as he was always behaved to my best knowledge, as a gentlemen and a very honest, truthful and intelligent man …"*

Affidavit of Frederick Bachmann[58]
(from the US/Bell trial)
"… He [Meucci] *was injured in 1871 by the explosion on the ferry-boat Westfield; he was badly burned, more particularly his face and hands, and was not able to assist himself in bed. At that time I was a strong young man, and went in daily as his neighbor, to turn him in bed, I did not suppose he would recover. I often saw in a room adjoining his sick room, glass jars, six or eight inches high, with something green in them, also a good deal of wire laying around resembling telegraph wire, as well as reels of wire. At this time he was destitute, not able even to pay drug bill or Doctor, in fact he had no money at all except what was given him by his friends. Mrs. Meucci told me their circumstances, and wanted I should buy of her some old pistols and knives, which I refused to do, but gave her five dollars …"*

Affidavit of Angelo Bertolino
(from the US/Bell trial)
"… Since 1870 I have seen him very frequently and went to visit him quite a number of times during his illness from the effects of the injury from the explosion of the Ferry boat Westfield in 1871 …"

Affidavit of Alessandro Panizzi[59]
(18 September 1885)
(from the US/Bell trial)
"…When Mr. Meucci was injured by the explosion of the Westfield I lived at 528 Broome Street; I did not see him for a few months after his injury, as I was so busy. But in October or November I went to see him. It was in one of

[57] At the time of the *Westfield* explosion, Mr. De Luca was Consul General of Italy in New York.

[58] Mr. Bachmann was a German brewer, who came to live near Meucci, in Forest Street, in 1866. Together with another German, named Mayer, he took up the *Clifton Brewery*, that he transformed to a big and renowned brewery, which will be named after him.

[59] Mr. Panizzi was a businessman residing in New York City.

these months, as I was on my way to spend a day hunting, which must have been in the Fall, sure not later than November. At this visit I saw that he was still suffering from the effects of the injury as his face, neck, and hands showed that he had not recovered from the burn. At this visit I saw they are very poor, had little or nothing; Mrs. Meucci told me that she had been compelled to sell her jewelry to get food, and the necessity of life, and she cried when she told me. At this time she was an invalid. While Mrs. Meucci was telling me of their distress, Mr. Meucci seemed very sad, and went out of the room. He would not say anything about his poverty, but I saw the poor condition he was in; and soon I met R. Beneditti [Benedetti, Editor's note]*, G. Conti, G. Vercelli, G. Cella, on 42nd Street, and we agreed on a subscription paper that each of us should pay said Meucci a dollar a month. I often took the money to Staten Island, and always gave it to Mrs. Meucci , we continued each to give his dollar a month for at least five years. During this time I understood that the overseer of the poor at Staten Island was also helping them with coal, flour and groceries; But Mr. Meucci was not able to earn anything, and his wife a confirmed invalid, and notwithstanding the assistance they got they seemed to grow poorer until he got some, as I heard for a patent* [*'Improvement in Hygrometers,'* Editor's Note] *about 1877 …"*

Affidavit of John Fleming[60]
(from the Bell/Globe trial)
"… I went to his house the day he was brought home; he then was in bed. His room was on the third floor, north part of the house; I remember the room he was in; they called it the Garibaldi room. Mr. Meucci was burned a great deal, his face and hands were scalded, and the skin lay loose where he was burnt. The house presented the appearance of people in great poverty. Mrs. Meucci was an invalid from the time I first knew her; at this time she was just able to move about. I called three or four times soon after as a neighbor; I saw him each time. At these visits he seemed to be in great pain; he moaned a great deal; he appeared like a very sick man; at that time I did not think he would get well …"

[60]Mr. Fleming kept a second-hand articles' shop in Willow Avenue, near Meucci's cottage, where he came to live in 1870. He also worked as tinsmith and second-hand dealer in the streets.

For that almost interminable period, Antonio Meucci laid in bed in Garibaldi's room, in the northeast corner of his cottage, looking at the New York bay. His wife was ill in her usual room, behind his. Mary almost always slept over, in the room on the south-east corner of the house, on the other side of the stairway from the rooms of the two Meuccis. Who knows whether in his state of semi-unconsciousness during the first weeks Antonio could hear Frederick Bachmann's powerful voice, who climbed up the stairs every morning as noisily as possible, shouting: *"Siknor Meuttchi, here is kuutt friend Fredrerikko, coming to turn you around in your bed … Today is a loffely day! …"* On hearing him climbing, Mary immediately rushed with the boric solution to disinfect the wounds, along with olive oil, a pack of bandages and clean sheets, profiting of Mr. Bachmann's help.

At the time of my contemplative crossings on the ferry to Staten Island, mentioned before, I thought about poor Antonio - who was about my age (sixty-three) at that time - who felt death was at his bedside and saw the images of his past life flow before his eyes, without being able to stop them. What good things had there been in his tormented life? To what purpose should he continue to live? Perhaps to continue making experiments upon experiments? In the few moments of relief from the torture of his wounds and the blazing spurts of high fever, these questions reeled in his mind, and perhaps, in an almost obsessive way, the words that had accompanied him over the last twenty years buzzed in his brain: *the speaking telegraph* … Unconsciously, a decision that could no longer be postponed gained strength in him: he had to proceed immediately, as soon as he had enough energy to get out of bed.

Mary (whom he continued to call Maria) took care of him lovingly, without him ever being able to imagine where the girl managed to find enough money to prepare him a cup of hot broth, and to feed his wife Esther and herself. The neighbors all helped her, with great discretion, and in every possible way. This was because they all loved and respected that man of genius, but also that simple, honest and discrete man called Antonio Meucci. John Fleming bought a box of trifles from Mary, paying at least seven dollars for it (over one hundred dollars of 1990). The shopkeepers sold her food at half price, inventing discounts that did not exist, or cheating, the wrong way round, on the weight.

Such loving care and Antonio's strength allowed him at last to win his struggle against death, after three long months, and after everyone had thought that his time had come. On his shaky legs, Antonio weakly descended the two flights of the wooden staircase that led down to the ground floor, looking at the living room and the kitchen, if it were the first time he saw them, and walked out of the front door onto the porch. The muted, splendid colors of the Staten Island countryside and the silence that

followed the departure of the New York tourists announced him that it was Fall. He took a deep breath, to take in as much as he could of the fresh air of that end of November, and he felt as the energy of his best years were once again returning to him. Perhaps, this is what happens after one has made a round trip towards death …

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