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The 1882 transit of Venus observed in Italian observatories

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Abstract
The Italian Government did not provide financial support to Italian astronomers so that they could organize expeditions to places where the 1882 transit of Venus could be observed both at ingress and egress, so all observations had to be made from Italy, where the phenomenon was only partially visible. On December 6, the ingress should have been visible in Rome at about 2.30 p.m., in very unfavourable circumstances. Nonetheless, observations were made at the Observatories of Milan, Turin, Moncalieri, and Palermo; at the University Observatory and the Royal Navy Observatory in Genoa; at the Observatories of the Collegio Romano, Campidoglio and Gianicolo in Rome; and at the Capodimonte Observatory in Naples. Both spectroscopic and visual observations were made.

Keywords: *1882 transit of Venus, Italian Observatories, spectroscope*

1 INTRODUCTION

The success of the Italian party that went to India to observe the 1874 transit of Venus (Pigatto & Zanini, 2001) convinced Giuseppe Lorenzoni and Pietro Tacchini[1] that the Italian Government would finance at least two expeditions to geographical places where both the ingress and egress of the 1882 transit would be observable. During their sole mission of 1874, the Italian astronomers were the only ones to make use of the spectroscope, and they used that transit to gain experience, with the next transit in mind. In the process, they demonstrated that spectroscopic observations produced precise contact times, especially of the external contacts. The Italian expedition of 1874 was also successful because of the scientific friendship and collaboration between Lorenzoni and Tacchini, so they expected that an astronomer would represent Italy at the 1881 October 6 international conference in Paris that was arranged in order to discuss and outline general instructions for observations of the 1882 transit. Instead, the two friends were bitterly disappointed when this did not eventuate, and the reason for this seemingly inexplicable decision makes a funny story that deserves to be told.

On 1881 September 23 the Minister of Public Education wrote a circular letter to the directors of Italian observatories: "Economic reasons prevent this Ministry from delegating one of our clever astronomers to represent Italy at the Paris International meeting, promoted by the French Government in order to study the problems concerning the transit of Venus over the Sun." (Minister P.E., 1881). The Minister decided to send "... as a representative, the same Italian delegate to the International meeting of Electricity, which contemporaneously is held in Paris, that is the illustrious professor Gilberto Govi". The Minister (ibid.) asked the astronomers to give suggestions and necessary instructions to him "... in order to make his difficult task easier." On September 30 Lorenzoni replied:

> It is completely unknown to the undersigned what the Royal Government's intention is concerning the role that Italy will play in the observation of the next transit of Venus ... if it is decided that Italy is not going to take part in this enterprise, an Italian commissioner's presence at the meeting evidently will be useless except for solemnizing the declaration of Italy's abstention. (Lorenzoni, 1881).

However, Lorenzoni demonstrated that he had not completely given up hope by suggesting what the Italian commissioner should take into account during the transit meeting. In particular, he should advise the meeting that the Italian astronomers were acquainted with standard visual and spectroscopic methods of contact observations.

Tacchini was extremely upset, and in a letter to Lorenzoni he wrote:

> The Ministry's letter about the transit of Venus had the same effect on me as a poultice poorly applied: as soon as they decided that money was lacking, it was necessary for the Ministry to be completely out of this matter. Once the Ministry decided to be represented at the meeting, the astronomers, above all, had to be invited, in order to avoid making a fool of the Ministry by nominating an outsider as a makeshift and then asking us to give him suggestions! These are ridiculous tricks fit for a Ministry without rhyme or reason ... It is sure that we will make a bad impression due to the stupidity of our Government. (Tacchini, 1881).

Despite these protests, Professor Govi, a physicist and Italian member of the *Bureau International des Poids et Mesures*, ended up representing the Italian Government at the Paris meeting. It is quite possible that political reasons may have been behind this absurd decision, as relations between Italy and France were strained following France's occupation of Tunisia (where thousands of Italians lived and worked) earlier in the year. It was a very delicate diplomatic situation, and the lack of any Italian representative at the astronomical meeting could have been interpreted by the French as a further stiffening of Italy's attitude towards the 'Tunisian problem'.

After the Paris meeting, this whole affair was never spoken of again, and Italian observatories arranged to observe the transit at home, even though the conditions would be very unfavourable, mainly because of the season of the year.

2 OBSERVATIONS OF THE TRANSIT MADE AT ITALIAN OBSERVATORIES

The 1882 transit was observable in Italy and western Europe only during the ingress phase (first and second contact), whereas the entire event was visible from central America and South America.

In 1877, Elia Millosevich calculated the mean time of ingress for the longitudes and latitudes of Turin, Naples, Venice, Rome, Padova, Florence, Bologna, Milan and Palermo, using geocentric data (Venus and Sun conjunction in right ascension at GMT) derived from Leverrier's astronomical tables. These data, together with the eastern and western angles of Venus's path with respect to the solar north, gave the observers the places on the solar limb where the contacts would take place (Millosevich, 1877).

On 1882 December 6, the ingress was observed at about 2.30 p.m. Rome Mean Time (RMT) in very unfavourable conditions because of cloudy or foggy skies and an early sunset, just two hours later (i.e. before the egress phase). No observations were made at Padova Observatory because of dense fog. Table 1 summarizes the places where observations were made, the instruments used and the associated observers, on the basis of published scientific reports.

The directors, Schiaparelli, Dorna, Garibaldi, Magnaghi, De Gasparis, and Cacciatore sent a short note about their observations to Tacchini, who communicated these initial results to the Accademia dei Lincei (Tacchini, 1883) and published them in the *Memorie della Società degli Spettroscopisti Italiani* (Tacchini and Millosevich, 1883). Some of the above astronomers also published their own scientific reports in different journals (see References).

2.1 Brera Observatory

In Milan (Figure 1), the astronomers were only able to observe the second ingress contact, and even then through passing clouds. Giovanni Schiaparelli used a Gregorian reflector by Short that had belonged to the Brera Observatory since its foundation in 1762. Because of its antiquity, the mirrors had partially lost their reflecting capacity, so it was possible to observe the Sun directly without using a coloured glass or a helioscopic eyepiece (Schiaparelli, 1882, 1883). The low elevation of the Sun (~13°) and a foggy horizon also helped. In spite of atmospheric turbulence, Schiaparelli obtained a good quality image with a 48 magnification eyepiece, and was able to appreciate the skill of this famous English telescope-maker. Figure 2 shows a Short reflector similar to the one used by Schiaparelli. When half of Venus's disc was on the Sun, Schiaparelli could see a bright arc around the planet's dark portion outside the Sun, and he attributed this phenomenon to a Venusian atmosphere. He also observed that the bright arc, even if thinner, persisted once the planet was completely on the Sun. Schiaparelli recorded the second contact, when the two cusps joined together (see Figure 3) and a very thin bright stripe appeared.

Giovanni Celoria observed with a Gregorian Dollond reflector and a 50 magnification eyepiece, and like Schiaparelli he noted the same bright halo outside the solar disc. The third observer, Michele Rajna, had to reduce the magnification from 150 to 75 on his telescope because of clouds and atmospheric turbulence, and he only observed the second contact.

The Brera Observatory astronomers used a Froshdam chronometer, and their results were in good agreement, in spite of their small telescopes. No one saw the black drop phenomenon (Schiaparelli, 1883).

2.2 Turin Observatory

Alessandro Dorna, Director of Turin Observatory, used the same equatorial reflector he had used during the 1874 transit in India (Figure 4). This instrument was installed in the new dome of the Observatory (see Figure 5). Passing clouds, atmospheric turbulence, and fog disturbed the observation, but Dorna observed a dark ligament connecting the planet to the solar limb. He also noted that "… on its limb Venus appeared brighter than in the centre, as if a less opaque medium existed there." (Tacchini & Millosevich, 1883:3).

Table 1. Italian observatories where the 1882 transit was observed

Place	Instruments	Observers
Milan Brera Observatory	600 mm focal length Short reflector 120 mm aperture Dollond reflector: 75 mm aperture Ramsden refractor	Schiaparelli Celoria Rajna
Turin Observatory	1920 mm focal length Fraunhofer refractor 1530 mm focal length Dollond refractor 1030 mm focal length Dollond refractor	Dorna Charrier Castino
Moncalieri Observatory	100 mm aperture Merz refractor	Denza
Genoa University Observatory	Terrestrial and astronomical refractors	Garibaldi Porrata
Genoa Observatory of the Hydrographic Bureau of the Royal Navy	Not mentioned	Magnaghi
Rome Collegio Romano Observatory	250-mm Merz refractor 150-mm Cauchoix equatorial refractor	Tacchini Millosevich
Rome Campidoglio Observatory	115.4 mm aperture Merz refractor 94 mm aperture Merz refractor 65.2 mm aperture French refractor 68 mm aperture Ramsden refractor	Respighi Di Legge Giacomelli Prosperi
Rome Gianicolo Observatory	108 mm aperture Merz refractor 91 mm aperture Sécrétain refractor	Ferrari Hüninger
Naples Capodimonte Observatory	Not mentioned	De Gasparis Brioschi Nobile Contarino Angelitti
Palermo Observatory	72 mm Ramsden meridian circle 9 cm Fraunhofer refractor Ramsden refractor Merz refractor	Cacciatore Zona Delisa Riccò

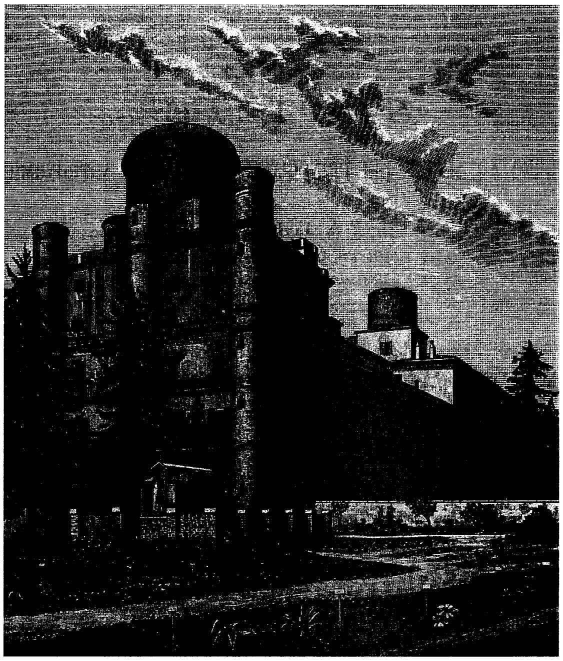

Figure 1. Engraving showing Milan Brera Observatory at the end of the XIX century. The astronomers observed the transit from the terrace.

2.3 Collegio Romano Observatory

In Rome (Figure 6) it was sunny all morning, but the Sun was obscured by large clouds at 2.30 p.m. RMT, shortly before the transit. Nonetheless, Tacchini decided to use a reticle spectroscope mounted on the Merz refractor, while Millosevich would observe Venus in the standard visual way with the 150-mm Cauchoix and 130 magnification (Figure 7). As Tacchini had stated since 1874, the spectroscopic method had the advantage of showing the planet's black disc above the red chromosphere just before the first contact happened, whereas with traditional visual observations Venus was invisible before first contact, so it was necessary to monitor the solar limb and continuously verify the position angle of the contact in order not to miss it.

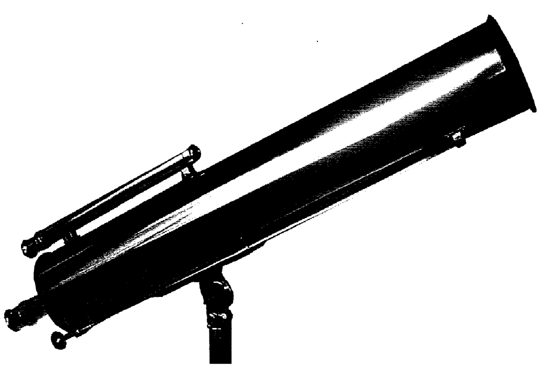

Figure 2. A Short reflector like that used by Schiaparelli (Museo *La Specola*, INAF-Astronomical Observatory of Padova-I).

The spectrum could not be observed if the Sun was obscured by passing clouds, but Tacchini noted that

> On the other hand, even if the observations of these contacts in Italy were of very little importance as far as the solar parallax determination was concerned, it was a duty in front of the science to try spectroscopic observations, even if the probability of not succeeding could be very large. There is even more reason why the spectroscopic method has to be used: this method is not taken into account by the foreign missions mainly because it is practically unknown and very few devote themselves to spectroscopic observations of the Sun; in addition, Mercury and Venus transits are too rare for practising the spectroscopic method. (Tacchini and Millosevich, 1883:6).

It was a thrilling moment for Roman observers, for although a cloud obscured the Sun just five minutes before the first contact, luckily it quickly moved and Tacchini was able to observe "... the planet's limb on the tips of the living chromospheric small flames..." (ibid.). From that moment, it was sufficient for the slit to be kept tangential to the solar limb and to control the planet's motion towards the AB edge as shown in the drawing ("*Fig. 4*") in Figure 8. "Only in this way could we be sure to note the true first external contact. Instead, this is impossible with the ordinary method: in this case the first contact is the time in which the observer notices the notch produced by the planet on the solar limb." (Tacchini and Millosevich, 1883:7).

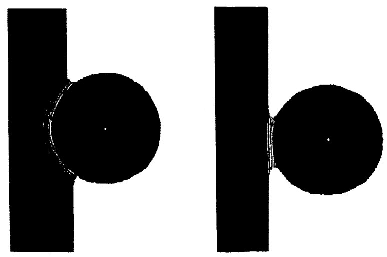

Fig. 1. Fig. 2.

Figure 3. Drawings of Venus ingress and second contact by Schiaparelli (Fig. 1 and 2 from Schiaparelli, 1882: 665).

As a matter of fact, a very very small notch, impossible to observe in the ordinary way, is sufficient to produce a thin black line along the solar spectrum (see Figure 11 in Pigatto & Zanini, 2001:50). Tacchini had realized that sunspots very near to the solar limb were visible in the spectroscope, but that it was impossible to notice them in the ordinary way, either by observing directly or by using projection. He was able to observe the second contact as far as the red arc of the chromosphere recovered its size, when the planet was completely over the photosphere. Just as in 1874, he was also able to see the solar spectrum growing dark near and around the C and B lines, as the planet was crossing the slit perpendicular to its path, a phenomenon—he wrote—due to the atmosphere of Venus. He also derived a value of 67″.253 for the mean spectroscopic diameter of Venus.

Millosevich, who collaborated with Tacchini as adjunct astronomer from 1879, after the transit calculated the corrections to be made to the difference of the apparent equatorial co-ordinates of Venus and Sun, related to the observations performed at the Collegio Romano. He concluded that the spectroscopic method was much more precise than the ordinary one as far as the first contact was concerned. He also compared the times of the second contact recorded by Italian astronomers following the instructions given by the International Conference of

Paris (International Conference, 1881), and verified that they were in good agreement and were comparable to those derived from the spectroscopic method (Tacchini and Millosevich, 1883:13-19).

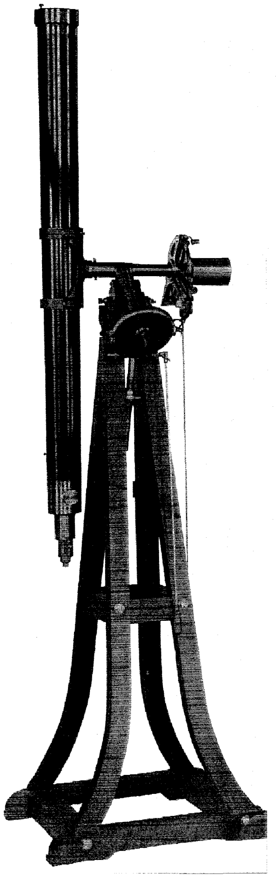

Figure 4. Fraunhofer equatorial refractor used by Dorna both in 1874 and 1882 transit of Venus (Photograph, Padova Observatory Archives).

Contact times recorded at the Collegio Romano Observatory and a number of other Observatories are listed in Table 2.

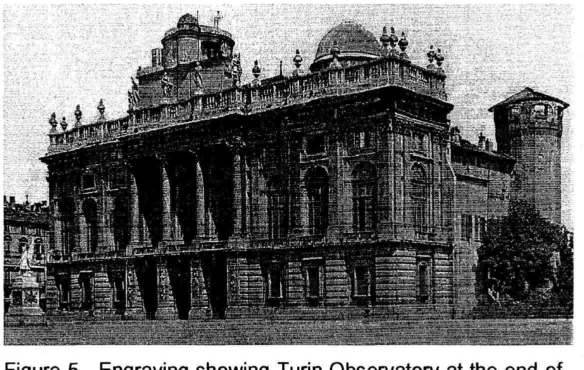

Figure 5. Engraving showing Turin Observatory at the end of the XIX century with the new dome in the background.

2.4 Campidoglio Observatory

Lorenzo Respighi, Director of the Observatory, was ready to observe the contacts with the spectroscope. However, being afraid of loosing the contacts because of the bad condition of the sky, he replaced the spectroscope with a micrometric eyepiece. The times of the contacts recorded by him and his three collaborators were in close agreement. All observed a weak luminous halo around the dark body of Venus. Respighi tried to explain this, separating out effects due to the planet's atmosphere from others due, for example, to the solar corona over which the planet's dark body was projected before its complete entrance onto the solar disc. He believed that it was very unlikely that absorption bands could be observable in the spectroscope, taking into account the very thin layer of Venus's atmosphere and the refraction of the solar light through it. This opinion was open criticism of Tacchini who—as mentioned above—saw such bands in 1874. After the internal contact, Respighi measured Venus's diameter with his micrometer, obtaining a value of 66″.36, but he questioned its reliability as it was derived in bad atmospheric conditions (Respighi, 1883:4).

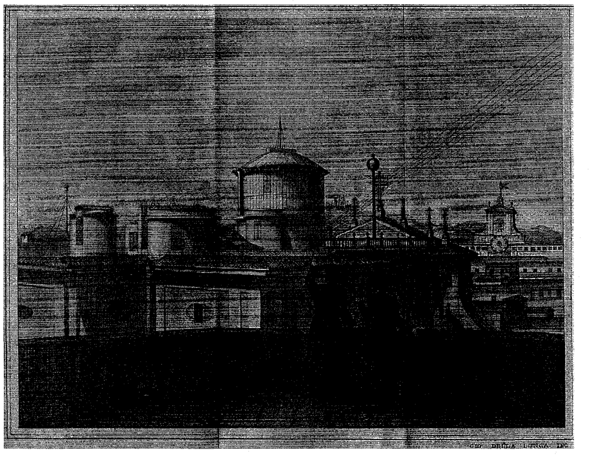

Figure 6. Engraving showing Collegio Romano Observatory in Rome in the second half of the XIX century.

2.5 Palermo Observatory

Although they were conscious of the relative unimportance of their observations, the astronomers at Palermo were still prepared to observe the transit. Gaetano Cacciatore wrote in his note to Tacchini that they observed through passing clouds, recording the second contact when the black ligament broke, and that their data were in good agreement. Annibale Riccò observed with the spectroscope, but he missed the contacts as he had had little practice with this instrument. Like Tacchini, he observed a fleeting darker band near the B and C lines of the solar spectrum when Venus was crossing the slit of the spectroscope. He also believed that this was due to the planet's atmosphere (Tacchini and Millosevich, 1883:23).

2.6 Other Observatories

Annibale De Gasparis, Director of Capodimonte Observatory in Naples, wrote a very short note to Tacchini: "The transit of Venus over the Sun was observed in Naples as well as in our Observatory. The sky gave us the pleasure of being clear for about an hour. Because of our poor-quality telescopes, we couldn't record the first contact in a realiable way… I won't send you other reports from us, as the agreement is not at all satisfying, or so it seems to me." (Tacchini and Millosevich, 1883:20). This short and dry report, without any information about observers or instruments, Brioschi's contact excepted, evidently hid a strong disagreement between the Director and his astronomers. In fact, Arminio Nobile (1883), an astronomer at the Observatory, wrote a short note in *Astronomische Nachrichten* where he mentions other two observers (there were five in all).

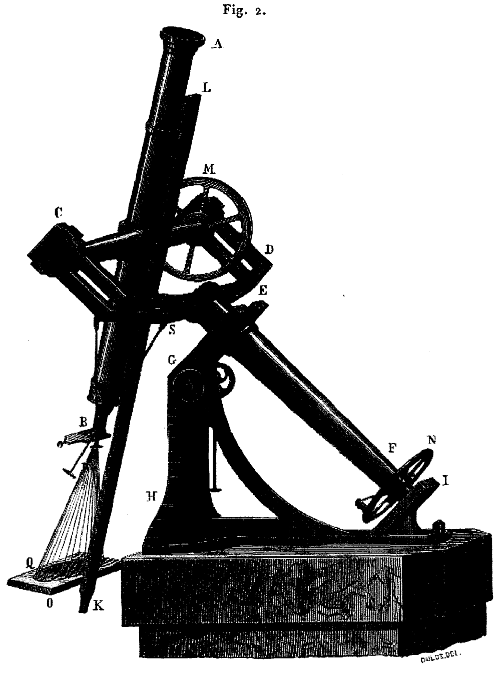

Figure 7. Cauchoix refractor used by Millosevich (from Secchi, *Le Soleil*, 1875, I:9.).

The Jesuit Stanislao Ferrari became Director of Collegio Romano Observatory after Secchi's death, but had to move away when the new Italian State appropriated all the buildings in 1879. He then built a small private observatory on Gianicolo hill (Monaco, 2000), where he observed the transit. He published his results in *L'Osservatore Romano* and in *Astronomische Nachrichten* (Ferrari, 1883). His first contact anticipated those of the other Roman astronomers by more than 20 seconds, so Millosevich thought that his data were completely unreliable.

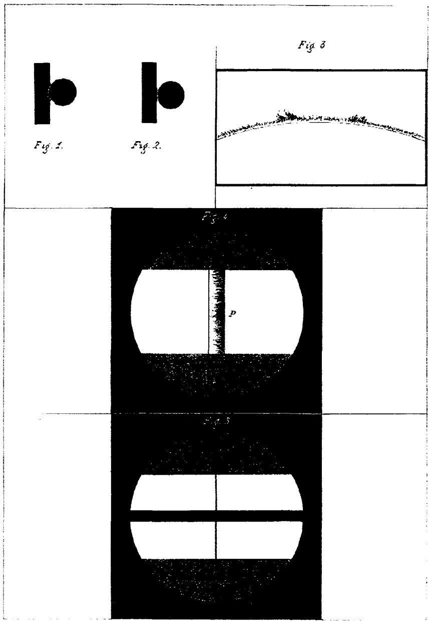

Figure 8. Drawings of the observations performed by Millosevich (Fig. 1 and 2, ordinary method) and Tacchini (Fig. 3, 4, 5, spectroscopic method). (From Tacchini and Millosevich, 1883, table CXLVIII).

Table 2. Data from Italian observatories: times for internal and external contacts at Venus ingress reduced to Rome Mean Time.

Ingress at Rome MeanTime	
External contact	Internal contact
$2^h\ 48^m\ 54^s.43$ (Rome C.R.- spectroscopic method)	$3^h\ 9^m\ 34^s.79$ (Rome C.R.- spectroscopic method)
$2^h\ 49^m\ 48^s.14$ (Rome C.R.- ordinary method)	$3^h\ 10^m\ 10^s.14$ (Rome C.R. - ordinary method)
$2^h\ 49^m\ 9^s.74$ (Rome C. - ordinary method)	$3^h\ 10^m\ 5^s.43$ (Rome C. - ordinary method)
$2^h\ 49^m\ 20^s.53$ (Rome C. - ordinary method)	$3^h\ 9^m\ 27^s.01$ (Rome C. - ordinary method)
$2^h\ 49^m\ 38^s.40$ (Rome C. - ordinary method)	$3^h\ 10^m\ 5^s.40$ (Rome C. - ordinary method)
$2^h\ 49^m\ 32^s.40$ (Rome C. - ordinary method)	$3^h\ 9^m\ 59^s.90$ (Rome C. - ordinary method)
$2^h\ 48^m\ 27^s.10$ (Rome G. - ordinary method)	$3^h\ 9^m\ 36^s.12$ (Rome G. - ordinary method)
	$3^h\ 10^m\ 8^s.00$ (Rome G. - ordinary method)
$2^h\ 49^m\ 32^s.5$ (Turin. - ordinary method)	$3^h\ 10^m\ 5^s.0$ (Turin – ordinary method)
$2^h\ 50^m\ 13^s.0$ (Turin. - ordinary method)	$3^h\ 10^m\ 13^s.0$ (Turin – ordinary method)
$2^h\ 51^m\ 3^s.0$ (Turin - ordinary method)	$3^h\ 10^m\ 4^s.0$ (Turin – ordinary method)
$2^h\ 49^m\ 31^s.0$ (Moncalieri - ordinary method)	$3^h\ 9^m\ 54^s.4$ (Moncalieri – ordinary method)
–	$3^h\ 10^m\ 33^s.5$ (Milan – ordinary method)
–	$3^h\ 10^m\ 32^s.5$ (Milan – ordinary method)
–	$3^h\ 10^m\ 31^s.0$ (Milan – ordinary method)
$2^h\ 48^m\ 39^s.1$ (Palermo - ordinary method)	$3^h\ 9^m\ 26^s.4$ (Palermo – ordinary method)
$2^h\ 49^m\ 22^s.6$ (Palermo - ordinary method)	$3^h\ 9^m\ 38^s.5$ (Palermo – ordinary method)
$2^h\ 48^m\ 39^s.3$ (Palermo - ordinary method)	$3^h\ 10^m\ 19^s.3$ (Palermo – ordinary method)

C.R. = Collegio Romano; C. = Campidoglio; G. = Gianicolo

Finally, Father Francesco Denza of Moncalieri Observatory communicated his results to the newspaper *L'Unità Cattolica*, n. 288 of 1882, then he sent two short notes to *Monthly Notices of the Royal Astronomical Society* (Denza, 1883a,b). Denza recorded the second contact as the black drop detachment, and reported a value of 67″.12 for Venus's diameter. He considered this value as unreliable, because of the atmospheric turbulence experienced at the time of his observation.

3 CONCLUSION

The results achieved by Italian observatories were of poor quality, largely because of the generally bad observing conditions. However, Italian astronomers did their best, after lack of funds prevented them from organizing a mission to South America, as Lorenzoni and Tacchini had planned. The final mockery for the disappointed astronomers arrived three months later. On 1883 March 13, the Ministry of Public Education sent a letter to Lorenzoni informing him (and Italian astronomers) that

> … in Santiago as well as in Punta Arenas the great astronomical phenomenon of December 6 had been happily observed … According to the news freshly published at the capital of Chili three scientific parties, one from Germany, one from Brazil, and the third from England, successfully observed the transit of Venus in different places of the Magellan Straits". (Ministry P.E., 1883).

Evidently the Ministry believed that Italian astronomers were incapable of collecting information from their foreign colleagues, and that specialized journals in astronomy did not exist.

Concerning the spectroscope, Tacchini believed that it was only Italian astronomers who had used this instrument to observe the transit, but perhaps he had not seen the note by French astronomer, Charles Trépied, who observed the transit from Alger. Trépied missed the ingress contacts because of clouds, but was able to observe the planet on the solar disc with a Thollon spectroscope during a very short appearance of the Sun. He tried to see if a selective absorption due to the Venusian atmosphere could be observed, as Tacchini had already seen during the 1874 transit. Trépied (1883) wrote that with the slit both crossing the planet's disc and tangential to its limb, he did not see any change in the solar spectrum.

4 NOTES

1. Giuseppe Lorenzoni (1843-1914) and Pietro Tacchini (1838-1905) were respectively appointed Directors of Padova Observatory and Rome's Collegio Romano Observatory in 1877 and 1879.

5 REFERENCES

Cacciatore, G., 1883. Osservazioni del passaggio di Venere al 6 Dic. 1882. *Astronomische Nachrichten*, **104**:283-284.

Denza, F., 1882. Osservazioni di Moncalieri. *L'Unità Cattolica*, n° 288.

Denza, F., 1883a. Le passage de Vénus observé à l'Observatoire de Moncalieri. *Monthly Notices of the Royal Astronomical Society*, **43**:73-74.

Denza, F., 1883b. Sur l'observation du passage de Vénus faite à l'Observatoire de Moncalieri. *Monthly Notices of the Royal Astronomical Society*, **43**:272-273.

Ferrari, G. S., S.J., 1883. Ingresso di Venere sul disco solare osservato in Roma il 6 Dicembre 1882. *Astronomische Nachrichten*, **104**:253-254.

International Conference, 1881. Instructions formulées par la Conférence International pour l'observation du passage de Vénus. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences*, Paris, **93**:569-572.

Lorenzoni, G., 1881. Letter to the Ministry of Public Education, dated 30 September. Copy at Padova Observatory Archives.

Millosevich, E., 1877. Il passaggio di Venere il 6 dicembre 1882. *Memorie degli Spettroscopisti Italiani, Appendice*, **6**:21-23.

Millosevich, E., 1882. Sur le passage de Vénus du 6 decembre 1882, observé a Rome. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences*, **95**:1269-1270.

Minister of Public Education, 1881. Circular to G. Lorenzoni dated 23 September. Padova Observatory Archives.

Minister of Public Education, 1883. Letter to G. Lorenzoni dated 13 March. Padova Observatory Archives.

Nobile, A., 1883. Note sur le passage de Vénus du 6 Décembre 1882. *Astronomische Nachrichten*, **104**:109-110.

Pigatto L., and Zanini V., 2001. Spectroscopic observations of the 1874 transit of Venus: the Italian party at Muddapur, eastern India, *Journal of Astronomical History and Heritage*, **4**:43-58.

Respighi, L., 1883. Sul passaggio di Venere sul Sole, del 6 Dicembre 1882. Nota in *Atti della R. Accademia dei Lincei, Transunti*, 7:100-101.

Schiaparelli, G. V., 1882. Osservazioni del passaggio di Venere sul disco solare fatti nel R. Osservatorio di Brera il 6 dicembre 1882. *Istituto Lombardo di Scienze e Lettere. Rendiconti*, II s., **16**:663-668.

Schiaparelli, G. V., 1883. Ingresso di Venere sul disco solare osservato a Milano il 6 dicembre 1882. *Astronomische Nachrichten*, **104**:137-142.

Tacchini, P., 1881. Letter to G. Lorenzoni dated 11 October. Padova Observatory Archives.

Tacchini, P., 1882. Observations du passage de Vénus a l'Observatoire royal du College romain. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences*, Paris, **95**:1209-1211.

Tacchini, P., 1883. Osservazioni sul passaggio di Venere del 6 dicembre 1882. *Atti della R. Accademia dei Lincei, Transunti*, Roma, s. III, 7:106-109.

Tacchini, P., and Millosevich, E., 1883. Osservazioni del passaggio di Venere sul disco solare fatte in Italia nel 6 dicembre 1882. *Memorie degli Spettroscopisti Italiani*, **11**:1-23.

Trèpied, Ch., 1882. Observations faites pendant le passage de Vénus à l'Observatoire d'Alger.. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences*, **95**:1267-1269.

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Valeria Zanini received the degree in astronomy from the University of Padova in 1999 with a dissertation thesis in historical astronomy *Geminiano Montanari, un astronomo di fronte all'astrologia* [an astronomer in front of the astrology]. In 2000-01, she had a grant from the Observatory to study astronomy of the 17th, 18th, and 19th centuries in Padova, and complete the Catalogue of the astronomical instruments of the *Specola* Museum. From 2002 January 1, she is curator of the Museum.