Mem. S.A.It. Vol. 82, 268

Memorie della

Schiaparelli and French astronomers

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Abstract. In order to talk about the relation between Schiaparelli and the French astronomers, those who, as members of the *Académie des sciences*, have sustained his name for some *Prix de l'Académie des Sciences* and for his acceptance at the *Académie* have been chosen. All of them were astronomers of the Paris Observatory or related to it. The chronological order, based on documents, archives and publications at the *Académie des sciences* and at the *Observatoire de Paris*, was selected.

1. Introduction

Appointed as an astronomer at the Brera Observatory in Milano, Schiaparelli became interested in comets since 1860 and also in shooting stars, mostly after all the events which had affected Biela's comet upon its returns in 1845, in 1852 and later, in 1862, with the great comet of that year. In August 1866 he observed the great meteor swarm; such swarms are sometimes called meteor showers.

Schiaparelli was definitely convinced about the relationship between what are called *stelle cadenti*, in italian, and comets. His famous letters to Secchi (1818-1878), director of the *Collegio Romano*, published in the *Bullettino meteorologico dell'Osservatorio del Collegio Romano*, called the attention of all astronomers around the world. Secchi was a *correspondent* of the *Académie des sciences*, having been elected in May 1857. Among the 50 references concerning Schiaparelli, which are in the library of the *Observatoire de Paris*[1], are: - *Intorno al corso ed all'origine probabile delle stelle meteoriche* (1866); - *Note e riflessioni intorno alla teoria astronomica delle stelle cadente* (1867). There are perhaps others in the library of the Institut de France which includes the *Académie des sciences*[2].

2. Chronological orders of the events

1868 - The value of Schiaparelli was recognized by the five members of a Commission (Mathieu, 1783-1875; Laugier, 1812-1872; Faye, 1814-1902; Liouville, 1809-1882; Delaunay, 1816-1872), the last one being in charge of the report. This report ended with the connexion between comets and meteor showers, saying that M. Schiaparelli [...] *a ouvert une voie toute nouvelle qui doit conduire les astronomes aux conséquences les plus importantes relativement à la constitution de l'univers* (1868 May 18) and it is signed by Delaunay.

Delaunay, born in a small town located in the Aube department, entered the Ecole Polytechnique and, at the end, being rank one,

[1] see the "Bibliothèque" web site at www.obspm.fr

[2] Dossier Schiaparelli. Archives de l'Académie des Sciences, Institut de France, Paris

he had the opportunity to read Laplace's books. From 1845, he only worked on the theory of the Moon, becoming the specialist of the subject at this time. When Le Verrier (1811-1877) had to abandon the directorship of the *Observatoire de Paris*, Delaunay replaced him, but he died, in 1872, in a boat wreck. The medal of Lalande's foundation was attributed to Schiaparelli after Delaunay's report to the *Académie des sciences*, its value being 571 Francs at that time.

1875 - Schiaparelli, is now forty years old and director of the Milano Observatory since 1862; most probably after a request, he sent a list of his works and publications to the *Académie des sciences*[3] related to the years from 1862 to 1875. One can assume that it was sent to help Hervé Faye (1814-1902) in some report to the *Académie*.

Indeed, a report of over four pages can be found in the Archives of the Academy. The last one ends with: *La Section* [which means the part of the Académie devoted to the subject] *a pensé qu'il serait équitable de ne pas retarder davantage l'inscription de ce nom vraiment illustre sur la liste de nos correspondants*. Faye was a member of the Academy sice 1847. He was not an astronomer of the Paris Observatory but, at that time, he was a professor at the *Ecole Polytechnique* and a member of the *Bureau des longitudes* having his background in astronomy. He was president of this Bureau in 1874, 1875 to 1893, in 1896, 1900 and 1901.

1879 - On June 2 1879 Schiaparelli was elected. This event led Schiaparelli to express, on June 5, his thanks having received in Milano a letter from the perpetual secretaries of the Academy. Note that the letter, sent from Paris on June 2, was in Milano early enough to allow him to answer on June 5; this is mostly incredible, the delay in the present time being longer!

1890 - Schiaparelli obtained the Lalande's Prize a second time, which value was now 540 francs. He is then well established as director of the Milano Observatory. Delaunay, Mathieu, Laugier and Liouville no longer alive, the Commission was composed of Jules Janssen (1824-1907), Maurice Loewy (1833-1907), Félix Tisserand (1845-1896), Charles Wolf (1827-1818) and Faye, the only surviving astronomer of the previous group. Maybe for that reason, he is in charge of the report given during the annual public meeting on 1890 December 29: in those days members of the Academy did not vacations at this time of the year.

The report is not concentrated on meteors and comets but recalls the studies made by Schiaparelli concerning the rotation of planets, Mercury and Venus mostly. Nevertheless, the report ended with *Ces découvertes aussi belles qu'inattendues d'un savant astronome, à qui nous devions déjà les mystérieuses gémination des canaux de Mars et la magnifique solution du problème des étoiles filantes, ont engagé votre Commission à lui décerner le prix Lalande*.

The letter announcing the result of the proposal sent by the perpetual secretaries was dated December 20 - date of the decision - the official meeting being held nine days later. Schiaparelli had answered on December 24, expressing that he could not come to Paris; this letter is written in a perfect french, and says: *combien je suis sensible au jugement favorable porté à mes travaux par ce haut Tribunal scientifique, et combien je me sens encouragé par cette voix puissante pour les travaux à venir*.

1895 - On that year a *Rapport sur les travaux de M. Schiaparelli* was established by Félix Tisserand recalling that Schiaparelli had been a *correspondant* for the *Académie* fifteen years earlier. The main part of the report, written on three pages, concerns the shooting stars for about two third of its length. It's a very well written report showing the evolution of ideas which had led Schiaparelli to be a specialist of these celestial bodies.

The same year, acting in name of a commission of the *Académie*, Tisserand wrote about what could be considered as a particularly fair report, showing what was obtained by Schiaparelli, what could be considered not so certain, what had to be considered accepted, what was not, etc. This report, dated February

[3] Index biographique de l'Académie des sciences, Gauthier-Villars ed., Paris, 1954

11 and signed by Tisserand, ended with *son nom* [Schiaparelli] *avait tous les droits pour figurer sur la liste, pour une place d'Associé étranger*. Such a position within the *Académie* would have been at a higher level than his present one as an associate.

The same year, from a letter from Schiaparelli dated December 18, it is known that the Académie had requested its foreign members to send, to the perpetual secretaries, a portrait of each of them under the form of a photography; the one sent to the *Académie* is indeed included in Schiaparelli's dossier. In the collections of the *Observatoire de Paris* there is one which associates Schiaparelli to Liebig (1803-1873), the celebrated German chemist, who had been *correspondant* in 1842, and *associé étranger* in 1862, of the *Académie*.

Tisserand who had been in charge of the 1895 report was born in a Burgundy town celebrated for its wine, Nuits-Saint-Georges, where his father was a cooper. After the end of his studies, in 1866, he was recruited at the *Observatoire de Paris* by Le Verrier (1811-1877). In 1873 he moved to Toulouse to be director of its observatory and, in 1878, he his nominated, in Paris, at La Sorbonne. In 1892 he became director of the *Observatoire de Paris*; but he suddenly died in 1896. Tisserand's master work is his *Traité de mécanique céleste* (1889-1896), precise, accurate, and clearly written, qualities which appear in the report he had written about Schiaparelli.

1898 - During the first meeting of the year (January 3), the *Comptes rendus de l'Académie des sciences*[4] mention that Schiaparelli is among the deceased correspondents, that he died on 1897 February 19, and that he will have to be replaced in that position. Later, Schiaparelli himself wrote a letter to let the Académie know that he was still alive. His letter is not included in the documents bearing his name in the Archives of the *Académie des sciences*.

1900 - Two years later a new report had to be prepared, but Tisserand is dead and was replaced by Loewy as director of the *Observatoire de Paris* in 1897. Both had been elected at the *Académie*, Tisserand in 1874 and Loewy in 1873. Like his predecessor, Loewy was recruited by Le Verrier at the *Observatoire de Paris* in 1860. He worked first on determinations of orbits for comets and small planets; this explains, perhaps, why he was asked to prepare a new report about Schiaparelli. Loewy was also a member of the 1890 Commission.

The beginning of the report reads: *Je veux seulement prendre dans l'œuvre de M. Schiaparelli les trois recherches les plus récentes qui ont répandu un si vif éclat de lumière sur la carrière de cet astronome. Lorsqu'on se trouve en présence de découvertes brillantes qui ont ouvert aux spéculations scientifiques un nouvel horizon...*

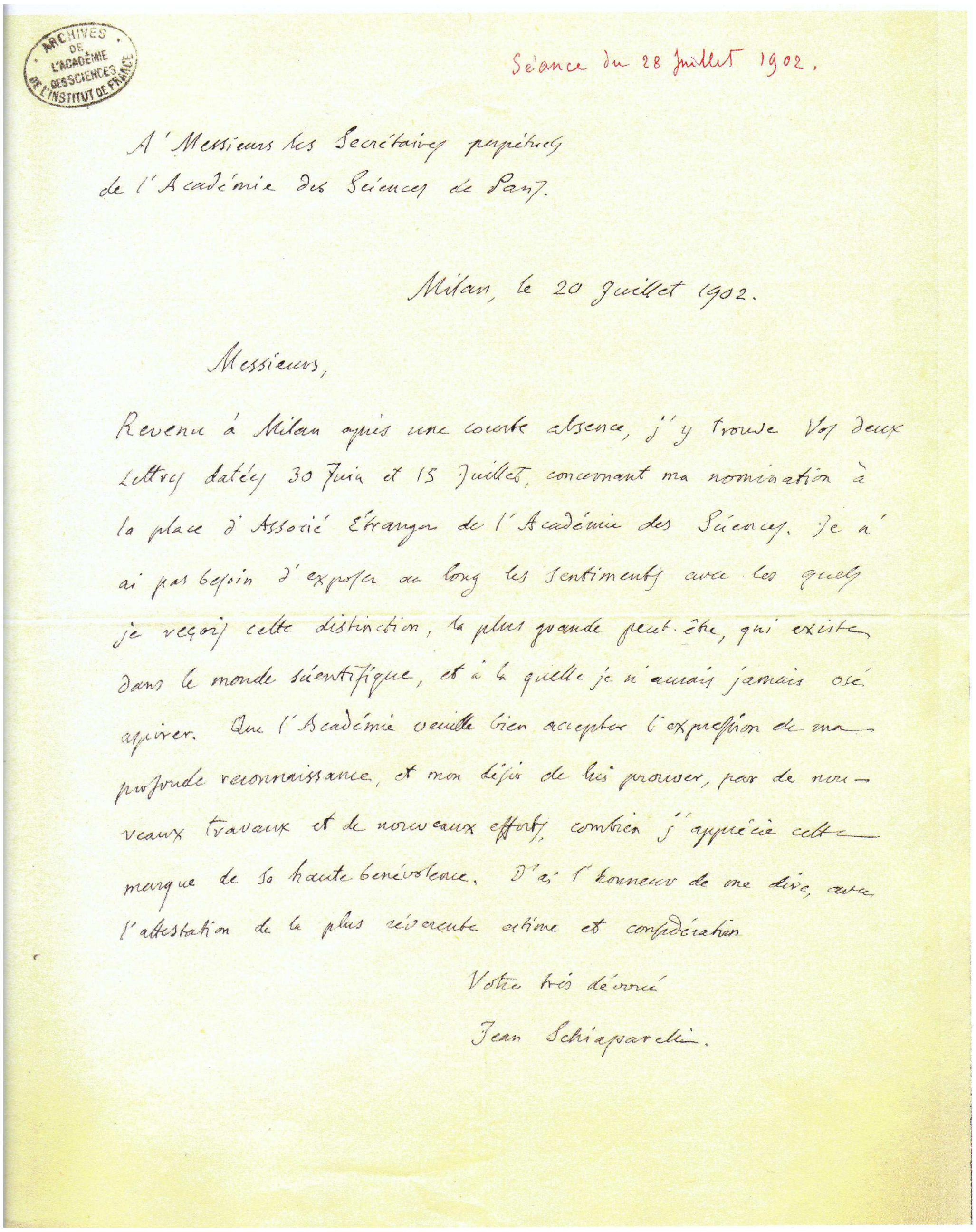
At the end Loewy concluded: *M. Schiaparelli est doué d'un esprit d'initiative hardi; par l'originalité et le haut mérite de ses travaux il s'est acquis des titres scientifiques glorieux qui nous semblent justifier l'inscription de son nom sur la liste des candidats présentée à l'Académie pour la nomination d'un associé étranger*.

Loewy's report was not successful and Schiaparelli was not elected as *Associé étranger* the last year of the 19th century. But this will come two years later.

1902 - Loewy was in charge of the new report. Indeed he used the 1900 version dated April, the new one being *Rapport complété en Juin 1902*. The beginning is exactly the same. The new first page took into consideration the modification noticed in the first report. Loewy recalls the situation regarding the shooting stars, considering the history of the subject and adding what Schiaparelli brought to it, following new observations and theoretical studies.

Some examples are given: - *Cet état de chose a complètement changé en 1866, grâce à M. Schiaparelli qui peut être considéré comme le véritable créateur de la théorie astronomique des étoiles filantes. - Les vues de l'éminent astronome italien exposées d'abord dans une série de lettres adressées au P. Secchi ont dissipé tous les doutes. - M. Schiaparelli*

[4] Gauthier-Villars ed., Paris, Vol. 126, p. 15-16, 1898



Séance du 28 Juillet 1902.

A Messieurs les Secrétaires perpétuels
de l'Académie des Sciences de Paris.

Milan, le 20 Juillet 1902.

Messieurs,

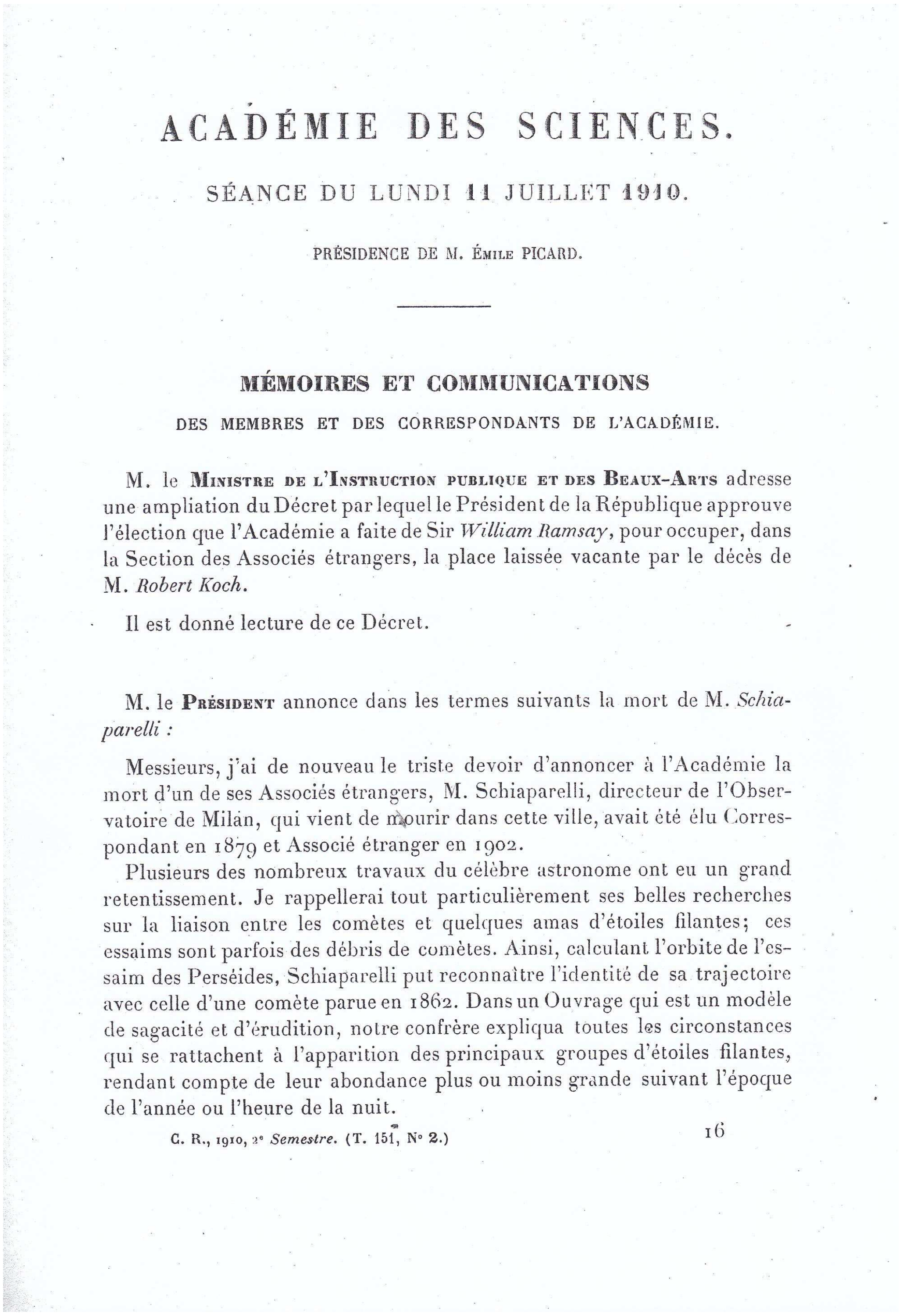
Revenu à Milan après une courte absence, j'y trouve Vos deux Lettres datées 30 Juin et 15 Juillet, concernant ma nomination à la place d'Associé Étranger de l'Académie des Sciences. Je n'ai pas besoin d'exposer au long les sentiments avec lesquels je reçois cette distinction, la plus grande peut-être, qui existe dans le monde scientifique, et à laquelle je n'aurais jamais osé aspirer. Que l'Académie veuille bien accepter l'expression de ma profonde reconnaissance, et mon désir de lui prouver, par de nouveaux travaux et de nouveaux efforts, combien j'apprécie cette marque de sa haute bienveillance. J'ai l'honneur de me dire, avec l'attestation de la plus révérente estime et considération

Votre très dévoué

Jean Schiaparelli.

Fig. 1. Letter from Schiaparelli to the Académie des sciences. ©Académie des sciences - Institut de France

eut l'idée très heureuse de donner à sa belle conception une expression mathématique et d'en chercher la confirmation dans les faits observés.



ACADÉMIE DES SCIENCES.

SÉANCE DU LUNDI 11 JUILLET 1910.

PRÉSIDENCE DE M. ÉMILE PICARD.

MÉMOIRES ET COMMUNICATIONS

DES MEMBRES ET DES CORRESPONDANTS DE L'ACADÉMIE.

M. le **Ministre de l'Instruction publique et des Beaux-Arts** adresse une ampliation du Décret par lequel le Président de la République approuve l'élection que l'Académie a faite de Sir *William Ramsay*, pour occuper, dans la Section des Associés étrangers, la place laissée vacante par le décès de M. *Robert Koch*.

Il est donné lecture de ce Décret.

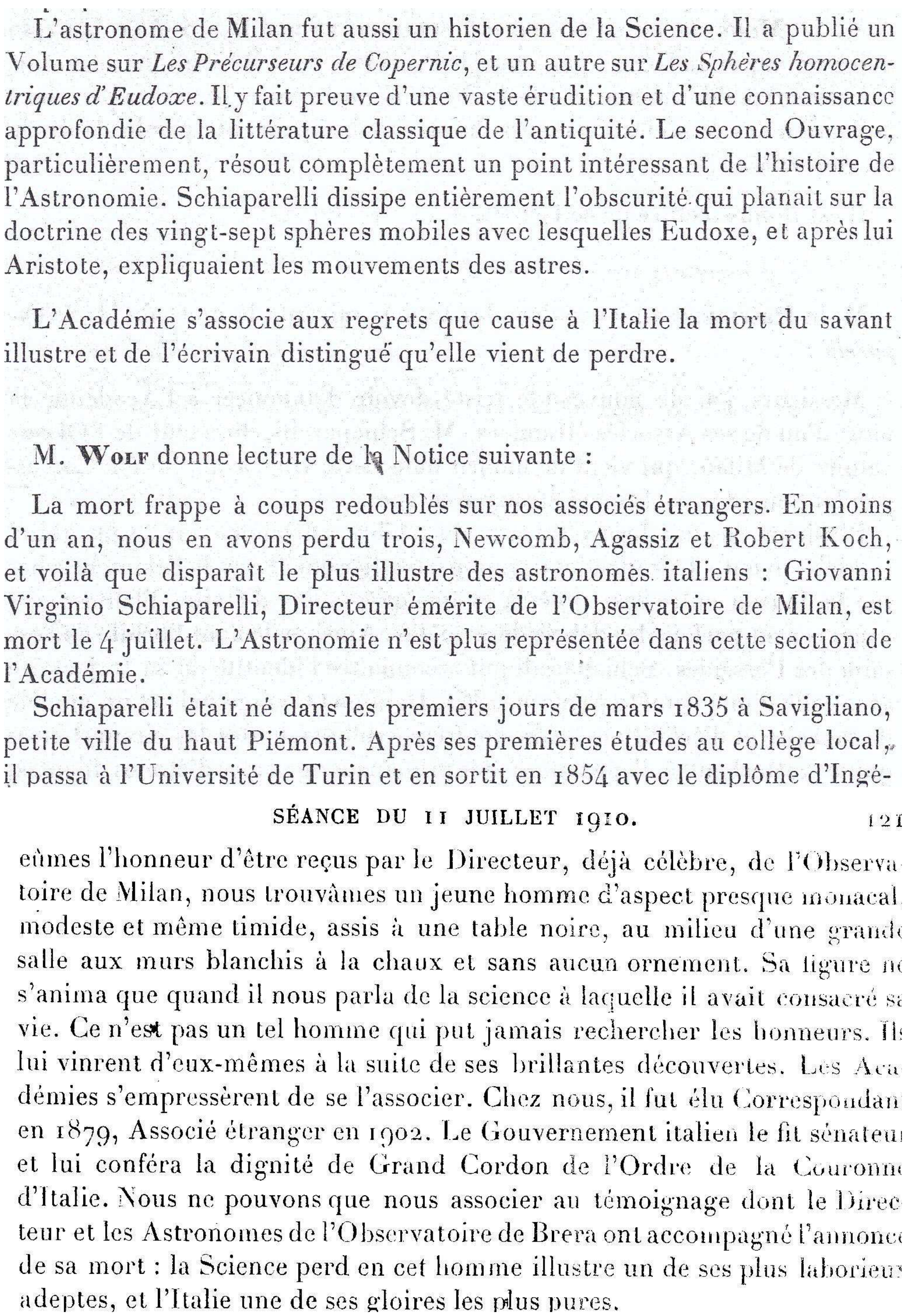
M. le **Président** annonce dans les termes suivants la mort de M. *Schiaparelli* :

Messieurs, j'ai de nouveau le triste devoir d'annoncer à l'Académie la mort d'un de ses Associés étrangers, M. Schiaparelli, directeur de l'Observatoire de Milan, qui vient de mourir dans cette ville, avait été élu Correspondant en 1879 et Associé étranger en 1902.

Plusieurs des nombreux travaux du célèbre astronome ont eu un grand retentissement. Je rappellerai tout particulièrement ses belles recherches sur la liaison entre les comètes et quelques amas d'étoiles filantes; ces essaims sont parfois des débris de comètes. Ainsi, calculant l'orbite de l'essaim des Perséides, Schiaparelli put reconnaître l'identité de sa trajectoire avec celle d'une comète parue en 1862. Dans un Ouvrage qui est un modèle de sagacité et d'érudition, notre confrère expliqua toutes les circonstances qui se rattachent à l'apparition des principaux groupes d'étoiles filantes, rendant compte de leur abondance plus ou moins grande suivant l'époque de l'année ou l'heure de la nuit.

C. R., 1910, 2e *Semestre*. (T. 151, N° 2.) 16

Fig. 2. First page of the Séance du 11 juillet 1910 of the Académie des sciences from the Comptes rendus of the Académie des sciences - ©Académie des sciences Institut de France



L'astronome de Milan fut aussi un historien de la Science. Il a publié un Volume sur *Les Précurseurs de Copernic*, et un autre sur *Les Sphères homocentriques d'Eudoxe*. Il y fait preuve d'une vaste érudition et d'une connaissance approfondie de la littérature classique de l'antiquité. Le second Ouvrage, particulièrement, résout complètement un point intéressant de l'histoire de l'Astronomie. Schiaparelli dissipe entièrement l'obscurité qui planait sur la doctrine des vingt-sept sphères mobiles avec lesquelles Eudoxe, et après lui Aristote, expliquaient les mouvements des astres.

L'Académie s'associe aux regrets que cause à l'Italie la mort du savant illustre et de l'écrivain distingué qu'elle vient de perdre.

M. Wolf donne lecture de la Notice suivante :

La mort frappe à coups redoublés sur nos associés étrangers. En moins d'un an, nous en avons perdu trois, Newcomb, Agassiz et Robert Koch, et voilà que disparaît le plus illustre des astronomes italiens : Giovanni Virginio Schiaparelli, Directeur émérite de l'Observatoire de Milan, est mort le 4 juillet. L'Astronomie n'est plus représentée dans cette section de l'Académie.

Schiaparelli était né dans les premiers jours de mars 1835 à Savigliano, petite ville du haut Piémont. Après ses premières études au collège local, il passa à l'Université de Turin et en sortit en 1854 avec le diplôme d'Ingé-

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eûmes l'honneur d'être reçus par le Directeur, déjà célèbre, de l'Observa toire de Milan, nous trouvâmes un jeune homme d'aspect presque monacal modeste et même timide, assis à une table noire, au milieu d'une grand salle aux murs blanchis à la chaux et sans aucun ornement. Sa figure n s'anima que quand il nous parla de la science à laquelle il avait consacré s vie. Ce n'est pas un tel homme qui put jamais rechercher les honneurs. Il lui vinrent d'eux-mêmes à la suite de ses brillantes découvertes. Les Aca démies s'empressèrent de se l'associer. Chez nous, il fut élu Correspondan en 1879, Associé étranger en 1902. Le Gouvernement italien le fit sénateu et lui conféra la dignité de Grand Cordon de l'Ordre de la Couronn d'Italie. Nous ne pouvons que nous associer au témoignage dont le Direc teur et les Astronomes de l'Observatoire de Brera ont accompagné l'annonc de sa mort : la Science perd en cet homme illustre un de ses plus laborieu adeptes, et l'Italie une de ses gloires les plus pures.

Fig. 3. Beginning and end of Wolf's talk from the Comptes rendus of the Académie des sciences - ©Académie des sciences Institut de France

SCHIAPARELLI (*Giovanni* Virginio), né à Savigliano, Piémont, le 14 mars 1835; — élu correspondant pour la section d'astronomie, le 2 juin 1879; — associé étranger, le 30 juin 1902; — mort à Milan, le 4 juillet 1910. — *Directeur de l'Observatoire de Brera.* AP

Fig. 4. Schiaparelli's notice in the Index biographique ©Académie des sciences Institut de France

Meanwhile Loewy had mentioned that the theory given by Schiaparelli was *basée, il est juste de le rappeler sur les précieuses séries d'observations accumulées avec une infatigable persévérance par de modestes travailleurs* whose names are given. He also recognises the quality of the writings of Schiaparelli *qui explique avec une clarté parfaite...*

Loewy adds some considerations about Schiaparelli as an observer having *déployé les aptitudes d'un observateur d'élite*. After having considered Mars, Loewy appears not to be so happy about the works concerning the rotation of Mercury and Venus, writing: *il croit prouver [...] d'ailleurs, ses conclusions n'ont été formulées qu'avec une certaine réserve*.

The historical studies of Schiaparelli are also mentioned by Loewy: *M. Schiaparelli a en outre publié deux ouvrages historiques qui ont un grand retentissement parmi les astronomes [...] d'une vaste érudition et d'une profonde connaissance de l'ancienne littérature classique. [...] Enfin ce savant a enrichi la science par d'excellentes et originales recherches sur les étoiles doubles...*

The Report ends with: *M. Schiaparelli est doué d'un esprit d'invention hardi; par l'originalité et le haut mérite de ses travaux, il s'est acquis des titres scientifiques glorieux qui nous semblent justifier l'inscription de son nom en première ligne* [Loewy underlines], *sur la liste de candidats présentés pour la nomination d'Associé étranger*.

The discussion about election to this position within the *Adadémie des sciences* took place, the same year, 1902, on June 30 and the ampliation of the decree, on July 15, Schiaparelli being elected to replace Erik Nordenskiöld (1832-1901). On the 20th of July, Schiaparelli wrote a letter to the perpetual secretary (Fig. 1); after his return to Milano, he found there two letters, dated June 30 (the day of the elections) and July 15, the day of ampliation writing: *Je n'ai pas besoin d'exposer au long les sentiments avec lesquels je reçois cette distinction* [...] *mon désir de lui [the Academy] prouver, par de nouveaux travaux...* Contrary to the three previous letters, which were simply signed J. V. Schiaparelli, this one is signed Jean Schiaparelli.

Between 1900 and 1910, the year of his death, there are twelve publications by Schiaparelli in the library of the *Observatoire de Paris*.

1910 - During the meeting of the *Académie* dated July 11, the death of Schiaparelli is announced. This time, no letter signed Schiaparelli is received after the announcement! The *Académie* printed an official card mentioning his death on the previous July 4 (Fig. 2).

The information to the members begins by recalling that another *associé étranger* died. And indeed three of them died within less than one year. This was also clearly mentioned by Charles Wolf (1827-1918) astronomer from the *Observatoire de Paris* in the notice he presented the same day (Fig. 3).

Charles Wolf was a member of the *Académie* from 1883, having been its vice president in 1898. Besides his professional activity as an astronomer he worked in several fields related to the history of the *Observatoire*. As examples, about the objective lenses employed by Cassini I (1625-1712) who came to France from Perinaldo, Roma and Bologna; Wolf also made important studies on the references for the *mètre* and the *kilogramme*, being better known as the author of the history of the Paris Observatory from its beginning in 1667 up to 1793. This notice covers three pages of the *Comptes rendus* of the *Académie*.

Other notices concerning Schiaparelli can be found: as an example one in French by Doublet, an astronomer from Bordeaux Observatory, on the occasion of the centenary of his birth. Our Italian colleagues had not forgotten the fiftieth anniversary of his death, as it can be seen from the documents which are in the Archives of the *Académie*. At the present time, Schiaparelli's name is included in its *Index biographique* (Fig. 4), under a form including the letters P and A which means that the *Académie* has portrait and autograph.

Note: The documents relative to the celebrations of the centenary of Schiaparelli's death, offered to S. Débarbat, have been added, by Florence Creff, Curator, to the file bearing his name in the Archives de l'Académie des sciences.