




## Jean-Martin Charcot, member of thesis juries at the Paris medical school (1862–1893)

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### ABSTRACT

Jean-Martin Charcot is considered the founding father of modern neurology. There are many general and specialized biographies about him, the result being that a new text is unexpected or would likely amount to plagiarism. However, part of the duties for Charcot's medical professorship have not, to date, been studied at all. This article will focus on the role of Charcot as a member of doctorate juries and, in particular, as the president of these juries. I have reviewed around 12,500 theses one by one. These were defended at the Paris medical school from 1862, Charcot's first year as an *agrégé* (assistant professor), to his death in 1893. Among the theses, I have selected all of those that discuss neuropsychiatry in the broadest terms (3,663). I have paid particular attention to all of those for which Charcot was part of the jury. This involves 608 theses. All of the data were entered in a database (Filemaker) to facilitate identifying those theses corresponding to one or more of the criteria. Statistical comparisons were then carried out (Excel spreadsheet). In addition to these results, brief individualized surveys were conducted on theses selected for their representativeness, either for the subject matter (multiple sclerosis, aphasia, tabes, general paralysis, etc.) or for specific criteria (foreigners, women, etc.), but all of the theses were defended before a jury that included Charcot. This makes it possible to track how the areas of study in the medical world changed over time, and particularly those of Charcot. The juries Charcot was obliged to be a part of, without any particular ties to the candidate and/or any involvement in the selection and supervision of the work, must be differentiated from the thesis juries for his students. In the latter case, the thesis subjects were most often linked to Charcot's researches. Providing a thesis subject was motivated, in certain cases, by the desire to disseminate new data in the medical profession, not only by dint of the theses themselves but also through the reports that the medical press published regularly (e.g. the diagnosis of various types of shaking) and through the commercial publication of these data, in some cases with a preface by Charcot. In other cases, the thesis was a step in the long process of developing a theory (hysteria). Or it led to a flowering of new ideas, insufficiently proven, which Charcot would only cover in his *Lessons* once there was convincing confirmation (amyotrophy). This rich cornucopia gives rise to certain neglected nuggets, as well as works that have entered the classical corpus—for example, the theses of Léopold Ordenstein, Ivan Poumeau, Isaac Bruhl, Albert Gombault, and Pierre Janet.

### KEYWORDS

Jean-Martin Charcot; Paris medical faculty; thesis juries



**Figure 1.** Jean-Martin Charcot around 1890 (collection OW).

There are numerous analyses of the medical *oeuvre* that Jean-Martin Charcot (1825–1893) passed down to us (Figure 1). However, one topic has never been addressed: Charcot's participation in thesis juries for obtaining the title of medical doctor. To conduct this study, I reviewed around 12,500 theses defended at the Paris medical school starting in 1862, the year Charcot became an assistant professor, through to his death in August 1893, in order to identify the juries in which Charcot participated. Among the theses, I selected all of those that discuss neuropsychiatry in the broadest terms (3,663), choosing to pay particular attention to those for which Charcot participated in the jury. During this 30-year period, Charcot judged 608 theses. All data were entered in a database (Filemaker) to facilitate identifying those theses corresponding to one or more of the criteria. I then carried out statistical comparisons (Excel spreadsheet). The library of the Paris medical school, at 12 rue de l'École de Médecine in the sixth district, holds the totality of the theses defended at the school (today the University of Paris-Cité). This treasure enabled me to carry out my research, which was published exhaustively in a book in French released in 2020 (Walusinski 2020).

### **Jean-Martin Charcot**

A few dates will be helpful for our analysis. After he failed the *agrégation en médecine et en médecine légale* (examination to become an assistant professor of medicine and legal

medicine) in 1857, in 1860 Charcot succeeded, becoming a practicing assistant professor starting on January 1, 1862. After becoming a hospital physician in 1856, he was appointed head of the nursing home and asylum for women at La Salpêtrière Hospital on November 13, 1861. He was nominated by his peers at the Paris medical school to hold the pathological anatomy chair on November 28, 1872. The polyclinic for nervous system diseases at La Salpêtrière opened its doors on June 2, 1881. It was linked to the Chair of Nervous System Diseases, created for Charcot on January 2, 1882 (Goetz, Bonduelle, and Gelfand 1995).

At the start of his career, Charcot was a physician who would currently be considered as an internist and geriatrician. This can be seen in the first edition of his *Leçons sur les maladies des vieillards et les maladies chroniques* (*Lessons on Diseases of the Elderly and Chronic Diseases*), compiled by Benjamin Ball (1833–1893) and published in 1868; then in his *Leçons sur les maladies du système nerveux faites à La Salpêtrière* (*Lessons on Nervous System Diseases Presented at La Salpêtrière*), compiled by Désiré-Magloire Bourneville (1840–1909) in 1872; and finally, his *Leçons sur les maladies du foie, des voies biliaires et des reins, faites à la Faculté de médecine de Paris* (*Cours d'anatomie pathologique*) (*Lessons on Diseases of the Liver, Bile Duct, and Kidneys, Presented at the Paris Medical School [Pathological Anatomy Classes]*) in 1877. The first truly neurological publication was written by Charcot together with Alfred Vulpian (1826–1887) in 1861: *De la paralysie agitante* (*On Paralysis Agitans*) (Charcot and Vulpian 1861).

### Why a doctoral thesis in medicine?

The French law of March 10, 1803, founded a new organization of medical practice in France following the French Revolution, which had abolished the multiple sources of medical legitimacy that existed under the monarchy. The “thesis of medical practice” certified the acquisition of skills necessary for the practice of medicine after four years of study. This law still separated the doctorate in medicine from the doctorate in surgery and maintained the practices of *officiers de santé* (health officers), who were trained in practices rather than theories. With this law, “six specialised schools of medicine” were authorized to open. The number was increased to 19 (Amiens, Angers, Arras, Bordeaux, Caen, Clermont, Dijon, Grenoble, Limoges, Lyon, Marseille, Nancy, Nantes, Orléans, Poitiers, Rennes, Rouen, Toulouse, Tours.), but theses, authorizing medical practice, could only be obtained in one of the three medical faculties that existed at that time: in Paris, Montpellier, and Strasbourg (Guillaume and Høerni 2003).

The members of the juries I studied were part of the professorial body of the Paris medical school, which meant they could not participate in the juries in Montpellier or Strasbourg. The thesis jury consisted of two professors, each holding a chair; one of them presided over the jury, which also included two assistant professors. This arrangement explains why the doctoral students, whose work we will examine, came from all regions of France as well as other countries. In addition, some of them dedicated their theses to the teachers at their provincial medical schools, all while thanking the jury president for playing his role.

Finally, we should note that presiding over thesis juries was one of the obligations of assistant professors and professors, who did not necessarily hold a chair in the area pertaining to the candidate’s “inaugural work” (Poirier and Derouesné 2017). We do not have any information concerning how the candidates were chosen or how they garnered

the attention of professors who would then preside over their theses. In contrast, Charcot frequently chose to preside over the theses of his students, whether they were external students or residents in his department. He was particularly interested in the theses of his foreign students, most likely aiming to broaden the reach of his prestigious La Salpêtrière School.

A jury interrogated two or three candidates per session. Its four members sat aligned on one side of a large table facing the candidate, alone on the other side. The session was ceremonious, taking place in a solemn, historic context and in a dedicated room of the Paris medical school, surrounded by the decorated busts of former professors. The jury members wore long university gowns and caps whose ribbons and stripes indicated their university rank. The candidate wore a special gown indicating his status, with a simple black cap having no ribbons or stripes. The defense was open to the public. Traditionally, the candidate invited his friends and family to attend, to bear witness to his fleeting glory. Once the defense was over, the candidate was authorized to practice medicine in a place of his choice, anywhere in France. We do not have any comments from the candidates reporting on their reception by the jury. For most of them, their theses were the only medical publications in all of their professional lives and they cost a great deal to print.

Because the thesis text was supervised by a professor at the Paris medical school, it was unthinkable that the candidate be refused, which would amount to denigrating a fellow professor. The only famous example is that of Pierre-Jules Grenier, whose thesis defense—presided over by Alexandre Axenfeld (1825–1876) on December 30, 1867—was annulled by Victor Duruy (1811–1894), the French Minister of Public Instruction at that time, after a virulent campaign in the French Parliament and in the press, conducted by Catholic factions who took offense at the thesis subject: the medico-psychological study of human free will (Grenier 1867). In his study, Grenier revealed his materialist philosophical penchant, denying spontaneous generation, and dared to hold views that at that time were seen as heretical: “The serious question of free will is, in all respects, a question of cerebral physiology, and as such a field of medicine.” Grenier took advantage of the defense of a new thesis on July 31, 1868, and entitled *Du ramollissement sénile (On Senile Softening)*, presided by Vulpian, to respond—in an uncustomary, vengeful, and nominative preamble—to Monseigneur Félix Dupanloup (1802–1878), the Bishop of Orléans who had led the revolt against his first thesis. This is the only candidate feedback we have.

We also do not have any comments by Charcot regarding the candidates he judged. The only exceptions were the juries that, for one reason or another, examined the candidate’s thesis. This event, at that time exceptional, attracted journalists from mainstream media who published Charcot’s comments. Here is what Charcot said on December 12, 1888, to a young Polish student, Caroline Schultze (Karola Szul, 1867–1926; see [Figures 2 and 3](#)):

Your thesis is excellent, such that women physicians will always be very intelligent and pass their exams with great success; they are more successful than men. You have even shown this by curious statistics. But allow me to say that these women think of themselves more than humanity. They aspire to rise to the top, to high profile positions, lucrative positions. They are less likely to accept being a head nurse in our hospitals, to prepare antiseptic bandages, which requires focused attention, meticulous care, and skilled use of the hands. But this is an occupation that is so suitable for women! No, they are too ambitious. And since nature, in the end, prevents them from playing the roles they wish to play, I conclude that these women physicians have no future and will never be anything but an exception. (de Molinari 1889)



**Figure 2.** Charcot presided over the jury of Caroline Schultze, December 22, 1888 (collection OW).

What is even more improbable coming from Charcot are the words with which he had welcomed her: “You are pretty, Mademoiselle, indeed! Do you believe that some aspects of medicine, in terms of the exercise of this art, are well suited to your beauty, to your clothing?” (de Molinari 1889).

### Charcot’s participation in thesis juries

While he was an assistant professor, from 1862 to 1872, Charcot participated in 127 thesis juries. From 1873 to 1893, he presided over 227 juries and served as a professor for 254 theses (see Table 1). As an assistant professor, in most cases he listened to doctoral students he did not know and for whom he did not have to choose the subject of the thesis. But when he was the jury president, he often chose the candidates. He sometimes proposed the thesis subject, and always did so for the students whose work he oversaw. Charcot developed this approach and used it repeatedly to disseminate his own research. This is one aspect of the strategy that enabled him to develop what came to be called the Salpêtrière School. Fulgence Raymond (1844–1910), his successor to the Chair of Nervous System Diseases, underscored this practice in his opening lesson on November 1, 1894: “Charcot did not merely inspire a prodigious number of works and researches among those who were his students in various circumstances; he facilitated making them known to a wider public” (Raymond 1896).

In other cases, the thesis was prepared under the authority of a professor from a provincial medical school, who sought out a Parisian teacher to preside over the jury.





**Figure 3.** Caroline Schultze (Karola Szul, 1867–1926) in *Le Journal illustré*, December 30, 1888 (collection OW).

**Table 1.** Number of theses judged and Charcot's academic status.

	All subjects	Neurological and psychiatric subjects
Assistant professor	127	27
Professor	254	29
President	227	122
Total	608	178

But for the majority of thesis defenses, it is not possible to determine the factors that brought together the jury president and the candidate.

As an assistant professor, Charcot most often participated in thesis juries in 1865 and 1866. Strangely enough, from 1869 to 1872, he did not take part in any juries. As a result of the Franco-Prussian War in 1870–1871, the medical school shut down from early August 1870 until June 12, 1871. During this period, Charcot remained in Paris. Although he ceased receiving patients in his home and giving lessons in his department, he worked tirelessly to treat diseased and injured patients at La Salpêtrière, especially during the Paris Commune. His son, Jean-Baptiste, gave a moving account of this time (Charcot 1926).

Thesis defenses took place until mid-August 1870, then resumed in July 1871. The following year, 1872, saw a rebound in the number of defenses at the Paris medical school, but Charcot stopped being part of juries in 1869 and did not serve in juries in 1872, either. The war is thus not the explanation.

As for the decision of the hospital administration, dating from 1869, to put him in charge of the hysterics and epileptics that Louis Delasiauve (1804–1893) had treated up to that point, in the dilapidated Sainte-Laure ward, did it increase his hospital activities to the point of his having to reduce his involvement with university life? None of the Charcot’s biographies, written by his contemporaries, get to the bottom of this mystery.

After resuming his activity as a thesis judge in 1873, it was in 1877 and 1878 that Charcot played the biggest role, judging 49 theses in each of these years. After 1882, once he had been named to the Chair of Nervous System Diseases, his participation in juries fell and the number of his presidencies was once again higher than his role as professor. Table 2 indicates in the left column the total number of theses judged by Charcot in his university capacity. After 1882, once he held the Chair of Nervous System Disorders, the juries over which he presided mainly judged theses with neurological subjects (122/227).

In summary, among the 608 theses Charcot had to judge, he was only faced with a neuropsychiatric subject for 178 of them. It is impossible to analyze here the totality of the latter number. I will only examine a few of these theses, those that marked or should have marked the history of neuropsychiatry.

Among the 26 theses of foreign candidates that he presided over, 14 covered a neuropsychiatric subject. Some of these candidates became famous, such as Jean-Louis Prévost (1838–1927) from Geneva, Max Nordau from Budapest (1849–1923), and Francisco Soca (1856–1922), professor and dean of the Montevideo medical school in Uruguay.

**Table 2.** Theses by female medical students.

Theses written by women			Jury
Poland	Schultze C. (Carola Szulc)	La femme médecin au XIX <sup>e</sup> siècle	Thèse Paris n°49: 12/12/1888, Ollier-Henry;1888. Straus, Charcot, Reclus, Landouzy
Russia	Skwortzoff N.	De la cécité et de la surdité des mots dans l’aphasie.	Thèse Paris n° 05/04/1881 135: impr. A. Parent; 1881. Charcot, Bouchard, Grancher, Debove
Russia	de Herodinoff A.	Essai sur les myélo-encéphalopathies syphilitiques tertiaires diffuses ou disséminées	Thèse Paris n° 22/06/1887 245: Davy; 1887. Charcot, Lannelongue, Rendu, Kirmisson
Poland	Goldspiegel H.	Contribution à l’étude de l’hystérie chez l’enfant	Thèse Paris n°3: 31/10/1888 H. Jouve; 1888. Charcot, Damaschino, Landouzy, Chauffard.
Great Britain	Edwards B.	l’hémiplégie dans quelques affections nerveuses (Ataxie locomotrice progressive, sclérose en plaques, hystérie, paralysie agitante).	Thèse Paris n° 23/01/1889 111: Delahaye; 1889. Charcot, Guyon, Brissaud, Bouilly
Serbia	Stojanovitch L.	Étude critique sur les rapports du tabes et de la paralysie générale.	Thèse Paris n° 08/06/1893 240: Ollier-Henry;1893. Charcot, Laboulbène, Joffroy, Chantemesse

Charcot took part in the juries of six women, all foreigners (see Table 2). Between 1881 and 1883, four of them defended a subject proposed by the master. Charcot is often falsely considered a misogynist. Although his feminism cannot be compared with today's feminism, he was one of the few professors to sign the original petition in support of the women lobbying for entrance rights to the resident examination. And he always warmly welcomed women medical students in his department.

These students were attracted in Paris by the possibility open to them to pursue medical studies; this was not possible in their home countries. Christopher Goetz summarized the situation this way: "In combination, Charcot's professional fostering of women's careers, his support of nursing education, his 'degendering' of hysteria, and his behaviour favouring, albeit less than exemplary, argue strongly against a specific prejudice against women" (Goetz 1999).

As noted, the thesis by Caroline Schultze was of particular note. Its title, *La femme médecin au XIX<sup>e</sup> siècle (Women Doctors in the Nineteenth Century)* (Schultze 1888), is itself a feminist manifesto, which no doubt encouraged Charcot to speak out, as one journalist reported: "If your aim was to prove that medicine is a feminine profession as much as a masculine one, it is impossible for me not to speak out against such a claim. Women doctors will never be anything but an exception" (Anonymous 1888).

Charcot was a member of the jury for 21 of his 33 residents, once as assistant professor and 20 times as president. Only Pierre Marie (1853–1940) covered a pathology not strictly neurological in his thesis: Graves' disease. But we must remember that, at the time, endocrinology was in its infancy, arising out of neurology, and notably through the work of Pierre Marie. We should note that the master's son, Jean-Baptiste Charcot (1867–1936), had not yet finished his residency when his father died. He defended his thesis under Fulgence Raymond (1844–1910), who succeeded his father to the Chair of Nervous System Diseases. His defense took place on June 6, 1895, and his thesis was titled *Contribution à l'étude de l'atrophie musculaire progressive type Duchenne-Aran (Contribution to the Study of Duchenne-Aran-Type Progressive Muscular Atrophy)* (Charcot 1895).

Let us now take a look at a selection of Charcot's advised medical theses on key neurological topics.

### **Progressive locomotor ataxia, tabes, and general paralysis**

The dissertation of Guillaume Duchenne de Boulogne (1806–1875) establishing the clinical features of "progressive locomotor ataxia" was published in 1858 (Duchenne de Boulogne 1858), whereas the German Moritz von Romberg (1795–1873) had given a description in 1851, "in the form of a sketch" based on Charcot, under the name of *tabes dorsalis* (from the Greek for melt or liquefy) (von Romberg 1851). Between 1862 and 1893, Charcot participated in 36 juries that listened to a candidate speak about what we now understand to be syphilis. It should be noted that Charcot always considered syphilis as a factor that favored or aggravated a neurological pathology and denied that it was the real etiology. Among these theses, 27 deal with a neurological pathology.

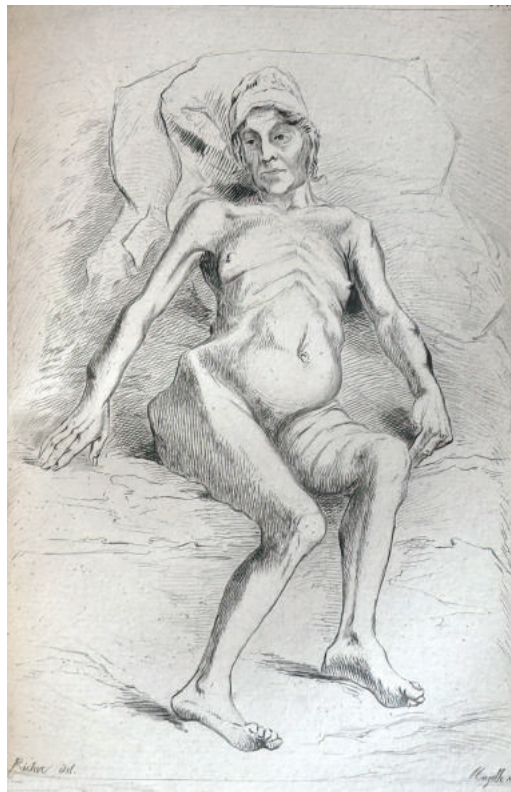
In 1863, Charcot provided the seminal description of tabetic arthropathy (Charcot 1868). In 1874, he presided over the thesis of Jérôme Forestier (1842–?), who elaborated on his own article published in the *Archives de Physiologie normale et pathologique*, attributing spontaneous fractures and tabetic arthropathy to damage to the posterior tracts of the spinal



cord (Charcot 1874b). Forestier copied the observation of “Cottret, a 57-year-old woman,” whose unfortunate physical condition was captured in a drawing by Paul Richer (1849–1933) (Forestier 1874; see Figure 4).

In 1872, Antoine-Auguste Pierret (1845–1920) proposed an anatomopathological description of the spinal cord in locomotor ataxia, first referring to global damage along the full height of the posterior tracts, whereas previously the damage was localized in the lower back (Pierret 1871-1872). In 1874, Pierret was a resident under Charcot, who presided over his thesis jury on April 6, 1876 (Pierret 1876). Pierret started with a comparative anatomical study of numerous animals, deducing that the trigeminal nerve, at the bulbo-pontine level, was the sensory equivalent of a posterior root of the spinal cord, which for him explained why some patients with tabes complained of facial neuralgia, anesthesia, and facial and ocular palsy. Shortly afterward, he was named professor of anatomical pathology when the new medical school in Lyon opened in 1877.

For his last thesis jury on July 29, 1893, before the thesis of Pierre Janet (1859–1947) (Janet 1893), Charcot presided over that of Henri Lamy (1864–1909), his resident in 1892. This work related to the debate around the syphilitic etiology of myelitis without taking a clear position, undoubtedly because Charcot had always seen syphilis as a factor in, but not the cause of this pathology (Lamy 1893). Lamy expanded his thesis in a book, *La syphilis des centers nerveux* (*Syphilis in Nervous Centers*), published in 1895. In 1904, he dealt with this topic in Volume 9 of the *Traité de Médecine de Charcot, Bouchard and Brissaud*. Lamy



**Figure 4.** Drawing by Paul Richer of Cottret of a 57-year-old woman. (collection OW).

practiced as a hospital physician at Tenon Hospital, where Gustave Roussy (1874–1948), among others, served as his resident.

### Amyotrophic lateral sclerosis

In 1869, Charcot and Alix Joffroy examined all the varieties of muscular atrophy and described (Charcot and Joffroy 1869) “a chronic, progressive condition anatomically characterized by the atrophy of nerve cells in the anterior horns of the spinal cord and associated with symmetrical sclerosis of the lateral tracts of the white matter.” In 1870, Charcot revisited the initial 1860 publication of Duchenne de Boulogne (Duchenne de Boulogne 1860), adding “glosso-laryngeal paralysis” as a clinical form localized in the brainstem, which had the same pathology (Charcot 1870). The Franco-Prussian War interrupted his publications, to which he did not return until 1874 (Charcot 1874a).

Albert Gombault (1844–1904) was a resident under Charcot in 1872 who would become one of the most well-known neuro-anatomicopathologists at the end of the nineteenth century (Clarac and Lechevalier 2006). In 1875, Gombault and Charcot published a *Note sur un cas d’atrophie musculaire progressive spinale protopathique* (*Note on a Case of Protopathic Spinal Progressive Muscular Atrophy*) (Charcot and Gombault 1875); that is, amyotrophy of the upper limbs, nearly exclusive, with slow progression and the “absence of any spasmodic phenomena.”

Gombault based his 1877 thesis on the opposition between this form of protopathic amyotrophy and a deuteropathic form—that is, with another demonstrated cause (secondary amyotrophy) (Gombault 1877). His thesis provided details on the clinical features—notably spasticity, bulbar damage, and rapid progression—based on nine observations, three of which were his own. For each of them, there was an in-depth anatomicopathological examination in addition to the clinical description, which made this the complete clinical and anatomicopathological picture of “Charcot disease.” In the complete works published in 1894, the full description of amyotrophic lateral sclerosis was the focus of three *Lessons* (11, 12, 13) that brought together the clinical picture, the various localizations, the progressive forms, and the pathological anatomy (Charcot 1894).

### Migraine

Charcot only participated in two juries in which the candidates referred to migraine. Nonetheless, he knew this subject well, as he himself had migraines and had described his own scotoma during one of his Tuesday Lessons (Walusinski 2022). In 1866, he listened to Jules Michellet pay homage to the teacher they had in common, Eugène Cazalis (1808–1883), with whom Charcot had finished his residency at La Salpêtrière Hospital (Michellet 1866). Drawing on the translation by Gadso Coopmans (1746–1810) of the book by Alexander Monro (1697–1767) (Monro 1763) and that of de Samuel Tissot (1728–1797) (Tissot 1785), Michellet considered migraine to be “a neuralgic state localised in the sensory nerves of the head”—that is, “in the ramifications of the trifacial nerve” (or trigeminal nerve)—to explain its localization and the symptomatology. Whereas Tissot, and thus Michellet, suggested that “all the branches of this nerve are the seat of migraines,” Charcot compared it to “vasomotor epilepsy” and considered it “a temporary spasm of the Sylvian vessels” (Walusinski 2022). We

can observe that the concept defended by Michellet is close to current thinking, which refutes the vasomotor etiology put forward by Charcot (Di Antonio et al. 2022). Here we have the example of a student more clear-sighted than Charcot in formulating a pathophysiological hypothesis, which seems to be validated more than 250 years after the thesis's defense.

## Shaking and Parkinson's disease

"Paralysis agitans" was the first joint article published in 1861 by Charcot and Alfred Vulpian (1826–1887). This work was intended for French physicians, who were previously unaware of this disease; it described all the clinical signs (Charcot and Vulpian 1861). Charcot's 1868 lesson, transcribed by Bourneville, highlighted the difference between shaking at rest in Parkinson's disease and active shaking in lead poisoning or multiple sclerosis (Charcot and Bourneville 1869).

The thesis of Léopold Ordenstein (1835–1902), defended on December 17, 1867, and titled *Sur la paralysie agitante et la sclérose en plaques généralisée (On Paralysis Agitans and Generalized Multiple Sclerosis)*, was published as a commercial version in 1868 (Ordenstein 1867). Charcot was only an assistant professor in the jury to which Ordenstein presented, the latter reusing some of the elements in the 1861 article and establishing clinical differences between multiple sclerosis and Parkinson's disease, with a focus on shaking.

In his 1888 lesson, Charcot referred to the thesis, as if to appropriate it, in this way: "The differentiating line between these two diseases was indicated by me for the first time, if I am not mistaken, in the thesis of M. Ordenstein." Ordenstein, had trained in the physiology laboratory of Konrad Eckhard (1822–1905) and, after obtaining a degree from the University of Giessen in Germany in 1859, he came to study the diseases of the nervous system under Charcot, attracted by the prestige of the Paris medical school. He spent his entire medical career in Paris, interrupted only by the Franco-Prussian War of 1870–1871, during which he took refuge in Worms. Ordenstein came to a tragic end, injured by a thief on a train to Versailles on July 15, 1902. He died three days later at Beaujon Hospital (Lehman and al. 2007).

Eugène Béchet (1862–1939), former resident at the Asylum of the Seine, defended his thesis presided by Charcot on July 28, 1892 (Béchet 1892). He had illustrated it with graphic recordings of shaking. After a long dissertation on all the signs and symptoms of Parkinson's disease, Béchet established a list of atypical forms based on personal observations or those found in the literature: atypical forms due to the absence of shaking or rigidity; atypical forms due to the localization of the symptoms; and atypical forms due to additional disturbances: For example, he deftly described urological and ocular disturbances, and especially the depression and hallucination that could precede dementia. Béchet proposed three observations with trunk stiffness and extended limbs.

One observation described a 52-year-old man who "had been treated for a few weeks with the shaking chair at La Salpêtrière Hospital." Charcot had tasked Georges Gilles de la Tourette (1857–1904) with testing this treatment (Goetz 2009; Walusinski 2013). "But what is initially striking in him is the exceptional external habitus, a special posture, notably differing from that generally observed in paralysis agitans. It was for this reason I felt it judicious to place it alongside the cases described by M. Charcot under the name of extension type."

During the Tuesday Lesson on June 12, 1888, Charcot himself examined the patient known as “Bachère, aged 31 years.” His disease set in when he was 26:

I presented the subject to you as a type of Parkinson’s disease, or at least that it involved the form where shaking is missing but nevertheless, even after this reservation, there is an anomaly. Here is the patient standing. I have positioned him before you in profile. . . . What is abnormal is that in Bachère’s standing pose, the forearms are extended from the arms, the legs from the thighs, so that rigid bars are formed, whereas in normal conditions, these same parts are half-flexed. . . . Our patient also shows a tendency, equally marked, toward retropulsion.

Charcot underscored the description of accented forehead wrinkles and noted that “the fixed gaze is also the consequence of rigidity more or less equally pronounced in all the muscles of the eye.” Whereas Charcot’s lesson was illustrated with his own portrait of Ferdinand Bachère (1857–?), Béchét’s thesis featured the drawings of Paul Richer (Figure 5) and the photos of Albert Londe (1858–1917), such as “posture during walking.” This observation showed that Charcot had already noted what is currently classified as “Parkinson-plus”; that is, either progressive supranuclear palsy (Steele-Richardson-Olszewski syndrome) or corticobasal degeneration (Goetz 2011).



**Figure 5.** Drawing by Paul Richer of Ferdinand Bachère, a 31-year-old man (collection OW).

## Multiple sclerosis

Multiple sclerosis emerged from the chaos of various forms of “chronic myelitis” through Charcot’s sense of synthesis, which enabled him to illustrate the disease’s anatomopathological specificity during a memorable lesson recorded by Bourneville, his resident at the time, on September 1, 1868 (Charcot and Bourneville 1868). Charcot took a differential diagnosis approach to the clinical picture, between the shaking at rest in “paralysis agitans” and active shaking in multiple sclerosis. Stiffness in the limbs and “speech disturbances” are the other symptoms recorded (Charcot and Bourneville 1869).

The first thesis title to include the term “multiple sclerosis” (MS) is that of Ordenstein, already mentioned for Parkinson’s disease. MS was covered in the last chapter and compiled Charcot’s articles and Vulpian’s publication from the previous year in 1866 (Vulpian 1866). Ordenstein reported on four observations in which the motor deficits of the limbs with contraction accompanied by pain and shaking were the key phenomena. He briefly referred to the progression involving partial regressions, but the patients hospitalized at La Salpêtrière were all bed-ridden and at the end of their lives. He thus lacked the capacity to monitor the progression of the disturbances over a long time frame, as Charcot and Vulpian had. Similarly, he noted the disturbances of equilibrium but could not report on cerebellar syndrome, whose semiology was not yet described. The results of the anatomopathological examinations are those that Charcot and Vulpian had provided.

Edmond Timal (1848–1908), a resident at La Salpêtrière, also owed the material for his thesis to Bourneville and Charcot, the latter presiding over his jury on August 5, 1873 (Timal 1873). He gave five observations of young women with ataxic syndrome, severe neuralgic pain in the limbs, and (for some of them) nystagmus. During the life of the patients, those making the diagnosis hesitated between progressive motor ataxia, general paralysis (due to the “particular disturbance of speech”), and multiple sclerosis. The anatomopathology confirmed the last condition: “The lesson to be learned from these observations is that, in patients with multiple sclerosis, some of the symptoms of locomotor ataxia can occur.” Timal also reported on two cases in which the clinical features and the progression evoked multiple sclerosis but the appearance of generalized amyotrophy and contractions could have overruled it, in favor of Charcot’s disease. Similarly, he noted that bulbar damage could make a differential diagnosis difficult.

The thesis of the Romanian Christe Bouicli (1857–?) added new observations to those of Timal. He took them from the department of a former Charcot resident, Maurice Debove (1845–1920), at Bicêtre Hospital, where Bouicli was a resident (Bouicli 1883). These new data added to the initial clinical picture the possibility of “any form of mental alienation” in the progression of the disease, such as hallucinations or megalomaniacal delirium. Bouicli supplemented the treatment of patients by recommending the systematic examination of the eye fundus, the modifications of which he had learned under Henri Parinaud (1844–1905), Charcot’s ophthalmologist at La Salpêtrière. This examination indicated that “the ocular lesions in multiple sclerosis are perhaps more frequent than in any other cerebrospinal condition. They involve the muscles, pupils, and optical nerve.” He noted papillary atrophy and that “one of the most remarkable characteristics of the amblyopia indicated by M. Charcot is that it can improve very significantly.” Finally, Bouicli focused on the sometimes-difficult diagnosis of mild forms relative to tabes, amyotrophic lateral sclerosis, or “hemiplegia with a cerebral cause.”



## Syringomyelia

Whereas Duchenne de Boulogne in 1860, Vulpian in 1870, and Charcot in 1887 were confronted with patients with syringomyelia without recognizing the semiological specificity, Augustin Morvan (1819–1897), a country physician in Brittany, was able to identify the clinical symptomatology between 1860 and 1882 (Walusinski and Honnorat 2013). But it was Friedrich Schultze (1848–1934) in Tartu (Schultze 1882) and Otto von Kahler (1849–1893) in Prague (von Kahler 1882) who established the complete clinical and anatomopathological description of syringomyelia in 1882. They adopted the name coined in 1827 by Prosper Ollivier d'Angers (1796–1845) (Walusinski 2012).

Five years after Morvan's seminal publication (Morvan 1883), Georges-Charles d'Oger de Spéville (1863–1935), from Mauritius, was the first to devote his 1888 thesis to "Morvan's disease." He thus referred to syringomyelia and not what is currently known as Morvan's syndrome (fibrillary chorea, myoclonus multiplex, myokymia, etc.). When he was an external student under Victor Hanot (1844–1896), he recorded a novel observation of analgesic panaris and compared it to the 29 cases previously published. The slow, progressive extension of the motor and sensory disturbances led him to posit a medullary central cause and to refute the explanation of peripheral neuritis (d'Oger de Spéville 1888). Charcot returned to the observation of this patient on December 6, 1889, for his first lesson on Morvan's syndrome, using the eponym to do so (Charcot and Guinon 1890). Georges Guinon (1859–1932) and Adolphe Dutil (1862–1929) added to the same clinical history in the journal *Nouvelle Iconographie de La Salpêtrière* the following year, including photographs (Guinon and Dutil 1890).

Isaac Bruhl (1863–1931) collected 36 observations, of which the first 10 were novel, having in fact been compiled by the residents and senior residents of Charcot, Georges Gilles de la Tourette (1857–1904), Paul Blocq (1860–1896), and Adolphe Dutil (1862–1929) (Bruhl 1890). Bruhl copied the others from the excellent thesis of the Swiss Anna Bäumlér (1852–1934) (Bäumlér 1887). Its rich bibliography and color illustrations indicate that the essential characteristics of syringomyelia symptomatology were established by 1890.

The Russian Azriel Raichline (1863–?), having previously defended a doctoral thesis in Moscow, did so again before Charcot on July 28, 1892, presenting "a case of syringomyelia with bulbar manifestations" (Raichline 1892). Raichline, a student of Fulgence Raymond at Lariboisière Hospital, aimed to provide the missing information that Charcot referred to in his 12th lesson in 1892, during which he reduced Morvan's syndrome and syringomyelia to one disease: "Like multiple sclerosis, the mild and abnormal forms do not yet have their regular history" (Charcot 1891). Raichline provided a detailed observation of a female patient who, 15 years after lumbar trauma, developed distal amyotrophy in one arm then bulbar damage with paralysis of the soft palate, nystagmus, bilateral facial palsy, partial anesthesia to pain in the face, and so on. To affirm his diagnosis, he compared his case with the rare observations already published, notably that of Solomon da Silva Solis-Cohen (1857–1948) of Philadelphia, appearing in 1889 (Solis-Cohen 1889). Raichline added a special note to his thesis highlighting his gratitude for everything he owed to Charcot: "We will never forget the generosity with which he opened his department to us, and the kindness he showed us on many occasions." This epigraph, among others, shows how committed Charcot was to welcoming foreign students, aware of the prestige this brought him in France and abroad.

## Cerebral vascular pathology

Although Charcot's contribution to the study of cerebral vascular pathology seems modest compared to other neurological fields, it should be noted that he understood all the different varieties of the pathophysiology (Walusinski 2019).

In 1866, Charcot, at that time a young assistant professor, participated in the jury of his student Ivan Poumeau (1839–1878), who defended, as Charcot had suggested, an embolic vascular cause, rather than an inflammatory one, for “brain softening” (Poumeau 1866). Poumeau showed the presence of a clot in an ulcerated atheromatous plaque at an arterial bifurcation, causing either an occlusion or a cruric embolus (Walusinski 2019). He compared this observation with the experiments on mechanical embolization conducted in 1865 on rabbits by Jean-Louis Prévost (1838–1927) and Jules Cotard (1840–1889) (Prevost and Cotard 1866): “Vascular congestion, frequent in the first period, is a mechanical and non-vital phenomenon. The granular bodies found in abundance are a necrobiotic product and bear a resemblance only in form with the characteristic elements of encephalitis.”

Charles Bouchard (1837–1915), Charcot's resident in 1864, defended his thesis in 1866 before a jury that included Charcot. Bouchard's thesis presented the role of micro-aneurysm in causing cerebral hemorrhage and stated that “senile haemorrhage occurs as a consequence of prior vascular alteration, always the same, and the role of sclerosis in small arteries with atrophy of the tunica media and secondary production of aneurysm, the rupture of which is the direct cause of haemorrhage.” The thesis challenged the previous aetiopathogenic explanations, notably the role of “altered brain consistency.” The eponym “Charcot-Bouchard aneurysm” is the reward for this work (Bouchard 1866).

Blanche Adelaïde Edwards (1858–1941; see Figure 6) defended her thesis before Charcot on January 23, 1889: *De l'hémiplégie dans quelques affections nerveuses (ataxie locomotrice, sclérose en plaques, hystérie, paralysie agitante)* (*Hemiplegia in Some Nervous Affections [Locomotor Ataxia, Multiple Sclerosis, Hysteria, Paralysis Agitans]*) (Edwards 1889). Born in Milly-la-Forêt in northern France to a French mother and an English father, Edwards was the first French woman to pass the examination for external students in October 1882, at the same time as Augusta Klumpke (1859–1927). Edwards was an external student under Charcot in 1884–1885. She started her defense by profoundly thanking her teacher:

Allow us to express to our Master, Professor Charcot, our profound gratitude for the knowledge he has enabled us to acquire in his erudite clinics and even more so in his daily lessons, and for the liberality with which he enabled his students to draw on this ever so rich mine that is La Salpêtrière, and finally for the generosity of agreeing to serve as president for our thesis.

Charcot responded this way: “You are among my best doctors; you passed your examinations in a particularly brilliant fashion. However, I do not have a clear vision of what will sanction such conscientious work. What do you propose to do?”

Edwards did not back down: “I will endeavour to treat all people who are sick, but I will focus particularly on women and children, dedicating myself to their health” (Leguay and Barbizet 1988).

She kept her word, devoting herself for nearly 50 years to her numerous patients, first at her offices, initially, in the ninth district of Paris and then working in the house where Maximilien Robespierre (1758–1794), one of the influential and controversial personalities



**Figure 6.** Blanche Adelaïde Edwards and colleagues in 1887 (collection OW).

of the French Revolution, had lived, currently 398 rue Saint-Honoré in Paris's first district (Leguay and Barbizet 1988).

With the help of Pierre Marie and Joseph Babiński (1857–1932) in writing her thesis, Edwards set out to determine whether cases of hemiplegia not secondary to a vascular accident had differential symptoms that would enable distinguishing between them clinically. The etiology of observations she compiled was a “tuberculoma or syphiloma,” whether it be cortical, around the internal capsule or brainstem, but also cranial indentation, or infectious or hemorrhagic meningeal lesions. Her thesis was unusual in that it included some photos of the patients. The criteria she selected to predict a nonvascular etiology were transitory progression of paralysis, recidivism, the existence of paralysis outside the scope of the hemiplegia, and the association with sensory deficits. Finally, she differentiated between hemiplegia with abolition of reflexes and hemiplegia with exaggerated reflexes.

## Hysteria

Between 1873 and 1893, Charcot judged some 60 theses on hysteria. The fruitless search for a cerebral lesion causing the disturbances gradually led him, during this 20-year period, to substitute a psychological origin for a lesional etiological paradigm. This new model improved the semiology and the neurological clinical examination, the basis of present-

day neurology (analysis of tendon and skin reflexes, Babiński sign, etc.). The result was a legitimacy owing to Charcot's study of hysteria, denied for too long.

The emblematic example was the last thesis judged by Charcot, three weeks before his death, defended by Pierre Janet (1859–1947) on July 29, 1893 (Janet 1893). Pierre Janet was the nephew of the philosopher Paul Janet (1823–1899). In 1878, Pierre Janet prepared for the entrance examination at the prestigious *École Normale Supérieure*, leading to an academic career in philosophy. Once he had obtained his degree in 1882, he taught for seven years in the northern port city of Le Havre. One of his students was the son of a hospital alienist, Joseph Gibert (1829–1899), with whom he became friends, Gibert even inviting him to visit his department. It was there that, in 1885 and 1886, he explored the case of the “clairvoyant and magnetist Léonie Le Boulanger” (1837–?), one of the main sources for his *doctorat ès lettres* (*Doctoral Degree in Languages, Literature, or Social Sciences*) in 1889: *L'automatisme psychologique; essai de psychologie expérimentale sur les formes inférieures de l'activité humaine* (*Psychological Automatism; Experimental Psychology Essay on Lower Forms of Human Activity*) (Janet 1889). Janet focused on personality disease, notably disturbances related to multiple personalities, and tried to reconcile the study of phenomena of consciousness with the notion of subconsciousness, “what is below consciousness but of the same nature,” expressing itself through a double personality and studied from a resolutely philosophical rather than a medical perspective.

Janet met Charcot in Le Havre in 1885, who had come accompanied by the future Nobel prize winner Charles Richet (1850–1935). Richet participated in Janet's thesis jury. Other members of the French Society of Physiological Psychology also came to examine Léonie. In 1890, this decisive meeting led to the birth of the “psychology laboratory,” which Charcot wanted at La Salpêtrière for Janet, bringing together scientific philosophy and medicine. Janet remained its director until 1910. In the preface to the commercial edition of the thesis, Charcot wrote, “The studies of my student Janet confirm the thinking often expressed in our lessons, namely that hysteria is largely a mental illness. This is one aspect of the disease that we must never neglect if we wish to understand and treat it.”

Janet was the first to claim a link between the events earlier in a subject's life and “trauma,” resulting in hysteria. This led Janet to define trauma as follows: “Hysteria is a set of diseases by representation.” We cannot summarize here this fundamental work, but it should be noted that Janet introduced the concepts of “doubling of personality,” “narrowing the field of consciousness,” subconsciousness, and dissociation. These ideas were presented in the conclusion of his thesis: “Hysteria is a form of mental disintegration characterised by the tendency toward permanent and complete doubling of personality”; also: “A banished idea, like a psychic parasite, causes all accidents stemming from physical and mental diseases.”

### **Essential support from Désiré-Magloire Bourneville**

Our work shows that an early student, Désiré-Magloire Bourneville (1840–1909), played a major role in Charcot's work. Bourneville helped most students to whom Charcot had recommended a thesis subject. Starting in 1873, he published in his journal *Le Progrès médical* Charcot's Lessons; he also made an account of nearly all theses that Charcot judged. Along with Paul Richer, for the shared artistic vision, and Pierre Janet at the end of his career, for his interpretation of hysteria, Bourneville was one of the few

students who truly influenced Charcot. He gave Charcot a start in alienism, who had been an intern of Delasiauve, where he cared for hysterical patients who were later transferred to Charcot. He converted Charcot to the use of thermometers, introduced him to photography and all its pedagogical benefits, and involved him in the campaign to secularize hospitals. His lobbying affected the political decisions to create a Chair of Nervous System Diseases. In sum, what would the work of Charcot and the Salpêtrière School be without the profuse activity that Bourneville brought to bear as an editor? This study makes a point of demonstrating as much. For both Charcot and Bourneville, the sheer volume of the work conducted over some 30 years remains prodigious.

## Conclusion

Constantly seeking out new research projects, Charcot must have enjoyed judging many theses on a wide range of topics, most often authored by devoted students who, in their acknowledgments, always expressed their gratitude and, in some cases, their veneration. Undoubtedly, the word “emulation” best describes the work conducted by all these disciples.

At the origin of unprecedented concepts based on the anatomoclinical method, enriched by systematic microscopic examination, Charcot built a nosography of neurological diseases that remains relevant to this day. Among the 608 theses he judged, 122 can be singled out, for which he presided the juries starting in 1873. All of them covered a neurological subject. Among them, we can focus on those that explored hypotheses and incomplete theories that Charcot did not wish to publish himself as they stood (for example, Gaston Lhiron del, antecedents and causes of Parkinson’s disease, 1883) and those that established with greater certainty the state of acquired knowledge on a pathology (for example, Eugène Bèchet, contribution to the clinical study of forms of Parkinson’s disease, 1892).

This review, by nature quite basic, nonetheless sheds new light on Charcot’s professorial activity. Three subjects—locomotor ataxia and general paralysis, on one hand, and hysteria, on the other—were the subjects most often covered in the theses Charcot judged. The importance of the syphilis epidemic at that time explains this, but there were also discussions, never conclusive, on the etiology of this damage to the nervous system. As for functional pathology in neurology, hysteria to this day makes up nearly 30% of a neurologist’s activity and thus remains relevant, even though its name has changed.

The pathologies mostly described by Charcot are infrequently represented: multiple sclerosis, amyotrophic lateral sclerosis, and Gilles de la Tourette disease. This does not include Parkinson’s disease, through the teaching around the differential diagnosis of shaking. Syringomyelia, for which Charcot was not recognized, falls into the same category of the diseases listed above. As for the study of memory, it is totally absent.

We should recognize that most of these theses, despite the efforts of the candidates to write them, were merely a rite of passage marking the capstone of university studies, which most young French people did not have access to at that time. Those who influenced medical history through novel content were rare. Among the authors who did attain this relevance are Léopold Ordenstein, Ivan Poumeau, Isaac Bruhl, Albert Gombault, and Pierre Janet.

The great diversity of the subjects Charcot had the capacity to judge remains the best proof of his insatiable curiosity, notably for novel concepts, underscoring a rare aptitude to



embrace nearly all aspects of medicine, which no eminent professor in our day, with the likes of his knowledge, would be able to envisage.

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