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History of neurology

Figures and institutions of the neurological sciences in Paris from 1800 to 1950. Part III: Neurology

Les figures et institutions des sciences neurologiques à Paris de 1800 à 1950. Partie III : neurologie

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INFO ARTICLE

Article history:

Received 29 June 2011

Received in revised form

26 September 2011

Accepted 2 October 2011

Published online 3 March 2012

Keywords :

History

Paris

Neurosciences

Anatomy

Physiology

Neurology

Psychiatrics

Psychology

Mots clés :

Histoire

Paris

Neurosciences

ABSTRACT

We present a short historical review of the major figures, their administrative functions and their works that contributed to make Paris a renowned centre of physiology and neurology during the XIXth and the first half of the XXth century. We purposely chose to focus on the period 1800–1950, as 1800 corresponds to the actual beginning of neurosciences, and 1950 marks their exponential rise. Our presentation is divided into four chapters, matching the main disciplines which have progressed and contributed the most to the knowledge we have of the brain sciences: anatomy, physiology, neurology, and psychiatry-psychology. The present article is the third of four parts of this review, and deals with neurology. A special credit should be given to Jean-Martin Charcot who founded the Salpêtrière School of neurology and became one of the world's most important neurologists of the XIXth century. We provide below the biographical sketches of Armand Trousseau, Guillaume Benjamin Amand Duchenne, Jean-Martin Charcot, Alfred Vulpian, Désiré-Magloire Bourneville, Paul Richer, Henri Parinaud, Albert Pitres, Jules Joseph Dejerine, Mrs. Augusta Dejerine-Klumpke, Édouard Brissaud, Pierre Marie, Georges Édouard Brutus Gilles de la Tourette, Joseph Babinski, André Thomas, Georges Marinesco, Achille Alexandre Souques, Georges Guillain and Charles Foix.

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R É S U M É

Nous présentons une revue générale historique brève sur les principales personnalités, leurs activités administratives et leurs travaux qui ont contribué à faire de Paris un centre renommé de physiologie et de neurologie au cours du XIX^e siècle et de la première partie

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doi:10.1016/j.neurol.2011.10.006

Anatomie
Physiologie
Neurologie
Psychiatrie
Psychologie

du xx^{e} siècle. La raison du choix de cette période allant de 1800 à 1950 s'explique par le fait que 1800 marque les débuts des neurosciences et 1950 leur développement exponentiel. Notre présentation est divisée en quatre chapitres, correspondant aux principales disciplines ayant progressé et contribué le plus aux connaissances que nous avons sur les sciences du cerveau : anatomie, physiologie, neurologie, et psychiatrie-psychologie. Le présent article est la troisième des quatre parties de cette revue générale, qui porte sur le chapitre de la neurologie. Une mention particulière doit être faite à Jean-Martin Charcot qui fut le fondateur de l'école de neurologie de la Salpêtrière et fut l'un des plus célèbres neurologues au monde du xix^{e} siècle. Nous présentons ci-après les biographies résumées de Armand Trousseau, Guillaume Benjamin Amand Duchenne, Jean-Martin Charcot, Alfred Vulpian, Désiré-Magloire Bourneville, Paul Richer, Henri Parinaud, Albert Pitres, Jules Joseph Dejerine, Mrs. Augusta Dejerine-Klumpke, Édouard Brissaud, Pierre Marie, Georges Édouard Brutus Gilles de la Tourette, Joseph Babinski, André Thomas, Georges Marinesco, Achille Alexandre Souques, Georges Guillain, et Charles Foix.

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1. Introduction

During the xix^{th} and early xx^{th} centuries, clinicians, anatomists and pathologists performed a considerable work as regards neurology. Numerous authors from many parts of the world contributed to the development of this new discipline. A special credit should be given to German speaking universities from Central Europe, institutions in Great Britain and North America, French and Italian neurological schools, and also

medical universities from Belgium, the Netherlands, Scandinavia, Southern Europe, Russia and South America.

The purpose of the present article is to highlight the role of several physicians from Paris to the build-up of neurology. The emblematic Jean-Martin Charcot (1825–1893) is of particular importance, as he left his mark on French Neurology and became one of the most important world neurologists of the xix^{th} century (Clarac and Ternaux, 2008). His works at the Salpêtrière hospital (Fig. 1), the lectures he regularly gave, the renowned patients he treated, and his mundane activities



Fig. 1 – The Salpêtrière hospital.

L'Hôpital de la Salpêtrière (Photographic art work : E. Broussolle and P. Prince, 2008).

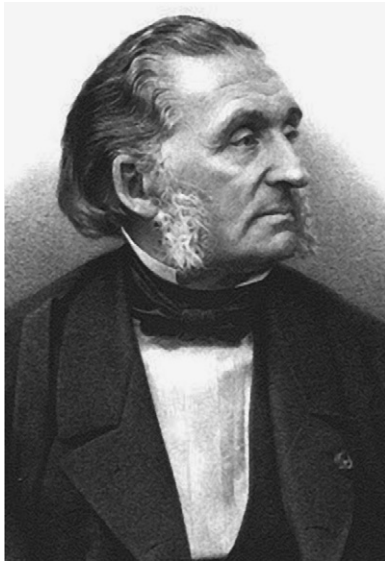


Fig. 2 – Picture of Trousseau.
Portrait de Trousseau (Académie nationale de médecine).

made him a man “du tout Paris” (Parisian smart set). When describing his work, one takes the full measure of the international impact the Salpêtrière School of neurology had at that time (Bogousslavsky, 2011). We wish to present below - without being exhaustive - a biographical sketch of the most important masters who contributed to the reputation of Paris neurology.

2. Armand Trousseau (1801–1867)

Trousseau (Fig. 2) began his medical studies in his native city of Tours under the guidance of Pierre Bretonneau (1778–1862) (Bariéty, 1967; Lyons, 1976; Mayer, 1957; Pearce, 2002a; Peumery, 2003). Together with Bretonneau and Alfred Velpeau (1795–1867), they founded the medical school of Tours. Trousseau continued his studies in Paris and became a *docteur en médecine* (M.D.) in 1825. He practiced experimental surgery on animals at the Alfort Veterinarian School near Paris. He was successively appointed *professeur agrégé* (1827), *médecin des hôpitaux de Paris* (1830) and professor of therapeutics (1839). He acceded to the chair of *clinique médicale* (Clinical Medicine) at the Hôtel-Dieu hospital in 1852 and was elected at the *Académie de médecine* (French National Academy of Medicine) in 1856. He wrote *Traité de thérapeutique et matière médicale* (Treatise on Therapeutics) in 1836 with his student Hermann Pidoux (1808–1882) (Trousseau and Pidoux, 1836), and then with Belloc *Traité pratique de la phthisie laryngée, de la laryngite chronique et des maladies de la voix* (A Practical Treatise on Laryngeal Phthisis, Chronic Laryngitis, and Diseases of the Voice, 1837) (Trousseau and Belloc, 1837). Trousseau recommended and practised tracheotomy in croup and invented thoracocentesis in pleural effusion. He worked on cholera epidemics, and fought against enemas and bloodletting. Although he did not discover by himself a given disease, his *cliniques médicales de l'Hôtel-Dieu* (Lectures on Clinical Medicine, delivered at the Hôtel-Dieu, Paris, 1861) made him a renowned international physician. In his lectures, Trousseau made several

and greatly accurate clinical descriptions of cases. Among neurological syndromes, he did clever descriptions such as aphasia (Lebrun, 1993), tetany (Trousseau sign) and movement disorders (with a pioneering contribution on tics years before Gilles de la Tourette's own description (Rickards et al., 2010; Trousseau, 1861). His lectures inspired Charcot and other disciples and were translated and re-edited many times.

3. Guillaume Benjamin Amand Duchenne (1806–1875)

Duchenne, also known as Duchenne de Boulogne (Fig. 3), did his medical studies in Paris. Among his teachers were Cruveilhier, Velpeau, Dupuytren and Laënnec. After he graduated in 1831, he came back to his native town of Boulogne and spent several years as a general practitioner. He returned to Paris in 1842 due to familial reasons (his wife died from puerperal fever) and decided to study neurology (Borg, 1992; Clarac et al., 2009; Cuthbertson, 1979; Jay, 1998; Parent, 2005a, 2005b; Pearce, 1999; Rondot, 2005). In order to relieve his patients' pain, he took an interest in electropuncture, but realized that this method was especially useful for analyzing the most complex muscle contractions. Without receiving any advice, he went around the Parisian hospitals “with an electric box and a battery” and two rheophores (electrodes) to perform very specific stimulation patterns in patients.

He bonded with Trousseau at the Hôtel-Dieu hospital, with Pierre François Olive Rayer (1793–1867) at the Charité hospital and - above all - with Charcot, who received him at the Salpêtrière hospital and on whom he had a great influence. His procedures on localized electrical stimulation with faradic current were published at the *Académie des sciences* (French

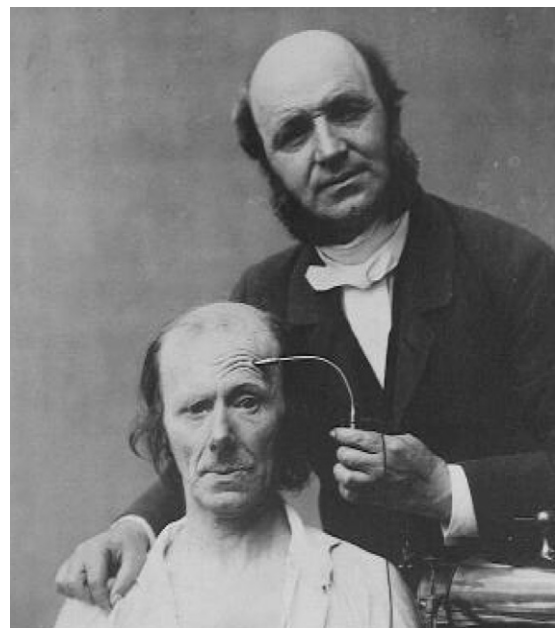


Fig. 3 – Picture of Duchenne evaluating a patient's contraction of frontal muscles by faradisation.
Photographie de Duchenne étudiant chez un patient la contraction provoquée par faradisation des muscles du front (© BIU Santé).

Academy of Sciences) in 1847. Using this technique as well as muscle biopsy, Duchenne described numerous neuromuscular pathologies (Nelson and Genain, 1989; Reincke and Nelson, 1990). He especially used this technique in wounded people during the 1848 revolution. Duchenne distinguished among muscular atrophies those related to nerve pathology from the others resulting from muscular diseases. He investigated some particular cases combining muscular atrophy and metamer sensory deficits; this was the first step of the discovery of syringomyelia whose full description later was achieved by German physicians. In 1861, Duchenne commented on the medical history of a young boy suffering from congenital hypertrophic paraplegia and described it with more accuracy in 1868 (Brody and Wilkins, 1968; Duchenne, 1868), and coined the term “pseudohypertrophic muscular dystrophy” for this pathology, known today as Duchenne muscular dystrophy. As early as 1850, he studied progressive muscular atrophy with François Amilcar Aran (1817–1861), and distinguished it from other paralyzes. Aran published this work under his own name with acknowledgements to Duchenne. Fortunately, this entity was later named Aran-Duchenne syndrome. In 1858, Duchenne described a type of progressive locomotor ataxia (Duchenne, 1858). This report was overshadowed by the earlier description of *tabes dorsalis* thanks to the reference work of Moritz Heinrich Romberg (1795–1873). Later, this syndrome will be related to neurosyphilis. In 1860, Duchenne reported the labioglossopharyngeal paralysis, later called progressive bulbar atrophy by Wachsmuth in 1864. During the next decades, these two syndromes were considered as the spinal (Charcot, Gowers, Pierre Marie) and bulbar (Dejerine) forms of amyotrophic lateral sclerosis (ALS). Duchenne did also a preliminary description of Landouzy-Dejerine fascio-scapulo-humeral dystrophy.

Duchenne contributed in quite an original way to the analysis of the muscles involved in facial expressions and drew a complete explanation of emotions out of it (Cuthbertson, 1985; Duchenne, 1862b; Hueston and Cuthbertson, 1978). Few were interested in his results in France, whereas in England Charles Robert Darwin (1809–1882) used photographs from Duchenne in his book *The Expression of the Emotions in Man and Animals* published in 1874 (Darwin, 1874). Duchenne developed a passion for photography from the very beginning of his career (Cuthbertson and Hueston, 1979). He used collodion negatives and albumen prints. He photographed all the effects of electrical stimulation with faradic current of the facial muscles as well as the pathological responses and put them together in an album published in 1862 (Fig. 3) (Duchenne, 1862a). He also made microscope photographs and produced a detailed atlas of the human brainstem that he presented at the *Académie nationale de médecine* in 1869. He published two major works on muscular activity: *De l'électrisation localisée et son application à la physiologie, à la pathologie et à la thérapeutique* (A Treatise on Localized Electrization) in 1855 (Duchenne, 1855) and his major book *Physiologie des mouvements démontrée à l'aide de l'expérimentation électrique et de l'observation clinique et applicable à l'étude des paralysies et des déformations* (Physiology of Motion Demonstrated by Means of Electrical Stimulation and Clinical Observation and Applied to the Study of Paralysis and Deformities) in 1867 (Duchenne, 1867; Ostini, 1993). In this book, the description of focal spasms such as the writer's cramp and musician

cramps is of particular interest as well as the description of other focal spasms (which are currently described as examples of task-specific dystonias).

Despite his considerable work, Duchenne never received any official hospital appointment or academic chair, probably due to his modesty and speech difficulties when presenting conferences. Most of his work would have never been published without the help of his two friends, Trousseau and Charcot.

4. Jean-Martin Charcot (1825–1893)

Charcot (Fig. 4) is universally recognized as the founder of French neurology (Clanet, 2008; Gelfand et al., 1996; Goetz et al., 1995; Massie, 2004; Tan and Shigaki, 2007; Wechsler, 1953). He was a *médecin des hôpitaux de Paris* and headed a department at the Salpêtrière hospital in 1862, at the same time as Alfred Vulpian who was his challenger but also his friend. He succeeded Vulpian as a professor of pathology at the Faculty of Medicine of Paris in 1872 and then became the first professor to hold the chair of the diseases of the nervous system, created for him at the Salpêtrière hospital in 1882. He was a member of the *Académie nationale de médecine* and of the *Académie des sciences* (1883). Charcot advocated the anatomical-clinical method in neurology (Charcot, 1879), contributing to the description or delineation of several syndromes and diseases, such as multiple sclerosis and Parkinson's disease (Charcot, 1868; Charcot and Vulpian, 1862a) and described eponymous conditions such as ALS- also known as Charcot's disease- (Charcot, 1874; Charcot and Joffroy, 1869; Charcot and Marie, 1885) and Charcot-Marie-Tooth disease (Charcot and Marie, 1886). He later mostly focused on hysteria and hypnosis (Bogousslavsky et al., 2009; Faber, 1997; Goetz, 2007; Lhermitte, 1950) and developed organic conceptions that the School of Nancy strongly opposed. He oriented several of his disciples in the field of psychiatry, making it a scientific and academic discipline at the expenses of the alienists. He encouraged one

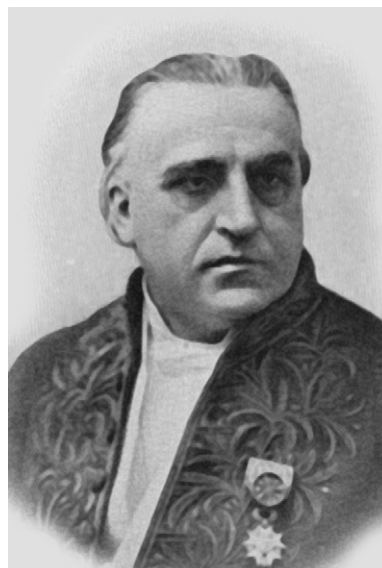


Fig. 4 – Picture of Charcot.
Photographie de Charcot (*Académie nationale de médecine*).

of his pupils Pierre Janet (1859–1947) to create the new field of psychopathology. When the decision was made to create a chair of mental diseases at the Paris Faculty of Medicine, its first two holders Benjamin Ball (1833–1893) and Alix Joffroy (1844–1908) belonged to the “master’s” circle.

While holding his chair at the Salpêtrière, one, and not the least, of his merits was to surround himself with major collaborators such as Alix Joffroy (1844–1908), Albert Gombault (1844–1904), Paul Richer (1844–1933) (Charcot and Richer, 1900), Georges Debove (1845–1920), Fulgence Raymond (1844–1910), Albert Pitres (1848–1928), Édouard Brissaud (1852–1909) (Charcot et al., 1891) Gilbert Ballet (1853–1916), Pierre Marie (1853–1940), Joseph Babinski (1857–1932), Georges Gilles de la Tourette (1857–1904), Alexandre Achille Souques

(1860–1944) and many others. It is difficult today to take the full measure of what the glory of the neurologist of the Salpêtrière hospital was like at the end of the XIXth Century. His reputation on both national and international levels came from the lectures he gave on Tuesdays (less technical and aimed at general public) (Charcot et al., 1887; Charcot and Bourneville, 1872, 1876), as well as from his private Friday lectures. Exclusively for scientists, they attracted the *tout Paris* (Parisian smart set). The famous painting from André Brouillet (1857–1914) *Une leçon clinique à la Salpêtrière* (A clinical Lecture at the Salpêtrière) displayed at the *salon* of 1887 immortalized them (Fig. 5). On this painting we can see the master Charcot examining his famous hysterical patient Blanche Wittmann (1859–1913), physically held up by his assistant Babinski.



Fig. 5 – A clinical lecture at the Salpêtrière, oil on canvas, André Brouillet, 1887, museum of the history of medicine, Paris. 1: Victor Cornil; 2: Philippe Burty; 3: Georges Debove; 4: Mathias Duval; 5: Jean-Baptiste Charcot; 6: Alix Joffroy; 7: Jean-Martin Charcot; 8: Joseph Babinski; 9: Théodule Ribot; 10: Edouard Le Lorrain; 11: Georges Guinon; 12: Albert Londe; 13: Léon Le Bas; 14: Albert Gombault; 15: Paul Arene; 16: Jules Claretie; 17: Alfred-Joseph Naquet; 18: Désiré-Magloire Bourneville; 19: Henry Berbez; 20: Henri Parinaud; 21: Gilbert Ballet; 22: Romain Vigouroux; 23: Paul Berbez; 24: Edouard Brissaud; 25: Pierre Marie; 26: Georges-Gilles de la Tourette; 27: Charles Fere; 28: Paul Richer; 29: “Blanche” (Marie) Wittman; 30: Melle Bottard; 31: Melle Ecary.

Une leçon clinique à la Salpêtrière, peinture à l’huile, André Brouillet, 1887, musée d’histoire de la médecine, Paris (photographic art: Pierre Prince, 2008).

Around them are most of Charcot's students and some Parisian important figures. In 1881, Charcot was celebrated as a hero at the medical congress of London. Sigmund Freud (1859–1913) spent a few months in the unit of Charcot (from October 1885 to February 1886) and then kept friendly relations with him. He translated his lectures into German and kept a reproduction of Brouillet's painting in his living room for all his lifetime.

Charcot and his neurological school attracted most of the greatest European and Russian neurologists. The major influence of Charcot as a master and as a founder of the Paris Neurological School could be seen even 50 years after his death.

Apart from his particular curiosity in neurology and psychiatry, Charcot was also interested in other medical fields, which were later denominated internal medicine, gerontology and endocrinology. Beyond his medical duties, Charcot had also close contacts with the political circles, supporting the “progressists” and the “anticlerical” ideas.

5. Alfred Vulpian (1826–1887)

Vulpian (Fig. 6) began his medical studies under the influence of Pierre Flourens (Breathnach, 1987; Cousin, 2002; Dellon and Dellon, 1993; Pearce, 2002b; Vulpian, 1880). His MD thesis was about the origin of cranial nerves, from the 3rd to the 10th (Vulpian, 1853). He became successively *interne des hôpitaux de Paris* and associate professor. Vulpian was both a predecessor, challenger and friend of Charcot. Among his most eminent *internes* and pupils were Joseph Babinski (1857–1932) who was his *interne* before Charcot, Fulgence Raymond (1844–1910) and Jules Dejerine (1849–1917) to name a few. In 1862, he was named along with Charcot, Head of two different departments at the Salpêtrière hospital. He was named full professor of the chair of pathology in 1866, succeeding Jean Cruveilhier (1791–1874). In 1872, he let the chair of pathology to Charcot and took hold of the chair of experimental and comparative pathology (Vulpian and Brémond, 1866). His work, although slightly overshadowed by the glory of his student Dejerine and that of Charcot (Bogousslavsky et al., 2011), is extensive in the field of clinical anatomy and physiology of nervous diseases.

Vulpian performed a lot of experiments in animals unlike Charcot who was reluctant to do it himself. In 1859, he was the first to have the idea of growing animal tissues by isolating tadpole tail fragments, thus obtaining the survival of cells without any proliferation. He did the first important contribution to the discovery of adrenaline (epinephrine) in the adrenal gland (Hazard, 1959). Vulpian described the conjugate deviation of the head and eyes in apoplectic ictus in 1864, and the clinical spectrum of multiple sclerosis in 1866 (Rascol and Clanet, 1982; Vulpian, 1866) with Charcot, by distinguishing it from other forms of tremor such as paralysis agitans. They also studied this latter condition (which they named Parkinson's disease) (Charcot and Vulpian, 1862c), as well as ALS. Vulpian was the first to demonstrate that *tabes dorsalis* — contrary to the general opinion of that time — does not primarily affect the posterior columns of the cord (Charcot and Vulpian, 1862b). He was a refined clinician and coined, for example, the term *syncinésie* (synekinesia).

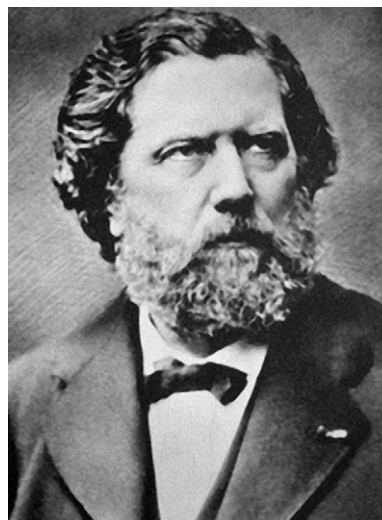


Fig. 6 – Picture of Vulpian.

Photographie de Vulpian (Académie des sciences – institut de France).

Vulpian was elected to the *Académie des sciences* and was the dean of the Paris Medical Faculty from 1875 until 1881. While he was the dean, he regrettably decided not to open the internship to women, notably for Augusta Dejerine-Klumpke (1859–1927) who nevertheless became a few years later the first woman to be appointed as an *interne* in Paris.

6. Désiré-Magloire Bourneville (1840–1909)

Bourneville (Fig. 7) was born in Normandy, in north-western France and studied medicine in Paris (Anonymous, 2005; Poirier and Chrétien, 2000a; Poirier and Signoret, 1991a, 1991b; Poisson, 2008). He became intern/resident of Charcot in 1868 and, from then on, had a huge impact on him, in particular for



Fig. 7 – Picture of Bourneville.

Portrait de Bourneville (Le progrès médical).

his works on hysteria (Bourneville, 1876; Bourneville and Voulet, 1872). He was appointed *médecin-aliéniste des hôpitaux de Paris* and developed new methods for the management of the mentally retarded, at the Bicêtre hospital (Bourneville, 1905a, 1905b; Reyre, 1989). His name remains associated with the discovery of the *sclérose tubéreuse de Bourneville* (Bourneville's tuberous sclerosis) (Bourneville, 1880a, 1880b) and the description of the *myxoedème congénital* (congenital myxedema). He had among his *internes* Paul Sollier (1861–1933). Bourneville was a talented editor who contributed to disseminate the work of the Charcot Neurological School, and make Charcot internationally renowned. Indeed, Bourneville began in 1872 to publish the editing of Charcot's *Leçons sur les maladies nerveuses faites à la Salpêtrière*, founded the journals *Le progrès médical* and with Charcot *Archives de neurologie*. Most if not all of the medical thesis of the Salpêtrière Neurological School were published thanks to him.

Bourneville was a republican, a freethinker, a freemason, an anticlerical (Brais, 1993) and was very involved in the major political struggles of the French Third Republic. He was successively *conseiller municipal* (municipal councillor) of Paris, *député du département de la Seine* (deputy of the Seine County) and belonged to the extreme left wing of the *parti radical* (French radical party). Bourneville founded municipal nurse schools (Bourneville, 1881; Collière, 1999) and vigorously fought for the secularisation of hospitals and for the promotion of cremation.

7. Paul Richer (1849–1933)

Intern resident of Charcot in 1878, Richer (Fig. 8) was both a physician and an artist. His medical thesis was inspired by Charcot and described the *grande attaque hystérique* (great hysterical crisis) from which he made a famous drawing (Richer, 1879). In 1888, and under the direction of Charcot, he founded the *Nouvelle iconographie de la Salpêtrière* with Georges Gilles de la Tourette (1857–1904) and Albert Londe (1858–1917), which replaced the previous *iconographie photographique de la Salpêtrière*. The main interest of this scientific



Fig. 8 – Picture of Richer.
Portrait de Richer (©BIU Santé).

journal lay in the numerous photographs, coloured lithographs and drawings by Paul Richer which illustrated articles on the neurological cases observed at the Salpêtrière hospital (Charcot and Richer, 1888, 1900; Richer, 1892; Richer and Meige, 1895). Richer published two brilliantly illustrated books in collaboration with Charcot entitled: *Les démoniaques dans l'art* (Demoniacs in art, 1887) (Charcot and Richer, 1887) and *Les difformes et les malades dans l'art* (The Deformed and the Diseased in art, 1889) (Charcot and Richer, 1889). He was also a sculptor and described human postures at rest and in motion (Richer, 1890). With Henry Meige (1866–1940), he carefully observed the morphology of an aged parkinsonian woman and created thereafter a realistic plaster statuette (Richet and Meige, 1895) from which a bronze copy was much later performed and is still today presented in Charcot's Library and shown in exhibitions during international meetings. In 1903, Richer became professor of artistic anatomy at the Paris fine arts school ("École des beaux-arts"). His works include *Premier artiste* (First Artist, 1890), *Le bûcheron de la forêt de La Londe* (Lumberjack of La Londe woods, 1899), *Le monument de Pasteur* (A new monument to Pasteur, 1903) and *Tres in una* (Three in one, 1913), among others. Richer was a laureate of *institut de France*, member of the *Académie de médecine* (1898) and the holder of the chair of artistic anatomy of the *École des beaux-arts* (Paris Fine Arts School) (1903) (Richer, 1920a, 1920b) where Henry Meige (1866–1940) succeeded him. He was also the president of the *Société française d'histoire de la médecine* (French Society for the History of Medicine) (1907–1908).

8. Henri Parinaud (1844–1905)

Parinaud (Fig. 9) was born in Bellac (Haute-Vienne French département/County in the center of France) and began his medical studies in Limoges (Ouvrier, 1993). He then studied in Paris, where he was successively *externe* and *interne des hôpitaux de Paris* (extern/non-residential student and intern/resident of the hospitals of Paris), and served in the Red Cross ambulance corps during the Franco-Prussian war in 1870. Parinaud learned after Xavier Galezowski (1832–1907), a physician who was born in Poland and a founder of neuro-ophthalmology. He defended his MD thesis on optic neuritis in pediatric acute meningitis (Parinaud, 1877a) and Charcot handed him the direction of the service of ophthalmology, which belonged to his chair of the diseases of the nervous system. Parinaud published numerous works, notably on optic neuritis and strabismus (Parinaud, 1879a, 1879b, 1893). His name remains associated with upgaze paralysis (Parinaud's syndrome, which is caused by lesions of the mesencephalic area) (Parinaud, 1877b, 1886), with Parinaud's oculoglandular syndrome he described in 1889 (and that has subsequently been associated with the cat-scratch disease) (Parinaud, 1889), as well as with the optometric scale (Parinaud scale) for the assessment of visual acuity (Parinaud, 1888), which is still in use today. Parinaud is considered as one of the pioneers of French ophthalmology and particularly neuro-ophthalmology (Parinaud, 1898). He had a long friendship with Joseph Babinski.



Fig. 9 – Picture of Parinaud.
Photographie de Parinaud (Courtesy of Martine Briand).

9. Albert Pitres (1848–1928)

Pitres (Fig. 10) was born in Bordeaux and received his medical training in Paris, where he became resident of Charcot and Dejerine, and attended at Étienne Jules Marey's (1830–1904) and Ranvier's respective laboratories. In 1877, he defended his MD thesis presided over by Charcot and entitled: *recherches sur les lésions du centre ovale des hémisphères cérébraux étudiées au point de vue des localisations cérébrales* (research on the lesions of the cerebral hemispheres oval centres with particular focus on cerebral localizations) (Pitres, 1877). Although this work with Charcot was important at that time, it was further shown that Charcot and Pitres did partly a mistake since they described in the human brain the primary motor area not only in the frontal cortex but also in the adjacent sensory cortex (Jeannerod, 2006). Pitres was admitted to the *agrégation* (French civil service competitive examination for positions in the public education system, either in secondary or higher



Fig. 10 – Picture of Pitres.
Portrait de Pitres (Académie nationale de médecine).

education) in 1878. He studied the different brain areas with Charcot, who was very much influenced by the British neuroscientist David Ferrier (1843–1928). He contributed to the description of the direct pyramidal tract, explaining some cases of dissociated hemiplegia. He defended the doctrine of “localizationism” and supported the idea of autonomous centres with specific functions (Charcot and Pitres, 1877, 1878a, 1878b, 1883, 1895). Albert Pitres witnessed the beginning of hypnosis during the lectures of Charcot in 1877–1878. Pitres then returned to Bordeaux where he became a professor of anatomy and histology in 1880 and then of internal medicine the next year. In 1884, he was the first to describe a clinical case of pure agraphia, and showed that an acquired motor ability could also be localized (Pitres, 1884a; Lorch and Barrière, 2003). Pitres also contributed to the study of aphasia and described amnesic aphasia (Pearce, 2005; Pitres, 1894, 1895, 1898). He continued his works on hysteria by following Charcot's ideas. His book *Les Leçons cliniques sur l'hystérie et l'hypnotisme* (Clinical lectures on hysteria and hypnotism) was published in 1891 (Pitres, 1891). However, he gave up this study topic after Charcot's death and resumed his works on memory and peripheral nerves. He was appointed as the dean of the Faculty of Medicine of Bordeaux in 1885 when aged 37 and for 20 years. His name is associated with two signs: the *signe du sou de Pitres* (Pitres' coin sign) in pneumothorax and the *signe de Pitres* (Pitres' sign) in tabes dorsalis (hypoesthesia or anesthesia of the scrotum) (Pitres, 1884b).

10. Jules Joseph Dejerine (1849–1917)

Dejerine (Fig. 11) was born in Geneva, Switzerland, and settled in Paris in 1871 where he studied pathologic anatomy with Vulpian and did not have the opportunity to learn from Charcot (Anonymous, 1969; Bassetti and Jagella, 2006). He was a *médecin des hôpitaux de Paris*, an associate professor and headed a department at the Bicêtre hospital (1887), before moving to the Salpêtrière hospital in 1895. He then became professor of medical history (1901) then of medical pathology (1907), he succeeded Fulgence Raymond (1844–1910) at the chair of the diseases of the nervous system in 1911. In 1888, Dejerine married Augusta Klumpke (see next biography). Both of them were hard at work and became experts in brain and spinal cord anatomy and pathology with an outstanding scientific production. Among Dejerine's numerous publications, the most famous are the Landouzy-Dejerine syndrome or facio-scapulo-humeral muscular dystrophy (1885) (Landouzy and Dejerine, 1885), the Dejerine-Sottas hypertrophic neuropathy (1893) (Dejerine and Sottas, 1893), and in collaboration with André Thomas (1900) the sporadic form of the olivo-ponto-cerebellar atrophy (OPCA) (Dejerine and Thomas, 1900) and most importantly the Dejerine-Roussy syndrome caused by a lesion in the posterior thalamus (1906) (Dejerine and Roussy, 1906; Pearce, 1988). Dejerine did also important contributions on reading and writing, and particularly on word blindness (Bub et al., 1993; Dejerine, 1892; Henderson, 1984).

Three of his books remain especially important today: the *Traité des maladies de la moelle épinière* (Treatise on Spinal Cord Diseases) in collaboration with André Thomas (Dejerine and Thomas, 1902) and the two masterpieces that are *Anatomie des*



Fig. 11 – Picture of Jules Dejerine and Augusta Dejerine-Klumpke.

Photographie de Jules Dejerine et de son épouse Augusta Dejerine-Klumpke.

centres nerveux (Anatomy of the Nervous Centres, 1895–1901) (Dejerine and Dejerine-Klumpke, 1895), a monumental piece of work with a rich iconography of large anatomical sections and for which the participation of Mrs. Dejerine-Klumpke was of critical importance, and *Sémiologie des affections du système nerveux* (Semiology of the Diseases of the Nervous System, 1914) (Dejerine, 1914), which is today considered as one of the greatest classics of the French neurological literature. Although the major part of his work is about organic neurology, Dejerine turned to a new field in the later stages of his career. Like many eminent neurologists of that time he became interested in psychology, functional disorders and hysteria. He was influenced by his friend, the Swiss Paul-Charles Dubois (1848–1918), and became interested in the concept of functional disorders and psychotherapy. He published *Les manifestations fonctionnelles des psychonévroses, leur traitement par la psychothérapie* (The Psychoneuroses and Their Treatment by Psychotherapy) with E. Gauckler in 1911 (Dejerine and Gauckler, 1911).

11. Augusta Dejerine-Klumpke (1859–1927)

Augusta Klumpke, Dejerine's wife (Fig. 11) was an American woman born in San Francisco. She grew up in Switzerland and studied at the Faculty of Medicine of Paris (Bauer, 1974; Bogousslavsky, 2005; Ellis, 2011; Satran, 1974; Schurch and Dollfus, 1998; Yildirim and Sarikcioglu, 2008). Being a feminist, she had a long struggle against the unwillingness of the medical profession, and the hospital administration, and obtained the authorization to take the hospital competitive examination. She had a great esteem and admired her teacher Vulpian despite the obstacles he made for her medical career (see Vulpian biography). She was appointed extern/non-residential student in 1882 and became the first female resident of the Paris hospitals in 1886. As an extern/non-residential student she published—on her own—the princeps article on the lower brachial plexus paralysis in *Revue de Médecine*, today known as Klumpke's paralysis, or

Dejerine-Klumpke syndrome (Anonymous and Klumpke, 1999; Dejerine-Klumpke, 1908; Klumpke, 1885; Ulgen et al., 2008). When she was an intern/resident of Professor Alfred Hardy (1811–1893) at the Charité hospital, her chief resident was Jules Dejerine who became her husband in 1888. She defended her MD thesis on *Les polynévrites en général, les paralysies et les atrophies saturnines en particulier* (About Polyneuritis in General and Saturnian Palsies and Atrophies in Particular) in 1889 (Dejerine-Klumpke, 1889). Mrs. Dejerine-Klumpke became a reference in anatomy and pathology of the nervous system. She did important works on neuroanatomy (Dejerine-Klumpke and Jumentié, 1910; Lecours and Caplan, 1984; Shoja and Tubbs, 2007) and took an active part in the writing of *Anatomie des centres nerveux* ("Anatomy of the Nervous Centres"), co-signed with her husband (Dejerine and Dejerine-Klumpke, 1895). She was the president of the *Société de neurologie de Paris* in 1914 and 1915. During World War I, she headed a 300 beds unit, caring for wounded patients at the Salpêtrière hospital. She became *Officier de la légion d'Honneur* (Officer of the Legion of Honor) in 1921.

12. Édouard Brissaud (1852–1909)

Brissaud (Fig. 12) was successively resident of Paul Broca (1824–1880), Ernest-Charles Lasègue (1816–1883) and Charcot (Freeman, 1953; Poirier, 2010, 2011; Tatu, 2011). He became *médecin des hôpitaux de Paris, agrégé*, professor of the history of medicine (1899) then of medical pathology (1900). He was a talented artist. This led him to publish a monumental atlas of the human brain (Brissaud, 1893). He dedicated many of his works to infantilism (and described its thyroid form) (Brissaud, 1897) and gigantism (Brissaud and Meige, 1895a), asthma (Brissaud, 1896), Little disease (Brissaud, 1894), intonation in aphasia (Brissaud, 1901), herpes zoster, spinal metamerism and tabetic arthropathy. Brissaud did two famous lectures on Parkinson's disease and on tics and spasms (Brissaud, 1895a,

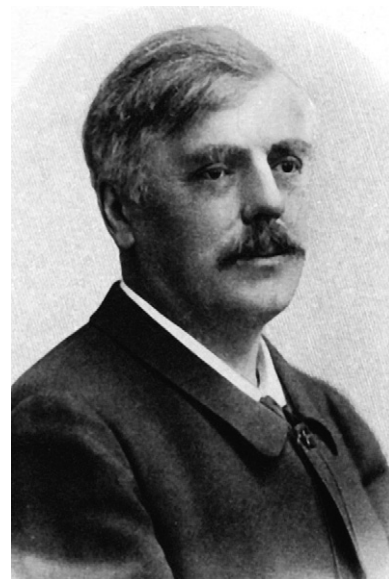


Fig. 12 – Picture of Brissaud.

Portrait de Brissaud (Académie Nationale de Médecine).

1895b). He notably studied hemifacial spasm and torticollis, with photographic illustrations (Brissaud, 1895b; Colosimo and Berardelli, 2010). He proposed the term *torticollis mental* (“mental torticollis”) on the basis of the description of an important feature (Brissaud, 1895b) subsequently denominated as *geste antagoniste* (“antagonistic movement”) by his pupils Henry Meige (1866–1940) and Eugène Feindel (1862–1930). He demonstrated the automatic-voluntary dissociation between the voluntary expression and facial expression in pseudobulbar palsy. In 1896, a few months after Roentgen’s discovery of X-rays, Brissaud and Albert Londe (1858–1917) used this new method to localize an intracranial projectile on the radiograph, whose fixture time was then of one hour and a half! Brissaud was the project initiator of Charcot and Bouchard famous *Traité de médecine* (Treatise of Medicine) (Charcot et al., 1891) and of *Pratique médicochirurgicale* (Medical-Surgical Practice) published in collaboration with Paul Reclus (1847–1914) and Adolphe Pinard (1844–1934) (Brissaud et al., 1907). In 1893, he founded the *Revue Neurologique* journal with Pierre Marie, which was supported by Charcot who published its very first article. After the death of Charcot in 1893, Brissaud replaced him at his Chair for 1 year and published his *Leçons sur les maladies du système nerveux* (Lectures on the Diseases of the Nervous System) (Brissaud and Meige, 1895b). Brissaud was one of the founding members of the *Société de neurologie de Paris* (1899).

Brissaud’s personality was exceptional. His cleverness was marvelous and his character humorous, facetious, and cheerful. He published a book on popular believes (Brissaud, 1888). He passed away in December 1909 from a brain tumor, unsuccessfully operated on by the renowned British neurosurgeon Victor Horsley (1857–1916).

13. Pierre Marie (1853–1940)

Pierre Marie (Fig. 13) was appointed *interne des hôpitaux de Paris* in 1878 and was a brilliant student of Charcot (Anonymous, 1983; Cohen, 1953; Goetz, 2003; Pearce, 2004a,b; Poirier and Chrétien, 2000a,b). At the end of his residency, he defended his



Fig. 13 – Picture of Pierre Marie.
Portrait de Pierre Marie (©BIU Santé).

M.D. thesis on Graves’s disease (Marie, 1883) and became chief resident under the direction of Charcot. Together, they described progressive muscular atrophy, later known as Charcot-Marie-Tooth disease (Charcot and Marie, 1886). He was associate professor and head of a department at the Bicêtre hospital and then at the Salpêtrière hospital, in 1895 and 1911 respectively. He was also a professor of pathology in 1907 and a member of the *Académie de médecine*. He described acromegaly (Pierre Marie disease) (Marie, 1886), cerebellar tonsil herniation (Simonetti et al., 1997) and hereditary cerebellar ataxia (Marie, 1893). He contributed to the study of bone and joint pathology (Ryckewaert and Naveau, 1984), and described hypertrophic pulmonary osteo-arthritis (Marie, 1890), hereditary cleidocranial dysostosis (Marie and Santon, 1898) and rhizomelic spondylosis (Benoist, 1995; Marie, 1898). His work on aphasia (Marie, 1906) was opposed to that of Paul Broca and Karl Wernicke (1848–1905), which resulted in famous and intense debates with Dejerine in 1908 (Brais, 1992; Roch Lecours, 1999). Along with Édouard Brissaud, he founded the journal *Revue Neurologique* in 1893, and the *Société de neurologie de Paris* in 1899, of which he was the first General Secretary. He published various works dedicated to the neurological sequels due to World War I, in collaboration with Charles Foix (1882–1927) and Henry Meige (1866–1940), among others (Marie and Foix, 1917). Pierre Marie showed in all his works his scientific skills with rigour and exactness, becoming addict to work. At the age of 64, he took over from Dejerine—whom he hated most implacably—in the chair of the Clinic of Nervous Diseases, which he held for six years, from 1917 to his retirement in 1923.

14. Georges Édouard Brutus Gilles De La Tourette (1857–1904)

Gilles de la Tourette (Fig. 14) was intern/resident (1884) then chief resident (1887–1889) of Charcot, *médecin des hôpitaux de Paris* (1893) and *agrégé* of medicine and forensic medicine (1895) (Goetz et al., 2001; Krämer and Daniels, 2004; Lees, 1986; Rickards and Cavanna, 2009; Walusinski and Bogousslavsky, 2011; Walusinski and Duncan, 2010). He is mostly famous for the *maladie des tics* (tic disorder) he described in 1885 and which is named after him (Gilles de la Tourette, 1885, 1899; Goetz and Klawans, 1982; Lajonchère et al., 1996; Stevens, 1971). He also worked on hysteria and hypnotism (Bogousslavsky et al., 2009) and published two works on this topic: *L’hypnotisme et les états analogues au point de vue médico-légal* (Hypnotism and Analogous States From the Medico-Legal Point of View, 1887) (Gilles de la Tourette, 1887) and *Traité clinique et thérapeutique de l’hystérie d’après l’enseignement de la Salpêtrière* (Clinical and Therapeutic Treatise on Hysteria Based on the Salpêtrière Lectures) (Gilles de la Tourette, 1891). Other medical publications are a treatise on the diseases of the nervous system, a study on gait and early description of restless legs syndrome (Gilles de la Tourette, 1886, 1898; Konofal et al., 2009). He was also a prolific writer, and notably produced numerous works on the Poitou Province in the centre of France and a biography of Théophraste Renaudot (1586–1653), a physician native from Loudun (as was Gilles de la Tourette) and the founder of the very first French journal in 1631, *La Gazette*. Gilles de la



Fig. 14 – Picture of Gilles de la Tourette.
Photographie de Gilles de la Tourette (©BIU Santé).

Tourette was a strong defender of the hysteria doctrine of his mentor Charcot in the fight of the Salpêtrière Hospital against the Nancy School, using all platforms as professional journals, general newspapers and the Court. In his late life, he suffered from a general paralysis caused by tertiary syphilis and his mental condition gradually worsened. He died at the age of 47 in the psychiatric hospital of Lausanne where he had been confined.

15. Joseph Babinski (1857–1932)

Babinski (Fig. 15) was born in Paris to Polish parents who had fled Warsaw (Ambrosius and Michalak, 2009; Bailey, 1961; Gasecki and Kwiecieński, 1995; Moreau, 1958; Philippon and Poirier, 2009; Poirier, 2007, 2008; Skalski, 2007). He studied medicine in the French capital, where he became resident of Vulpian and of Victor Cornil, and then *chef de clinique* (assistant professor) of Charcot (1885–1887) (Massie, 2004). Babinski was



Fig. 15 – Picture of Babinski.
Photographie de Babinski (©BIU Santé).

appointed *médecin des hôpitaux de Paris* in 1890, but failed the *agrégation* in 1892, because of some quarrel between Charcot and the president of the jury, Charles Bouchard (1837–1915). As a consequence, Babinski would never be a professor. He remained head of a medical department at the Pitié hospital for his entire career, first in the old Pitié hospital until 1912 and then in the new Pitié hospital, which was opened the same year, contiguous with the Salpêtrière hospital. Babinski did considerable contributions to the study of diseases of the nervous system (Babinski, 1913, 1934). He was above all a semiologist and his constant aim was to discover characteristic signs allowing to make the distinction between organic pathology and functional, hysterical disorders. During a presentation of 28 lines at the *Société de biologie* (French Society of Biology) in 1896, he showed that stimulation of the sole of the foot caused an extension of the great toe in patients with a lesion of the pyramidal tract whereas it caused a flexion in normal subjects (Babinski, 1896). This inversion of the cutaneous plantar reflex sign would very quickly be called Babinski sign (Goetz, 2002; Lance, 2002). After the death of Charcot, Babinski reconsidered the position of his master on hysteria and suggested to rename it *pithiatisme* (pithiatism) in order to show that it is a disorder caused by suggestion and that can be treated by persuasion (Allilaire, 2007; Babinski et al., 1918). Thanks to the long observation of his patient Henri Mouninou, Babinski refined the cerebellar semiology and described *asynergia* (i.e. cerebellar ataxia), *hypermetria* and *adiadochokinesia* (Babinski, 1899, 1902a, 1902b, 1902c, 1909, 1925; Babinski and Tournay, 1913; Clarac et al., 2009). Babinski finally was at the origin of the birth of French neurosurgery by encouraging his students Clovis Vincent (1879–1947) and Thierry de Martel (1876–1940) to become accomplished neurosurgeons (Babinski et al., 1912). Babinski lived all his life with his older brother Henri Babinski (1855–1931), who was an engineer but was mostly famous as a distinguished cook. As “Ali Bab”, he wrote a classic cookbook entitled *Gastronomie pratique: études culinaires* (Practical Gastronomy: Culinary Studies) (Babinski, 1907). Joseph Babinski suffered from Parkinson’s disease at the end of his life and died one year only after his brother.

16. André Thomas (1867–1963)

André Thomas (Fig. 16) spent his entire medical career in Paris (De Ajuriaguerra, 1955; Duckett, 2000; Hécaen and Bonduelle, 1967; Polonovski, 1999; Sigwald, 1967; Soriano, 1967). He was first an intern/resident at the Bicêtre hospital, where Dejerine was his mentor, then worked at the Salpêtrière and later at the Saint-Joseph Hospital. It is noteworthy that when he retired, he focused on the study of child neurology including the analysis of muscular tone and the description of the pilomotor reflex (Thomas and Saint-Anne Dargassies, 1952; Thomas and De Ajuriaguerra, 1949). Although André Thomas did numerous publications in neurology, as for example on spinal cord with Dejerine (Dejerine and Thomas, 1902), his most important research was on the study of the cerebellum. In parallel with Babinski in France and Gordon Morgan Holmes (1876–1965) in Great Britain, he was one of the main contributors to the study of cerebellar disorders at the turn of the XIXth and XXth

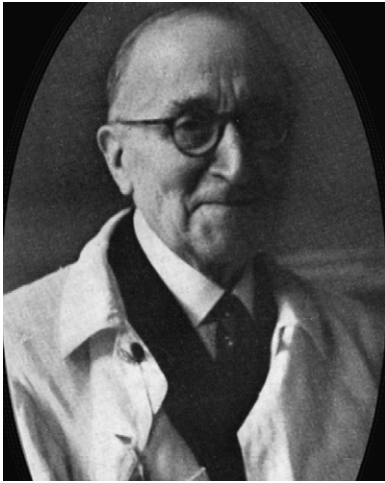


Fig. 16 – Picture of André Thomas.

Photographie d'André Thomas. Bibliothèque Charcot (UPMC : université Pierre-et-Marie-Curie) – hôpital de la Salpêtrière.

centuries (Thomas, 1897, 1905; Thomas et al., 1914; Thomas, 1909). While Babinski reported asynergia, hypermetria and adiadochokinesia, André Thomas added dysmetria, dyschronometria (Thomas, 1937) and *passivité* (i.e. hypotonia) with the pendular reflexes and published an authoritative book on balance (Thomas, 1940). Gordon Holmes further characterized hypotonia (Stewart-Holmes maneuver), delayed initiation or arrest of movement and action tremor, and identified *rubral tremor* (now called Holmes tremor). In 1900, Dejerine and Thomas described a new syndrome: OPCA (Dejerine and Thomas, 1900). This degenerative disease occurs sporadically at middle or elderly age. The main pathological feature is a severe atrophy of the cerebellum, inferior olives and pons. OPCA was subsequently recognized by others with in some cases, an akinetic rigid syndrome. In the 1960s, Shy-Drager and striatonigral degeneration syndromes were described. Important histopathological data in the late 1980s showed that these two entities and OPCA shared common oligodendroglial inclusions with different anatomical distributions. These three syndromes were later coalesced under the term multiple system atrophy (MSA).

17. Georges Marinesco (1864–1938)

Georges Marinesco (Fig. 17), also known as Gheorghe Marinescu, was born in Romania and received most of his medical education at the Brâncoveanu (Brancovan) hospital and worked at the laboratory of histology and bacteriology of Victor Babes (1854–1926) (Buda et al., 2009; Chudley, 2003; Petresco, 1964). Marinesco later came to Paris to receive further education in neurology with Charcot at the Salpêtrière hospital, where he was in close contact with Pierre Marie, Babinski and Raymond. He also worked in Germany with Karl Weigert (1845–1904) in Frankfurt and Emil Du Bois Reymond (1818–1896) in Berlin. Back in Romania he held the very first chair of neurology in Bucharest and founded the Romanian School of Neurology. He published an atlas of the pathological

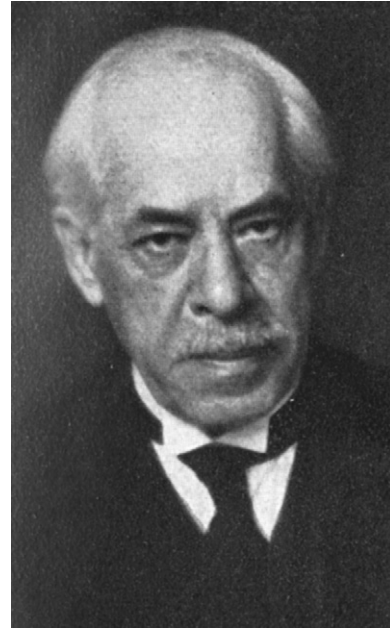


Fig. 17 – Picture of Marinesco.

Photographie de Marinesco (adapted from photographic work of Fayer).

histology of the nervous system with Victor Babes and Paul Oskar Blocq (1860–1896) (Blocq et al., 1892). Marinesco's contribution to science is outstanding. He had indeed the ingenuity to put new methods in practice, as soon as they were available, especially roentgen rays, film camera and Nissl method. The book he published on this latter topic dealt with the study of normal nerve cells and reparative processes in neurofibrils in the degenerated cells following nerve section (Marinesco, 1905a, 1905b, 1918, 1920). With Blocq, he reported a peculiar case of parkinsonian tremor related to tuberculosis abscesses of the mesencephalon (Blocq and Marinesco, 1893), and discovered senile plaques (Marinesco, 1911, 1928). Marinesco was the first to carry out hypophysectomy in animals in order to demonstrate that they could live for a few weeks without pituitary gland (Marinesco, 1892). He also studied a new form of familial spastic paraplegia with extrapyramidal motor symptoms, clinical-anatomical aspects of the thalamic syndrome, juvenile form of familial amaurotic idiocy and degenerative changes of the spinal cord following amputations (Marinesco-Sjögren syndrome) (Marinesco and Drăganescu, 1925). He maintained close academic relationships with his colleagues in Paris. In 1909 he published a voluminous work on the nerve cell entitled *La cellule nerveuse* (The Nerve Cell) that was later overshadowed by Ramón y Cajal's works (Marinesco, 1909).

18. Achille Alexandre Souques (1860–1944)

Achille Alexandre Souques (Fig. 18) studied medicine in Paris, worked at the Salpêtrière Hospital, became Charcot's last *interne* (resident), then Brissaud's chef de clinique (assistant professor) (Alajouanine, 1945, 1953; Broussolle et al., 2010;



Fig. 18 – Picture of Souques.

Photographie de Souques. Bibliothèque Charcot (UPMC : université Pierre-et-Marie Curie) – hôpital de la Salpêtrière.

Société Française de Neurologie, 1945). While he was interne, he had to care the famous poet, Paul Verlaine. In 1898, he became a hospital consultant and worked successively at the Charité, the Hôtel-Dieu, the Ivry and the Bicêtre hospital where he succeeded Dejerine. He returned to the Salpêtrière Hospital in 1917. Souques founded the Paris Neurological Society in 1899, with Pierre Marie, Joseph Babinski and others. He was elected at the *Académie de médecine* in 1918 and retired in 1925.

Souques described several important neurological signs. One bears his name: *Signe des cils de Souques* (i.e. Souques' eyelashes sign) in *formes frustes* of facial paralysis. In this case, the involvement of the upper facial nerve territory can be detected when the patient is asked to close his eyes strongly: the eyelashes are less covered by the eyelids and thus appear longer compared to those of the non-paralysed side. Souques also studied speech and language and described palilalia in 1908 (Souques, 1908). Patients affected by this syndrome cannot help repeating the same word or sentence. This speech disorder is frequently seen in stroke patients, especially in the course of pseudobulbar palsy and parkinsonian syndromes. In 1915, Souques coined the term *camptocormia* with Mrs Rosanoff-Saloff to describe the abnormal curve of the trunk in injured trench warfare soldiers (Souques and Rosanoff-Saloff, 1915). Some soldiers had a *camptocormia* due to the stress of the anticipation of the battle, whereas others were afraid to suffer again from a previous spinal cord injury. Nowadays, *camptocormia* is considered not only as a psychogenic disorder, but is also described as part of Parkinson's disease, dystonia, myopathic processes and ALS (Djaldetti et al., 1999; Skidmore et al., 2007).

Souques' work on parkinsonian syndromes is remarkable. During an International Congress in Paris in 1921, he updated the scientific knowledge on Parkinson's disease and post-encephalitic parkinsonian syndromes with his famous exhaustive review, (Souques, 1921) Souques considered that post-encephalitic parkinsonism was indistinguishable from

idiopathic Parkinson's disease and added two original contributions: first, abolition of automatic and associated movements, as the loss of the automatic swinging of the arms while walking; second, *kinésie paradoxale* (paradoxical kineses). Souques used this term to refer to patients who generally could not move and were suddenly able to walk, or even to run. This phenomenon can also be seen in speech.

After his retirement, Souques did an important contribution to the study of neurology in the ancient Greece (Souques, 1936).

19. Georges Guillain (1876–1961)

Georges Charles Guillain (Fig. 19), was born to a bourgeois family (Alajouanine, 1962; Bonduelle, 1977, 1997; Mollaret, 1961). His father Louis was an engineer, his mother Gabrielle the daughter of a wealthy owner of a spinnery in the Normandy town. After customary schooling he commenced the study of medicine in his native town, but after 2 years moved to Paris, where he received his clinical education at several hospitals. He soon became interested in neurology, and his first scientific work, in 1898, concerns lesions of the plexus brachialis. He received his medical doctorate in Paris in 1902. He devoted his life to his professional work. He became *chef de clinique* for nervous diseases and was habilitated in 1910. After the Great War, he served at the Hôpital Charité until his career was crowned with the professorship of neurology at the Hôpital de la Salpêtrière in Paris in 1923, succeeding Pierre Marie. He held this position until his retirement in 1947. His student Théophile Alajouanine (1890–1980) succeeded him at Charcot's chair of the diseases of the nervous system. Georges Guillain received many honours. He was a member of the *Académie nationale de médecine* and of the *Académie des sciences*, and was *Commandeur de la Légion d'Honneur* (Commander of the Legion of Honor). He also became a member of American, and Japanese academies of science.

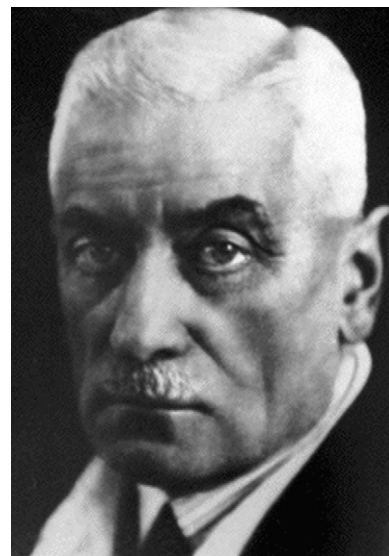


Fig. 19 – Picture of Guillain.

Photographie de Guillain. Bibliothèque Charcot. (UPMC : université Pierre-et-Marie-Curie) – hôpital de la Salpêtrière.

The scientific legacy of Georges Guillain is considerable. With L  chelle, physician of Paris hospitals, he discovered the colloidal benzoic reaction (Guillain et al., 1922, 1926) and participated in the description of numerous eponymous syndromes. The most famous is the syndrome of acute polyradiculoneuritis or Guillain-Barr   syndrome (also known as Guillain-Barr  -Strohl) (Asbury, 1990; Guillain, 1938; Guillain et al., 1916). Guillain also wrote many articles on various affections of the nervous system such as myoclonus, notably palatal myoclonus with the description of the Guillain-Mollaret-Bertrand myoclonus triangle (1933) (Guillain and Mollaret, 1931, 1936; Guillain et al., 1933) and hereditary degenerative diseases of the spinal cord (Cestan and Guillain, 1900). He published several books such as the *Travaux neurologiques de guerre* (Wartime Neurological Works) with Jean Alexandre Barr   (1880–1967) (Guillain and Barr  , 1920), *L'Anatomie topographique du syst  me nerveux central* (Topographic Anatomy of the Central Nervous System) with Ivan Bertrand (1893–1965) (Guillain and Bertrand, 1926). He also wrote a book on gliomas of the brainstem. Guillain published a monograph on the Salp  tri  re hospital with Mathieu (Guillain and Mathieu, 1925), and a biography of Charcot (Guillain, 1955).

20. Charles Foix (1882–1927)

Charles Foix (Fig. 20) did his medical internship in Paris (1906) along with Pierre Marie and Achille Alexandre Souques and headed his laboratory at the Salp  tri  re hospital (Breathnach, 1982; Caplan, 1990, 2010; Hillemand, 1976). Foix served during World War I in the neurological center of Salonica in Greece and was successively *m  decin des h  pitaux de Paris* and associate professor in 1919 and 1923, respectively. He succeeded Clovis Vincent at the Ivry hospice (1924), where his reputation attracted many foreign visitors. His scientific contribution is considerable, both in terms of quantity and quality. One may specially mention his works on the anatomical lesions of Parkinson's disease (Foix, 1921), Lewy



Fig. 20 – Picture of Foix.

Photographie de Foix. Biblioth  que Charcot. (UPMC : universit   Pierre-et-Marie-Curie) – h  pital de la Salp  tri  re.

bodies and on palatal myoclonus (Foix and Hillemand, 1924). He also made an accurate description of the brain arteries and their territories (Foix and Hillemand, 1925a, 1925b; Foix and Masson, 1923; Tatu et al., 2005) and of the vascular syndromes depending on their pathology, with several original descriptions (Caplan, 1990; Foix, 1911; Foix et al., 1925; Foix and Hillemand, 1925c, 1925d). Of particular interest was his contribution in the discovery of the ischaemic nature of the thalamic syndrome due to thrombosis of arterial branches of the basilar artery. Indeed, Dejerine and Roussy had described the clinical topographical syndrome but not its etiology. His other important publications with his contemporary colleagues are: a fine anatomy of the mesencephalon sub-optic area (Foix and Nicolesco, 1925), a cranial-cerebral topography, several studies on cerebellar syndromes and late cerebellar atrophy with cortical predominance (Marie et al., 1922). Among other contributions are his work on aphasia (Marie and Foix, 1917), necrotic myelopathy (Ferrell et al., 2009; Foix and Alajouanine, 1926) and anterior opercular syndrome (known as Foix-Chavany-Marie syndrome) (Foix et al., 1926). Charles Foix was also an author of prose and poetry. As a person, Foix was pleasant, kind, beloved by all his colleagues, pupils and friends.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Acknowledgements

The authors would like to thank for their tremendous help Chlo   Loiraud, Yann Bregeras, Sandrine Jamen and Jessica Moreau from *Biblioth  que m  dicale, h  pital neurologique Pierre Wertheimer*, Lyon, France, Chantal Barbara, Marjorie Lorch (ISHN), the *  cole des neurosciences de Paris*, the *Club d'histoire des neurosciences* from the *Soci  t   des neurosciences* and the *BIU Sant  * (*Biblioth  que inter-universitaire de sant   de Paris*) and the *Acad  mie nationale de m  decine* and *Acad  mie des sciences* for the reproduction of photographs.

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