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## Keeping the Fire Burning: Georges Gilles de la Tourette, Paul Richer, Charles Féré and Alfred Binet

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### Abstract

Jean-Martin Charcot (1825–1893) was the one of the world's leading physicians during the final third of the 19th century. Rewarded in 1882 with the creation of the first chair in the diseases of the nervous system, he was extremely successful at recruiting loyal and talented students. Charcot himself never produced a general treatise on hysteria, but instead encouraged his pupils to write their own books. Here, we describe how the work on hysteria of Georges Gilles de la Tourette, Paul Richer, Charles Féré and Alfred Binet was closely associated with Charcot, and how they remained faithful to their mentor. We will highlight the unusual personality of G. Gilles de la Tourette and the tragic end to his life, the exceptional artistic talent of P. Richer (writer and painter of his magnificently illustrated thesis), the prolific writing capacity of C. Féré (bearing witness to his broad fields of interest) and A. Binet (blessed with an extraordinary capacity for work, and author of *The Psychology of Reasoning*, before presenting his metric scale of intelligence).

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Jean-Martin Charcot was the leading figure in French neurology during the second part of the 19th century. His major discoveries and his groundbreaking descriptions of multiple sclerosis, Parkinson's disease, amyotrophic lateral sclerosis, tabes and cerebral localizations were published between 1860 and 1883. In 1882, the chair of the clinic for nervous system disorders

was created for him. From that point on, J.-M. Charcot never again published any major new descriptions himself. He was always pushing one of his students to the fore, limiting his own role to writing prefaces for their publications. Georges Gilles de la Tourette wrote: 'Our teacher knew how to identify each student's abilities and distribute the work accordingly'. J.-M. Charcot excelled in the discreet art of leading a school of thought – selecting students and colleagues for their talents while pursuing his own objectives. The personal qualities that made it possible for him to reach the top included determination and abnegation (which enabled him to work constantly and intensively), drawing skills (which almost led him to become an artist and explained his liking for caricature), his broad general literary and artistic knowledge (including the ability to read Latin, English and German), and his writing and editing talents. J.-M. Charcot surrounded himself with disciples possessing the same qualities [1, 2]. Here, we examine a few of his students: Georges Gilles de la Tourette, Paul Richer, Charles Féré and Alfred Binet. They were all born between 1849 and 1857, and thus formed 'the next generation' – those that kept the flame burning for their teacher and his message intact. Strangely,

we can identify a similar path for each of them. All came from the French provinces and travelled to Paris to study. They were outstanding students who moved swiftly through the initial stages of their schooling, but had disciplinary problems and trouble adapting to the system.

## Georges Gilles de la Tourette

### *Training and Career*

Georges Gilles de la Tourette was born on 30 October 1857 in central France, close to Loudun in the *département* of Vienne. His father, Léon Gilles de la Tourette (1828–1882), a distinguished general practitioner, was an amateur archaeologist with a talent for drawing [3]. Georges obtained his *baccalauréat* at age 16 years, but because of his immaturity his mother had him start his medical studies in Poitiers as he was worried that he would get into trouble in Paris. As Paul Legendre relates [4]:

I do not think the danger for Gilles, had he come to Paris too young, would have been the easy pleasures at the *brasseries* on boulevard Saint-Michel; he was curious and hard-working, but his curiosity itself would have been a threat to him. With his liking for history and literature he could have been tempted to abandon his medical school classes and the hospital theatres for classes at the Sorbonne and Collège de France; he perhaps would have slipped into literary and political journals and exclusively worked as a publicist, instead of finding in journalism a mere reprieve from his medical career.

He enrolled in medical school in Paris 3 years later, in 1876, becoming a non-resident student after his second attempt in 1878, ranking 195th out of 231 candidates. In 1881 he became a house officer at the Paris public hospitals. He counted François Damaschino, Paul Brouardel and Alfred Fournier among his teachers, and in 1884 he started working under J.-M. Charcot, ‘who would really become his God’ [4]. As P. Legendre writes [4]:

M. Brouardel was very fond of this talented student who was so ardent about his work and had literary as well

as medical abilities; in 1885 he made him *préparateur*<sup>1</sup> for his forensic medicine classes.

In 1887, G. Gilles de la Tourette took over from Joseph Babinski as *chef de clinique* (specialist registrar) under J.-M. Charcot. P. Legendre notes that: ‘Preparing lessons for the professor that founded the Salpêtrière School, balancing obedience and initiative, overseeing all the details of an immense department, was a delicate and exhausting chore.’ During this period, he attempted to treat tabes pain by ‘suspensions’, which Fulgence Raymond had discussed with J.-M. Charcot upon his return from Russia to visit Motchoukowsky. The teacher remained skeptical, but did not want to overlook a potentially beneficial treatment for patients, for whom the only treatment available at the time was hydrotherapy in Lamalou les Bains. G. Gilles de la Tourette demonstrated the absence of any real spinal elongation. The curiosity of his teacher led him to study a vibrating chair to benefit Parkinson’s patients, and he invented a vibratory helmet using batteries to treat facial neuralgia and vertigo [5, 6]. G. Georges de la Tourette kept the following letter, which had this annotation [7]: ‘Monsieur Charcot leaving for a trip to Nice or Cannes or Marseille for a consultation with Don Pedro d’Alcantara, Emperor of Brazil’ (fig. 1).

Sunday

My Dear Gilles de la Tourette,

I have to leave tonight. I will not be back for the Tuesday morning lesson. Have the patients come back Friday, I will have returned by then and since I will not have had time to prepare, I will demonstrate the sleeping woman. During my absence, take charge of the public consultation on Tuesday, and if you come across good patients, tell them to come back Friday. I will interview them again. With the sleeping woman, that will be enough for the lesson. Tell the audience that I was called away suddenly and deeply regret that I had to leave.

Yours sincerely, Charcot, 27 November 1887.

Charcot had to leave for an urgent consultation with the emperor of Brazil. As physician to the

<sup>1</sup> A teaching assistant in anatomy classes who prepared the cadavers and taught the medical students dissection techniques.

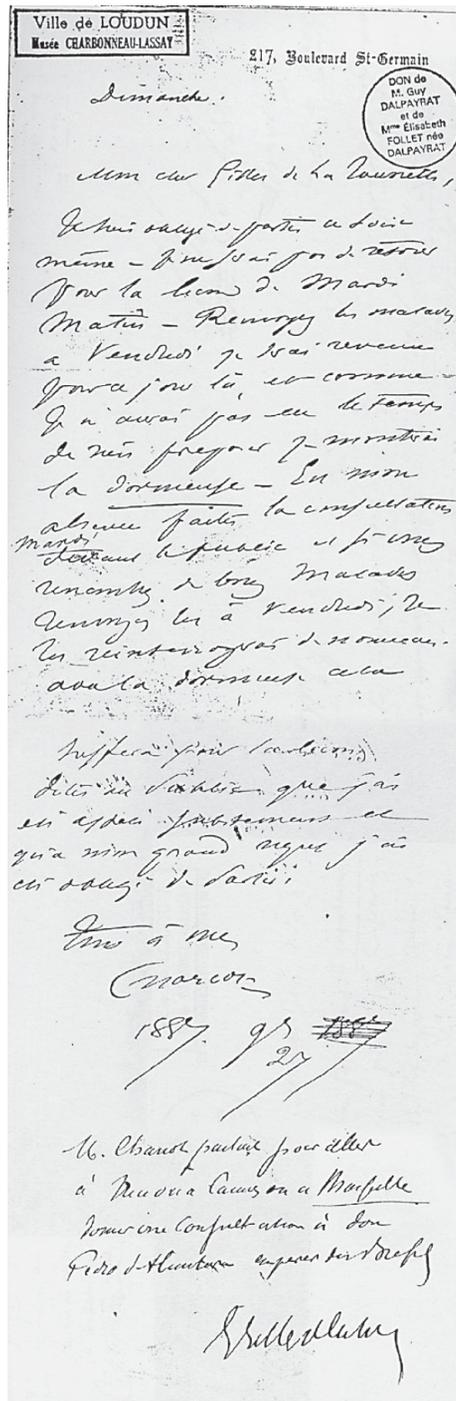
important figures throughout the world, he confidently left the control of his department and his famous Tuesday morning public consultation to his *chef de clinique*. Being exclusive and meticulous, he wanted to re-interview patients that G. Gilles de la Tourette had already seen during the consultation and who had teaching value. J.-M. Charcot's words indicate a sort of familiarity that he did not express in public. His reputation was very different, one of intransigent authority that he 'exercised towards his students and which none would have dared to challenge' [4]. He liked his centre stage role, however, and did not want to disappoint 'the audience'.

In 1892, G. Gilles de la Tourette participated in the same *agrégation*<sup>2</sup> exam as J. Babinski. Both fell victim to the dissent between J.-M. Charcot and the president of the jury, Charles Bouchard, and neither were recruited. But unlike J. Babinski, he persevered and obtained the *agrégation* in forensic medicine in 1895 [5]. He was appointed to the *Bureau Central* in 1893, thus becoming a physician at the Paris public hospitals. He became *chef de service* (consultant) at Hérold Hospital in 1896, then at Saint-Antoine in 1898. The only time he taught neurology was during the illness of Fulgence Raymond, J.-M. Charcot's successor as chair of nervous system disorders, for whom he filled in one semester in 1899 [8].

#### Man of Letters

The first issue of *Nouvelle Iconographie de la Salpêtrière*, was published in January 1888. J.-M. Charcot was the official editor, but Paul Richer, Georges Gilles de la Tourette and Albert Londe were the actual editors. G. Gilles de la Tourette [9] wrote the foreword in his habitual pompous manner:

**Fig. 1.** Letter from J.-M. Charcot to G. Gilles de la Tourette in 1887 informing him that he had to leave urgently to for a consultation with the emperor of Brazil. Courtesy of the Coll. Musée Charbonneau-Lassay, Loudun.



<sup>2</sup> High-level competitive examination to obtain a medical profession.

It is common knowledge that the clinic housed in this hospital constitutes the most significant scientific centre for the study of the nervous system. There is scarcely a French physician in Paris or the *départements* that has not sent patients; moreover, the diversity of languages spoken here proves that all countries in the world more or less rely upon it. Among this large number of patients, there are certainly many who come spontaneously in search of a remedy for a stubborn disease, but even more are sent by their physician to have an uncertain diagnosis confirmed on solid ground.

*Les Archives de Neurologie* was created in 1880 by J.-M. Charcot and edited by Désiré Magloire Bourneville and Charles Féré, who in addition to this publication had the following goal: 'When a patient is of objective interest, he is immediately sketched or photographed [...] These pictures currently represent a very important collection at La Salpêtrière Hospital'. It was a unique innovation when J.-M. Charcot created a photography lab next to the anatomical pathology lab in his own department. He used the talents of his assistants to disseminate the observations and discoveries he made. In the beginning *Les Archives de Neurologie* was published every other month, and it was usual to find a text by G. Gilles de la Tourette in every issue; thus, demonstrating his taste for journalism. Considering practical matters, he wrote:

Our teacher has put us in charge of the most important branches in his department, and we possess all the elements to successfully accomplish our task. We do not need to call on outside help for the drawing, engraving or photography in the cases we describe.

G. Gilles de la Tourette was the editor, P. Richer did the drawings and engravings and some editing, and A. Londe was the appointed photographer. He added the commentary [9]: 'We know that today, dealing without intermediaries, we can obtain much and with little expense.'

#### *Description of Diseases*

As early as 1881, the year he became a house officer, G. Gilles de la Tourette had translated, but not annotated, the article by Beard on the jumping Frenchmen of Maine [10, 11]. The translation was published in *Les Archives de Neurologie*;

the original article was published in 1880 in *The Journal of Nervous and Mental Diseases*. J.-M. Charcot encouraged G. Gilles de la Tourette to persist in these studies [12]:

On the advice of our teacher, Professor Charcot, we have ourselves analysed the works of the three earlier authors (Beard, O'Brien, Hammond), demonstrating in July 1884 that jumping Frenchmen of Maine, latah in Malaysia and myriachit, observed by American officers in Siberia, were one and the same condition.

His first work, describing the disease that carries his name, appeared in 1885 in *Les Archives de Neurologie: 'Etude sur une affection nerveuse caractérisée par de l'incoordination motrice accompagnée d'écholalie et de coprolalie'* (Study of a nervous condition characterized by motor incoordination accompanied by echolalia and coprolalia) [13]. He did not defend his doctoral dissertation in medicine until one year later, in 1886. Except for one occasion in 1899, when another clinical case was described in *La Semaine Médicale*, G. Gilles de la Tourette never again studied convulsive tic disorder [14]. This early work did not have an important impact at the time of its publication, and it was J.-M. Charcot who proposed its title: '*Maladie de Gilles de la Tourette*' [5]. Between 1884 and 1965, only 50 cases were described in the literature and G. Gilles de la Tourette's name could well have been forgotten. But in 1969 the team of A. Shapiro and A. Shapiro published a study of 114 consecutive cases they had observed, and then estimated the prevalence of the disease at 0.5% of a given age range in the American population. This definitively confirmed the clinical picture as described and characterized by G. Gilles de la Tourette, which had previously been contested. The creation of a patient association in the USA in 1971 brought G. Gilles de la Tourette's name to the fore once again and assured his celebrity status. MacDonald Critchley writes:

The Malady of Gilles de la Tourette: what a compelling and grandiloquent choice of words! As a matter of fact, it is a fragment of poetry with its iambus following a

dactyl. More than that, it is a musical theme which reverberates in one's imagery. Little wonder that the eponym fixates itself in the mind of every student at the outset of his career in neurology, there to remain throughout his life like a limpet.

The disease was, sadly, simplified to Tourette syndrome, the only eponym in the DSM-III and the DSM-IV [15, 16].

### *Hysteria*

The subject that impassioned and occupied G. Gilles de la Tourette from 1884 to 1897 was hysteria, a term used as 'a dustbin where everything was placed which could not be classified' [5]. He became a zealous compiler of the experiments and theories passed on by his teacher J.-M. Charcot, who had focused on the topic since 1870. J.-M. Charcot appreciated G. Gilles de la Tourette's devotion and capacity for work. He made him his private secretary after C. Féré started working at the Bicêtre Hospital. J.-M. Charcot's department included a room reserved for hysterics and epileptics. The presence of 'a number of very remarkable cases of hysteria' encouraged him to try to solve the mystery of two often confused pathologies, which were in conflict with the anatomical-clinical method that had led to his most important discoveries.

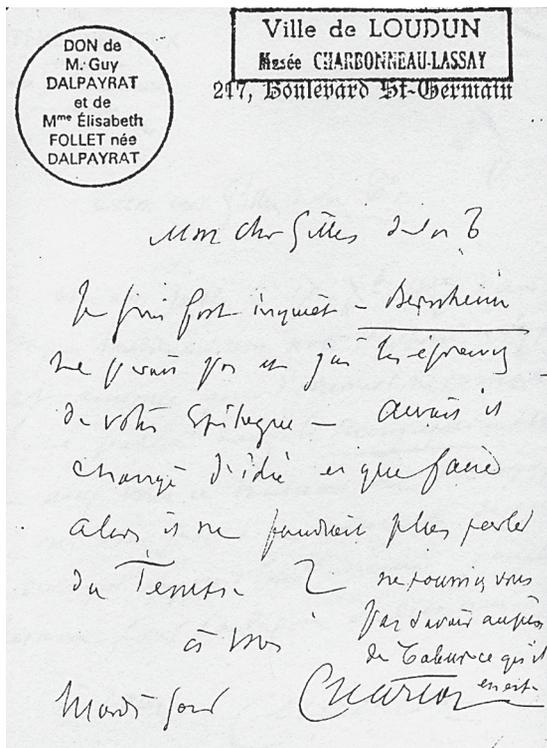
More specifically, the clinical symptomatology for hysteria and epilepsy was remarkable for the lack of individualized lesions in the central nervous system.

G. Gilles de la Tourette's first publication appeared in 1886. Combining his interest in history and journalism, he once again turned to Loudun for inspiration by exploring the case of *Soeur Jeanne des Anges supérieure des Ursulines de Loudun XVIIè s, autobiographie d'une hystérique possédée* (Sister Jeanne des Anges, mother superior of the Ursulines in Loudun during the 17th century, an autobiographical case of hysterical possession), with his first preface by J.-M. Charcot [17]. In the library of Tours, he and G. Legué had found an unpublished autobiographical account, in which:

We simply find ourselves in direct contact with a patient possessing a certain degree of culture, although illiterate, who has meticulously and intelligently observed her condition and who provides her own account of her suffering with as much sincerity as innocence, and, I add, with a wealth of instructive details that we often look for in vain in the most modern medical observations.

Gilles de la Tourette was interested in history from his adolescence. His curiosity led him to study the life of Théophraste Renaudot (1586–1653), who was born in the city of Loudun, very close to his own birthplace. His renowned compatriot, a physician himself, accompanied Cardinal de Richelieu to Paris. He imported the first pawnshops, or *monts de piété*, to France, and also instigated free and charitable consultations as well as a *bureau d'adresse et de rencontre*, a forerunner to modern employment agencies. G. Gilles de la Tourette, a positivist and progressive, was nothing but fascinated by this important figure. On 30 May 1631, Théophraste Renaudot launched his famous *Gazette*. This first French daily paper was a propaganda mouthpiece for Richelieu, who granted it a monopoly over the press in 1635, to the detriment of its Parisian competitors. While still a house officer, G. Gilles de la Tourette wrote a biography of Renaudot that was published in 1884 [18]. It is impossible not to see his fascination with the written word, which made Gilles de la Tourette so prolific. In 1882 he met the journalist Georges Montorgueil, who like him was born in 1857, and who wrote the news column for the journal *L'Eclair* [19]. A deep friendship developed, lasting until G. Gilles de la Tourette's death. Seemingly drawing his inspiration from T. Renaudot, G. Gilles de la Tourette had his friend publish not only medical news from the works of the Salpêtrière School, thereby assuring its notoriety, but also a variety of day-to-day correspondence.

While Gilles de la Tourette used the mainstream press to disseminate the works of J.-M. Charcot, thereby popularizing his research, he also increased his personal fame at the same time. Starting in 1892 and using the pseudonym



**Fig. 2.** Letter from J.-M. Charcot to G. Gilles de la Tourette without a date, but estimated to be in 1891, depicting their close relationship at this time. Courtesy of the Coll. Musée Charbonneau-Lassay, Loudun.

Paracelse, he wrote as a scientific columnist on madness and its depiction in the theatre, and also on crimes of passion: *l'Etat mental de Froufrou* [20], *La Folie de la Reine Junana* [21], *A propos du procès Cauvin: l'état mental de Marie Michel* [22], *L'état mental de feu Ravachol* [23] and *L'épilogue de l'affaire Eyraud-Bompard* [24].

### *The Eyraud-Bompard Affair*

A criminal affair fascinated the public in 1889–1890, the Gouffé affair, named after a bailiff who was the victim of murder by strangulation. After having been invited to lie down on a sofa by Gabrielle Bompard, the flirtatious accomplice who had drawn him into this trap delicately

slipped a rope around his neck during supposed foreplay. His murderer, Michel Eyraud, had been hiding behind a curtain and strangled his victim to death by tightening the rope. The murderers did not find the expected savings and left the body in a trunk not far from Lyon. Gabrielle Bompard voluntarily turned herself in a few months later. Her lawyers built her defense on the premise that she had acted under hypnosis, having been placed in this state by M. Eyraud. Jules Liégeois, representing Bernheim and the Nancy School, came to court to demonstrate his own experiments, which supposedly showed that a crime could be committed by suggestion. But the appointed experts, Paul Brouardel and Gilbert Ballet, ridiculed his deposition. Michel Eyraud was convicted to death and Gabrielle Bompard to 20 years' imprisonment [25]. On this occasion G. Gilles de la Tourette wrote the memorable *Épilogue d'un procès célèbre* (Epilogue of a famous trial), proclaiming victory for the theories of the Salpêtrière School, which denied all possibility of a violent act under hypnosis and by suggestion [24]. An unpublished letter from J.-M. Charcot to G. Gilles de la Tourette casts light on their close relationship at this time (fig. 2):

My dear Gilles de la Tourette,

I am very worried. Bernheim did not know and I have the rough draft of your conclusion. Did he change his mind, and what to do now that we can no longer mention *Le Temps* anymore? Could you inquire with Taleur about this?

Yours truly, Charcot  
Tuesday night

This letter gives a glimpse of a more emphatic J.-M. Charcot than his usual persona, but he was worried, and uncharacteristically made his doubt apparent. Unfortunately this letter is not dated, but it clearly concerns the dispute opposing the Nancy and Salpêtrière Schools on the occasion of the Eyraud-Bompard trial. Gilles de la Tourette had probably shown the final draft of his article, published in *Le Progrès Médical* in 1891, to his teacher. But several weeks passed between the writing of this article, which glorified the position

of the Salpêtrière School, and its publication. During this interval Bernheim had published a column in the *Le Temps*, justifying his point of view on suggestion and criminality. A cross-reference at the bottom of page 93 of the *Le Progrès Médical* article indicates that Gilles de la Tourette had added the following, after this exchange with J.-M. Charcot [24, 26]:

In his article in *Le Temps* (29 January 1891), published after this Bulletin was prepared, H. Bernheim, assessing the opinions of the Salpêtrière School on the subject of hypnotism, says somewhat scornfully: 'It is a set of experimental facts rather than a doctrine, because the facts are presented without theoretical interpretation.'

In 1887 in his book *L'hypnotisme et les états analogues du point de vue médico-légal* (Hypnotism and similar states from the forensic point of view), Gilles de la Tourette did however describe two examples of hysteria (the famous Blanche Wittman and Ms. H.E.) who were induced to commit a crime while under hypnosis and who declared they committed the act before waking up [27]. Here we see a first contradiction to the position taken during the trial. The year 1893 brought another.

G. Gilles de la Tourette suffered several personal tragedies in 1893. First he lost his son to meningitis in January. In August J.-M. Charcot suddenly passed away. Then, on 6 December 1893, a woman by the name of Rose Kamper came to his house to demand money from him, saying she was a victim of the hypnotism experiments she underwent at La Salpêtrière Hospital. After having refused her demands, G. Gilles de la Tourette got up and turned around to see her out. She then fired three shots, injuring Gilles de la Tourette superficially in the neck [28]. Immediately after being treated by the surgeon Pierre Delbet (1861–1957), and with an unsteady hand, the first thing he did was write a short note to Montorgueil that was never published:

I would be happy to see you today. The bullet has been taken out. I am better, better. Sincerely, Gilles de la Tourette. What a strange story.

When asked why she had attempted to kill the doctor, this woman repeated that:

She lived in poverty and had long ago, either voluntarily, or without her knowledge [sic], agreed to be a subject for hypnotism experiments at La Salpêtrière Hospital. By doing so she had lost her will to such an extent that she found it impossible to continue working, and consequently, asking for money from those who had taken away her livelihood appeared logical to her.

On 8 December, Montorgueil published a complete article in *L'Éclair*. This trivial event sparked considerable media coverage, occurring a few months after the public dispute in a courtroom between the Nancy and Salpêtrière Schools. Certain newspapers went so far as to insinuate a publicity stunt orchestrated by G. Gilles de la Tourette [29].

G. Gilles de la Tourette's sense of loyalty and attachment regarding J.-M. Charcot and his ideas on hysteria becomes obvious in this account by P. Legendre:

From the day he started working with Charcot, he made sure to carefully note what his teacher said or merely suggested day after day. Charcot himself paid tribute to the patient historiographical work of his student, lasting eight years, when he wrote in the preface of *Traité de l'hystérie*: 'While I was reading the work of M. Gilles de la Tourette before it was printed, I was surprised on several occasions to find ideas of mine I considered absolutely personal, that I thought I never talked about, which, in any case, had never been published.'

This was the third preface J.-M. Charcot had accorded his student, a privilege not bestowed on any other disciple. In 1895, Gilles de la Tourette published the third volume of his *Traité de l'hystérie*, which J.-M. Charcot had revised a few days before his death. After that, Gilles de la Tourette wrote only one more article about hysteria in 1900 [30].

#### *Difficult Final Days*

Gilles de la Tourette was a house officer under Alfred Fournier. While he accepted that tabes dorsalis was due to syphilis, he never agreed with

his former teacher on the syphilitic origin of dementia in general paralysis [31].

In *Paris vécu*, Léon Daudet gives his version of how Gilles de la Tourette's disease revealed itself publicly [5]:

Pierre Marie, who much later attracted considerable attention with his localisation of articulated speech, was very disciplined and modest, keeping very much to the background: 'Yes sir, no sir, perfectly sir'. He was attractive, very kind, resembling a shy lawyer more than a physician. He stood in contrast to Gilles de la Tourette, who was hirsute, categorically talkative and absurd and would die insane. Gilles de la Tourette's delirium, resulting from a neglected treponemal infection, became publicly apparent in the most comical way. While conducting an exam he asked the candidate: 'Who are, sir, the three greatest French physicians of the 19th century?' The student thought about it and answered: 'Laennec, Duchenne de Boulogne and Charcot', because he knew that Gilles de la Tourette had been Charcot's student. 'No, sir, that is incorrect: it was my grand-father, my father and me, mate. That is why in this room the examiner put his own *toque d'agrégé*<sup>3</sup> on the head of the speechless young man, that is why a potassium bromide statue will be erected for me!'

The public assistance archives showed that Gilles de la Tourette was on leave for health reasons starting on 1 November 1901 [32]. In 1900, after Edouard Brissaud (1852–1909) left the chair of history of medicine to take the chair of medical pathology, Gilles de la Tourette wished to succeed him. The 38-page manuscript he wrote for this purpose but never submitted contains pathetic passages indicating a flight of ideas, megalomania and the loss of his critical faculties:

We think it a magnificent service we have rendered to the history of medicine by bringing attention to these old treasures in our museums and also by making them appealing. These documents are so specific and so accurate in their representation... and were almost completely ignored until now and unknown to most of the public and also to those physicians most specialised in the posthumous objects of

<sup>3</sup> Cap worn as part of the traditional academic dress of agrégés, who have passed a national competitive exam to obtain university professorships. During the ceremony to induct successful candidates, the cap is symbolically placed on their head.

medicine. We have also published, as an appendix, original texts describing the most beautiful discoveries in ancient and modern art, with a minimum of 300 to 400 drawings, which could also constitute a superb volume to the glory of French medicine. We should always consult it to constantly keep in mind this parallel and admirable evolution of the history of medicine and the art of sculpture, painting and costumes in France and abroad, with illustrated documents that are unrivalled in the world. They appear only rarely in common books, aside perhaps from the important work of the honest Ambroise Paré, who must have been an excellent artist as his book is adorned with marvels'.

He was hospitalized involuntarily at the medical facility in Bois de Céry, close to Lausanne, accompanied by Jean-Baptiste Charcot, his teacher's son and fellow student, who explained that they were going to give a medical opinion on a famous patient at the facility. He suffered from dementia, and died on 22 May 1904 after an epileptic seizure [5, 7].

## Paul Richer

Paul Richer was born to a family of linen and fabric merchants in Chartres on 17th February 1849. Every day on the way to school, young Paul passed the famous cathedral embellished with countless figures, which stimulated his imagination. Seeing the stonemasons repairing the structure certainly contributed to P. Richer's liking for sculpture. As a malicious and unruly child whose buffoonery exasperated his teachers, he had to change schools several times. His parents grew weary of this and resigned to placing him in a disciplinary boarding school with the Marist Brothers in Montluçon in 1865. A drawing teacher there noticed his excellent graphic skills and encouraged him to pursue drawing. He obtained his *baccalauréat* in 1869 and began to study medicine when the war with Prussia broke out. He was assigned to the ambulances of Dujardin-Beaumetz and was baptized by fire at Loigny while helping to amputate the leg of General de Sonis. His work *L' ambulance de Loigny* at the museum of Val de Grâce immortalizes his emotions. He became a non-resident



**Fig. 3.** In 1875 Paul Richer illustrated the thesis of his friend Henri Meillet entitled '*Des déformations permanentes de la main au point de vue sémiologique médicale*' (Permanent deformations of the hand from a medical semiological point of view). O. Walusinski, private collection.

student shortly after the Paris Commune and continued to draw while working under Eugène Bouchut, Jules Bucquoy, and others [33].

In 1875 Marc Sée published *Recherches sur l'anatomie et la physiologie du coeur* (Research on anatomy and physiology of the heart) which was richly illustrated with drawings by P. Richer. When the book was published, the illustrator was profoundly disappointed to find that his name appeared nowhere. From then on he signed all his drawings! On 23 December 1874, he was rated third among his fellow house officers, including Jules Dejerine and Maurice Letulle. During an internship with Théophile Gallard at La Pitié Hospital, he decorated the physician's room with a charcoal fresco, becoming well known to his colleagues and teachers. In 1874, J.-M. Charcot chaired the committee for Henri Meillet's thesis entitled *Des déformations permanentes de la main au point de vue sémiologique médicale* (Permanent deformations of the hand from a medical semiological point of view). The author was a friend

of P. Richer and asked him to illustrate his work. J.-M. Charcot was captivated by the beauty of the drawings and immediately proposed that P. Richer join him at La Salpêtrière Hospital to finish his house officership [34] (fig. 3). Encouraged by D.M. Bourneville and under the direction of J.-M. Charcot, P. Richer began working on his thesis, '*Etude descriptive de la grande attaque hystérique, ou attaque hystéro-épileptique et ses principales variétés*' (Descriptive study of the great hysteria attack or hystero-epilepsy and its main varieties). Passing innumerable hours in patient rooms, he waited for a gesture, an attitude, an expression which he would quickly capture on paper. This magnificently illustrated thesis, defended in 1879, served as the basis for his book *Etudes cliniques sur l'hystéro-épilepsie ou grande hystérie* (Clinical studies on hystero-epilepsy or great hysteria) published in 1881. In 1882 J.-M. Charcot – an art collector who counted many artists among his friends – put him in charge of his laboratory. In P. Richer he found an art lover who helped him publish a series of scientific reviews on artworks that appeared in the *Nouvelle Iconographie de La Salpêtrière*. His son, Jean-Baptiste Charcot, visited the Salpêtrière laboratory when he was a child, where P. Richer introduced him to electric toys, the latest novelty of the time. His accounts are invaluable to us. He reveals that P. Richer was color blind, which explains why he chose medicine over painting and why his work is solely composed of sketches and drawings and later engravings and sculptures, but never paintings. As P. Legendre notes, 'the artist finally triumphed over the physician.' Having been a member of the *Académie de Médecine* since 1898, he succeeded Mathias Duval (1844–1907) at the chair of artistic anatomy at the Ecole des Beaux Arts in 1903. 'The professor mastered anatomy, physiology, drawing and modeling with equal skill'. He created numerous monuments glorifying French medicine, such as his tributes to Pasteur and the discovery of anthrax (Chartres, 1903) and to J.-M. Charcot and hydrotherapy (Lamalou). The latter, a bronze bust



**Fig. 4.** Sculpture engraved by Alfred Binet: Fontaine Charcot in Lamalou les Bains, France. Postcard, O. Walusinski, private collection.

bequeathed to the city of Lamalou les Bains by Madame Charcot in 1903, was melted down during the German occupation [35] (fig. 4).

In *Nouvelle Iconographie de La Salpêtrière*, he published several observations on morphological anatomy, such as *Le bourrelet sus rotulien* (Subpatellar pad) (1886) and *Note sur le pli fessier* (Note on the gluteal fold) (1889). His main artistic work, a 500-page book entitled *L'anatomie artistique, description des formes extérieures du corps humain* (Artistic anatomy, description of the exterior forms of the human body) was published in 1890. Undoubtedly influenced by his colleague Charles Féré's descriptions and concerns regarding

degenerates, he developed a passion for 'the scientific and artistic canons' of the human body, publishing *Canon des proportions du corps humain* (Canon of the proportions of the human body) in 1890 and in 1893. J.-M. Charcot insisted that the director of La Salpêtrière Hospital install a studio in the department outbuildings for his laboratory director and artist, where P. Richer dedicated himself to his drawings. Here P. Richer began to create a collection of statues destined for teaching neurology. His representations of various pathologies are preserved in the Charcot Library at La Salpêtrière Hospital: a female patient with labio-glosso-laryngeal paralysis, a myopathic patient



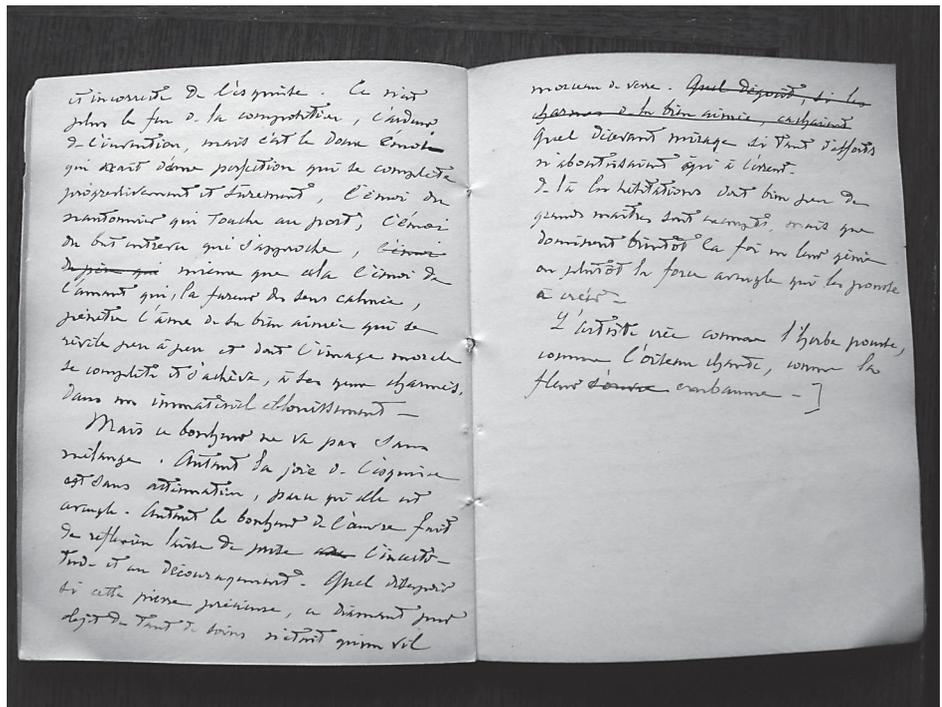
**Fig. 5.** Statuette of an old woman with Parkinson's disease, height 47 cm. Copyright of the Musée d'Histoire de la Médecine et de la Pharmacie, Université Claude-Bernard, Lyon 1 Domaine Rockefeller.

and a Parkinson's patient displaying rigidity [36, 37] (fig. 5). We cannot fully cover P. Richer's sculpting career here, but we offer an unpublished text handwritten by him and found in a notebook dating from 1898, which presents his philosophy of artistic creation. In this notebook (fig. 6), he copied passages of books that he read in order to use them as citations in his writings (Thomas-Scheler private collection, Paris, 6th district):

The fever of beauty, the ardour of inspiration, the heat of invention, the voluptuous and intense emotion of artistic creation can only be found, properly speaking, in the first rough draft of a piece of art, in the sketch or model. These

violent feelings, which are cut short by their exasperated nature, give way to gentler but no less profound feelings during execution of the work. The joy of creation persists but is restrained, and this dominates overall, encompassing the entire work. Inspiration and invention give way to reasonable choice, conscious discernment, the scientific method and artistic taste. At this point, there is a major difference between painting and sculpture, yet not as significant as we might initially think. The touch of paint is final, whereas the sculptor's work on the clay that so easily obeys his fingers more or less disappears during execution in the final material, such as bronze or marble. In sculpting, the stroke of a painter is only comparable to the stroke of the artist's chisel as he finishes his marble. And like the stroke of the chisel, the completed work vanishes behind the perfection of the form, in the same way that the paint appears to flow without even the trace of a paint stroke in a completed painting. Take Leonardo da Vinci. What a different feeling for the artist when he completes his work than the fervour that shakes him in the beginning, as this culmination is successively achieved and as he watches the uncertain and incorrect image of the first sketch presenting and completing itself. It is not the end of the composition, nor the fervour of invention, but the gentle emotion born of gradually achieved perfection. And surely the excitement of the bridge-builder as he completes his task, the excitement of the approaching goal, better than that, the excitement of the lover whose passionate feelings have calmed as he penetrates the soul of his beloved, which reveals itself little by little, and whose moral image completes itself and culminates before his charmed eyes in an immaterial bedazzlement. But joy does not come unadulterated. As the joy of the sketch does not originate in the artist's soul because it is blind, so the joy of the work achieved by the intellect is subject to uncertainty and discouragement. What despair if this precious stone, this delicately cared for diamond, were no more than a worthless piece of glass. What a disappointing mirage if all these efforts only led to error. This is the source of the hesitation from which few of the great masters are exempt, but which they quickly subdue by faith in their genius or by the blind force that pushes them to create. The artist creates like grass grows, like the bird sings, like the flower gives off its scent...

P. Richer terminated his career as general inspector for drawing instruction (self-portrait in fig. 7). His path was an extraordinary one for a neurologist. His retirement did not dampen his productive energy. He continued to produce engravings, medals and statues, notably the statue of Alfred Vulpian, which is still standing not far from the medical school in Paris [33]. He passed



**Fig. 6.** Paul Richer: 'Mélanges sur le Science et sur l'Art' (Philosophy of science and art) 1896–1898. Manuscript of 40 handwritten pages. Courtesy of Librairie Thomas Scheler, Paris.

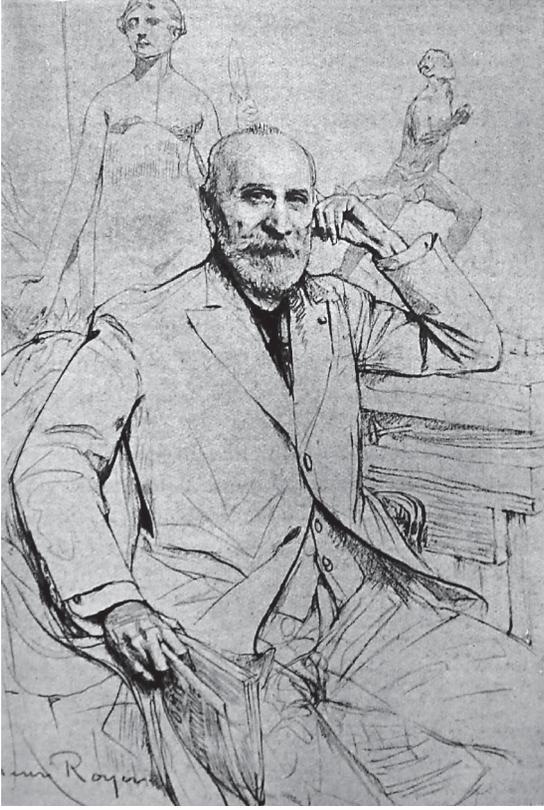
away at age 84 years. Of the four students under J.-M. Charcot whom we are studying here, he was the only one to live a long life.

### Charles Féré

Charles Samson Féré (fig. 8) was born on 13 June 1852 in Auffay in the Normandy area, 170 km west of Paris. He was the only child of well-to-do farmers. He was judged a 'capricious' student by a teacher at the upper secondary school in Rouen, where he obtained his *baccalauréat* at age 16 years. He took a carefree approach to life, and his numerous escapades with friends led to his first failure when he was not admitted to the medical school in Rouen. At this point, he developed hemoptysis, a sign of the pulmonary

tuberculosis that would affect him profoundly. Even though he apparently recovered rapidly, this terrifying event led him to develop the diligent approach to work that characterized the rest of his life [38].

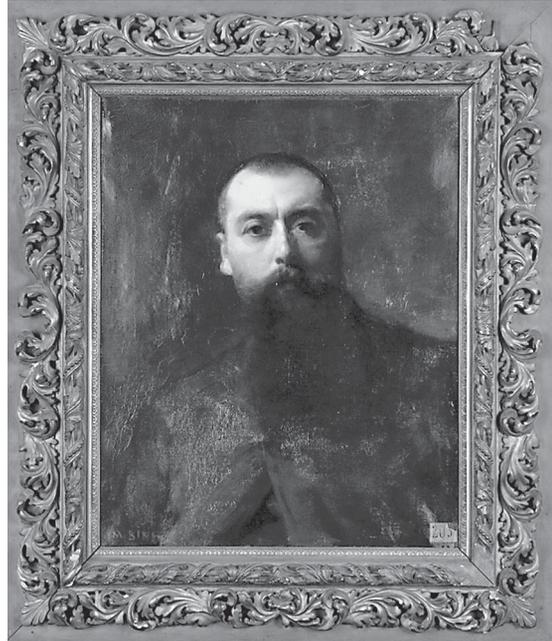
From 1870 to 1872 he began his medical studies at the Rouen school, where his professor was the Hôtel-Dieu surgeon, Achille Flaubert (1813–1882), brother of the writer Gustave Flaubert. Then he left for Paris, but having no roots there and being emotional and shy, he only passed the house officer competitive exam after his fifth attempt in 1877. In 1879, he worked under Paul Broca (1824–1880), who localized aphasia and founded the Anthropological Society. This experience left a lasting mark on him. After an initial interest in surgery, his early publications dealt with abdominal hernias in breastfed children



**Fig. 7.** Paul Richer: self-portrait, from *Biographies médicales* (1930–1936. 2<sup>e</sup> série. pp. 65–76). O. Walusinski, private collection.

(1879), hip fractures (1880) and cancer of the bladder (1881).

In 1881 he became house officer under J.-M. Charcot and was immediately fascinated by him. In 1882, the same year the chair in neurology was created, he defended his thesis under the direction of J.-M. Charcot: *Contribution à l'étude des troubles fonctionnels de la vision par lésions cérébrales, amblyopie croisée et hémianopsie* (Contribution of brain lesions and hemianopsia to the study of functional vision problems), to which he applied the anatomical-clinical method, in reference to his teacher. Shortly thereafter J.-M. Charcot made him laboratory director [39].



**Fig. 8.** Charles Féré's portrait by Moïna Binet, mother of Alfred Binet. Cliché Bruno Maurey. Courtesy of Musée Flaubert et d'histoire de la Médecine, Rouen.

P. Le Gendre wrote [40]:

Ch. Féré was a *préparateur* in the specific area of autopsies. He was called '*le grand Féré*', because his height and imposing build evoked the memory of the patriot farmer who, during the Hundred Year's War, killed numerous English soldiers with a *maillet*<sup>4</sup>. This great devil concealed a sardonic sense of derision under his phlegmatic harshness, and the assistants did not get bored when he discovered some diagnostic error 'in Morgagni'<sup>5</sup> committed by one of the *chef de service*, even his own. He wrote an excellent book on the medical anatomy of the nervous centres (1886), and he showed his clinical intuition one day while crossing paths with my superior (H. Legrand du Saule). When he saw him walking with a heavy step and heard him talking with a thick tongue and dry lips, he told him point blank: 'Monsieur Legrand, get your urine checked

<sup>4</sup> Small wooden hammer.

<sup>5</sup> Refers to autopsy rooms, named for the Italian anatomist Giovanni Battista Morgagni (1682–1771).

for sugar'. Legrand retaliated with laughter: 'I'm too frightened I'd find some, which would force me to keep away from it, and I love it'.

Charles Féré was known as an extraordinarily shy man who stammered, especially when he spoke in public, a situation that made him flustered and upset. J.-M. Charcot, recognizing his abnegation and the quality of his work, was very kind to him, but understanding his handicap, he discouraged him from attempting the *agrégation* and oriented him towards the competitive entry exam for alienists at the Paris hospitals, which he passed in 1884.

In charge of the insane and the epileptics at La Salpêtrière Hospital, he was simultaneously physician to the insane at the *Préfecture de Police* where he directed criminology work, such as the thesis of A. Planès (1886): *Quelques considérations sur la folie à Paris observée à l'infirmerie spéciale du dépôt de la Préfecture de police* (Considerations on madness in Paris observed at the special infirmary of the *Préfecture depot*<sup>6</sup>). He befriended Alphonse Bertillon (1853–1914) who awakened his interest in anthropometry and had him admitted to the Anthropology Society [41].

In 1887 he returned to Bicêtre Hospital as department head, where he remained until the end of his career. There he met and frequented the Dejerine couple. Three afternoons a week he gave consultations at his home at 37 Boulevard St Michel in Paris. He was extremely discreet, leaving no trace of his private life. He was probably married but did not have any children. He cherished solitude and led a simple life, acknowledging himself: 'It is enriching to give up luxury and unnecessary needs'. The reason he was chosen by J.-M. Charcot, namely the determination with which he tackled his work, appeared to be an outlet for his relational problems, which he described

in his own words: 'In normal life, moral pain and boredom are often the starting point for the most useful work, for the individual as well as for the human species'. He demonstrated a profound liking for scientific research, which as he put it is an 'inexhaustible source of distraction and consolation for life's challenges'. In this way he revealed a depressive state, which paradoxically pushed him to seek out the rewards of thought and action. Occasionally, a migraine would interrupt his work for several hours [42]. In the biography of J.-M. Charcot that he wrote for the *Revue de Deux Mondes* (1894), he depicted his teacher in terms that perfectly described himself: 'His defining qualities were discipline and perseverance; not a day without work, not a study undertaken without being taken to its farthest conclusions'. Jules Séglas said: 'There is no branch of the medical sciences towards which he had not directed his curiosity at least briefly' [41].

Whether you open a book on the history of psychiatry, psychology or hypnosis, on prostitution, eugenics, Darwinism, anthropology, criminology or diseases in art and in human sciences, the name C. Féré appears – bearing witness to his broad fields of interest and the variety of his publications. He was elected to the *Société Médico-Psychologique* in 1883, and subscribed to the Society for Psychological Research in London in 1885. Simultaneously he created the *Société de Psychologie Physiologique* in France, which was presided over by J.-M. Charcot and Pierre Janet (1859–1947). This enthusiasm demonstrated his belief in the positivist philosophy developed by Auguste Comte, which he shared with D.M. Bourneville, P. Richer and J.-M. Charcot. Léon Daudet criticized him for it, writing in *Devant la douleur* (1915):

He himself was a good example of a lout, tattooed with knowledge of anatomical pathology, also exemplifying the devotee to nothingness, the servant of materialism.

L. Daudet goes on to add, denouncing the rationalist ideology:

<sup>6</sup> 'Lunatics' found on the streets were brought here before being returned to the streets or sent to an asylum.

Working for the evolutionist libraries that were proliferating at that time, fanatics like Bourneville and Féré produced pretentious and diffuse works that spread their fanaticism.

As part of the anticlerical movement of his time, he thought that work was a fruitful biological necessity and not a punishment. An early ergonomist, he used the ergograph developed by Angelo Mosso (1846–1910) on himself, conducting experiments on the influence of muscular work, its rhythms, and environmental conditions. He tried to prove that ‘peripheral excitation and the psychic phenomena that result from it, meaning emotions, are accompanied by motor expressions’. He published his findings and thoughts in various books: *Sensation et mouvement* in 1887, *La pathologie des émotions* in 1892 and *Travail et plaisir* (Work and pleasure) in 1904.

*Le magnétisme animal*, co-written with A. Binet, was published in 1886. After a long historic overview recalling the banning of magnetists for charlatanry under Louis XVI, they presented suggestion as a useful therapy, thus popularizing the ‘medicine of imagination’ that was formerly condemned. It was a true positivist republican manifesto against the reactionary obscurantism praised by Léon Daudet [42, 43].

Once the foundations of evolutionism and psychopathology had been laid by the philosophy of Pierre Cabanis, alienists such as Philippe Pinel, most often freethinkers, believed in the improvement of mental patients by ‘regeneration’. The profession of alienist was recognized by the law of 30 June 1838, as it laid forth the right of the insane to be treated as patients suffering from a disease. Alienists sought to establish the clinical pictures of various mental disorders. But at the end of the 19th century a quest for the cause of madness began, along the lines developed by Benedict Augustin Morel (1806–1873), a proselyte Christian alienist. As the controversial author of *Traité des dégénérescences intellectuelles, physiques et morales de l'espèce humaine* (Treatise on intellectual, physical and moral degeneration

in the human species), he developed the new concept of hereditary madness. Concepts such as ‘natural selection’ and ‘morbid heredity’, which were inspired by Darwinism, shed new light on pathophysiological explanations for madness. C. Féré, a republican, president of *La Société de Biologie* in 1895, followed this school of thought like many others, influenced as he was by the ‘Lamarck dinners’ [44].

A fierce advocate of using organic concepts of evolution in the analysis of human societies, along the lines of Spencer, he became involved in teratological experiments with poultry! (*Note sur l'évolution d'organes d'embryons de poulet greffes sous la peau d'oiseaux adultes* – Note on embryonic organs grafted under the skin of adult birds – by C. Féré and A. Elias. Paris: Masson, 1898. p 10).

Doubtlessly marked by the secondary pathologies of alcoholism which he observed in his native Normandy, he published *Dégénérescence et criminalité* in 1888, where his paradoxical position lends an ambiguity to his words: ‘Criminals and delinquents are abnormal, from the psychic as well as the physical point of view’. Chapter 10 has a frightening title: *Les nuisibles* (Harmful persons). His moralizing tone suggests he had forgotten his own adolescence:

Idleness is no more legitimate than a fire' [...] ‘A harmful person, by his lack of production, is as much the necessary consequence of his antecedents as the insane person or the criminal. The impotent, the insane, the criminal and the degenerate of every type, have to be considered as the waste products of adaptation, the invalids of civilisation.

He was a member of the organizational committee for the international conference of criminal anthropology in Paris in August 1889, along with Benjamin Ball, Jules Falret and Joseph Magnan. As fascinated as his teacher, J.-M. Charcot, by degenerates, chronic neurotics and alcoholics – as much in his clinical practice as in their art history research – C. Féré took part in the rise of a dark and tragic form of psychiatry that threatened society. He started the war to stamp out what he saw as social plagues, which he describes in *La*

*famille névropathique* (The neurotic family) in 1894 [45].

Heredity became an explanation for social organization as well as human responsibility. All clinical observations by J.-M. Charcot and by his students retrace as much as possible the mental family history of their patients, with added comments on 'the inherited disease constitution'. C. Féré came to believe in the possibility of intervening surgically to avoid any possibility of reproduction, as described in *L'instinct sexuel, évolution et dissolution* [46]. This interest in eugenics surprises us. Even if it widely influenced political thought, C. Féré, in writing *Le traitement des aliénés dans les familles* (Treatment of the insane in families) in 1905, was mainly working for a prophylactic medical-social solution for treating mental pathology as well as syphilis or tuberculosis within families, schools and the army.

C. Féré acquired a European reputation through articles published in *Brain* in England, and in *La Revue de la société de médecine mentale de Belgique*. He coined the word autoscopia and his books were translated into seven languages. *Hysteria, Epilepsy and the Spasmodic Neuroses* was published in 1897 in New York, but *Scientific and Esoteric Studies in Sexual Degeneration in Mankind and in Animals* and *The Sexual Urge: How It Grows or Wanes* were published in 1932, 25 years after his death. He passed away at the age of 55 years, probably due to a rapidly progressing cancer [45].

### **Alfred Binet**

Alfred Binet was born on 11 July 1857 in Nice, on the Mediterranean coast. His country of birth was Italy since the county of Nice only became part of France in 1860. The grandson and son of a physician, he went to live in Paris with his mother, Moïna Binet, who was a painter (her painting of C. Féré is fig. 8), where he graduated from upper secondary school. He was a law student and finished his three-year degree in 1878 at the age of 21 years [47].

He was blessed with an extraordinary capacity for work and an astounding ability to focus on several objectives at once. For about 10 years he frequented philosophical circles and participated in Théodule Ribot's *Revue philosophique*, in which, at the age of 21, he published a thesis, '*La vie psychique*' (The psychic life), followed by '*Du raisonnement dans les perceptions*' (On reasoning in perception) in 1880. During the same period, he studied the natural sciences (1890 doctoral thesis entitled *Le système nerveux sous intestinal d'es insectes*; The sub-enteric nervous system in insects), conducted experiments at the Sorbonne under the direction of Edouard-Gérard Balbiani (1823–1899), chair of compared embryogenesis at the Collège de France, and began medical studies which he would never complete. In 1884 he married the daughter of E.G. Balbiani. He was introduced to J.-M. Charcot by Joseph Babinski, who was the same age as Binet and his classmate from upper secondary school. Babinski was finishing his time as *chef de clinique*. A. Binet also participated in the Tuesday sessions at La Salpêtrière Hospital. That is where he discovered hypnosis and suggestion. In 1883 J. Babinski presented him to Charles Féré. His time at La Salpêtrière Hospital inspired his work on, in his own words, 'morbid psychology'. His first book was published in 1886, *La psychologie du raisonnement* (published in English as *The Psychology of Reasoning*, Chicago, Open Court, 1896), followed by *Études de psychologie expérimentale* and *Recherches sur l'hypnotisme* in 1888, and *Le magnétisme animal* in 1887, written in collaboration with Charles Féré [48].

In 1890 he was returning from a vacation on the coast of the English Channel. At the Rouen train station, he happened to meet Henri Beaunis (1830–1921), director of the psychophysiological laboratory at the Sorbonne which had been created the previous year. Beaunis wrote:

As soon as he introduced himself, the ice was quickly broken between us. I knew and respected his work, although I was in the opposing camp on the questions of

hypnotism and suggestion which occupied me a great deal at the time. We talked, and he asked me if he could work at the laboratory. I immediately said yes, because I was happy to have found someone of his calibre for a young laboratory, whose creation triggered more or less openly declared mistrust and hostilities that had not yet been resolved.

At first he worked as a volunteer, but quickly became official *préparateur*, and in 1892 assistant director, before succeeding H. Beaunis as director when the latter fell ill. With him he founded the journal *L'année psychologique* in 1895, which he ran until his death [47].

The birth of his two daughters, Madeleine (1885) and Alice (1888), opened another and totally new area of interest: child psychology, particularly the analysis of individual differences in relation to genetic heritage and education. He published *La peur de l'enfant* (Fear in children) in 1895. In 1889 he worked with the director of a school in the Belleville district of Paris, Pierre Vaney, to found an 'experimental teaching laboratory', which was officially recognized by the French Ministry of Education in 1905. Gradually, his interest in teaching and the social purpose of education came to occupy A. Binet full time, and he left the activities of the psychophysiological laboratory to his colleagues [48].

In 1898 he created a collection entitled *Bibliothèque de pédagogie et de psychologie* (Pedagogy and psychology library) in cooperation with Victor Henri. Ferdinand Buisson (1841–1932), Chair of Sciences and Education at the Sorbonne, introduced him to the *Société libre pour l'étude psychologique de l'enfant* (Free society for the study of child psychology). This orientation can also be explained by his failure to obtain a chair at the Collège de France, where Pierre Janet was chosen to succeed Théodule Ribot, or by his failure at the Sorbonne, where he could never become a professor [48].

In 1904 – in keeping with the public education reforms of the Third Republic, which, spurred by Jules Ferry, made public education mandatory,

secular and free – the French Ministry of Public Education decided to organize the education of abnormal children and appointed a commission headed by A. Binet. For almost 20 years, A. Binet had studied ordinary subjects, but also those with extraordinary qualities: mental calculators, chess players, theatre people (*Psychologie des grands calculateurs et joueurs d'échecs* – Psychology of great mental calculators and chess players; *Psychologie de la création littéraire* – Psychology of literary creation; 1894). In *L'analyse expérimentale de l'intelligence* (Experimental analysis of intelligence), published in 1903, he made a very precise study of higher mental functions and their differences from one individual to another, his aim being to develop a method of experimental analysis. Before him, E. Séguin, nicknamed 'teacher of idiots' (*Traitement moral, hygiène et éducation des idiots* – Moral treatment, hygiene and education of idiots – 1846), and D.M. Bourneville had already served as pioneers in this area by bringing handicapped children out of isolation. D.M. Bourneville created a special department at the hospital of Bicêtre to accommodate 'idiots', and to introduce a medical-pedagogical treatment for idiocy. His house officer Paul Sollier (1861–1933) defended his thesis on *La Psychologie de l'idiot et de l'imbécile* in 1890, in which he distinguished physical and psychological disorders, tried to classify and quantify the degrees of 'idiocy', and proposed the first clinical and psychological examination for abnormal children [49].

In 1892, Théodore Simon (1873–1960), psychiatric house officer at the facility for retarded children in Perray-Vaucluse, contacted him and asked for his advice on improving the education of the abnormal children under his care. Together they started cephalometric studies. T. Simon hoped to find a means of quantifying the intellectual delay, but A. Binet abandoned cephalometric analysis rather rapidly:

I worried that in measuring heads with the intention of finding some difference in volume or form between an

intelligent and an unintelligent person's head, I would be inclined to increase without my knowledge, unconsciously, in good faith, the cephalic volume of the intelligent person and to diminish that of the unintelligent person.

Having learned from this unsuccessful attempt, they developed a 'metric scale of intelligence' instead. An inextricable duo was thus formed, and their names became associated and well-known to future generations thanks to *Méthodes nouvelles pour le diagnostic de niveau intellectuel des anormaux* (New methods for diagnosing the intellectual level of the abnormal). They developed a series of 30 tests with increasing difficulty to assess intelligence, memory and behavior in children in the most objective way possible:

We believe that the valuable applications of our scale will benefit mainly inferior degrees of intelligence rather than normal subjects.

A. Binet and T. Simon saw intelligence as a very vast function, but believed they could assess and even measure intelligence, not by measuring basic fractionated mental processes, but by directly testing the overall functioning of the mind. Compared to previous attempts, they also introduced the essential notion of mental age, which served as a true measuring and calibrating unit, and made a quantitative approach possible. A. Binet wrote: 'Individual differences are more pronounced for higher processes than for basic processes' (*La psychologie individuelle*, 1896) [50].

A. Binet was upset to see his intentions misrepresented during this time of the Dreyfus affair and of political and union-related agitation, when critics outside the psychological circle qualified him as an 'intelligence cop' who helped public authorities justify isolating poor children by measuring their 'natural' intellectual inferiority.

Their long preparatory work, unknown during that period, explains how A. Binet and T. Simon could present their diagnostic test – the first version of the metric scale of intelligence – at the International Congress of Psychology (Rome, 1905), only 6 months after it had been requested

by the French ministry. The following years were mainly dedicated to improving this test. From 1909 to 1910, for example, following a request by the French Ministry of War, they examined several tens of conscripts and took advantage of the situation to add the 'adult' level to the test [51, 52].

At that point, A. Binet's health suddenly took a turn for the worse. The day after a meeting of *La Société Libre*, he was struck by 'apoplexy' and died several weeks later on 28 October 1911. He was only 54 years old.

The extreme variety of the work undertaken by A. Binet can be seen in consulting *L'année psychologique* (which is still being published) from the first issue in 1894 until his death. He dealt with topics ranging from witness accounts in legal proceedings, to graphology, to the theories of Freud and Jung which he introduced in France, to the analysis of the breakdown of hysteria proposed by J. Babinski [53]. How did he find time for leisure if he was always working? His private area of interest is most original although closely connected to his work [47].

Although they were not very close, J. Babinski and A. Binet shared the same curiosity and fascination for the *Grand Guignol*<sup>7</sup>, for which they occasionally provided medical counsel. A. Binet studied the psychology of literary authors such as Alexandre Dumas Jr., Eugène Brieu and Paul Hervieux, so it is not surprising that he worked with André Lorde on theatre plays, most on madness and the associated fear, obscure and omnipresent at that time, concerning its more or less unavoidable heredity. In *L'Obsession ou Les deux forces*, similar to Emile Zola's *La Bête humaine* (The Human Beast), published in 1890, the main character consults an alienist for 'a friend obsessed with the idea of killing his own son'. The physician answers that everything depends on the family background: if the parents are in good mental

<sup>7</sup> Paris theatre (1897–1962) specialized in naturalistic horror shows.

health, there is no danger; if one of them is insane, the obsessed person has to be locked up. The main character gathers information, finds out his father died insane and kills his son [54]. Was it his curiosity about the fantastic side of children's psyches and about *Grand Guignol* that drove A. Binet to add absurd sentences for commentary to his intelligence tests, such as: 'Yesterday we found the body of an unfortunate girl on the fortifications, cut up into 18 pieces. We believe she killed herself'. These comments can be compared with what he wrote in an article on fear in children (1895): 'To avoid these fears, their imagination must not be fed in any way. Avoid all storytelling that could

stimulate nervous agitation'. Such was A. Binet's advice, but in practice did he do the opposite?

A short time before his death, A. Binet planned to combine all his discoveries into a treatise entitled *Psychologie normale et pathologique*. He did not have time to undertake this project, but some of his intuitions are strikingly relevant as demonstrated by functional neuroimaging. In *Sensation, perception et hallucination*, A. Binet wrote: 'The resolution to act is situated in the same centre as the action being carried out'. In our time Jean Decety has expressed the same idea as follows: 'Generating intentional action and the associated mental imagery share the same neuronal structures.'

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