CHAPTER

# The Cruelty and Failings of Therapies for Neurological Diseases in French Literature

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## Abstract

In this chapter, excerpts from famous or little-known works of French literature are used to illustrate how eighteenth- and nineteenth-century physicians tried to treat neuropsychiatric illnesses. Although the causes were unknown to them, they did not hesitate to inflict suffering on their patients, who were often in an appalling condition to begin with. Novelists such as Gustave Flaubert, Alphonse Daudet, the Goncourt brothers, Georges Siménon, and Céline applied their writing talents to describing the use of leeches, bloodletting, vibratory treatments, suspension of the body, multiple painful injections, and brutal electrotherapy. These writers reveal how physicians used their imaginations not only boundlessly but also without pity, to treat their patients. Each literary work is presented with the medical justifications of the time, for example, the explanations of Cruveilhier, Charcot, Brown-Sequard, Sollier, Vincent, and Roussy.

## Keywords

bloodletting, vibratory treatments, suspension of the body, electrotherapy, history of neurology, tabes, stroke, Parkinson's disease, tremor, camptocormia

The history of the relationship between science and literature in the nineteenth century bears witness to a reciprocal interaction. Medicine at that time was questioning the relationship between diseases, their treatments, and art. Drawing on literature, physicians explored illnesses in authors that destroyed them secretly. So many premature deaths left a permanent stamp on their works. The sick artist could not be denied; furthermore, it was believed the "morality" of the reader and society might benefit from the discoveries of a medical establishment imbued with the theories of degeneration: heredity, insanity, alcoholism, morphine, and syphilis (which was seldom acknowledged). Cesare Lombroso (1835–1909) went as far as

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to write: "The giants of thought expiate their intellectual powers through degeneration and psychoses" (Lombroso, 1889; Réveillé-Parise, 1843; Voivenel, 1908).

Novelists appropriated neurological and especially psychiatric diseases, recently identified, using their inventive genius to portray the physical and psychological lives of their characters, thereby spreading this new knowledge. Some also described the therapies for these diseases, often painful but rarely effective, as we will see. Emile Zola (1840–1902), apostle of the naturalist novel, declared, "We novelists are analysts of men. Through our observations and experiments, we pursue the task of the physiologist, who carries on the work of the physicist and the chemist." Edmond (1822–1896) and Jules Goncourt (1830–1870) go further by claiming that their novels had a social–medical objectivity, as revealed by their preface to Germinie Lacerteux: "The following study is a clinical approach to love" (Goncourt and de Goncourt, 1864).

In this way, literature claimed to rival the laboratory, the physiologist, and the clinician by building, through novelistic chronicles of human lives, a historiography of nervous system pathologies, and their fledgling therapies, which were often more cruel than effective, as we will see in the following examples.

Neurological pharmacopeia remained in its infancy until the middle of the nineteenth century. In his caricature entitled Docteur Molière, Xavier Aubryet (1827–1880) put the following words in his hero's mouth: "We physicians of the spirit and physicians of the body, we only heal those who are dead" (Aubryet, 1873). Léon Rostan (1796–1866) wrote in 1846: "Symptomatic medicine, in the absence of local diagnostics, is absurd, perfectly impotent and sometimes harmful, even fatal" (Rostan, 1846). Gaspard-Laurent Bayle (1774–1816) notes in his Idée Générale de la thérapeutique (Corvisart and Bayle, 1838): "If one considers all diseases, it is evident that, in most cases, we do not know the rational curative indication." Imbued with these precepts and according to an old adage—better nothing at all than an uncertain remedy—Jean-Martin Charcot (1825–1893), founder of neurology in Paris, was adept at allowing the spontaneous progression of diseases, the subject of his first thesis to obtain a professorship in 1857 (he was unsuccessful) entitled Expectation. The decision not to treat when symptoms were insufficiently explicit is an indication of Charcot's skepticism, based on his belief in degeneration as it was conceived by Bénédict-Augustin Morel (1809–1873) (Morel, 1857), a belief that reinforced his hereditary and fatalistic views of nervous system diseases. However, he was sincerely concerned about easing his patients' pain and prescribed bromides, mercury, hyoscyamine, silver nitrate, hydrotherapy, and electrotherapy, creating in his department a specialized division directed by Romain Vigouroux (1831–1911) and Ernest Huet (1858–1917).

## 1 VIBRATION THERAPY AND TREMOR

Pierre Chirac (1650–1732), physician at Versailles during the reign of Louis XV, left a manuscript entitled Histoire des maladies de la teste (Chirac, 1697) in which he mentioned an improvement in the condition of a melancholic patient who had

traveled in a mail cart for several days. Recounting this anecdote in Le Mercure de France, Charles-Irénée Castel, abbot of Saint-Pierre (1658–1743), wrote (Saint-Pierre and Castel, Décembre 1734): "Skilful physicians have observed that the movement of the body in a mail cart rolling rapidly over the cobbles for several days may be seen as an excellent remedy for several ills attributed to melancholy, vapours, bile and obstructions of the liver, the spleen and other glands in the lower belly." [. . .] "Provided that the cart is not rolling along a bumpy road and has good suspension, the entire human body is in a condition quite unlike any other, or perhaps like a resonating body. All parts are slightly contracted at the same time, then stretched or rubbed in the joints, and this happens a great many times over a short duration. [. . .] If the degree of these frictions is not out of proportion with what the patient can withstand, it would appear that this treatment must be useful for re-establishing harmony in the play of nervous action and for eliminating aberrations." But finding this remedy noisy, costly, and not very practical, the abbot of Saint-Pierre proposed "a chair attached to a frame shaking it vigorously" for home use. With help from "the excellent engineer-machinist Duguet," the abbot of Saint-Pierre introduced the first model, known as the "trémoussoir" (vibratory chair) on December 31, 1734, and suggested that "healthy persons could use it to replace the exercise they are unable to take, to preserve their health; others to avoid bloodletting after a copious meal, this remedy augmenting their respiration and transpiration. To achieve regular physical fitness, the machine should be used two or three days per week for two or three hours. Curative treatment would involve rapid shaking four or five hours per day" (Fig. 1).


**FIGURE 1**

Vibratory armchair. Nouvelle Iconographie de La Salpêtrière 1892.5:18–24 (private collection of the author).

In 1744, Voltaire (François Marie Arouet, 1694–1778) himself found the treatment to his liking: "I left for Champs, my adorable angel, rather than dining; I seated myself in the trémoussoir of the Abbot of Saint-Pierre, and now I feel a little better" (Voltaire, 1744). The success of the "trémoussoir" became the subject of mockery, as the refrain of the following song indicates (Cabanès, 1899):

*A l'aide d'une chaise*
*Mouvante par ressorts,*
*On peut tout à son aise*
*Se trémousser le corps.*
*Cela ferait filtrer plus aisément la bile;*
*Pour l'opération don don*
*Le patient aura la la,*
*Un trémousseur habile.*

*With the help of a chair*
*Moving on springs,*
*One shakes up the body*
*Without really trying.*
*This seems to filter the bile;*
*For the operation - na, na*
*The patient must have - la, la*
*A clever "vibrationist."*

In 1881, Gustave Flaubert (1821–1880), considered the master of realism, that is, novels based on methodical and objective observation, mentioned the vibratory chair in Bouvard et Pécuchet, his last novel, left unfinished and published posthumously in 1881. In this philosophical farce, Flaubert attacks the cult of science, caricaturizing the bourgeoisie of his time and medicine in particular: "Once autumn came, they took up gymnastics, which bored them. Why not the trémoussoir imagined under Louis XV by the Abbot of Saint-Pierre! How was it built? Where could one find out? Dumouchel didn't even deign to answer them! So they set up an arm swing in the bakehouse. A rope was threaded through two pulleys screwed to the ceiling and then attached to a bar at either end. Once they had grasped the bars, one of them rose to the tips of his toes, while the other lowered his arms to the ground; the weight of the first person drew the second person who, letting the rope slacken a bit, would in turn rise. In less than five minutes, sweat was dripping from their limbs" (Flaubert, 1881).

In August 1892, Georges Gilles de la Tourette (1857–1904) published a lesson of Charcot entitled "Vibratory medicine - applications of rapid and continuous vibrations in the treatment of certain diseases of the nervous system" (Charcot, 1892). Charcot reports almost the same findings as abbot of Saint-Pierre, without ever referring to him: "I have long advised patients with paralysis agitans that they would find great relief in railway or carriage travel. Throughout the journey, the tiresome

and sometimes painful sensations that nearly always accompany this disease seem to disappear almost completely. This well-being persists for a while once the journey has ended. [. . .] I have more than once formulated the hypothesis that Parkinson's disease could be effectively treated by a process that would recreate all the movements transmitted to the body by a carriage in motion." He also had a chair built with a "special mechanism that transmitted rapid oscillatory movements around an anterior and lateral axis. These combined and opposing movements produced a rapid vibration or trepidation very similar to that felt when one is seated in a train in motion. [. . .] When the patient steps down from this chair, he feels lighter, his stiffness is gone and he can walk more easily than before. The phenomenon is nearly constant. Nights go more smoothly; a patient who used to toss and turn miserably in his bed sleeps calmly, a source of great relief for him."

Charcot goes on to explain how Gilles de la Tourette built a vibratory helmet, after reading the work of the English physician Joseph Mortimer-Granville (1833–1900) and of Boudet de Pâris, which described treating facial neuralgia and migraines through localized application of a vibrator on the patient's skull. "The entire head vibrates, as can be verified by placing one's hands on the mastoid process. In operation, the machine makes a continuous, soft buzzing noise, which may be of interest regarding the pathogenesis of the results obtained" (Boudet de Pâris, 1881; Mortimer-Granville, 1883).

Charcot reported three cases of recovery from neurasthenia in which dizziness, weakness in the limbs, and sexual impotence disappeared. He concluded: "It is not improbable, in light of the foregoing, that this practice of vibration is a powerful sedative for the nervous system" (Charcot, 1892).

Here is how Mortimer-Granville explained the action of his vibrator: "The first effect of nerve-vibration, therefore, is awakening or interrupting; the second is more like tuning a violin string, or the wire of a pianoforte. Nerve stretching acts in one of two ways for a time. If much force be used it disorganizes the nerve and prevents any vibration taking place in its elements, with the result, in successful cases, of giving it a new starting-point when the integrity of the nerve-fibre is restored in the process of natural repair. When less force is used, the nerve is acted upon precisely as screwing and stretching act on a violin string, altering its physical capacity for vibration, and either reducing or increasing the amplitude of the waves of movement into which agitation will throw it. I doubt not that nerves of different calibres have each their proper physical capacities for vibration; and the vibrations of a nerve are, in perfect health, mathematically component and complementary parts of the vibrations of the trunk from which it springs. When a nerve becomes turgid from congestion, or is in any way swollen or attenuated, this perfect relation is disturbed, and the result is functional disorder, and probably pain. The manner in which vibration acts in the second stage or phase of its process is, I believe, explained by the law of musical concords and discords or harmonies. We interrupt by a discord, and control by substituting one set of vibrations for another. In this way, by vibrating a particular nerve daily, as nearly as possible at the same hour and for the same length of time, with a percuteur working at the same speed or number of vibrations per second, we

may educate the nerve-cells or fibres, so to say, to a new rhythmical habit, and thus establish new vibratile conditions" (Mortimer-Granville, 1883).

These ideas had spread since the middle of the eighteenth century, imagined by the Englishman David Hartley (1705–1757). Hartley sought to unite the physical and psychological worlds by means of a speculative neurophysiology. His source of inspiration was Newton's theory of vibrations. Hartley applied the same ideas to biological life in general and to human beings in particular. He realized that the principles set forth in Newton's queries in his Opticks could serve as a framework not only for interpreting physical events but also for explaining the neurophysiological basis of perception and thought. In the final paragraph of Principia, Newton wrote: "All sensation is excited, and the members of animal bodies move at the command of the will, namely, by the vibrations of this Spirit, mutually propagated along the solid filaments of the nerves, from the outward organs of sense to the brain, and from the brain into the muscles. But these are things that cannot be explained in few words, nor are we furnished with that sufficiency of experiments which is required for an accurate determination and demonstration of the laws by which this electric and elastic Spirit operates" (Newton, 1999). Hartley's theory was expressed in his book Observations on Man, his Frame, his Duty, and his Expectations. Published in 1749, it provides the basis for his theory of vibrations and associations and applies them to perception and thought. He proposed that sensations enter into the nervous system as vibrations (matter in motion), which give rise to localized vibrations in the brain: "External Objects impressed upon the Senses occasion, first in the Nerves on which they are impressed, and then in the Brain, Vibrations of the small, and, as one may say, infinitesimal, medullary Particles" (Hartley, 1741, 1755; Wade, 2005).

It is incorrect to assume that this therapeutic method of submitting the entire body to vibrations has been abandoned by current-day medicine. A recent literature review concluded that vibratory treatment improves proprioception and quality of life in patients with neurological diseases such as Parkinson's, multiple sclerosis, and complications following a cerebrovascular accident (del Pozo-Cruz et al., 2012). In contrast, another literature review covering only Parkinson's disease concluded there is insufficient evidence to prove or refute the effectiveness of whole-body vibration in enhancing sensorimotor performance in people with Parkinson's disease (Lau et al., 2011). As to "vibratory therapeutics," the recent development of "magnetic seizure therapy" is a "safer method for evoking seizure activity than current therapy with a confirmed antidepressant efficacy," utilizing "rapid rate transcranial magnetic stimulation" as an alternative to conventional electroconvulsive therapy (Zyss et al., 2010). Charcot would be delighted.

## 2 EPIC TREATMENTS OF APOPLEXY

Since the eighteenth century, medical dictionaries have been read more widely by the general public than by doctors (Helian, 1771). The Dictionnaire de Médecine et de Chirurgie pratiques, considered the work of Gabriel Andral (1797–1876), consists of

15 volumes published in Paris in 1829 (Andral et al., 1829). In it, Jean Cruveilhier (1791–1874), a pioneer in macroscopic anatomical pathology, offers more detail: "In Greek, apoplexy means to strike with violence; when the grammatical meaning of this word is applied vigorously, it should be used for any serious disease that strikes suddenly, like lightening. It has been dedicated to diseases of the cerebrospinal nervous centre, which are characterized by sudden, spontaneous paralysis that is more or less complete, more or less extensive, more or less lasting and that affects sensation and movement in one or more parts of the body. It is the spontaneity, instantaneity and variable duration of the paralysis that constitute the fundamental character of apoplexy, and not the paralysis itself, which may be due to a wide range of causes. Given that the most general anatomic character of apoplexy is an effusion of blood in the brain, Morgagni has proposed calling it a cerebral haemorrhage, while others have extended the name to all sudden, spontaneous effusions of blood, in various parts of the body, notably the brain."

Cruveilhier goes on to describe in detail what we call a cerebral vascular accident. He distinguishes between the various types of paralysis, their shared characteristics, the greater or lesser degree to which vigilance is affected, and the often unfavorable prognosis. He was already concerned with a possible prevention: "Prophylactic treatment must aim only to prevent a general plethora resulting from a diet that is overly copious and especially overly excitatory, a local plethora which leads to exaggerated exercise of cerebral functions, and the abuse of alcoholic beverages. Physicians must pay special attention to hypertrophy of the heart, which predisposes one very strongly to brain disease, as well as to the usual haemorrhages, evacuations, periodic rashes or erysipelas, and gout, especially in individuals whose conditions predispose them to apoplexy. In a patient having suffered apoplectic attacks, when there is temporary numbness in a member, habitual somnolence and hot flashes in the face, apoplexy is imminent. Under these conditions, precautionary bloodletting when the seasons change, precautionary purgatives, a vegetable diet for a variable duration, country living, long walks with a small step, avoidance of any effort or attitude that holds blood in the brain, removal of any mental contention or moral affection – in a word, all hygienic measures which are most protective – must be practised."

He then turns his attention to treating the disease described: "The treatment of apoplexy is a necessary consequence of understanding pathological anatomy. It involves preventing fluxions of blood to the brain, this being the protective treatment; favouring the absorption of blood effusions and maintaining the repair work is the curative treatment. The consecutive treatment involves a strict diet to protect the patient from all immediate and remote causes of apoplexy, as well as stimulating by all means possible the sensitivity in the paralyzed members." Cruveilhier was among the nineteenth-century practicians who built the foundations of scientific medicine. He nonetheless proposes bloodletting and purging, therapeutic practices in use since antiquity. According to popular belief, bloodletting was considered to both purify and vivify. Extending this treatment to healthy individuals shows the extent to which myth has more of a placebo effect than critical judgment. The practice of bloodletting

has proven exceptionally and surprisingly adaptive to changes in our understanding of circulatory anatomy and physiology. Whereas Cruveilhier isolated risk factors—obesity or plethora, somnolence, or sleep apnea, which he suspected to cause excessive pressure in the arteries—he appears to rely more on his imagination than verified observational data to explain the therapeutic action of bloodletting. To support his ideas, he cites the Greek physician Aretaeus of Cappadocia and Jean-Baptiste Morgagni (1682–1771), author of Recherches anatomiques sur le siège et les causes des maladies (Morgagni, 1756). Practices based on profane concepts such as depleting or reducing blood mass; fighting against, diverting, or draining inflammation; revulsing blood; or stimulating a deficient function have been readapted to the thought system of each era and the corporal imagination of each individual. The cases that Cruveilhier presents as edifying and of certified veracity, as all physicians have done for centuries, are meant to prove the accuracy of the theory but are merely fabricated expressions of it. The underlying circular reasoning is based on the obvious, which no one thinks of questioning because of forgotten rules. All of this strengthens ritual (Beauchamps, 2000).

It is interesting in this context to consider an excerpt from "a collection of divine remedies," published in 1864 by a priest carrying out his ministry in the Bourbonnais region of France. The collection, which he published at his own expense, aimed to "contribute in our small sphere to relieving some of the miseries borne by our poor suffering humanity" (Morin, 1864). Abbot Morin, who served as priest in Chatelus par Saint-Martin d'Estreaux, included a chapter on apoplexy and its harsh treatment: "This horrible disease comes from the blood and humours, which are too forceful and violent and thus need to be clarified and calmed. For this purpose, certain physicians prescribe purgatives, which can be quite successful. Bloodletting and leeches are also recommended and very successful. Footbaths in water containing a fistful of kitchen salt or a shovelful of ash are also effective at bringing the blood down. These treatments are considered protective treatments. To prevent this disease, the best measure is to use white mustard seed twice a year. [. . .] It is helpful to purge once or twice a year, as needed. Insofar as possible, a gentle purgative must be used, one that is not violent, such as Sedlitz water, Mann water, etc.

When the blood is troublesome, which can be recognized by heaviness in the head and the desire to sleep, ten to twelve leeches must be applied per year or every six months, as needed. They can be placed on the thighs, slightly above the knee, or in some cases on the anus, for variation. One should take care, after treatment with leeches, to rest for a period of four to five days. Leeches should be applied before eating and at least five hours after a light meal. Leeches are recommended over bloodletting; bleeding the feet is difficult and bleeding the arm has the disadvantage of making the blood rise instead of bringing it down, whereas leeches on the thighs or anus bring the blood down. [. . .]

In attacks of apoplexy, great care must be taken to distinguish blood apoplexy from serous apoplexy, as there is an essential difference in their treatment. In cases of blood apoplexy, which attacks strong, robust and plethoric individuals with high colour in the face (even when the disease is present, indicating blood congestion

toward the brain), the mouth of the patient must be opened with a spoon and filled with coarse salt. Salt, due to its acrimony and its blood-liquefying properties, can produce excellent results by causing patients to release a large quantity of thick, viscous phlegm, resulting in significant clearing. Following this, and without losing any time, bloodletting must be performed on the foot or the jugular vein, and leeches must be applied to the anus or areas around the head such as the neck, the temples and the occiput. However, this requires an experienced person, a physician or someone used to bloodletting. [. . .]

When apoplexy is serous, that is, when it attacks individuals with a pale, yellow tint and a lymphatic temperament, bloodletting is not as suitable and is rarely practised. Experience has shown that the following are more effective: vesication near the nape of the neck, between the shoulders and on the legs; rubbing ammonia liniment into the spinal region of the back; and irritating enemas made from a senna decoction. If the patient is extremely nervous and the attack a result of moral impression, sedatives should also be taken, such as orange flower water, a small quantity of sulphuric ether in water or on a sugar cube, or three drops of laudanum on a sugar cube. The room where the patient is, must be kept cool and aired out as much as possible."

Nowhere in the text does the author discuss the suffering endured by patients undergoing bloodletting, purging, friction treatments, burning, and other violent therapies, all having random benefits.

Now let us turn our attention to a more recent novel: The Bells of Bicetre, by Georges Simenon (1903–1989) and published in 1963 (Simenon, 1963). Simenon was an exceptionally prolific novelist who published no fewer than 192 novels, 158 short stories, several autobiographical works, and numerous articles and reports under his own name, as well as 176 novels and dozens of short stories, romantic tales, and articles under 27 pseudonyms. He is the Belgian author most widely read in the world. Known especially for his police commissioner Maigret, Simenon immerses his readers in a rich world of shapes, colors, odors, sounds, flavors, and tactile sensations, revealing his talent for the depiction of psychological states. The Bells of Bicetre is one of Simenon's best novels and a hymn to hope for the sick. "The Bells of Bicetre is the title of the novel in most languages, except in French, where the word 'cloche' or 'bell' has a double meaning and evokes tramps, idiots and vagabonds. To call someone a cloche, is a common insult. For the French publication, bells are replaced by rings or 'anneaux', which evoke the sound of bells spreading in concentric circles" (Simenon, 1981).

The protagonist is 55-year-old René Maugras, a press magnate. He suffers a brutal stroke (that will leave him hemiplegic) on his way to the bathroom in a large Parisian restaurant where he regularly lunches with a group of friends—a lawyer, a playwright, a member of the Académie française, and a physician—all of whom have become, like himself, rich and famous in their field. As he slowly and progressively emerges from his coma, he finds himself at the Bicêtre Hospital, outside Paris. In the nineteenth century, this hospital was famous for treating psychiatric and neurological pathologies in men, the equivalent to La Salpêtrière Hospital for women during Charcot's time.

With an acuity that might lead one to mistakenly assume Simenon himself had been in this state, he portrays Maugras' return to consciousness and his realization that "he could no longer speak and half his body was paralysed." His friend Besson d'Argoulet, professor of medicine and also witness to his accident, informs him: "After diagnosing a probable thrombosis of the middle cerebral artery, I called my colleague Audoire, a professor of neurology and head physician at Bicêtre.. . . He's the one you saw yesterday evening, who performed the lumbar puncture.. . . Audoire preferred to handle your case himself, surrounded by specialized personnel he can fully trust. . ." [. . .] "We're going to give you a shot that will make you sleep for a few hours.. . . Unless Audoire decides otherwise, we'll take you down to radiography, for a cerebral angiography.. . . Nothing dangerous. You won't feel a thing, since you'll be under general anaesthesia.. . . You'll have to forgive us for imposing these little tortures, but in medicine, as in everything, your newspaper too, there's a routine we have to follow. . ." [. . .] "How would he have reacted, a few days earlier, or even Tuesday morning, if someone had told him: In a few hours, you'll suddenly stop being a normal man. You'll no longer be able to walk. You'll no longer be able to talk. And you won't be able to write with your right hand anymore. You'll see people come and go around you without being able to communicate with them. . ." [. . .] "Under the sheet, he could move the fingers of his left hand. He could even lift his hand, bend his elbow and, a little later, move his leg. But nothing happened when he tried on the right side. Taking advantage of a moment alone, he tried to speak and emitted a sharp note like the sound of a young cat's meow."

The book is set in the early 1960s. Maugras undergoes lumbar puncture, an electroencephalogram and angiography. He is rubbed down with alcohol. "Audoire took a little hammer from his pocket, hit him on the knees, the elbows, then scratched the sole of his foot with a pointed instrument. He went through these motions twice, then once more, appearing intrigued. 'Did we give him Sintrom?'" [. . .] "Someone would think for him. Or rather, it would be assumed he thought this or that, since on a given day of the crisis, hemiplegics are assumed to go through a given phase, a given state of mind". [. . .] "The first session of passive exercises prescribed by the professor Audoire disappointed him. He hadn't expected a miracle, or spectacular treatment, but his paralyzed arm was merely raised a few centimetres and set down on the bed, then his forearm, then his wrist and finally his inert leg." Maugras has a personal nurse in charge of starting his rehabilitation: "'Would you like pencil and paper?' He accepted docilely, showing no enthusiasm. He would do as he was told, but without believing in it. If only they would stop treating him like a child! She addressed him again, overly cheerful, while he watched her with curiosity. 'Now we're going to have a little talk. I'll ask questions and you answer in writing. You'll get used to writing with your left hand very quickly. . .'."

Simenon does not fail to note that all the physicians smoke, especially when they visit the patient. "For two days, you had no idea what was going on around you. . .. Then you only had vague or distorted notions. . .. 'So let me sum up what we did. . .. First, we injected you with an ampule of Neutraphylline, then we cleared your airways by suction. . .. All of this is standard procedure . . . to keep the lungs from

filling up. . .. To prevent pneumonia, we gave you one million units of penicillin. . .' Maugras remained distant. 'Your cholesterol is normal at 2.60, better than mine, which is over 2.80. . .. As for your sugar levels. . .'" [. . .] "A hemiplegic's first response, as Audoire could tell you more convincingly, is complete depression, near certainty one is going to die or, if this doesn't happen in the first few days, certainty that one will be permanently debilitated. The patient is immobilized and often can't talk, and imagines he will be cut off from the world forever. . .. You can admit having these thoughts. . ."[. . .] "Now you know you're not an exception and that you're following the clinical curve of your illness. . .. It's time to stop dwelling on your misfortunes and work with us. . .. You've had orange juice. . .. In two or three days, you'll be eating almost normally. . .. The passive exercises, which seem childish to you, are still an important step toward rehabilitation. . .. Already, if you had the will to do so, you'd be able to say sentences, even though you might get mixed up in the words. . .. I don't deny this calls for patience, but starting Monday, you'll be surprised that you can stand next to your bed . . . you have to believe in this, trust it, and stop looking at us with those doubtful eyes. . .. It's up to you to get back to where you were before. . ."

Simenon describes tracheal suction performed to relieve Maugras' breathing difficulties following bronchial congestion, despite the preventive penicillin. The neurologist carries out the procedure without anesthesia, at the patient's bedside. He then prescribes leaving the bed inclined several days, with Maugras' head angled downward, so that mechanical draining can take place; there is apparently no concern for the terrible discomfort. In the care administered by Cruveilhier and that by Simenon's Audoire, there is something that has not changed, that has withstood the test of time, in an implicit and confused manner: to treat the patient is to restore the organism to harmony and to physical and moral balance. This is the physician's duty, and he believes himself capable of carrying it out, whatever the suffering he inflicts on his patient, because "it's for his or her own good." Has this changed?

It is interesting to examine the literary device used by Simenon for his narrative. He implicitly confirms the postulate of thought without language; Maugras, despite his aphasia, narrates his story, both to himself and to us, describing his physical and psychological states. Jacques Lordat (1773–1870), professor at the Montpellier medical school who suffered temporary aphasia in 1825, is the first to have left a comparable first-hand account: "I realized when I tried to speak that I couldn't find the expressions I needed. My thoughts were ready, but I was unable to produce the sounds to convey them to others. I adapted to the situation with consternation, telling myself that indeed I could no longer speak." [. . .] "I was no longer able to grasp the ideas of others because the amnesia that prevented me from speaking made it impossible to understand the words quickly enough to seize their meaning. [. . .] You may think I could console myself through reading, but this was at first impossible. Having lost the memory of hearing words, I had lost that of their visible signs. Syntax had disappeared with the words. Only the alphabet remained, but the function of letters for forming words would require further study. [. . .] There was not the slightest change in how my sense of self functioned. I felt the same as I always did inside.

The mental isolation, sadness, embarrassment and impression of stupidity that resulted from my inability to speak made many believe that my intellectual faculties had weakened, an error that pained some and pleased others. When alone and awake, I tacitly carried out my life's occupations and my studies. I felt no obstacle in the exercise of my thinking. But as soon as someone approached me, I felt my difficulties arise with my incapacity to say, hello, how are you?" (Lordat, 1843). Did he realize the extent of his impairment? Could he have been mistaken as to his capacities?

Another physician left us his account of his aphasia, Charles Saloz, known for his thesis defended in 1881, which contributed to the study of Cheyne–Stokes respiration. "I had my ideas, thoughts and conceptions, perhaps a little modified however, as if vague. I remember that everything seemed a little fuzzy or cloudy as if in a dream, or rather, a nightmare. I wondered if I'd entered another world. I sometimes had the impression of a veil weighing on me and making my thoughts vague, as if I were dreaming with my eyes open. I had the far-away sentiment of déjà-vu." [. . .] "I knew exactly what I wanted to say. My intact sensations had simply lost their psychological instruments of expression through the symbols of language, I realised. I felt great confusion in my head, and walled in, as if in a tomb, but I didn't lose hope that I would regain my speech, and I had the distinct impression that my will remained intact" (Naville, 1918; Saloz, 1881).

## 3 TREATMENT OF TABES BY STRETCHING AND "SUSPENSION" (DAUDET'S TRANSLATIONS BY JULIAN BARNES (2002))

Alphonse Daudet (1840–1897) published narratives inspired by the Provence region of southern France (Les Lettres de mon moulin, La Chèvre de monsieur Seguin, Tartarin de Tarascon). His stories were among the most popular in French literature when they were published and remain so today. Daudet had a secret that haunts his work, which by its nature and by necessity attempts to ward off this secret: pain. "Poor humans! I won't tell them everything, give them my experience, the end of my life with all its pain and medical curiosity." Day after day, he secretly wrote about his pain, authorizing publication only after his death. La Doulou was not published until 1929. It starts with his young bohemian years and sexual wanderings after his arrival in Paris in 1857, during which time he contracted syphilis. He confessed to his friend Edmond de Goncourt: "I caught the pox with a lady from the top drawer, a terrible pox, with buboes and all, and I gave it to my mistress" (Caracalla, 2003). He was treated at the time by the physician Philippe Ricord (1800–1889), a specialist in the new field of syphilis studies. Ricord prescribed mercury: "It's the strongest, surest remedy, until a specific remedy is found, or until it becomes better known and used, and overcomes its detractors' arguments to occupy its rightful place as a treatment" (Ricord, 1838). This therapy, involving oral ingestion of granules and body rubs, caused Daudet stomatitis with hypersalivation, fever, and shaking.

As a result of his therapy or the silent progression of the illness, Daudet felt the first symptoms of tabes 25 years later in 1882: "Warning signs going back a long way. Strange aches; great flames of pain furrowing my body, cutting it to pieces, lighting it up." He was first under the care of Pierre Potain (1825–1901). As Goncourt reports on May 14, 1882 in his journal: "Tonight, while coming back from the Banville's, Mme de Nittis told me what Charcot had said about Daudet, that Potain didn't know how to treat him and didn't see what was wrong, which meant that Daudet would likely suffer from locomotor ataxia within six months. . .. Fortunately, Charcot tends to see his own patients in all patients" (Goncourt and de Goncourt, 1936).

Daudet asked Charcot to become his physician in 1884, to treat his "locomotor ataxia," a condition described by Guillaume Duchenne de Boulogne (1806–1875) in 1859. Its etiology was linked to syphilis in 1875 by Jean-Alfred Fournier (1832–1914), but Charcot never really accepted this origin. Daudet met Charcot, 15 years his senior, in 1882 by the intermediary of Léon Gambetta (1838–1882) and rapidly became a close friend, regularly invited to Charcot's Tuesday evening gatherings (Dieguez and Bogousslavsky, 2005). They were soon neighbors, as the gardens of their Paris mansions were adjacent to each other. The two men felt reciprocal esteem. Charcot recognized in Daudet the fine observer that he was himself: "When I talk to Daudet, I have the impression of being under a microscope" (Goncourt and de Goncourt, 1936).

Here is how Duchenne de Boulogne described the pains of progressive locomotor ataxia, primitively called tabes dorsalis by Moritz-Heinrich Romberg (1795–1873), in 1851: "Throughout the body, there is searing, erratic, very circumscribed, terebrating, lightening-like pain accompanied by cutaneous hyperesthesia. [. . .] The pain is atrocious; patients scream in agony" (Duchenne de Boulogne, 1858, 1859; Romberg, 1840).

In his secret journal, Daudet described his suffering this way: "A burning feeling in the eyes. The hideous pain from light reflected in a window. Also, from that time onwards, pins and needles in the feet, burning feelings, hypersensitivity. At first, a heightened awareness of sound: the noise of the shovel, tongs near the hearth, the screech of doorbells, the ticking watch, a spider's web on which work begins at four in the morning" (Daudet, 1929, 2002).

Daudet used all available medicines, aware not only of their favorable effects but also of their loss of effectiveness and their side effects: "Haven't had recourse to morphine for a long time, not since I've been taking bromide. Spent three delightful hours there. The injection wasn't too shattering, and as always made me garrulous and took me out of myself. The day turned out all floaty, as if we'd been taking absinthe. That evening I dined with Goncourt; hours of carefree chat until after eleven". [. . .] "After taking a great deal of acetanilide - which turns the lips blue and annihilates the already battered self - I've just completed a year on antipyrine. Two or three grams per day. Every eight to ten days, small doses of morphine. Antipyrine is a joyless drug, and for some while has had cruel consequences for the stomach and intestines!" [. . .] "Two injections of morphine a day, about twenty degrees. No longer able to get out of the habit. My stomach has adapted itself a little: with five or six

drops, I no longer vomit, although I can't eat. Forced to continue taking chloral." He does not mention taking silver nitrate as recommended by Charcot and Alfred Vulpian (1826–1887) in 1862; this substance may cause argyria (Charcot and Vulpian, 1862).

Daudet shared his worries about the future with Charcot: "Conversations with Charcot. For a long time I refused to talk to him: I was scared of the exchange we would have. Knowing what he'd say to me. I told him, I've been saving you up for last. A fine mind which has no disdain for a writer. His style of observation: many analogies with my own, I think". [. . .] "Long conversation with Charcot. It's just as I thought. I've got it for life. The news didn't deal me the blow I would have expected."

As with his other patients, Charcot advised Daudet to go to Lamalou in southern France for hydrotherapy. Léon Daudet (1867–1942), Daudet's son, writes: "The inhabitants of Lamalou awaited the great writer's arrival with impatience. The first night, we were surrounded by a circle of about 60 people – friendly, familiar faces smiling at us despite their tortures. It was the most extraordinary spectacle of moral attraction I have ever had the chance to witness. [. . .] Everything was transformed. The presence of Alphonse Daudet, his example, his persistent cheer, indefatigable charity and encouraging words heightened the effects of the waters, calming the general tension, the stupid quarrels, dissipating mistrust and hate. Whatever their condition, the patients with nervous disorders, being the most impressionable, reacted most quickly to the currents of sympathy or antipathy. My father proceeded in a very simple way. He said that chronic disease was a bad guest, that should be ignored as much as possible, that should not be allowed the upper hand. Patients should pursue their ordinary activities as much as they could, not let their disease disturb family responsibilities. In short, they should carry on with their lives as usual." [. . .] "I don't think I can be cured; Charcot doesn't think so either. Nonetheless, I go about my affairs as if my blasted pain was going to leave me tomorrow morning" (Daudet, 1915). Daudet did not get any relief from his stays at Lamalou.

Charcot dedicated his January 15, 1889 lesson to the treatment of locomotor ataxia using the "suspension technique of Dr Motchoutkowsky of Odessa." Fulgence Raymond (1844–1910), Charcot's former intern, had traveled to Odessa accompanied by their student Jakow Naumowicz Onanoff (1859–1892), who served as interpreter. He returned with an article unknown in France, which had been published in Russian in a journal Charcot called "Vracha" (Vratsch, The Physician) in 1883. It was later translated into English in Brain in 1889 (Balaban, 1889; Motchoutkowsky, 1883, 1889). A patient was fitted with a corset, said to be designed by Lewis Sayre (1820–1900), to correct a scoliosis that Osip Osipovich Motchutkowsky (1845–1903) was treating. The corset had made the pain and the motor difficulties caused by locomotor ataxia nearly disappear (Bick, 1933; Sayre, 1877). In fact, it was not the plaster that relieved the pain but the extension of the spinal column, which was recommended for producing the corset and involved suspension. In 1888, Charcot tasked his chef de clinique, Gilles de la Tourette, with carrying out a therapeutic experiment after having cited the work of the English

surgeon John Marshall (1818–1891) (Charcot, 1889a,b; Marshall, 1887). In his 1889 presentation, Charcot reported on 14 cases, treated over 3 months. In ten cases, there was clear improvement; only in four cases were there no results (Charcot, 1889a). In the Progrès Médical dated June 7, 1890, Gilles de la Tourette described treating 500 patients, with very marked improvement in 25% of them and incomplete improvement in 30–35% (Gilles de la Tourette, 1890). He added: "Suspension must be tolerated. Based on our already long practice with this technique, lipothymia and syncope are the main, if not the only obstacles to this tolerance." He also explained: "The very enthusiasm the method generated turned out to be most damaging to it. Soon there was not one hydrotherapy centre in France, not even one gym where this method was not applied. Most often it was left to the bath attendants, who knew nothing about medicine. Because the method has been incorrectly used for all ataxics, resulting in serious accidents and even sudden deaths, it has been thrown into disrepute." In 1889, certain authors contested elongation of the spinal cord by this technique and, implicitly, the results put forward (Haushalter and Adam, 1889). In 1894, Gilles de la Tourette carried out research on a cadaver: "This manipulation has real action on the spinal cord and the bilateral radicular segments, but it is evidently minimal, even more so when the suspension is carried out on a living patient. [. . .] However, we have observed, along with others, that the forced flexion of the spinal column produced true elongation of the spinal cord and its roots, measurable with a tape-measure in centimetres." In 1897, Gilles de la Tourette changed his technique by using a table of his own invention associating elongation and forced lumbar flexion (Gilles de la Tourette, 1898).

Charcot treated Daudet with suspensions, but Daudet never blamed his friend for this cruel and dangerous torture: "Suspension. Seyre's apparatus. The hanging up of poor ataxics, which takes place at Keller's in the evening, is a grim business. The Russian they hang up in a seated position. Two brothers; the little dark one writhing away. I am suspended in the air for four minutes, the last two solely by my jaw. Pain in the teeth. Then, as they let me down and unharness me, a terrible pain in my back and the nape of my neck, as if all the marrow was melting: it forces me to crouch down on all fours and then very slowly stand up again while - as it seems to me - the stretched marrow finds its rightful place again. No observable benefit. Thirteen suspensions. Then I start coughing blood. I attribute this to a congestion of the lungs brought on by the fatiguing effects of the treatment." (Figs. 2 and 3).

Goncourt relates Daudet's comments on January 27, 1889, as follows: "Daudet spoke to me of his hanging before dinner. It's a new treatment for ataxia, imported from Russia by Charcot. For this mysterious operation, Daudet waits in the showers until everyone is gone. Then he goes secretly into a poorly lit place, invaded by shadows. There, in the presence of Keller and another physician, the hanging takes place, lasting one minute, one long, long minute. A minute has 60 seconds, at the end of which Daudet is taken down and finds himself on the ground with intense pain in the back of the neck. 'Ah! A hanging in semi-darkness, now that's evocative!' said Daudet. 'Like a Goya!' I replied. 'Yes, a Goya! . . . and while I'm strung up in the air, if Keller happens to be alone, I recall that last year, he went mad for three months . . .

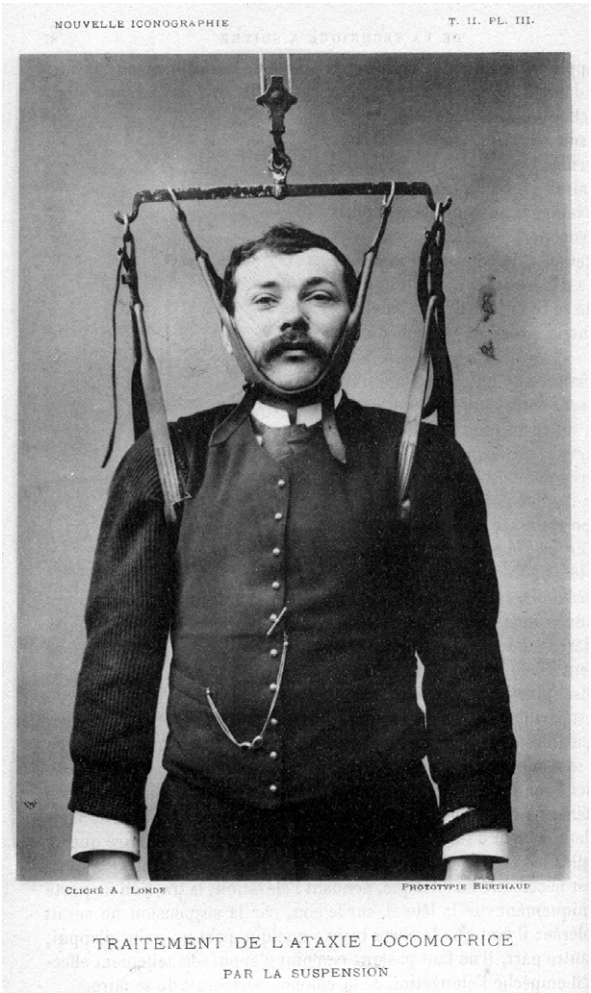


**FIGURE 2**

Locomotor ataxia's treatment by suspension. Nouvelle Iconographie de La Salpêtrière. Gilles de la Tourette 1889;2:85–91 (private collection of the author).

what if the madness came back and he forgot me. . .. But keep it quiet. . .. If Bloy were to find out, think of the macabre article he would write about me in L'Evènement!'" (Goncourt and de Goncourt, 1936).

The deterioration in Daudet's health was inevitable despite all these treatments: "In my cubicle at the shower-baths, in front of the mirror: what emaciation! I've suddenly turned into a funny little old man. I've vaulted from forty-five to sixty-five. Twenty years I haven't experienced." Léon Daudet is far more unforgiving than his father: "I wondered why a man like Charcot never tried to cure. It was very well to describe lateral amyotrophic sclerosis. But it would have been even better to

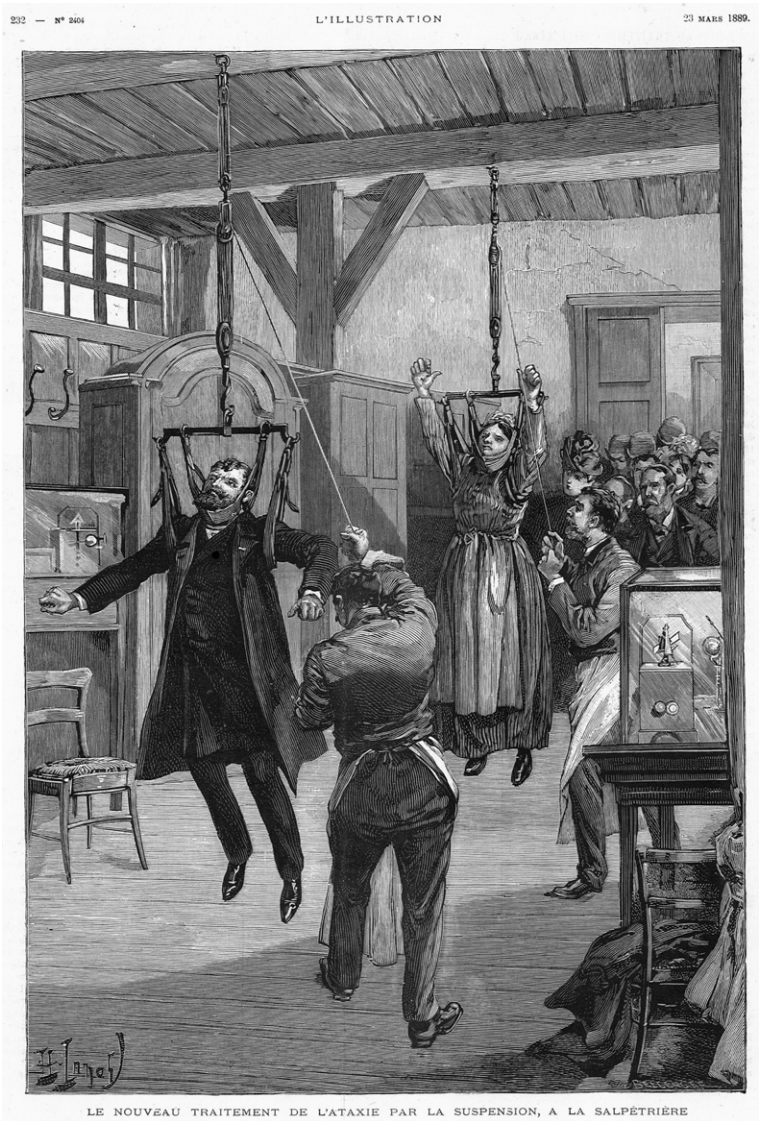


**FIGURE 3**

Locomotor ataxia's treatment by suspension. Newspaper "L'Illustration" no. 2404, March 23, 1889 (private collection of the author).

rescue all poor humanity from its claws. I also wondered why those who send their patients to the spas never investigated the origins of their certainly mysterious, but definite virtues. For there were cases of recovery thanks to those waters, and many of them. They acknowledged their happy results, but went no further. They left them with their secrets." (Daudet, 1940).

Goncourt, who stopped liking Charcot when the neurologist did not applaud one of his plays, noted on March 8, 1889: "Dear Sir, I had a cold, curt meeting with Charcot at Daudet's bedside last night. My God, he seems like a bad man! He's so dramatic that he may not be as bad as he seems; it's just a theatrical air he puts on. They're all lunatics in the Charcot family, lunatics from frequenting neurotics. One can always find a potion composed of bromide, morphine or codeine at their house, a selection of the most amiable narcotics, which father, mother and daughter drink to experience exhilarating dreams." Goncourt also conveyed this perspicacious analysis by Daudet on July 26, 1891: "Can you believe that a man like Charcot never came to Lamalou once, did not come to study on a daily basis how what he had prescribed affected the human beings he had prescribed it to? Oh, what poor discoverers these illustrious physicians are!... When a patient says to them: 'I noticed that an egg in the morning on an empty stomach brought me relief on a given day', they note the observation and prescribe it to all their patients. And that about sums up their discoveries.... Sometimes, I think of telling them ferocious mystifications. I want to say: 'This morning, at 8:30 – no, at 8:45 – I was in my garden and a beetle fell on me. Curiously, I was overcome with the desire to eat it!' Well... You can be certain that if I said that seriously to a physician, he would prescribe beetles to all his patients.... Yes, Charcot asked me for my notes, but as I've told you, I prefer to leave them to my son" (Goncourt and de Goncourt, 1936).

## 4 CEREBRUM'S JUICE TREATMENT AND NEURASTHENIA

In early 1893, Emile Zola (1840–1902) published Le docteur Pascal, the last volume in the Rougon-Macquart series and subtitled Histoire naturelle et sociale d'une famille sous le Second Empire (Natural and social history of a family under the Second Empire) (Zola, 1893). In this novelistic fiction, Zola gave his hero, the humanist physician Pascal Rougon, the characteristics of a learned philosopher. While each novel in the series can be read independently of the others, the common thread running through this long story is the transmission of a psychoneuropathic defect through six generations. Based on real clinical observations, Zola attempted to build a scientifically acceptable genetic doctrine of the transmission of hysteria to the main protagonists. Hysteria was considered a defect in Morel's influential treatise on the theory of degeneration (Morel, 1857).

Today, Pascal Rougon may seem like a simplistic character, a sort of visionary who trusts in the goodness of nature and is only interested in his genealogy. For a reader in 1893, Dr Pascal was a model of the erudite physician, the learned man who believed in scientific progress and its ability to explain human diseases and the mystery of life. Zola was advised by Maurice de Fleury (1860–1931), who authored in 1890 a medical thesis on masculine hysteria. Fleury's thesis jury was presided by one of Charcot's students, Albert Pitres (1848–1928), in Bordeaux. Fleury is known for chronicling medical news for the general public in the Parisian daily Le Figaro for 40 years under the name of Horace Bianchon. Once an admiring

member of Charcot's audiences, Fleury passed along notes to Zola to illustrate "hereditary degeneration," citing the following examples: sensitivity to tuberculosis, deliquescence of muscle tone, degeneration of nerve fibers after injuries, or fibrous degeneration of the medullary tracks in locomotor ataxia. The meaning of the expression "fibrous degeneration," used by pathologists, probably caused great confusion at the time. Zola wrote: "I exploited the works of learned men and physicians more than anyone; I never dealt with a scientific question or an illness without shaking up the entire faculty" (Fleury (de), 1902).

Around 1889, Charles Brown-Sequard (1817–1894), after observing a decrease in his sexual vigor and muscular strength, gave himself hypodermic injections of extracts of dog and guinea pig testicle. He published his results in the British Medical Journal, claiming he had regained all his diminished faculties. Then, he began to market his testicular extracts in solution form known as "Sequardine," which he claimed promoted longevity (Aminoff, 2011; Brown-Séquard, 1893). Combining this work with the study of heredity, Zola gave his hero, Dr. Pascal, the goal of regenerating those with hereditary weaknesses by giving them healthy, normal nervous substance as a medicine. "Basically, Dr Pascal only believed in one thing; he believed in life. [. . .] And life had no other instrument than heredity. The world was based on heredity; had we understood and grasped this, we could have made the world to our liking. Dr. Pascal had seen disease, suffering and death at close range, and a physician's militant pity awoke in him. If only there was no longer any need to be sick, to suffer! If only we might reduce the power of death! His dream led to the thought that one could hasten universal happiness, the future city of perfection and felicity, by providing care and ensuring health for all. Once everyone was healthy, strong and intelligent, only a superior people who were infinitely wise and happy would remain. [. . .] The problem was one of fortifying, which also meant increasing willpower, enlarging the brain while consolidating the other organs. Around this time, Dr Pascal read an old medical text from the 15th century and was very impressed by a medication called the 'signature medicine'. To cure a sick organ, the same organ in a healthy state was taken from a sheep or ox, boiled, and then the bouillon given to the patient. The theory was to remedy like with like, and in liver disease especially, according to the old text, the successful treatments were too numerous to count. This set Dr. Pascal's imagination to work. Why not try? Since he wanted to regenerate those weakened by heredity, who were lacking in nervous substance, he could simply give them nervous substance from healthy, normal organisms. But the bouillon method seemed too simple. He invented his own method in which sheep brain, including the cerebellum, was ground with a pestle in a mortar and wetted with distilled water. The liquor obtained was then decanted and filtered. He experimented on his patients with this liquor mixed with wine from Malaga, but obtained no appreciable results. Suddenly, just when he was starting to get discouraged, he had a flash of inspiration one day while giving a woman with liver colic an injection of morphine, with a small Pravaz syringe. What if he were to try his liquor as a hypodermic injection? As soon as he returned from treating his patient, he began experimenting on himself, giving himself an injection in the kidney area, which he

repeated every morning and every evening. The first doses, of one gram only, had no effect. But, after doubling then tripling the dose, he was delighted to awaken one morning with the strength of a 20-year-old in his legs. He increased to five grams, and as a result his breathing was more ample. He worked with a lucidity and ease he hadn't known for years. He was flooded with well-being and joie de vivre. After having a 5-gram syringe made in Paris, he was surprised with the good results he obtained with his patients, who were up and walking in a few days, as if once again in the flow of life with all its quiver and potency. His method was still quite empirical and barbaric. He imagined all sorts of dangers, and was especially afraid it might cause an embolism, if the liquor was not perfectly pure. He also suspected that his patients' energy came in part from the fever he gave them. But he was just a pioneer; the method would be perfected later. Hadn't he already achieved prodigious results, by making ataxics walk, by reviving phthisics? Hadn't he even succeeded in giving madmen a few hours of lucidity? Having made an alchemical discovery for the 20th century, he was filled with enormous hope, believing he had found the universal panacea, the liquor of life, destined to combat human debility, the only real cause of all evils. This veritable and scientific fountain of youth – a source of strength, health and will – would lead to a new, superior humanity." In the 1896 edition of the formulary of Georges Dujardin-Baumetz (1833–1895), authors Augustin Gilbert (1858–1927) and Paul Yvon (1848–1913) still give the formula for "cérébrine": "desiccated powder derived from brain matter for hypodermic injections of liquid prepared with grey substance" (Gilbert and Yvon, 1896).

Exhausted by doubt and rumination, Dr. Pascal fell into a dark depression: "Would he feel the pain of the defect rising up again in his marrow, the terror as the claws of the hereditary monster gripped him? His mother had predicted it: he was going mad with pride and fear. His sovereign idea, his exalted certitude that he was abolishing suffering and increasing willpower, that he was improving upon humanity and making it more resilient – this was only the beginning of his delusions of grandeur. And in his fear of being ambushed, in his need to watch out for the enemies he felt were bent on destroying him, he easily recognized the symptoms of a persecutory delusion. All accidents of the human race led to this terrible end: brief madness, followed by general paralysis and death."

Seeing her master slide into darkness, Pascal's servant Clotilde, whom he desired secretly, advised him to start his treatment again: "But her real fight was in persuading him to inject himself. He would lose his temper, deny his discovery and curse his stupidity. She would lose her temper, too. It was she who had faith in science now, who grew indignant when he doubted his genius. [. . .] From the first injections, he began to feel much better, though he refused to admit it. His head cleared, and he gradually regained his strength. She was in turn triumphant, feeling a rush of pride for him, extolling his method and decrying the fact he did not admire himself as an example of his own miracles. He started smiling, beginning to see his situation more clearly. Ramond had been right; he was just suffering from nervous exhaustion. Maybe he would pull through. 'You're the one who cured me, my girl,' he said, not wanting to avow his hopes. 'A remedy depends on the hand that gives it.'" After

marrying his servant, Dr. Pascal resumed visiting his patients: "Dr. Pascal continued with his visits in the city and the surrounding countryside. And, nearly always, Clotilde was on his arm, accompanying him into the homes of the poor. But, as he admitted to her one night in a low voice, his rounds aspired to little more than relief and consolation now. For some time already, he had been practising medicine with nothing but repugnance, which arose from the emptiness he sensed in the therapies at his disposal. Empiricism devastated him. Once medicine became an art rather than an experimental science, he was disturbed by the infinite complication of the disease and the remedy, dependent on the patient. The medications changed with the hypotheses; people had once praised methods now abandoned! The physician's flair was becoming everything. The healer was no more than a gifted soothsayer who felt his way in the dark, curing patients as the luck of his genius would have it. And this explained why, after a decade or so of practice, he had more or less abandoned his patients and devoted himself to pure study. When his heredity work led him to believe for a moment in his own influence, in his ability to cure with his hypodermic injections, he was once again filled with passion. Then one day his faith in life, which drove him to help its action by restoring vital forces, expanded yet again, giving him the superior certitude that life itself was sufficient, the only source of health and strength. And with his tranquil smile, he only visited patients who implored him. They benefitted miraculously from his treatment, even when he only injected them with water. Clotilde would sometimes joke about this. She remained a fervent believer in mystery; and she said gaily that if he could perform such miracles, it was because he had the power to do so, like a benevolent god! He would respond happily by ascribing the virtue of their common visits to her, claiming that he cured no one without her, that it was she who brought in the breath of heaven, the unknown and necessary force."

Zola thus evokes the placebo effect, which at that time was not explicitly known to physicians. Fleury introduced him to a book by Jules Chéron (1837–1900), a physician at Saint-Lazare Hospital: Introduction à l'étude des lois générales de l'hypodermie, physiologie et thérapeutique, published in 1893. Chéron explains therein that injections work by reflex, whatever the injected product. Zola proposed a pathophysiological explanation taken from Chéron: "The environment perpetually irritates the sensitive nerve terminals (tufts that connect to the nervous centres, the spinal cord and the brain); this is reflected in the medulla oblongata, the brain, the spinal cord [...]; this in turn becomes ideas, tonus, movements [...] If there is insufficient excitation from the exterior, artificial excitation must be created to act on the nerve tufts. This is the basis for dynamic therapy." (Chéron, 1893).

Zola must have heard about the clinical lesson of Armand Trousseau (1801–1867) who wrote in 1861: "Unknowingly and without meaning to, homeopaths have arrived in a very timely fashion to teach us about the power of the forces inherent in the economy of life. Their successes, founded precisely on acts of healing attributed to themselves, that were in fact the work of nature, have been a very useful lesson to us, teaching us to count a little less on ourselves and a little more on the marvellous aptitudes of the tissues and organs that make up the animal machine" (Trousseau, 1873). Zola's novel L'Assommoir, published in 1876, gives one of the most pertinent

descriptions of delirium tremens, revealing the decay caused by alcoholism. Zola used the same narrative power for his Dr. Pascal, masterfully describing the placebo effect, the synapse, and cognitive-behavioral therapies several decades before they were taken up by physicians.

## 5 CURING HYSTERIA BY PAINFUL ELECTROTHERAPY: "TORPILLAGE"

Louis Ferdinand Destouches (1894–1961), who used the pseudonym Louis-Ferdinand Céline, was one of the great French writers of the twentieth century, brought to the fore by the style and original aesthetics proposed in his first novel, Voyage au bout de la nuit, published in 1932. Based on slang, his elliptical style uses the shortcuts found in spoken language but carefully calibrates them, resulting in a strong emotional impact and profound pessimism. The main character, Ferdinand Bardamu, largely autobiographical, recounts his experience of the First World War, which he qualifies as an "international slaughterhouse gone mad." For Bardamu, the only reasonable way to resist this kind of madness is cowardice: "From the first visit, they said I was too far below average, just fit enough to be sent to another hospital for underweight and nervous cases." He arrived at the Bicêtre Hospital to be treated for "neurasthenia." The head physician welcomed him: "Our science belongs to you! It's yours! All its resources are directed toward curing you!" [. . .] ". . .these words were extraordinarily well put, meant to kill my taste for death" (Céline, 1932). Whereas Céline had in fact suffered a serious arm injury that required several operations, Bardamu was a neurasthenic.

Antoine-César Becquerel (1788–1878) wrote in 1857: "Once electricity had come into the hands of a great number of people, it was applied to everything and these applications were often useless or even harmful to patients" (Becquerel, 1857). It was not until the 1880s, notably after the work of Wilhelm Erb (1840–1921) in Germany, that "electrophysiology became the true guide for electrotherapy"—according to Georges Apostoli (1847–1900) (Apostoli, 1882). Electricity is used in neurology to stimulate motor function, for example, in paralysis. Within the clinic directed by Charcot at the La Salpêtrière Hospital, there was an electrotherapy department—"a facility of machines almost industrial in nature" (Z, 1885)—directed by Romain Vigouroux from 1875, then Ernest Huet. This department began to treat neurasthenia using electricity in 1881: "Static electrification is a treatment often used for neurasthenia and has produced a great number of favourable results. [. . .] General faradisation has been recommended by Beard and Rockwell. [. . .] Betton-Massey, who along with other authors believes that neurasthenia stems from impairment of the sympathetic nerve and specifically the solar plexus, recommends galvanisation" (Huet, 1911). In 1915, after surgery at the Villejuif Hospital south of Paris, Céline underwent "direct current and galvanic shock treatment," as recommended by Gustave Roussy (1874–1946). He transposed this painful personal experience for Bardamu: "Our head physician, the beautiful-eyed professor Bestombes, had a

very complicated set of gleaming electrical equipment installed, to reinvigorate our souls. We were subjected to electrical shocks periodically, which he claimed improved energy levels. Anyone who refused them would be thrown out of the hospital. Bestombes was apparently very rich; he'd have to be to buy all this costly electrocution junk. [. . .] That was the way he was, and we didn't hate him. He examined our nervous system with extraordinary care, and questioned us with courteous familiarity. His carefully crafted affability provided delicious entertainment for the nurses of his department, who were all charming. They waited every morning, the pretty bunch of them, for the moment they could delight in his gentlemanliness. It was sweet as pie. Basically, we were all acting out a play in which Bestombes had chosen the role of the benefactor, learned and profoundly, endearingly humane. The most important thing was to get along." Bardamu listens as Roussy, under the alias of Bestombes, proclaims: "You see, Bardamu, through the incomparable means that war gives us to test nervous systems, it reveals the human spirit in a formidable way. These recent pathological revelations will provide us with centuries of contemplation and passionate studies."

From the beginning of the war, physicians were confronted with patients known as the stupéfaits who suffered from vigilance problems, or patients suffering from camptocormia, which bent the trunk forward and made it impossible to stand upright (Fig. 4). Although these symptoms were most often caused by spinal cord injuries, they were considered a form of hysteria brought on by injury. In his thesis, Benjamin

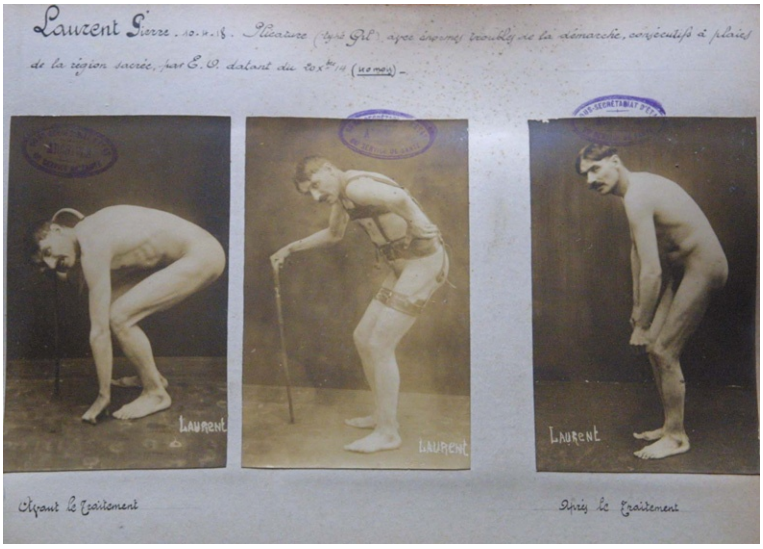


**FIGURE 4**

P. Laurent, soldier of the French army, camptocormia after 40 months of this condition. Musée du Service de Santé des Armées. Paris, Le Val de Grâce. With kind permission.

Moné refers to the "syndrome of prostration" (Moné, 1916). The first cases were presented by Achille Souques (1860–1944) and Clovis Vincent (1879–1947) in 1915, as documented in the thesis of their Russian student Inna Rosanoff-Saloff (Rosanoff-Saloff, 1917). They were followed by the cases of Paul Sollier (1861–1933), who suggested: "The best evidence of this analogy (see fulguration-hysteria) is that we are unable, aside from third-party accounts, to distinguish a case due to shell explosion from a case caused by ordinary trauma or even a violent emotion. Treatment in turn provides further proof of this analogy between hysteria and shell-shock, which increasingly appear to be the same thing, given that the same methods are curative, be they psychotherapy, functional rehabilitation or sensory-motor excitation" (Sollier and Chartier, 1915). Vincent sought to reinforce psychotherapeutic suggestion by using electrification with high-intensity galvanic currents, which the soldiers nicknamed "le torpillage" (torpedoing). But Maxime Laignel-Lavastine noted: "Electricity in the form of faradic currents or, in the most difficult cases, galvanic currents, produces good results when applied with moderation. We were never aware of excesses committed anywhere in France; using ordinary medical equipment, it is impossible to commit such excesses. Electrification works both by suggestion and by a beneficial excitation. The latter may cause some degree of physical pain, which must be scrupulously quantified" (Laignel-Lavastine and Courbon, 1919). However, in 1916, a soldier named Baptiste Deschamps violently refused Vincent's treatment. This led to a publicity campaign and a trial, with the result that this violent use of electricity was eventually abandoned (Roudebush, 2000; Tatu et al., 2010) (Fig. 5).

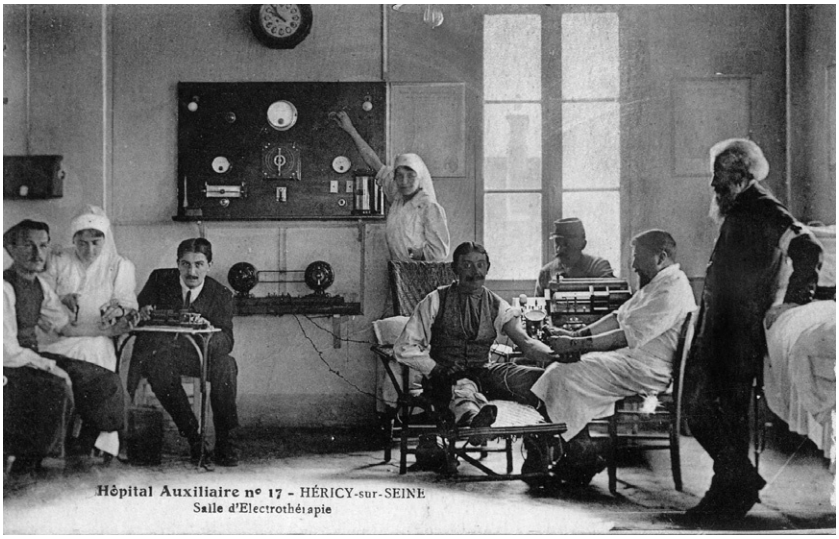


**FIGURE 5**

Postcard "Hôpital auxilliaire No. 17 Héricy sur Seine". Salle d'électrothérapie. The physician, on the right, looks like Jules Dejerine (1849–1917) (private collection of the author).

Sollier drew this conclusion: "An algogenic method was added – 'torpillage' – which was qualified as intensive rehabilitation (Clovis Vincent). This method consists of delivering, via galvanic plugs at short intervals, intense 50-60 milliampere shocks at any point on the body, with a quick, disseminated application. Under this treatment, the disturbances disappear: either the subject was simulating or exaggerating, and the pain forces him to adopt a different attitude; or he is sincere, and the treatment makes him accomplish involuntarily and reflexively the movements he thought he was incapable of. [. . .] But this torpillage, this intensive rehabilitation, this brutal treatment for which marvelous effects have been claimed in some cases, does have drawbacks: it must succeed right away, if not in completely curing the patient, then in eliminating the majority of the most obvious symptoms. [. . .] It may also produce dizziness. Following or during torpillage sessions, I have frequently observed dizziness, headache, insomnia, agitation and slight mental confusion, or full hysterical attacks, despite the lack of conscious perception of electrical excitation. I have also seen certain muscular atrophies accompanying flaccid paralysis increase under the effect of hyper-faradisation. Torpillage sometimes produces singular effects that go beyond what I have noted above [. . .]. Given that the return of sensitivity is the condition for the return of motor function in hysterical contractions, and especially in hysterical paralyses, violent galvanic and especially faradic excitations are not suitable for reviving the lost sensitivity. More appropriate is the old cutaneous faradisation process developed by Duchenne de Boulogne which uses a paintbrush-type brush, or better yet a very soft faradic brush, thereby avoiding diffusion through the muscles. This is the process we have always used" (Sollier et al., 1918).

## 6 CONCLUSION

"Amidst the eternal illusion enveloping us, only one thing is certain: suffering," wrote Anatole France (1844–1924) (France, 1888). This proximity with pain, which the social body tends to repress, has always been the physician's domain. Between what is said and what is withheld, the pain and anguish accompanying patients and their treatment is experienced by them as secret and troubling. The therapeutic methods at physicians' disposal were empirical from ancient times up to the twentieth century, but as literature reveals, the human imagination is limitless when it comes to treating illness. Literature highlights the ambivalence of the medical attitude, which often proposes an implicit contract: suffer for a cure. To the cruelties of fate and illness, must we also add therapeutic cruelty? Is this not an expression of a culture that sees suffering as redemptive? Is it an expression of medical power? Charcot, in 1857, at the beginning of his brilliant career, recommended prudence: "Incurable diseases exist, and unfortunately there are many of them. The imprudent attempts of an impatient physician insisting on vigorous remedies, would most certainly have the effect of shortening the patient's life. The best thing to do in such cases is to follow the precept of Baglivi: prolong life and diminish suffering, such is the only aim of the art" (Baglivi, 1745; Charcot, 1857).

Unless otherwise indicated, all translations are provided by the author.

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