

MARCEL PROUST AND PAUL SOLLIER: THE INVOLUNTARY MEMORY CONNECTION

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submitted

In December 1905, eight years before he published the first volume of “In Search of Lost Time”, Marcel Proust entered a sanatorium to follow a six-week treatment for “neurasthenia” under the care of Dr. Paul Sollier who, along with Babinski, was considered the cleverest pupil of Charcot. Following Charcot’s wish, Sollier had studied memory in depth, and he used this knowledge to provoke emotional surges of involuntary memories in his patients. Proust’s novel contains over 1,200 allusions to memory, with a specific emphasis on involuntary memory, which was largely inspired by Sollier’s theories.

Beyond that, Sollier highlighted several other concepts which make him a major precursor of modern cognitive neurology: memory stabilization requires specific conditions, learning is based on cellular changes and plasticity, memory is a universal phenomenon of the nervous system, memory organization centers differ from perception centers, memory organization is controlled by the frontal lobe, and neurophysiological mechanisms explain the difference between perception and memory. The rediscovery of Sollier’s extraordinary work on memory should rehabilitate a forgotten, atypical neurologist whose critical interest in psychology may, in retrospect, make him one of the first modern neuro-psychologists.

Marcel Proust (1871-1922), one of the greatest novelists of all times, is also known for his extraordinary skills in analyzing the forms and psychological mechanisms of memory. His main novel “In Search of Lost Time” (1) (first published in 1913) emphasizes the importance of what he called “involuntary memory”, which is deeply associated with emotions. In 1905-1906, Proust, who suffered from psychological exhaustion, spent six weeks in a sanatorium under the care of Dr. Paul Sollier, a pupil of Charcot, whom the master of La Salpêtrière had asked, a few years before his death, to synthesize the most recent discoveries on memory (2). Sollier subsequently published two major works on memory, “Les Troubles de la Mémoire” in 1892 (3) and “Le Problème de la Mémoire” in 1900 (4), followed by a book on emotions (“Le Mécanisme des Emotions”) (5) a few months before Proust’s admission to the sanatorium. It is striking that, in Proust’s novel, many of the developments on memory, including “involuntary memory”, seem to take their roots in Sollier’s work. While Sollier’s influence on Proust’s work has

recently been rehabilitated (6), his role as a major precursor in the field of cognitive and behavioral neurology of memory remains completely forgotten.

Marcel Proust and Neurology

While Proust studied philosophy, he developed and always maintained a specific interest in medicine. He was the brother of Robert, who became a urologist of some repute, and the son of a famous physician, Adrien Proust, who became professor of hygiene at the medical faculty in Paris in 1885, and who founded the International Office of Hygiene, predecessor to the World Health Organization (fig. 1). Adrien Proust had deep interests in neurology; he had studied aphasia, labio-glossopharyngeal palsy, stroke, and ambulatory automatism (7), before becoming interested in “neurasthenia”, a disease which had just been identified by Beard (8) to describe “nervous exhaustion”, covering what today largely belongs to psychosomatic disorders. Along with Gilbert Ballet, he publi

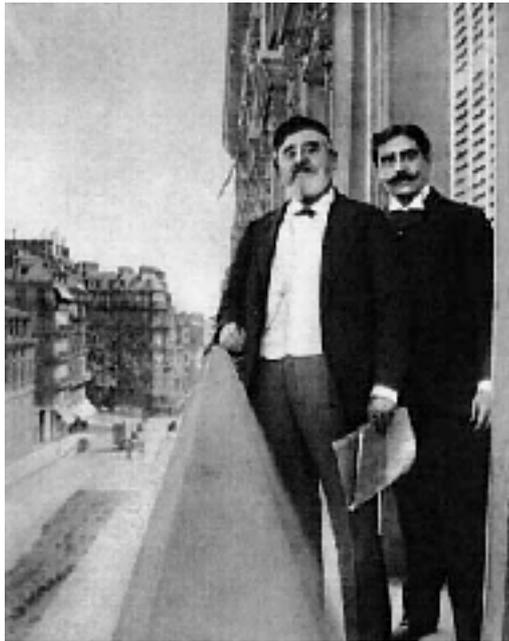


Fig 1. Proust's father Adrien and Brother Robert at home in Paris. Both were medical doctors, and the first published several works on aphasia, stroke, and neurology.

shed "The Hygiene of the Neurasthenic" (9), immediately after introducing— with a preface— Edouard Brissaud's "The Hygiene of the Asthmatics" (10). These choices were not surprising, as Marcel had been suffering, from the age of nine, from recurrent attacks of severe asthma, a condition which, at that time, was considered a subcategory of neurasthenia (6,7).

Proust met many physicians through his father and friends, including famous names such as Dieulafoy, Pozzi, Vaquez, Cotard, Jean-Baptiste Charcot, and Antoine Blanche, who had cared for Guy de Maupassant when he developed general paresis (11). But Proust's main medical connections were to neurology, which led him on a rewarding, lifelong tour of the Parisian neurological intelligentsia (7). Included in this grouping were Charcot's pupil, Edouard Brissaud who, along with Pierre Marie, founded "La Revue Neurologique" in 1893, Jules Dejerine, the second successor to Charcot at La Salpêtrière, and Joseph Babinski, who cared for Proust's mother when she had a stroke and became aphasic, and with whom Proust would subsequently consult when his own fear of aphasia developed. Later, Babinski would come to Proust's home to examine him just a few hours before his death, at age 51 (11). However, it is with another of Charcot's pupils, Paul Sollier (1861-1938), that Proust had his closest contact, referring himself to his clinique in

Boulogne-Billancourt in order to follow a six-week "isolation cure" to improve his asthma, to re-set his totally desynchronized sleep-wakefulness cycle, and also to accomplish a deep self-exploration to retrieve a "will" for literary creativity (6). Following Brissaud's advice, Proust selected Sollier after hesitating between Dejerine and two Swiss neurologists, Paul Dubois in Berne, and Henry-Auguste Widmer in Valmont (11). His choice was influenced by the shorter duration of Sollier's treatment and his interest in homosexuality. Proust entered the sanatorium on December 6, 1905, and was discharged six weeks later.

Paul Sollier

It is striking that, without his famous patient, Sollier's name would be completely forgotten today (12). His name appears only in connection with idiocy in Berrios' "History of Mental Symptoms" (13), while it is absent from neuropsychological textbooks and monographs on memory, as well as in textbooks on the history of neurology (7). His face (fig 2) also seems to have disappeared from most archiving institutions, since we had great difficulty in finding a portrait at the "Académie Nationale de Médecine", and we have been unable to locate any portrait or photograph in any other official archives in Paris, including the "Archives et Photothèque de l'Assistance Publique des Hôpitaux de Paris", the "Service de la Documentation de l'Université de Paris", or the "Bibliothèque et Fonds Charcot de La Salpêtrière". Charcot's biographies do not quote Sollier (14, 15), although at the time he was reported to be the cleverest collaborator during hospital rounds and the best follower of Charcot— together with Babinski (16).

Before training with Bourneville at Bicêtre in Paris, Sollier became an "interne" in 1887 and a doctor in medicine in 1890 (17). In 1897, he was appointed at Boulogne-Billancourt, located in a suburb of Paris, one year before starting a regular series of lectures at the "Université Nouvelle" in Brussels, where, in 1909, he became a member of the board. One of his career achievements was his election to president of the "Société de Psychologie". Sollier wrote articles and books on many topics, including alcoholism, morphine addiction, hysteria and neurasthenia, aphasia from insular lesion, chorea and athetosis, spinal cord claudication, hiccups in syringomyelia, tabes dorsalis, epilepsy, anorexia nervosa, autoscopy, war neurology, and neuromuscular physiology (18). He also contributed to the literature with papers on psychological-philoso-

phical topics, such as doubt, consciousness, the mental state of dying, gambling, miracles in science, and morality (17). However, apart from memory, his main expertise was in mental retardation, the topic of his medical thesis in 1890 (18). He developed a means of measuring mental state by comparing normal individuals of the same age, and supported a quantitative view which ultimately led to the creation of the intellectual quotient (IQ) (12). His international fame was considerable in his time, as shown by translations of his books into Italian, Russian, Polish, German, and English. A few years after he died, in 1938, his sanatorium in Boulogne (fig 4), which had been transformed into the Ambroise Paré hospital, was destroyed by the allied bombing of the nearby Renault factory during World War II (7), with the disappearance of many archives.

Sollier's work on memory

In his first book on memory (3), Sollier attempted to synthesize Charcot's teaching on amnesia in order to provide the best update of the time. It was published in 1892, shortly before Charcot's death, with a level of success that justified a second edition, in 1901. Sollier's major opus on memory appeared in 1900 (4), based on a series of lectures at the "Université Nouvelle de Bruxelles". This book appears as a masterly synthesis of neurological and psychological ideas on memory, both forming the platform for further, novel concepts that have proven themselves precursory by several decades.

Sollier asked a series of simple questions, such as: What are the cellular modifications that underlie the process of memory? Which brain regions are active in memory? What are the components of autobiographical memories? What are the mechanisms of remembering? How do invariant and variable features of memories match with each other? Sollier's main references include Ribot, Richet, Ebbinghaus and Pitres, while he virulently criticized Bergson's spiritualist theories and poor knowledge of brain anatomy and function. Sollier complained that, in general, memory was addressed too little by the neurophysiologists and the neurologists of his time, while as early as page one he emphasized Richet's formula that memory is "the critical key to the whole intellectual building", an opinion which has recently been revived (19). Overall, several of the concepts developed by Sollier can be considered incredibly advanced for his times, making him an extraordinary precursor in terms of contemporary thought on the mechanisms of memory (20):

LE D^r PAUL SOLLIER EST MORT Des BOUQUES

Il était président de l'Institut des hautes études de Belgique

Le docteur Paul Sollier, commandeur de la Légion d'honneur, commandeur de l'ordre de Léopold, commandeur d'Orange et Nassau, chevalier du Christ de Portugal, chevalier de Sainte-Anne de Russie, ancien interne des hôpitaux de Paris, ex-médecin-directeur du sanatorium de Boulogne-sur-Seine, directeur et président de l'Institut des hautes études de Belgique, professeur et fondateur de l'Ecole d'ergologie de Bruxelles, vient de mourir subitement le 8 juin, à Paris, 14, rue Clément-Marot.

C'est en janvier dernier que l'Institut des hautes études de Belgique avait élu comme président le docteur Paul Sollier, dont la plupart des ouvrages ont été traduits dans beaucoup de langues européennes, et qui a été, avec Mme le docteur Alice Sollier, le fondateur, en 1897, du sanatorium de Boulogne-sur-Seine, devenu depuis dix ans l'hôpital Ambroise Paré.

Professeur dès avant la guerre à cet institut, rattaché à l'université Nouvelle — disparue depuis 1920 — il en devint vice-président après avoir fourni le plan de son organisation actuelle.

D'autre part, le docteur Sollier avait créé parmi les sections de l'Institut, — une section de sciences du travail — ou ergologie — qui s'est transformée, sous la pression des élèves ingénieurs, médecins d'usines, etc., en une véritable école, reconnue et subventionnée par l'Etat comme établissement d'enseignement technique supérieur.

Dr Paul SOLLIER

Siècle Médical 11.6.33

Fig 2. *Le Siècle Médical*, a newspaper, publishes an obituary on 1933, June 15 th.

1. Conditions for memory stabilization. Sollier delineates six main factors required for memory stabilization: stimulus intensity, duration, repetition, attention, coexisting emotion, and will. He also underlines the fact that lack of successful voluntary recall does not correspond to a failure of

stabilized fixation, since involuntary retrieval demonstrates effective stabilization.

2. Cellular changes and plasticity during learning. Sollier underscores the constant changes which take place at the nerve cell level following incoming stimuli (pp.59-84) :“An excitation (...) determines (...) a special molecular arrangement”, where new stimuli transform the cell from a “static” to a “dynamic” state. Since a cell cannot provide a simultaneous “perception of the present” and a “representation of the past”, it is likely that “a cell, not only does not maintain a permanent modification under activating excitations, but cannot be differentiated and adapted to a special stimulation”, while “the molecular arrangement is not definitive (...), it is constantly transforming itself”. On the other hand, at the morphological level, stimuli and learning are associated with nerve cell extensions through “free endings which develop contacts with those of adjoining nerve cells”. These extensions grow and subsequently develop closer contact with the extensions of adjoining cells”, explaining why “exercising develops memory, and how memory retrieval becomes quicker with increased repetition”. While the concept of plasticity can already be found in the work of Ebbinghaus, Taine, and Bergson (21), this is the first time that a precise mechanism linking neuronal plasticity to memory was put forward.

3. Memory is a universal phenomenon of the nervous system. Sollier emphasizes memory as a basic property of nerve cells. This leads him to develop a concept of brain functioning that associates global functioning with specialized activity in focal cerebral regions, in an interesting effort to reconcile localizationism with antilocalizationism (pp.18-19).

4. Memory organization centers are different from perception centers. Basing his reasoning on the fact that a localized lesion of the perception centers does not abolish corresponding memories of perception, Sollier draws a simple pathway for stimuli, which travel from reception centers to perception centers, and then to memory centers, which are not co-localized in the brain. “Everything suggests that there is a brain center where memories are stored, and from which memories can be retrieved” (p.94).Sollier did not hypothesize where these memory centers were located, and another 60 years would have to pass before the role of the hippocampus became clearly delineated (22).

5. Memory organization is controlled by the frontal lobes. Over 80 years before the scientific demonstrations of Milner’s and Tulving’s groups (23, 24), Sollier spoke of an “intellectual cen-

ter” localized in the frontal lobes, which regulates learning and the retrieval of memories (p.115).

6. Neurophysiological mechanisms explain why a recalled memory is identified as memory rather than as an actual perception. While Taine had merely emphasized a psychological explanation whereby the recognition of a past memory occurs because it is contradicted by current perceptions, Sollier put forward a neurophysiological phenomenon: in perception, the excitatory cell current is “centripetal” at the level of the structures where memory will be stored, while during retrieval the excitatory cell current is “centrifugal” from these structures (pp.131-3). This hypothesis also led Sollier to suggest the modern concept that, while actively remembering, the corresponding perceptive cortical zones become activated (25).

In addition to formulating the above-mentioned novator concepts, Sollier envisioned the study of memory from a unique multidisciplinary point of view, combining biology, physiology, psychology and pathology.

Involuntary memory

Although the phenomenon of an involuntary surge of memories had already been mentioned by Aristotle, Voltaire, Diderot (21) and, more recently, by other neurologists such as Pitres (26), Sollier was the first to analyze this surge in such detail, in order to use it during specific therapy for his patients. He transformed Ribot’s idea that “forgetting is the condition of memory” (27) into “the passage from the Conscious to the Unconscious” (p.58), with the reverse phenomenon during “re-experiencing”(“reviviscence”): “A memory is an image(...) which reproduces a past impression. Re-experiencing is something more: it is not only the appearance of an image into the field of consciousness, but this appearance is so clear and is accompanied by such a precise and intense reproduction of the state of personality of the subject at the time of the initial impression, that this subject again believes they are going through the same events as before (p.29). For Sollier, autobiographical memories thus may often correspond to “re-experiencing anterior states of personality” (p.68-9): “the memory which is building up in me thus is not really formed by the impressions which come from it, but by all concomitant impressions. The main images of the object belong to that picture. They have the main place, but not the only one. Later, I will be able to retrieve them, as they are the sole perceptions which have been conscious; but in rea-

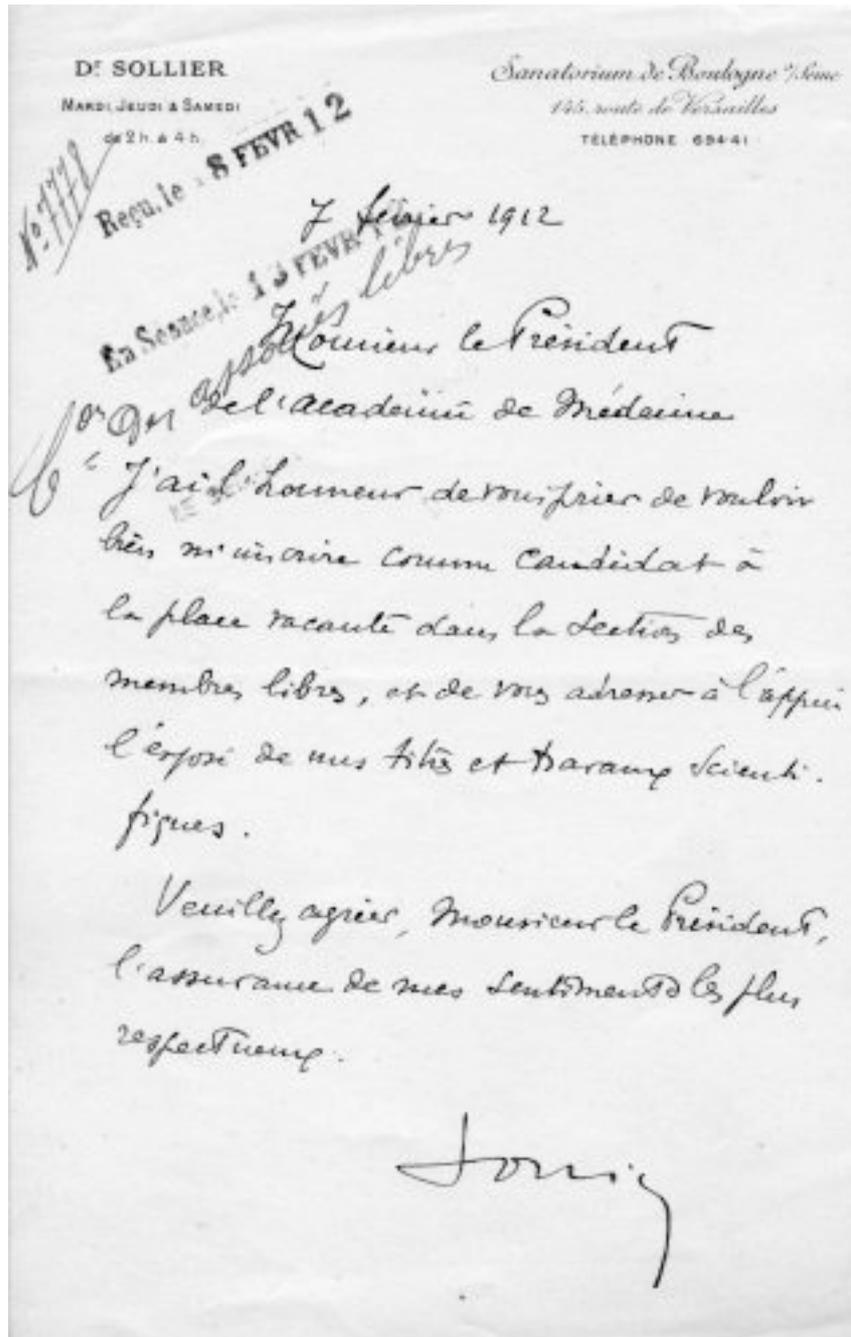


Fig 3. The letter written by Sollier to offer oneself as a candidate for the Medicine Academy in Paris.

lity, a whole state of personality may surge”. The items which coexist with the main image precisely allow for a distinction to be made from among memories of the same object: “This is the cenesthetic state, i.e. the state of personality which allows for the differentiation of memories which seem identical”.

Sollier linked involuntary memory with affective and emotional factors: “I am feeling a

violent emotion during an accident which I have witnessed, and this emotional state triggers in me the revival of memories of facts which bear no relationship to the actual accident, but have determined in me a similar emotional state” (p.113). Besides emotional triggers, Sollier also underscores the role of less conspicuous factors which may lead to involuntary retrieval of memories, and he called this phenomenon “association”, a topic about which he would subsequently write an entire book

(28). In parallel, he emphasizes the poor efficiency of the voluntary retrieval for life events: “Our will really plays a trivial role in the evocation of memories, and it is an illusion to believe that it is under the influence of free and voluntary efforts that this evocation takes place” (p.115).

Proust’s treatment by Sollier

For treating hysteria and neurasthenia, Sollier made use of the fact that in involuntary re-experiencing, “the personal element dominates the sensory element at the time of the impression” (p.122). He applied “isolation therapy”, which had been introduced by Esquirol, had been applied by Jules Dejerine and other neurologists, and was subsequently used by Charcot, then summarized by Camus and Pagniez (29): the patient was admitted to hospital and isolated from his usual social environment, being in contact only with his physician and one or two of his collaborators. Psychological regression was supposed to be triggered by confinement to bed for at least one week, with feeding being limited to milk products. The aim was to produce a “dependence” of the patient upon his physician, so that therapy would be easier. Sollier’s therapy was known to be shorter than Dejerine’s, which was an attractive feature for

Proust, who was also attracted by the fact that, under Sollier’s care, the isolation was less strict

than with other physicians (11). With Proust as with his other patients, Sollier used involuntary memories to trigger re-experiencing, in order to obtain a new mental and affective balance, which would lead to improvement of the reported symptoms. Unfortunately, one knows very little about the specific development of Proust’s therapy, since Sollier’s archives have not been recovered, and Proust remained mute about it. It is even striking that, while Proust is known to have written thousands of letters, his therapy at the hands of Sollier is scarcely mentioned in his correspondence. Proust mentions that his therapy was a “psychotherapy”, a novel term which had been introduced in 1894 (6). In his rare accounts of his stay in Boulogne, he complained about the inefficacy of the treatment, which was painful or was doing him harm (7). It is clear that this treatment could not be expected to improve Proust’s severe asthma. On the other hand, it was useful— though only temporarily— in reorganizing his disturbed sleep-wakefulness cycle, and also to stimulate him to continue writing. Moreover, several of Proust’s ideas on involuntary memory appear to have developed from what he learned from Sollier, both from his books and from his personal experience as a patient (2, 6, 7).

In his scarce comments on his stay with Sollier, Proust did not convey a positive image of his physician, especially since their interaction



Fig 4. Sollier’s clinique “sanatorium” in Boulogne-Billancourt which had been transformed into the Ambrois  Par  hospital after the retirement of Sollier and destroyed by allied bombing 1942 march 5.

apparently began with a quarrel over the philosopher Henri Bergson, who was also Proust's cousin (11). It is likely that Proust tried to impress his physician by quoting Bergson by memory, not knowing that Sollier had a deep knowledge of—and aversion to—Bergson's work. Later, while Proust never acknowledged how Sollier's theories on memory may have benefited him, it is interesting to see that he always vigorously defended himself from such attribution, claiming to have been influenced by Bergson, while Bergson completely omitted any mention of involuntary remembering in his work on memory (11). However, in his 1908 notebook, in which he elaborated the framework for his novel, Proust wrote down Sollier's name just beside the main involuntary memory phenomenon which leads to the final, key understanding in the novel (2). This probably constitutes the best—though involuntary—homage that Proust could ever give to Sollier.

In Search of Lost Time

This is the exact translation of the title of Proust's novel (1), which first appeared in English as the inaccurate rendition "Remembrance of Things Past". We counted 1,210 uses of terms relating to memory (like remembering, forgetting, recall, etc.) on 3,125 pages, which corresponds to an allusion to memory every 2.6 pages. In the 270 pages of volume 6 ("The Fugitive"), memory is quoted more than once per page. Although certain experts (30) have claimed that memory is not the central concept in the novel, "In Search of Lost Time" probably remains the great novel of autobiographic memory. This is not the venue to discuss the place of memory in Proust's work, but we believe that it contains a thorough analysis of at least 10 main topics on memory: involuntary memory, voluntary memory, affective memory, the constructive and deconstructive process of memory, reality-memory discrepancy, the phenomenology of memory and remembering, habitude, forgetting, memory processing into patterns, the role of time in memory, and memory dysfunction. Involuntary memory is the best known of these topics. Proust emphasized direct and indirect associations which may lead to re-experiencing as defined by Sollier. He also mentioned the "floating of consciousness", sometimes provoked by medications, which may lead to a surge of vivid memories, and he drew a parallel with similar phenomena which develop during sleep and dreams. Although no proof of this is available, it is highly likely that Proust was markedly influenced by Sollier through his books and his own therapy at Boulogne, where he may have discovered

the "function" of his own forgotten memories (2, 6). However, Proust went beyond Sollier on two matters. Firstly, he emphasized the "shock" provoked by the surge of a previously forgotten vivid memory, which may lead to an intense feeling of happiness and beatitude due to the affective overlap between the past and present. This phenomenon leads to a synthesis of the past and present persons in the subject, with a feeling of untemporality. Secondly, the resurgence of vivid, past memories first produces an impression, which may subsequently lead to desire and decision, to be followed by action.

Proust never emphasized his main sources, and in that regard he behaved with Sollier as he did with Schopenhauer and Bergson, who also greatly influenced him. Until recently, Sollier was considered by Proust experts as just the doctor who conducted Proust's only inpatient treatment, without success. In neurology and psychology, Sollier's contribution was also forgotten, probably because his atypical studies led him to be regarded as not a neurologist by the neurologists and as not a psychiatrist by the psychiatrists, at a time where these two fields were diverging from each other. Sollier indeed criticized the two rising stars of psychiatry, Janet and Freud, because they were not adequately considering neurophysiology and brain studies (6). At the same time, neither memory nor emotions were considered a neurological topic, despite Charcot's legacy. Sollier's many applications to the Académie Nationale de Médecine were never accepted (fig 3). As it appears that the early twenty-first century is providing the scientific grounds for some form of reunification of neurology and psychiatry, it is also certainly the right time to rehabilitate Paul Sollier and to bring from the shadows his extraordinary precursor work on memory.

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