

VICTOR MORAX (1866 — 1935)

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Paris

In the firmament of French ophthalmology, the brightest star in the beginning of our century was **Victor Morax**, oculist and Pasteurian (*fig. 1*). Everything has been said about this man and his work by his colleagues, friends and students (*fig. 2*). Still, I am both happy and proud to present to the members of the International Academy of Ophthalmology this universal man in whom science and discovery came first and whose work is a heritage of the first magnitude.

Victor Morax was born at Morges in 1866. Morges is a small town on the western half of the north shore of Lake Lemman, that is, between Geneva and Lausanne. This region is a veritable geographical crucible: **Dufour**, **Gonin**, **Cuenod**, and **Rist** were born there, and **Yersin**, like **Morax**, was born at Morges. The childhood of Morax was graced with the tenderness of a mother and an aunt, who were both highly cultivated. His father was a country doctor, a man of intelligence and common sense, who had been an intern at the Hôpitaux de Paris in 1861 and who was fired by the enthusiasm of his student years. Victor Morax was influenced by this paternal enthusiasm and from childhood on dreamt of studying medicine. He thought to do this in Paris and

not to return to practice rural medicine because of the heavy obligations his father was burdened with.

In his response to the tributes at his jubilee, Morax said that there was no cinema in Morges during his youth but only lecturers who came from time to time to stir the city from its lethargy. He preferred **Marc Dufour**, an oculist from Lausanne, "whose warm and friendly voice communicated luminous insights into hygiene or the visual function." Morax, then 15 years old, saw there the genesis of his vocation. But he did not take his baccalaureate for another two years, since he had to go to Lausanne to do his studies. At the laboratory of Professor Brunner, he developed a passion for chemistry though he was still attracted by the medical and biological sciences. In order to reconcile his interests, he went to Fribourg in Breisgau for 6 months where he studied physiological chemistry in the laboratory of Professor **Baumann**. At that time, one thought to find the explanation for the action of microorganisms in the production of alkaloids, which **Brieger** had analyzed extensively and which, under the general name of ptomaines, consisted of a series of analogously constituted bodies.

Victor Morax then went to Paris, where he had been preceded by his fellow-citizen, **Alexandre Yersin**, who was working at rue d'Ulm in the laboratory of **Emile Roux**, the eminent collaborator of **Pasteur**. Morax revealed his enthusiasm for the works of Brieger, but Yersin soon undermined his convictions and introduced him to the studies of Emile Roux on toxins. The action of microorganisms could no longer be attributed to an alkaloid, but rather to a more active substance that escaped the procedures of chemical analysis but that could be demonstrated by its biological reactions. Morax grasped the point. He enjoyed generous hospitality at the Institut Pasteur where, under the guidance of **Emile Roux**, he was able to accomplish his best work.

Morax, an extern in 1888, had the good luck of obtaining a position with **Charcot** in the neurology clinic of the Salpêtrière. Charcot would have a great deal of influence on his clinical formation. His ophthalmological vocation took form when Morax met Parinaud, an eminent oculist who dominated French ophthalmology at the time though he had no official title. Once a week, Parinaud would come to conduct ophthalmological examinations at Charcot's clinic, and he would always open new perspectives in ocular physiology. He suggested that Morax become his assistant at his private clinic on the Avenue de Clichy, and it is here that Morax received his ophthalmological training.

To remain faithful to his paternal tradition and to acquire an envied title, Morax prepared for the intern's examination at the Hôpitaux de Paris. **Maurice Nicolle**, an incomparable lecturer, transformed the Saturday afternoons into pleasant weekends. It was at these lectures that Morax first met



Fig. 1: Victor Morax



Fig. 2: Victor Morax and his staff at the Lariboisière hospital. At the left of Morax, Paul Bailliart.



Fig. 3: Victor Morax at the International Congress of Ophthalmology at Barcelona in 1933.

Rochon-Duvigneaud. Morax was appointed in 1890 and Rochon-Duvigneaud in 1891, and there came the joyous years of residency on the wards that Morax loved to recall. His masters were **Bourneville, Nicaise, Gerard-Marchand,** and **Joffroy.** He does not seem to have been held in high favor by the directors of the hospital since he was reprimanded for not being on call. Actually, when Morax had finished his work at the hospital, he would find an extern to replace him, and he would go to study at the Institut Pasteur. In his last year, he was the intern for **Felix Terrier** at the Bichat hospital. There he was able to apply the rigorous methods of the bacteriological laboratory of the Institut Pasteur. Terrier allowed him to start his ophthalmological career. **Henri Hartmann,** who was the assistant, allied himself with Morax and went on to support him throughout his career. Even if, later on, Professor Hartmann did not succeed in getting Morax chosen to succeed **Panas** for the chair of clinical ophthalmology at the Hôtel Dieu, he was able to let him know that the position of ophthalmologist at the hospital was going to be opened to public competition by the Assistance Publique and that he should try for it. Thus, Morax, who had obtained French nationality, became the leading ophthalmologist of the Hôpitaux de Paris in 1900.

Thus it was that the dismal little service of Lariboisière that Delens had left was transformed into a large, 3 story building planned and constructed by Morax where the microscope and asepsis would reign and where all the indispensable apparatus of modern medicine would be provided. Thanks to asepsis and Morax's manual dexterity, modern ocular surgery was born and developed.

So on one side, there was the Institut Pasteur, and on the other the Ophthalmological Service of Lariboisière.

I have already had occasion to mention the decisive influence Emile Roux had on the life of Victor Morax. In 1892, our brilliant intern of the Hôpitaux de Paris found himself among the first students of the *Grand Cours* of the Institut Pasteur directed by Emile Roux in rue Dutot. **Morax** formed a fertile and durable friendship with **Roux,** and with everyone at rue Dutot.

Morax defended his doctoral thesis in 1894, a study of the etiology of acute conjunctivitis stressing the bacteriology of these infections. He identified and described a diplobacillus responsible for angular conjunctivitis. This germ was later confirmed by **Axenfeld** and is now universally known as Morax's diplobacillus. This diplobacillus turned out to be the first of a vast family of pathogenic bacteria responsible for meningites and septicemia gravis that was given the name *Moraxella* in honor of Victor Morax. To conduct the research for his thesis, Morax had applied for and obtained a working post at the Institut Pasteur. For several years, he worked in a laboratory on the second floor of the microbiology building. This laboratory still is called the

"*laboratoire de Morax*". Up until the last years of his life, Morax taught bacteriology at the Institut Pasteur. In his simple but vivid language, he loved to demonstrate the important role played by bacteriology in the advance of modern ophthalmology. He studied thoroughly the ocular manifestations of gonococcal infections and pneumococcal conjunctivitis along with follicular conjunctivitis. Trachoma attracted his attention after a voyage in Egypt, where he was in charge of a mission in 1901, and his work demonstrated the bacteriological errors of his contemporaries in the pre-viral era. In 1923, along with **Charles Nicolle**, he founded the *Ligue contre le Trachome*, and he chose the Institut Pasteur for its meetings. In 1923, short, as Emile Roux said in 1926, Victor Morax "was part of the Pasteurian family, not only by his working with the method, the zeal, and the disinterest that Pasteur inspired in his disciples, but also by taking part in all the events that happened at the Institut Pasteur since its foundation." Morax was one of those who took turns at the bedside of Pasteur in 1894, and eight years later, in January 1902, he belonged to the faithful group that kept vigil when **Emile Duclaux** was struck with hemiplegia. In a word, as René Martin recalled at his centenary ceremony in 1966, "Morax was a Pasteurian through and through."

In 1907, the service of ophthalmology of the Hôpital Lariboisière had three floors and 45 beds. It had been designed by Victor Morax, Pasteurian and former intern of Felix Terrier, to be able to apply the rules of asepsis to ocular surgery. This service became the shrine of ocular surgery and the goal of pilgrim oculists from the world over for its reputation was international. In 1913, there were 7000 new patients. During the First World War, it was turned into a military ophthalmological center, and its clientele were doubled by the wounded. Wartime ocular surgery was perfected, and Victor Morax organized the procedures for dealing with traumas of the visual system.

The considerable scientific work of Victor Morax

We can divide Morax's scientific work into three categories:

- the Pasteurian work of the student of **Emile Roux**;
- the surgical work of the student of **Felix Terrier**;
- the neuroophthalmological work of the student of **Charcot, Parinaud, and Bourneville**.

The *Pasteurian work* is dominated by his studies of conjunctivitis. Thanks to his methodical study and bacteriological control of conjunctivitis, Morax was able to reform the pathology of this condition. He identified successively:

- a) Acute contagious conjunctivitis caused by **Weeks'** bacillus, which he was the first to culture in ascitic gelose.

Morax demonstrated that this bacillus produces toxins, which have an inflammatory effect.

b) The three forms of pneumococcal conjunctivitis. The same microbe could be the cause of an acute conjunctivitis that evolves rapidly, of a pseudomembranous conjunctivitis, or of a mild lacrymal conjunctivitis of the newborn.

c) Angular conjunctivitis is due to the diplobacillus that carries his name and is sensitive to zinc sulfate.

d) He also clarified acute and chronic follicular conjunctivitis, and he isolated inclusion conjunctivitis, which is also called swimming pool conjunctivitis and of which he had a presentiment of its viral nature. Finally, he also described conjunctival folliculosis.

With regard to trachoma, he noted during his voyage in Egypt that the acute form is only caused by a superinduced infection of gonococcus, **Weeks'** bacillus, or diplobacillus, and already he sensed the viral character of the disease.

At the 16th congress of Medicine in Budapest in 1909, he spoke of the etiology of inflammations after surgical or accidental traumatism and also of streptococcal, staphylococcal, pneumococcal, meningococcal, gonococcal, and trypanosomal or sporotrichosal metastatic ophthalmia.

It was in London in 1913 and later in the *Annales d'Oculistique* that he spoke of sympathetic ophthalmia, a rare condition. A penetrating wound of the eye involving the uveal tract is necessary to provoke it. It follows after an incubation period of 2 weeks to 3 months, and exceptionally after a year. Ablation of the traumatized eye in the first two weeks should prevent complications. Delayed enucleation certainly does not exclude the evolution of sympathetic accidents. Finally, **Morax** confirmed **Fuchs'** contention that this disease was characterized by uveitis with lymphocytic accumulation.

The *surgical work* of **Terrier's** student is dominated by the introduction of Pasteurian asepsis.

Morax adopted **Lagrange's** sclero-iridectomy and regularly recommended it. He was familiar with all the procedures for extracting a cataract. The Master excelled in autoplasty and orbitopalpebral repairs after wounds or exeresis of malignant tumors by utilizing all the types of cutaneous flaps.

In 1916, he described the technique of extracting magnetic foreign bodies from the eye, for he was the only one to have an electromagnet in his service.

Finally, concerning secondary cataracts — we are, in fact, in the time of extracapsular extraction — **Morax** showed that the maturity of the cataract has no influence on the frequency of secondary cataracts. It is, therefore, useless to wait for a cataract to "mature" before operating.

The *neuro-ophthalmological work* was dominated by the study of visual deficits caused by occipital traumas. Aided by **Moreau** and **Castelain**, his assistants, he conducted a thorough study of the visual fields of such patients and showed that the alteration of the macular function is more frequent in traumatic hemianopia than in vascular hemianopia. Morax explained that the sparing of the macula was compatible with the destruction of one of the macular visual centers because of the double representation of the macula on the occipital cortex. This hypothesis seems to have been confirmed.

In the order of similar ideas, Morax thought that the scintillating or dark scotomas of migraine were due to irritations on the external face of the occipital lobe.

Regarding his **publications**, Morax published 264 articles from 1886 to 1935. They appeared mostly in the *Annales d'Oculistique*, but also in the *Bulletins* and *Mémoires* of the French Ophthalmological Society, in the proceedings of the Société d'Ophtalmologie de Paris, in the *Annales d'Institut Pasteur*, and in the *Revue internationale contre le Trachome* to cite only the principal ones.

But I must pause here a moment to speak of the *Annales d'Oculistique*: they were brought from Belgium by Valude in 1891. Victor Morax was the editor from 1898 until his death in 1935. It developed into one of the most important international journals of our speciality. The impact of the journal under the successive leadership of Victor Morax, André Magitot, Paul Bailliart, Edward Hartmann, and then Pierre Morax and Louis Guillaumat continued to be powerful up until its recent merger with the *Archives d'Ophtalmologie* at the time of its 140th anniversary.

In addition to his articles, Morax also published several **books**. Here are the titles in chronological order:

1. *Thérapeutique oculaire* (with **Brun**), 435 pages, 60 figures, Doin, Paris, 1899.

2. *Sémiologie oculaire*, in volume IV of the **Encyclopédie Française d'Ophtalmologie**, 403 pages, Doin, Paris, 1905.

3. *Maladies de la conjonctive et de la cornée*, in volume V of the **Encyclopédie Française d'Ophtalmologie**, Doin, Paris, 1906.

4. *Précis d'Ophtalmologie*, 4 successive editions, Masson, Paris, 1908, 4th edition, 1931.

One finds here clarity and precision in a plan based on etiological considerations with personal documentation.

5. *Glaucome et Glaucomateux*, 360 pages, 114 figures, Doin, Paris, 1921. Here the author popularizes the use of tonometry, speaks of 15 years experience with sclero-iridectomy, emphasizes certain functional symptoms

such as oculo-orbital pain and lacrimation, and studies acute, sub-acute, chronic, and secondary glaucoma.

6. *Pathologie oculaire — Histopathologie de l'oeil et des Annexes*, 447 pages, 204 figures, Felix Alcan, Paris, 1921.

This book was written on advice of the anatomopathologists Cornil, Brault and Letulle.

7. *Le cancer de l'oeil et ses annexes*, 503 pages, 139 figures, Doin, Paris, 1926.

8. *Le Trachome* (with Petit), 1 volume, Jean Morax, Paris, 1929.
Unfortunately, Morax left uncompleted a book on ocular infections.

In addition to the great pasteurians, masters, collaborators, and students (**Yersin, Roux, Duclaux, Martin, Nicolle, Petit**), I must now speak of the international pupils of the Master of Lariboisière. I can only cite the principal ones: **Beal** from Clermont Ferrand who was there from the beginning, **Harriet** from Saint Sébastien, **Carlotti** and **Landrieu. Magitot** was his cherished pupil and his successor at Lariboisière. **Henri Lagrange** had a profound respect for his master; **Bailliart** would speak of him with emotion; **Edward Hartmann** was both admiring and fond. **Bollack** was also his pupil, and **Gabriel Sourdille** his last intern. Also with **Morax** were our Belgian friends **Leplat, Hambresin, Weekers**; and there was **Oreste** from Naples, **Fava** from Cosenza, **Ulrich** from Prague. But the list of his students is interminable, so I am obliged to stop here.

I must also note that **Victor Morax** and **Théodor Axenfeld** were great friends in their youth.

Victor Morax was not awarded the chair of clinical ophthalmology of the Faculty of Medicine of Paris because he was not "agrégé" — a stupid pretext of a stupid tradition — and perhaps also because he only had a "patron" in ophthalmology in the person of Parinaud, who was not "official".

In compensation, he did not lack the honors that he merited during his career. In 1919, he received the Bowmann Medal of the Ophthalmological Society of the United Kingdom — the highest distinction at the time in our speciality. He was the french member of the first International Council of Ophthalmology on which he sat from 1927 to 1934 (*fig. 3*). Finally, in 1930, he was unanimously elected a member of the National Academy of Medicine.

Victor Morax resigned his post in 1928, but, shortly before his retirement, he commemorated his 25 years of hospital service by celebrating his Jubilee at the Hôpital Lariboisière. During this moving ceremony on 22 November 1926, the tributes were given by **Chiazzaro** from Uruguay in the name of the foreigners, **Magitot** in the name of his students, **Rist** of his friends, **Rochon-Duvigneaud** of his colleagues and friends, **Quellet**, the director of the hospital, **Emile Roux** of

the Institut Pasteur, and Professor **Henri Hartmann** in the name of the "patrons". Telegrams flooded in from everywhere: **Marquez** from Madrid, **Diaz Caneja** from Valencia, **Oreste** from Naples, **Zeeman** from Amsterdam, **Paparcone** from Florence, **Verrey** from Lausanne, **Van den Hoeve** from Leiden, **Manolesco** from Bucharest.

Victor Morax responded from his heart with his characteristic simplicity and family spirit.

In 1935, Morax, the tireless worker that he was, called his principal collaborators on the *Annales d'Oculistique* to make an urgent decision. He died the day before this meeting. His death was announced on 15 May 1935 at the annual meeting of the French Ophthalmological Society. His students and many friends wept for him. A year later, on 15 May 1936, a memorial ceremony was held in the ophthalmological service of the Hôpital Lariboisière where **Henri Lagrange**, a member of the organizing committee, presented the Morax medal, designed by the artist **Boca**.

In 1966, a hundred years after the birth of Victor Morax, in the March number of the *Annales d'Oculistique*, **Paul Bailliart** and **Georges Leplat** recalled the life and work of Morax in moving prose. **Hans Karl Müller**, Chairman of the 20th International Congress of Ophthalmology at Munich, evoked the greatness of Victor Morax at the inaugural session.

The centennial ceremony was held on 18 September of the same year at Morges in front of the house where Morax was born and in which **Edward Hartmann** occupied a floor. He lived there after his retirement in the memory of his beloved Master. Among the speakers, **Paul Bailliart** remained at the foot of the official tribune as though he — he who had received the *Jules Gonin Medal* — did not feel worthy to speak as an equal of the "Grand Patron".

Such was Victor Morax, a simple man, a man of the heart, a musician and artist, a tireless worker who stood at his desk when he worked late so he wouldn't fall asleep. In the person of Madame Morax, the daughter of Professor **Pinard**, he had a valiant and charming wife who bore him many children. It was a beautiful French medical family that emanated a healthy and warm radiance. I am happy, for my part, to be the colleague and friend of his son, **Pierre**, in whom I have always perceived his inherited qualities. I am also happy to have had **Serge**, the son of Pierre, as an intern. With these 4 generations, one can speak of the Morax family as a marvelous and rare line of interns of the Hôpitaux de Paris.

Rochon Duvigneaud, colleague and friend of **Victor Morax**, acknowledged his qualities of method, patience, and good sense, his particular tenacity, and his consistency that was never led astray. He also acknowledged his knowledge drawn from direct observation, his surgical experience formed over 20 years,

his solid and personal publications, and his faculties of organization and accomplishment in educating the ranks of young ophthalmologists.

Emile Roux stated that **Morax'** work is characterized by the bacteriological background that permeated all of his labor. Without it, **Victor Morax** could not have been what he was.

Henri Hartmann added that this man of scrupulous honesty had an extraordinary degree of manual dexterity.

With all of this, it is not at all surprising that Victor Morax was able to occupy the leading place in ophthalmology at the beginning of our century and to give a new style to our speciality.

Our debt to him is immeasurable.

Summary

Victor Morax was one of the most outstanding ophthalmologists of the first third of the XXth century not only in France, but also abroad. His bacteriological discoveries and among them the recognition of the diplobacillus were famous. Moreover, he was one of the pupils of Pasteur.

Resume

Victoria Morax a été l'un des plus remarquables ophtalmologistes du premier tiers du XXe siècle, non seulement en France, mais aussi à l'étranger. Ses découvertes bactériologiques et parmi elles la reconnaissance du diplobacille sont célèbres. Il était d'ailleurs un élève de Pasteur.

Resumen

Victor Morax fué uno de los oftalmólogos mas remarcables del primer tercio del Siglo XX, no solamente en Francia, sino también en el extranjero. Sus descubrimientos bacteriológicos y entre ellos el descubrimiento del diplobacilo son célebres. Por otra parte, era discipulo de Pasteur.