Apresentação histórica - Historical introduction
Adolpho Lutz and dermatology in historical perspective

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In the early months of 1882, Adolpho Lutz settled down to work as a general practitioner in Limeira, in the interior of the State of São Paulo, Brazil. Limeira was an important center for the cultivation of coffee, sugarcane and cereals, and had a population of approximately four thousand inhabitants, including a sizeable Swiss-German colony. He soon wrote to a Swiss periodical in which he had already described his life as a teacher and physician in Brazil. He did not want to lose contact with European medicine, and he now described a plan he had in mind to study questions that might be important to his fellow physicians in the Old World.

He was interested in making “contributions to medical geography” by publishing studies on parasites, especially *Ancylostoma duodenale*, “if interest in these parasites has not already died down since the end of construction of St. Ghotard tunnel”. In Limeira, Lutz (1883, p.30) came into contact with vast material on malaria and some rare cases of beriberi.

I have also been able to make a number of observations about the influence of climate and race on various diseases. In my office I see blacks and Brazilians, as well as Germans, Portuguese and Italian immigrants who, together, comprise a considerable diversity. They therefore provide very interesting comparative material.

Although the relationships between climate, race and diseases was the topic that seemed most appealing to Europeans when Lutz was living in Limeira...
(June, 1882 to March, 1885), he also paid very close attention to the parasites that caused so much damage to his heterogeneous clientele and to the animals they had contact with. He would therefore broaden the repertoire of pathologies that Wucherer and other members of the Tropicalist School in Bahia had begun to investigate (Coni, 1952; Peard, 1996), thus also broadening the horizons for the study of veterinary diseases in Brazil.

In 1885, Lutz began publishing the results of the research he was conducting with his characteristic meticulousness. He published a vast study on ancylostomiasis, or hookworm disease – entitled “Ueber Ankylostoma duodenale und Ankylostomiasis” – in a series of articles included in Volkman’s lessons in clinical medicine, published in Leipzig. These articles were later published in Portuguese in O Brazil-Medico (1888), in Gazeta Médica da Bahia (1887-1889), as well as in book form (1888). Lutz examined the hookworm and the disease it caused, from its historical, geographical, morphological, biological, clinical, therapeutic and prophylactic aspects (Deane, 1955). There were controversies as to the role of hookworms in the pathology. Many still classified them as tropical hyphemia (Edler, 1999, 1996) and considered hookworms as a consequence of disease produced by climactic factors associated with bad food, sleeping out of doors, physical depression, and other factors. According to Deane (1955, p.75-6), Lutz confirmed the observations of Grassi, Leuckhart and others regarding the free life cycle of this parasitic worm, and studied the conditions that favored its evolution, from the egg phase, eliminated in the feces of the host, to the encysted larval phase, and identified the hematophagistic nature of the adult worm, a still controversial point among parasitologists.

During the same period (1885-1886), Lutz began publishing studies on the cycle of the Rhabdonema strongyloides. The description (1885) of this species of nematode found in domestic pigs is considered one of the founding works in veterinary medicine in Brazil. In addition, strongyloidiasis, the pathology it caused in human communities that ate pork meat, had not yet been studied in Brazil.

The articles that Adolpho Lutz published in the prestigious Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten between 1885 and 1888 regarding infestations by this and other intestinal nematodes in humans – ancylostomiasis, oxyuriasis, ascaridiasis and trichocephaliasis – proved that he knew about the work being carried out during that period by Leuckart, Grassi and other parasitologists. It was also clear that he had broad personal experience with the problems he wrote about.
Sammlung
Klinischer Vorträge
in Verbindung mit deutschen Klinikern
herausgegeben von
Richard von Volkmann.

Innere Medicin.
No. 62—92.
(No. 88 doppeltommer.)

Leipzig,
Druck und Verlag von Breitkopf und Härtel.
At the same time, Adolpho Lutz was interacting with another emerging area of European experimental medicine – dermatology – thus guaranteeing for himself the possibility of becoming a pioneer in Brazil in this area as well. He had entered the terrain of skin diseases and, as a consequence, of pathogenic fungi and bacteria, especially through leprosy, which he studied during his entire life. He died convinced that it was transmitted by mosquitoes, a fact that indicates one more course of his prolific scientific career, entomology, discussed in another book of this collection.

In 1886, Lutz published his first paper on this disorder in Monatshefte für Praktische Dermatologie, one of the most important forums in clinical and laboratory dermatology, with the Germans in the vanguard. Lutz became involved in dermatology at the exact moment when it was being established as one of the first autonomous medical specialties in important German-speaking cities, as well as in France and England, where specialists disputed with Germans the hegemony in this area of clinical and experimental medicine.

**Dermatology, historical milestones**

“Dermology” and “dermatology” were terms coined during the second half of the eighteenth century to designate the constitution of the skin and other body membranes as objects of investigation by physicians dedicated to anatomy and pathology. In 1792, Henry Seguin Jackson first used the expressions “dermato-pathology” and “cachexiaelogia dermatica et epidermatica” to refer to a branch of medicine “that has long and often been considered important only to surgery”. He set out to improve this field based on “arterio-muscular” pathology and in line with one of the nosologies available, namely, that of François Boissier de la Croix de Sauvages (1706-1767), a botanist and physician who corresponded with Linnaeus and taught at Montpellier (Holubar, 1998; Carneiro, 2002, p.37).

There were other classifications of diseases, proposed by ‘systematists’ of medicine, based on external symptomatic and/or morphological criteria. Among them, there was that devised by...
Jean Riolan in the 17th century, those of the Parisian physician Antoine Charles Lorry (1726-1783) and of the Viennese Joseph Plenk (1732-1778), and that of Robert Willan (1757-1812), of London, who some authors consider the “founder of dermatology” (Carneiro, 2002, p.37).

The medical treatises published in the late 18th and early 19th centuries described an increasing number of anatomic and physiological aspects of organs and tissues. The skin, for example, was no longer considered a mere envelope for the body, and took on the characteristics of a part of the body in its own, subject to lesions that could be related to certain pathological processes.

Marie-François-Xavier Bichat (1771-1802), for example, one of the leading protagonists in the birth of clinical medicine, dealt extensively with the anatomy of the dermis and epidermis. He described the influence that cold, heat and other external agents had on them, for example, and distinguished diseases that were able to penetrate the intact epidermis (such as the plague) from those that could only enter the body through lesions, such as rabies. But Bichat and other physicians who studied the anatomy of the skin and its reactions to various stimuli, considered that most pathological signs visible on the skin were mere manifestations of deeper, internal organic processes. The few skin diseases attributed to local external agents did not constitute a separate area of medicine.

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The texts on the transformation of skin treatment into a medical specialty make numerous references to scientists who, since ancient times, had described visible skin diseases with greater or lesser precision. In the early 19th century, correlations between clinical conditions described – almost always based only on observation to the naked eye – and general or specific pathological processes became better established.

During this period, Paris became the hegemonic center of clinical medicine in general and in the treatment of skin diseases in particular. Nevertheless, the institutional and cognitive dynamics of one and the other became inextricably enmeshed. Most knowledge regarding dermatological diseases was generated at St. Louis Hospital, where the clinical work of Jean-Louis Alibert (1768-1837) focused on this type of disorder. In his classes he presented the family tree of the maladies of the skin, “one of the many self-reliant and complacent concepts that characterized dogmatic medicine in the early 19th century” (Calder, 1976, p.35, quoted by Carneiro, 2002, p.36).

The establishment of relationships between skin pathology and the organism in general, and the increasing efforts to draw the borderlines between
dermatoses resulting from foreign causes and those of internal etiology, advanced through the writings of the clinical contemporaries of Antoine-Pierre-Ernest Bazin (1807-1878). This fact led the so-called “French school” to its pinnacle of prestige, but Bazin lived long enough to see it be surpassed by other medical centers in Central Europe, where dermatology became more rapidly known as a specialty.

The leadership in this and other domains of medicine was assumed by Germanic cities involved in the political unification that was to give rise to Germany in 1870 or in regions that were being pulled into the orbit of the new state. This difference was largely due to a system of higher education that favored the association of medicine with natural sciences, including the application to medicine of research methods developed in the context of the latter.

In the mid-19th century, cell pathology opened up new horizons for life sciences. This period also saw the development of precision methods for laboratory-based studies of observable phenomena and structures at the level of microscopic observation. The recently-acquired knowledge of the anatomy of the skin was then articulated with histopathological studies, that is, studies of lesions in tissues on a microscopic level. Especially important was the development of staining techniques that allowed samples of tissues to be observed under the microscope. Associated with the use of the microtome and improvements in optics and microscopy, these techniques increased the ability of scientists to view and precisely describe the components of objects on this minute scale. This not only broadened the frontiers of histopathology, but also created the need to re-examine and sometimes radically change the knowledge produced until then by clinicians, anatomists and physiologists. These synergies favored the development of investigations related to the micro-parasitology of skin diseases, and preceded the discoveries of Pasteur and Koch, undergoing an enormous impetus during the period when microbe hunters began exploring this and other domains of the etiology of human and animal diseases.

According to Pusey (1933, p.108-9), the essential aspects of skin anatomy and pathology had been elucidated by approximately 1900, thanks to histopathology and bacteriology, which were the underpinnings of dermatology in the late 19th century. During this period the knowledge of dermatological diseases had become so extensive and technical that it became necessary to establish a specialized branch of medicine.
The school of Vienna and other Germanic dermatological centers

In 1844, Julius Rosenbaum (1807-1874) published a well-documented analysis of the studies published until then on the physiopathology of skin, concluding that the Plenck-Willan system of morphological diagnosis was inadequate for explaining dermatological diseases. Rosenbaum was the first to refer to “Dermatopathologen” agents which, through microscopic studies, were able to carry out the program proposed earlier, in 1839, by the Frenchman Gilbert Breschet (1794-1845): “si l’on pouvait, prenant pour guide l’anatomie, indiquer le siège de chaque maladie cutanée, ce serait un véritable progrès pour la médecine et pour l’anatomie pathologique” (quoted in Holubar, 1998).

At Charité, the largest hospital complex in Berlin until the Second World War (when it was destroyed), Gustav Simon (1810-1857) and Felix von Bärensprung (1822-1864) sought to chart the constitution of the skin affected by various diseases, with the aid of the crude anatomopathological instruments available. Working with sections that had been hand-cut with a knife and without adequate staining or fixation techniques, they described hypertrophies, neoplasms and vesicles of the dermis and epidermis, as well as parasites that inhabited them.

Between 1850 and 1860, Voigt, Langar, Tomsa and others described the topographic structure of the skin with great precision (Pusey, 1933, p.108). During that same period, Rudolf Virchow, a militant of social-democratic causes and of German social medicine and the founder of cell pathology, published numerous papers in Berlin related to dermatology. Besides generic texts on the history and geography of leprosy (1860, 1881) and on disinfectant soaps (1869), he published specific articles on the pathological anatomy of hair follicles, chronic pemphigus (1855), normal and pathological anatomy of nails (1857), glanders (1857); *Onychomycosis* (1860), leprosy (1860), warts (1863), *molluscum contagiosum* (1865), cells of pruritus in the epithelium (1865), tuberculosis of the skin (1865), *xanthoma multiplex* (1871) (ibid., p.108).

In addition, since the 1840s, the generation of Carl Rokitansky (1804-1878), Carl Wedl (1815-1891) and Ferdinand Hebra (1816-1880) had been transforming Vienna, the capital of the Austrian-Hungarian Empire, not only into the leading center of dermatology as a clinical specialty, but also a center of medical education as famous as Paris had been until 1850. During the last quarter of the 19th century, the students of these clinicians and pathologists would make
up the elite of Viennese dermatopathology, including Isidor Neumann (1832-1906), Salomon Stricker (1834-1898), Heinrich Auspitz (1834-1885), Moriz Kaposi (1837-1902) and Salomon Ehrmann (1854-1926).

The most eminent of these scholars was Hebra, whose career ran parallel to the history of the Viennese institution known as Allgemeines Krankenhaus, the Germanic equivalent of St. Louis Hospital.
After graduating from medical school in 1841, Hebra became an assistant of Skoda, one of the great names in clinical medicine in Vienna and responsible for the ward specialized in diseases of the chest at Allgemeines Krankenhaus. For some reason, skin diseases had been assigned to that area of the hospital.

Like Bazin, Hebra first studied prurigo through an almost fortuitous circumstance. No one wanted to seriously study such a trivial problem, although at the time it constituted the majority of dermatological cases. Based on the notions of humoral pathology then in vogue, he supposed, at first, that prurigo was a systemic disorder, but soon noted that it was caused by a mite. In 1844, he published an article that became a classic on the subject (*Über die Krätze*). Experiments with other irritating substances, such as croton oil, which, when rubbed on normal skin, caused eczema, led Hebra to the conclusion that any inflammatory symptom could be induced by outside irritants, and that there were pathological changes specific to skin that could not be explained in the light of general pathology. Without denying the existence of systemic diseases, associated with the constitutional dyscrasia emphasized by the French school, Hebra began attributing greater importance to local factors in the occurrence of dermatopathologies. This emphasis soon facilitated the understanding of the role of microorganisms in the etiology of these diseases.

A student of Carl Rokitansky (1804-1878) and his successor as president of the *Wiener Akademie der Wissenschften*, Hebra learned to apply the most refined instruments of pathology to his specialty and, in 1845, proposed a new classification of skin diseases with twelve main categories: hyperemias, anemias, secretory anomalies of skin glands, exudations, hemorrhages, hypertrophies, atrophies, neoplasms, pseudoplasms, ulcers, neurosis and parasitosis ([Costa, 1945; Carneiro, 2002, p.38]).

Although he was a competent anatomopathologist, Hebra built up his reputation mainly on his clinical practice, even reacting coldly to the new conceptions of bacteriology ([Pusey, 1933, 103]). He showed the growth of tinea fungi on epidermis; he was the first to describe *rhinoscleroma* (1872), herpetiform impetigo (1872), *lichen acuminatus, lichen scrofulosus* and the pruritus that bears his name (Hebra’s pruritus). He classified into a single syndrome – polymorphous, or multiform erythema – the numerous toxic erythemas that had until then been confusedly described. He improved the characterization of eczema marginatum, first described by von Bärensprung in 1860, and clarified the symptoms of xanthomas and pemphigus, as well as the nature of hives and pruritus as internal diseases. “As Gaucher said of
Bazin, there are very few skin diseases that have not become better understood thanks to the excellent descriptions produced by Hebra” (Pusey, 1933, p.105).

Ferdinand Hebra died on 5 August, 1880, at the age of 64. Patients from all parts of the world had come to him, and the course he gave at the Vienna Medical School was the most popular among students (Pusey, 1933, p.106). The leaders of the next generation of German dermatologists, as well as many from other countries, had been trained at his clinic.

Hebra’s two most important works were his monumental *Atlas der Hautkrankheiten*, with beautiful illustrations by Anton Elfinger (Vienna, C. Gerold’s Sohn, 1856-1876), and *Lehrbuch der Hautkrankheiten* (Stuttgart, Enke, 1874-1876), completed by the Hungarian Moritz Kaposi (1837-1902), his son-in-law and successor to the professorship of dermatology in Vienna.4

Kaposi also dedicated himself to clinical dermatology, describing *xeroderma pigmentosum*, the multiple pigmented and idiopathic sarcoma (Kaposi’s sarcoma); herpes-zoster *gangrenosus hystericus*, *dermatitis papillaris capillitii*, and rhinoscleroma, studied earlier by Hebra. His book *Pathologie und Therapie der Hautkrankheiten in Vorlesungen für praktische Ärzte und Studirende* (Vienna, Urban & Schwarzenberg, 1880-1899), translated into French by Ernest Besnier and Adrien Doyen, and into English by James C. Johnston,5 was, for many years, one of the leading reference books for those beginning their studies in dermatology. In addition, his *Atlas das doenças da pele* [Atlas of skin diseases] (3v., 1898, 1899, 1900) is considered one of most extensive and valuable collections of illustrations in dermatology.

Another brilliant successor of Hebra was Heinrich Auspitz (1835-1886), also a professor of dermatology in Vienna. He proposed a new set of classifications for skin diseases in *System der Hautkrankheiten* (Vienna, Wilhelm Braumuller, 1881) and, among other contributions, published “General pathology and therapeutics of the skin,” in the *Handbook of diseases of the skin* (New York, W. Wood and Company, 1885), organized by Hugo von Ziemssen.6 *Acanthoma* and *Parakeratosis* are pathological alterations described and named by Auspitz, who called attention to their characteristic sign of psoriasis, the sores that bleed after scales are removed (sign of Auspitz). He also studied the vesicles and blisters of pemphigus and the effects of skin venous congestion. He was also one of those physicians that were most responsible for the widespread use of soaps in treating dermatological diseases (Pusey, 1933, p.110).
Isidor Neumann (1832-1906), the author of another important treatise on skin diseases, became especially well known as a specialist in syphilis, having set up the professorship in dermatology and syphilis in Vienna.\(^7\)

Filip Joseph Pick (1834-1910), another of Hebra’s disciples, made Prague an important dermatological center. He experimentally proved the identity between favus in humans and in rats and proved the contagiousness of *molluscum contagiosum*. He was the first teacher of dermatology in Austria to receive the title of professor and, together with Auspitz, founded the *Archiv für Dermatologie und Syphilis* in 1869, and was its editor for many years.

*“Fambroesia Brasileira ou Boubas“,* article by Achille Breda published in *Archiv für Dermatologie und Syphilis*, 1895.
In the final decades of the 19th century, under the guidance of Hebra’s renowned successors and their assistants, Vienna became a Mecca for physicians of many nationalities aspiring to be recognized as specialists in dermatology. In his study, Pusey charts the dermatological centers that flourished in various important cities in Germany and Central Europe during the late 19th century due to the work of these dermatologists. Here we will discuss in greater depth one of the graduates of the School of Vienna whom Holubar (1998) identifies as the “father of German dermatopathology”, and whom Herzberg and Korting (1987, p.128) consider one of the “great international founders of modern dermatology”.

Paul Gerson Unna

Born in Hamburg on 8 September, 1850, Paul Gerson Unna was the son of Moritz Adolph Unna, a renowned physician in that busy port city. Paul Unna was also a descendent of an important family of physicians on his mother’s side: she was born Ida Gerson, the only daughter of a famous surgeon.

As a continuation of this tradition, Paul began his studies in Heidelberg in early 1870, but was forced to interrupt his course when the Franco-Prussian war broke out in August. He volunteered to fight in the war and was seriously wounded near Le Mans. After the war ended in 1871, he returned to Heidelberg, then attended the university of Leipzig and finally completed his medical education in Strasbourg in 1875. His doctoral thesis, “Über die Entwicklung der Haut” [On the Development of the Skin], disclosed new facts of great importance regarding the various components of skin, which Unna had been able to observe with the use of osmic acid and picrocarmine, another staining substance recently developed by Ranvier. Unna showed that the epidermis was comprised of different strata, each consisting of further layers, with cells continuously migrating from one level to another. They are: a) the outer layer, called stratum corneum epidermidis, comprised of keratinized cells; b) stratum lucidum epidermidis, where
keratinization continues; c) *stratum granulosum epidermidis*, where the process of cornification begins; d) *stratum spinosum epidermidis*, whose cell strata synthesize keratin and; e) *stratum basale*, the deepest layer of cells in epidermis. Unna demonstrated that *stratum basale* is responsible for regenerating epidermis and that *stratum spinosum* did not participate in this process.

These discoveries were soon confirmed by respected anatomists and histologists, and brought fame to this young doctor. At von Ziemssen’s request, Unna published the most significant conclusions of his thesis in 1883, in the chapter entitled “Entwicklungsgeschichte und Anatomie der Haut” [Development and Anatomy of the Skin], in *Handbuch der speziellen Pathologie und Teraphie*, referred to above.9

At the age of 27, Unna went to Vienna to attend classes and clinical demonstrations given by Ferdinand Hebra, by his son Hans Hebra, by Moritz Kaposi and Heinrich Auspitz. He was also pleased to accept an invitation from Auspitz to participate in microscopic studies intended to clarify the pathological anatomy of syphilitic chancre. In 1877, Auspitz and Unna published two articles on this topic in *Vierteljahresschrift für Dermatologie & Syphilis*.

In October, 1876, Unna took on the position of assistant physician in the syphilis ward of St. Georg Hospital, in Engel-Reimers. Later, he joined his father’s clinical team in Hamburg, taking care of nighttime visits and visits to homes of patients living in remote places.

As the number of his dermatological patients grew, Unna decided to start his own specialized clinic in skin diseases.10 Joining forces with Oskar Lassar and Hans Hebra in 1882, he founded a journal entitled *Monatshefte für praktische Dermatologie*, the first periodical dedicated to dermatology in Germany and, for many years, one of the leading catalysts in this specialty, which was beginning to develop in other countries, including Brazil, as we shall soon see.11

Unna had only two assistants at his clinic and soon became unable to keep up with the growing demand. Therefore, he decided to abandon his work as general practitioner and concentrate exclusively on dermatology, an unprecedented move in Germany at that time. In April 1884, he opened the modern facilities of the new dermatological institute in an outlying district of Hamburg called Eimsbüttel. It consisted of three pavilions for patients, one for physicians, with well-equipped laboratories, and his own residence.

At that time, there was no organized or obligatory training for those preparing for medical specialties. As a result, Unna’s *Dermatologicum* began
Front cover of periodical Monatshefte für Praktische Dermatologie, in 1910, when it was published by Paul Gerson Unna and Paul Taenzer. Special edition with an article by Unna and Golodetz on skin chemistry.

attracting ever-greater numbers of students from Germany and other countries. In 1886, its scope was widened and he began offering graduate courses in anatomy, histopathology, bacteriology, mycology, pharmacology, chemistry and photography. All these courses were associated with the intense clinical practice carried out with the patients who came to his clinic in large numbers.

Some of the first physicians trained there became recognized pioneers of dermatology in various countries: Pollizer, from New York; Török, from Budapest; Tommasoli and Mibelli, from Italy; Eddowes, from London; Noys, from Melbourne; and Sir Norman Walker, the English translator of Die Histopathologie der Hautkrankheiten (Berlin, A. Hirschwald, 1894), written by Unna and considered a milestone in the history of dermatology. There were also Buzzi, Santi, Ernst von Düring, Hodara, Engman and, last but not least, the Brazilian Adolpho Lutz.

Adolpho Lutz in Hamburg

According to Olpp (1932), Unna and Lutz first met at the 58th Meeting of German Naturalists and Physicians held in Strasbourg in 1885, where Lutz presented a short communication about a disorder he had observed in a sizeable number of children in and around Limeira, Brazil. It was a strange disease that began as a catarrhal affliction and evolved into a “peculiar” dermatitis. In its more serious forms, the stains on the skin formed large, dark violet confluent strips and fell off in large scales. The course of the disease was slow and could lead to death. Since Lutz observed it only in small children that had already been weaned or that consumed other food products besides their mother’s milk, he suspected that the cause might be related to cornmeal, a food consumed by many of the children.

This etiology also corresponded to the fact that the illness had a certain similarity to pellagra, that was already known to be related to the consumption of spoiled corn. The disease was even more similar to Erythema epidermicum or with acrodynia, whose etiology is still unknown. However, this latter disease cannot be identified with that we see today because their descriptions differ in essential points.

In fact, the contact between Unna and Lutz was prior to the 1885 congress. Lutz, always attentive to advances in European experimental medicine, probably subscribed to Monatshefte für Praktische Dermatologie, in which the communication he presented in Strasbourg was published (Lutz, 1886a).
Lutz had already published important articles in Germany, of which Unna was undoubtedly aware. His study on *Rhabdonema* in pigs and on the diagnosis of *Rhabdonema strongyloides* in human beings was published in *Centralblatt für Klinische Medicin*, in June, 1885 (Lutz, 1885a). In the same year, *Deutsche Zeitschrift für Thiermedizin* published his observations on intestinal parasites in pigs and other domestic animals and regarding the occurrence of the same species in humans (Lutz, 1885-1886). Also in 1855(b), a long paper on the *Ankylostoma duodenale* and ancylostomiasis was included in the well-known *Sammlung Klinischer Vorträge* [Lessons in Clinical Medicine], published by Richard von Volkmann, in Leipzig.

All indications are that it was leprosy that brought Adolpho Lutz and Paul Gerson Unna together. One of the buildings at the *Dermatologicum*, opened in 1884, was reserved for victims of leprosy, most of whom came from South America (Hollander, 1987, p.85). It was also at this time that Unna began to study the bacteriology, pathology and treatment of the disease. In that same year he took part in a medical congress in Copenhagen where the topic was
under discussion. He then visited Norwegian Leprosaria and established a productive relationship with Gerhard Armauer Hansen (1841-1912), the discoverer of *Bacillus leprae*, and with Daniel Cornelius Danielssen (1815-1894) and Carl W. Boeck, who, in 1848, had established the distinctive characteristics of this disease on the basis of scientific observation.13

According to Olpp (1932), in 1885 Unna treated a German patient who had acquired leprosy on a trip to Brazil — he may have been referred by Lutz — and obtained satisfactory results with *pirogalol*. This case gave him data for his paper on the histology and treatment of the disease, which he later presented at the Congress of Internal Medicine in Wiesbaden.14

In March, 1885, Adolpho Lutz left Limeira for a period of study at Unna’s clinic. Under his guidance, Lutz became interested in the bacteriology of leprosy, and also studied the structure and biology of germs related to other diseases, including tuberculosis, whose bacillus showed intriguing analogies with those described by Hansen regarding leprosy.15 Shortly thereafter, Lutz published a paper on Hansen’s bacillus in *Monatshefte für Praktische Dermatologie* (1886b), which considerably changed the concepts then in vogue concerning not only this microorganism, but also those regarding the bacteria discovered by Koch. Lutz showed that these two organisms had common characteristics that were different from those of other bacilli, and proposed that the two be classified as species of a new genus.

**Lutz and controversies over the causal agent of leprosy**

Leprosy was one of the first infectious diseases to be re-structured in the light of microbiology. In 1848 Danielssen noted that certain cells found in leprous tissues were characteristic of leprosy. Hansen observed small rod-shaped corpuscles in the cells of skin tubercles. These corpuscles were large round mononuclear cells, that Virchow called “leprous cells”. Because of their constant presence in leprous lesions, Hansen suspected that they were the cause of the disease and called them *Bacillus leprae*. In 1874, Hansen described his observations to the Medical Society of Christiania, and his position was soon confirmed by Theodor Albrecht Edwin Klebs (1834-1913) (Bulloch, 1938, p.9, 376).

Albert Neisser (1855-1916) produced a more consistent description of the bacillus in an article published in 1879, thanks to staining processes, which were becoming increasingly important in the observation of microorganisms
in general. When Niesser’s article was published, Hansen quickly reacted to guarantee the priority of his work, and published his own theory in German, English and Norwegian. Hansen’s bacillus thus “became one of the first to be classified as a specific pathogenic microorganism in human beings, a great advance for the incipient science of bacteriology”. 16

At the same time that Adolpho Lutz was beginning his investigations, an intense controversy was raging among bacteriologists as to exactly where the leprosy microbe lodges in human tissues and liquids. This controversy was associated with another problematic question, the difficulty of cultivating the microorganism in vitro and replicating it in the tissues of other animals. The interpretation of what the various specialists saw depended largely on what staining and fixing techniques they used to prepare the tissue samples they intended to put under their microscopes, and innovations were constantly being made in these techniques.

Staining methods had been used in histology before they migrated to the study of bacteria. The objective of these methods was to fix staining substances in certain components of tissues or organisms, so that their forms and structures could be seen more clearly. Goeppert and Cohn (1849) were the first to work with preparations of fuchsin dye, later improved by Hartig (1854) and Gerlach (1858). The Bohemian physiologist Jan Evangelista Purkinje (1787-1869) introduced the use of balsam fir, of glacial acetic acid and of potassium bicromate. He was the first to slice tissues in order to study them under the microscope. Logwood extract or (Haematoxylum campechianum)17 was used by Waldeyer (1863). Böhmer (1865) improved the technique by adding alum to the substance. The aniline or coal tar stains began being used in 1856 and were eventually used in household and industrial processes for dyeing cloth. Hermann Hoffmann (1819-1891), a botany teacher in Giessen, was the first to stain bacteria. A short time later, Weigert (1871) showed that carmine served to stain cocci. In 1875, he discovered that alkyl also gave surprising results in staining tissues and bacteria. In 1877, C. J. Salomonsen (1847-1924) succeeded in staining tissues and bacteria in an aqueous solution of fuchsin dye.

Koch (1877) improved staining methods even further and classified them according to the acidic, basic or neutral PH levels of the substances used.
immobilize the bacteria he developed an ingenious process of drying that did not affect their natural form. His method for fixing bacteria included the use of alcohol to interrupt the organisms’ metabolic activities. Microscopic cuts and preparations were soaked in various types of stains, such as methyl violet 5 B, fuchsin dye, brown aniline and, especially, gentian violet. Samples were placed in an aqueous solution of potassium acetate or balsam fir. These procedures enabled Koch to discover, in 1882, the bacillus that bears his name, the agent of tuberculosis.

In subsequent years, other staining methods also became widely used in laboratories and were frequently mentioned in the increasing literature on the topic, which referred to specific methods for staining spores, cilia and capsules of microorganisms. Some formulas made their way into the treatises that began to establish bacteriology as a “normal” science, in the sense used by Thomas Kuhn (1970). In the excellent pages that Bulloch dedicates to the subject (1938, p.213-30), he also makes reference to Ehrlich’s improved staining of the tuberculosis bacillus in 1882 and describes Loeffler’s use of alkali and methylene blue in 1884, as well as the use of carbollic acid (phenol) instead of aniline by F. Ziehl (1857-1926), and the use of sulfuric acid instead of nitric acid by F. Neelsen (1854-1894). The Danish scientist Christian Gram (1884), working in Berlin, developed the method universally known today, which consists of the use of ammoniacal fuchsin dye and of the division of bacteria into gram positive and gram negative, depending on whether they fix stains or not.

A look at some of the medical publications of the time will give the reader a vague idea of the importance of the events that led us to this digression on the conflicting notions regarding the leprosy bacillus and the different techniques used to study it. Adolpho Lutz’s article stirred up a number of reactions, especially in the recently founded annual journal published by Dr. Paul Clemens von Baumgarten (1848-1928), professor of pathological anatomy in Königsberg, entitled *Jahresbericht über die Fortschritte in der Lehre von den pathogen Mikroorganismen* (1885-1911).

Neisser had held that the leprosy cells described by Virchow in pre-bacterial times were specific to the disease because they were full of bacilli. In 1885, Unna expressed the opinion that these objects were not cells at all, but conglomerates of free bacilli embedded in mucin and surrounded by cells of atrophied connective tissue. The leprosy bacillus was not to be found in the cells of the tissues, asserted Unna in 1885-1886, but rather in the lymph system. His observations had also shown that clumps of bacilli were uniformly
distributed and circulated freely through the *tunica intima* of arteries and veins. This led observers to believe that the patients’ bodies – especially those who suffered from the nodular form – contained millions of bacilli.

Unna’s controversial observations were related to a new method of staining he had developed to overcome a failure he noted in the methods employed until then to study leprosy. According to him, stains and balsams failed to show long-lasting results, and the substances present in the decolorizing and fixing agents affected the results, because of their “oxygenophilia,” that is, their tendency to steal oxygen. To solve this problem, he developed the “dry method,” by which the sample, after going through the customary stages of staining, discoloring by acid and, sometimes, a second staining, was taken directly from the water and carefully placed on the glass slide. The excess water was removed with tissue paper and the slide was carefully placed over the flame of the burner until dry. A drop of the balsam chosen as fixing agent was then added to the totally dry section, while the slide was still hot. Besides being more practical and cheaper, this technique showed the relationships of the microorganism with the surrounding tissues more clearly.19

To judge from the reviews published in the volumes edited by Baumgarten in 1886-1889, Unna faced serious criticisms from several eminent specialists in the matter. Hansen stated that “dry preparation” changed the morphology of the cells, making those of leprosy disappear and leaving only tissue cells. He also argued that, if the bacilli circulated freely through the lymphatic vessels, they would penetrate into the blood and cause acute pathogenic states, whereas the disease always had a chronic nature. The bacilli must therefore be “imprisoned” inside the cells.20

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*Sketch of Mycobacterium leprae (Arm. Hansen) Lehmann et Neumann. (bacillus leprae). I. Microscopy preparation of nasal mucus. II. Histologic cut: lymphatic ganglion; slightly larger; bacilli are not in giant cells, as in tuberculosis, but in clumps. III. Histologic cut: lymphatic ganglion; slightly larger. Lehmann & Neumann (1910, plate 68).*
Neisser held that Unna’s dry method could contribute to the study of cell morphology, but it was inappropriate for investigating the location (topography) of the bacilli.21

Another critic, Karl Touton (1858-1934), peremptorily stated that “Most leprosy bacilli are found in the leprotic tissues, as has been generally accepted until now, and closed inside the cells in larger or smaller clumps. These agglomerates of bacilli, therefore, are not cells, but parts or inhabitants of cells. In general, ‘free’ clumps come from inside cells.”

Touton attributed Unna’s error to his method, holding that the steam from the water used during the process made the cell membranes “explode,” thus giving the impression that the bacilli were free in the lymph. In addition, drying by fire reduced the thickness but not the area of the tissue samples. Their various superimposed layers were thus reduced to a single surface,
making it more difficult to examine the material. There was no doubt that Unna’s method changed the natural order of things and gave origin to “artifacts” with unreliable results.22

Two other critics of Unna were Beaven Rake and Sudakewitsch. The former saw bacilli so near the nucleus of the cells extracted from a nodule of leprosy that their location, for him, was undeniable. Sudakewitsch, of the Institute von Münch, in Kiev, studied cases of “secondary nervous form” (that is, cases where the skin showed only remains of extinct leprous infiltrates) in order to understand the relationship between the bacillus and the nervous system, and the changes undergone by the ganglia in the course of the disease. Sudakewitsch proved that there were bacilli inside ganglion cells. They were sometimes found inside the controversial vacuoles that the author called “parasitic” vacuoles because he held that they were the result of “intracellular digestion” processes. From his point of view, both degenerated bacilli and destroyed nervous cells were due to the battle between bacilli and cells.23

Besides the extra-cellular location of Hansen’s bacillus, which was also contested by Bidenkap and Campana but upheld by Kuhne,24 other aspects of the etiological agent of leprosy were debated. Unna was able to observe the vacuoles first described by Virchow, but in Neisser’s opinion they were only artificial results of Unna’s dry method. According to Unna, some of these vitreous masses observed in preparations were areas filled with bacillary mucous, while the remainder consisted of the lumen of the lymphatic vessels, free of bacilli. For Touton they were the product of the hydropic degeneration of the cells’ protoplasm. In his opinion, bacilli that came into contact with a lesion on an individual’s skin arrived at the cells through the lymphatic vessels and developed large colonies in the protoplasm. The vacuoles were indicators of the degeneration of protoplasm caused by the growth of the parasite. Vacuoles gradually grew and multiplied, cells swelled until they burst, and bacilli, now free, invaded lymphatic crevices, blood vessels, sudoriferous glands and other tissues and cavities (Doyon, 1887, p.429-30).

Another controversial point was in relation to the spores that some bacteriologists noticed inside the bacilli. Discontinuous staining and granular formations had already been observed in these rods, including those of tuberculosis. For some time, Koch had supposed they were spores, and Neisser came to a similar conclusion regarding the leprosy bacillus.

In an article published in 1886, Lutz (1886b) provided detailed evidence to support Unna’s thesis and went even further. He held that the masses which
Touton considered clumps of bacilli lodged inside the cells of leprosy not only were not there, but also did not consist of bacilli.\textsuperscript{25}

Thanks to a new method of staining he developed with Unna, Lutz saw and described objects that to other observers had seemed anomalies, or sporadic accidents.

According to Lutz, the microbes of leprosy were found in the lymph, in pus and in cuts of the diseased organs, alone or grouped in gelatinous envelopes or mucous. Even the isolated bacilli often showed the enveloping substance that, in Lutz’s opinion, played a major role in the formation of leprous neoplasias. The forms that did not have this wrapping consisted of an “early stage” of the microorganism.

When the envelope grew beyond a certain volume, the tenuous outlines of the rods were no longer visible and the observer had to use other methods to discern the nature of those conglomerates. The envelopes seemed to be very similar to the gelatinous masses often found among algae and fungi, and staining by gentian violet showed that their composition was analogous to that of the pneumonia cocci described by Friedländer. Unna held that these masses were not cells, nor were they located inside cells.

Lutz then described in detail the techniques that had allowed him to understand the nature of the clear spaces that interrupted the continuity of the rods, making them, as was said, non-homogeneous. For Neisser, they were places where interstitial spores were formed. Employing Gram’s method and discoloring by acidified alcohol, Lutz obtained sharp images of micrococci arranged in regular rows and connected by fine filaments.

He therefore came to the conclusion that the constitutive part of the presumed leprosy bacillus is the small round cell similar to a coccus with a very fine membrane at the tip that gradually thickens and becomes colloidal. The cell contained in this membrane broke down into two new cells that gradually moved apart and acquired new envelopes, without failing to be included in the former ones. Interstices between the cells were larger than the cells themselves. They always became dismembered in the same direction, in linear series that formed like a string of pearl, or rods. The gelatinous envelope around them constantly grew in size as cells acquired more layers. This gelatinous agglomerate could fuse with its neighbors into a common mass.

Lutz identified a third aspect that also failed to fit into the usual descriptions: at the tip of the rods he found oval cells with double outlines that were different from the others in their volume, their bright color, and their elongated form,
with one or two filiform extensions that looked like the stem of a musical note. These cells seemed to have a “special form” that seemed to play some role in the reproduction of the microorganism.\(^{26}\)

If this description is correct, wrote Adrien Doyon (1886, p.427) in *Annales de Dermatologie et de Syphiligraphie*, the name bacillus is inappropriate. Accordingly, Lutz proposed that the leprosy bacteria be classified in a division of the genus *Coccothrix*, into which, without hesitation, he would “place the tuberculosis parasite”.

In another article published in the periodical edited by Unna, Lutz (1886c) sought to break down the characteristics of the microorganisms that could be included in the genus he considered necessary to create, placing there not only Hansen’s bacillus, but also the supposed agents of malaria and syphilis: the bacillus recently described by Matterstock, and the *Bacillus malariae* of Klebs and Tommasi Crudelli, respectively.

There is almost no information about the former.\(^{27}\) And, as we have seen, Klebs was the first to prove the existence of Hansen’s bacillus. In 1883, he discovered the diphtheria bacillus, which, in the following year, was cultivated by Friedrich Löffler, a member of Koch’s team, and which first became known as the Klebs-Löffler bacillus (now known as *Corynebacterium diphtheriae*). In 1878, Klebs, together with Tommasi Crudelli, began doing research on the malaria bacteria, which had been endemic in the Roman CampaSigna. The American J. H. Salisbury, the Italians Lanzi and Terrigi, as well as Pietro Balestra, had blamed the disease on microscopic algae that apparently lived in swamps (Busvine, 1993, p.18). Klebs and Tommasi Crudelli found *Bacillus malariae* in the blood of patients with fever. This agent was a microscopic plant apparently similar to anthrax bacillus, whose spores Koch had recently come across in places where animals were buried. The malaria bacillus, therefore, probably lived in the soil and floated in the air, a discovery that was soon confirmed by several Italian and French investigators.\(^{28}\)

Lutz’s efforts (1886c) in “Ueber die Beziehungen zwischen Stäbchen und Coccen” to fit his theory to the descriptions of the supposed malaria and syphilis bacilli were related to another set of controversies involving basic aspects of the incipient science of microbes.
Heated controversies over the world of microbes

The division of living beings into two kingdoms was a basic axiom of natural history. The Swede Carl von Linnaeus, (1707-1778), published his most important work, *Systema naturae*, in 1735, and, in the following year, *Fundamenta botanica*. He gave Latin names to species of animals and plants, thus establishing the binary nomenclature still used today. Although he dealt especially with plants, he gave new classifications to animals as well.

In the late 17th century, a particular species of naturalists, the microscopists, published descriptions of living beings that were invisible to the naked eye. These scientists took great pleasure in spending long hours with one eye glued to a microscope, an instrument that had been perfected by Anton van Leeuwenhoek. With it, they observed animalcules that inhabited even the most familiar everyday objects. For a century and a half, the microbian world was “an object of enchantment and entertainment for amateur microscopists” (Stanier and Lwoff, 1973, p.1191).

To classify microorganisms, an easily visible criterion was first used, mobility. Anything that moves is an animal, and what is stationary is a plant. The first attempt at organizing animalcules into a system of classification similar to that of Linnaeus was the work of the Dane Otto Friederich Muller (1730-1784). In *Animalcula infusoria et marina* (1786), he set up two groups that were distinguished by the possession or lack of external organs (*Membraneceae* and *Crassiuscula*). C. G. Ehrenberg (1795-1876) called animalcules *Polygastrica*, because he presumed they had stomachs, and in *Die Infusionsthiere als vollkommen Organismen* (1838), classified them into 22 families.

Under the influence of the cell theories formulated by physician René Joachim Henri Dutrochet (1824), botanist Matthias Jakob Schleiden (1838), zoologist Theodor Schwann (1839) and pathologist Rudolph Virchow (1858), microscopists began establishing categories to distinguish microorganisms comprised of numerous cells, from the unicellular Infusoria. In his book *Histoire naturelle des zoophytes* (1841), Felix Dujardin (1801-1860) was the first to separate the single-celled beings that showed distinct and relatively large cells (protozoa) from the vibrokes, much smaller filiform animals, apparently without internal differentiation and without locomotive organs, consisting of the genera *Bacterium*, *Vibrio* and *Spirillum*. 
The borderline between animals and plants was becoming increasingly obscure at this level of observation. The criterion of motility soon lost its meaning, since algae and mushrooms reproduced by means of spores that moved within the field of the microscope. In addition, Casimir Joseph Davaine’s studies on anthrax indicated that its ‘animalcule’ remained absolutely motionless for part of its life cycle. It was also seen that certain protozoa contained chlorophyllous pigment, a fact that led Maximilian Perty (1852) to create the category of animal-plants, or *Phytozoidia*, to account for these anomalies.

First classified in the animal kingdom together with protozoa, bacteria became the object of controversy among botanists, who were unsure as to how they should be classified in the plant kingdom. Carl Wilhelm von Nägeli (1817-1891), a botanist working in Munich, joined several genera together into a group he called schizomycetes, classifying them with primitive colorless plants, the mushrooms (1857).

Based on Darwin’s thinking, Ernst Heinrich Haeckel stated, in 1866, that plants and animals only made sense as evolutionary lineages that led to vascular plants, on the one hand, and to the metazoa, on the other. Since the microbian world is comprised of older evolutionary lineages, it constitutes a third kingdom, the protists. Most botanists and zoologists, however, rejected this solution, and the debates as to the classification of microorganisms raged on.

Bacteria were associated with a particular group of algae, the Cyanophyceae, by Ferdinand Cohn, a botanist working at the University of Breslau and author of the system that became the cornerstone for classification in all treatises on bacteriology and medicine since the late 19th century. William Bulloch attributes to him the invention of the word “microbe,” used by Sedillot and sanctioned by Littré, coined to give some semblance of order to the jungle of vocabulary used in the scientific texts of the period. The word undoubtedly complied with its basic function of conveying the ideas engendered in laboratories to other spheres of medical practice, as well as to society at large, where it was used in newspaper chronicles and literary pages. Nevertheless, microscopists, including botanists, zoologists and physicians, continued their heated debates on the terms and concepts that surgeon Sedillot had rejected. The main difficulty
consisted in establishing a consensus as to the characteristics to be used in discriminating bacteria, algae, protozoa and fungi.

As Mazumdar (1994, p.4) has shown, these technicalities were associated with a basic and long-standing conflict between two currents or styles of thinking which, during that period in the development of life sciences, caused a split especially among botanists, but which also involved other professional categories interested in the biology of macroscopic and microscopic beings. On the one hand, there were the “unitarists,” always seeking the basic unit underlying the diversity found in nature. On the other, the “pluralists” accentuated diversity, in their enthusiasm to organize it into increasingly detailed and precise classifications.

In Germany, the first to oppose the systematic botany practiced by the pluralists, who followed the methodology of Linnaeus, was Schleiden, one of the founders of the cell theory.

Schleiden lived during a period when many radical intellectuals in the German-speaking world became involved in revolutionary politics and even set up barricades in favor of democracy. Schleiden, one such radical, opposed his predecessors, the Linnean botanists of the Aristotelian tradition, in the same way that his older but contemporary scientist, Johannes Müller, had disagreed with his predecessors in physiology, the Naturphilosophen. It is significant to note that, during this same period, Karl Marx and “young Hegelians” were opposing their predecessors in the areas of philosophy and theology. (Mazumdar, 1994, p.16)

In the introduction to his book *Grundzüge der wissenschaftliche Botanik*, 32 Matthias Schleiden proposed that the “medieval burg” of Linnean botany be replaced by a new inductive science whose purpose was to develop the unifying principles that would explain the multiform diversity of nature. Schleiden and his co-worker Theodor Schwann were the first to take the cell as the basic building block of plants and animals and as a bridge to the inorganic world, thus identifying the aspect that could give their new science the key for understanding the underlying unity of natural phenomena (ibid., p.17-8).

Unitarism was also the underlying theme of everything written by Carl von Nägeli, a disciple of Schleiden, his basic principle being *Lex continui in natura*. Nägeli was not looking for differentiation but for transitions between forms, the quantitative *Abstufungen* that connected them. The theories of Schleiden and Schwann regarding the formation of the cell, especially the idea that it consisted of a crystallization of matter around a nucleus similar to the formation
of inorganic crystals, gave Nägeli a model for his phylogenetic theory (1856). According to this theory, there is a continuous production of simple organic beings based on inorganic matter, and the beings that first took on existence were the simplest unicellular plants, namely, fungi and molds (Mazumdar, 1994, p.31-5).

Nägeli published his first book on this topic in 1856, three years before Darwin published *Origin of the Species*. Nägeli compared the two theories (1865) and stated that they both arose from the principle that the higher species evolved from the lower. For Nägeli, besides competition and natural selection, another mechanism was also operating in nature: the impulse toward increasing perfection or progress, which continually leads organisms to evolve toward increasing complexity. In contrast with the umbelliferous tree of Darwin’s families, Nägelli’s evolutionary theory supposed “innumerable phylogenetic stalks” that are independent from one another. They float on the surface of the present and plunge into varying depths of the past (Mazumdar, 1994, p.39).

“If, in the material world, in causal terms, everything is related to everything else, if all phenomena have a natural origin, if all organisms are made of the same material as inorganic nature and finally disintegrate into it once again, then, in their origin, they must emerge from inorganic compounds. To deny spontaneous generation is the same as to claim a miracle,” Nägeli wrote in 1884 in the work of his maturity, *Mechanisch-physiologische Theorie der Abstammungslehre*.33

Schizophytes, the simplest unicellular plants in terms of organization, were produced everywhere and all the time. Their multiple forms were so similar to one another and they were so easily transformed into one another that it was impossible to organize them into fixed species and genera.

In earlier articles,34 however, Nägeli had distinguished unicellular fungi and algae. In contrast to the algae, fungi cells did not possess chlorophyll or coloring material and did not arise from germs but from fermentation, putrefaction or disintegration of organic substances.

When writing of mechanisms of production of diseases in a small book intended for physicians and lay readers (1877), Nägeli divided “lower fungi” into three groups: molds, ferments and “fissiparous fungi,” and included bacteria among them. During his experiments, he had not observed transformations from one group to the other, but, individually, each group, especially the third, underwent continuous transformation (Mazumdar, 1994, p.42).35
The idea of spontaneous generation first arose in the Ancient World and was originally applied to worms, insects and even higher animals. In the 17th century it was used to explain the origin of the animalcules present in infusions made of animal and plant matter. The question posited by Leeuwenhoek himself was hotly debated by priests Lazzaro Spallanzani (1729-1799) and John Turberville Needham (1713-1781). Did those beings arise spontaneously through some vegetative force, or did they necessarily come from another similar living being? In religious terms, what they were discussing was whether God created the hierarchy of all living beings during the first six days of Genesis, or if He left some demiurge on the loose to undo His established order. In his classical study on microbe hunters, Paul de Kruif shows that the idea of spontaneous generation was, at the time, the most evident to common sense. Did not one constantly see insects coming out of old wood, worms from feces, flies from fruit? Needham and Spallanzani then conceived ingenious experiments, the first to confirm, the second to contest the appearance of animalcules in infusions sterilized by heat and isolated from the outside environment.

Polymorphism survived the demise of spontaneous generation in the famous controversy of Pasteur versus Pouchet (Martins and Martins, 1989, p.7-32). The concept of heterogenesis continued to affirm the alternation of generations, in the light of which important experimental results with fungi and algae – objects of great interest to naturalists – were obtained. In addition, studying them provided cognitive fuel for the differentiation of zoology, botany and mycology as specialties.

In their historical analyses, bacteriologists consider that the first labor pains for the birth of their discipline also occurred between 1830 and 1850, but the process was ambiguous, because, simultaneously, it privileged the efforts made to correlate diseases with living organisms and repudiated the invasion of fungi into the domain they wanted to preserve for the bacteria.

In 1835, Agostino Bassi (1773-1856) demonstrated the relationship between a fungus and muscardine, a disease that attacked silkworms and that would be an important subject of study for Pasteur. In the 1840s, it was discovered that these plant parasites were responsible for diseases (rust, smut, etc.), and many investigators, including Bassi, related them to diseases that affected the teguments and mucous membranes in humans and animals (Robin, 1853, 1847). Mycotic diseases in humans were described especially by David Gruby (1810-1898). In a series of articles published between 1841-1844, this Hungarian
physician living in Paris described the fungi associated to four of the most common types of tinea.

As Ainsworth observes (1976, p.15) in his informative study on the history of mycology,

after a brief and overly enthusiastic reception, fungi were eclipsed first by bacteria and then by viruses as pathogenous to humans, and medical mycology remained almost completely ignored until the last decade of the century, when Raymond Jacques Sabouraud (1864-1938) had to rediscover and confirm findings made by Gruby 50 years earlier.

William Bulloch places the high point of “fungomania” between 1865 and 1875, when these parasitic and mutant plants, sometimes appearing to be micrococci, were incriminated as agents of countless diseases, ranging from malaria to endocarditis.36 Bulloch identifies two opposing viewpoints regarding the role of plant and animal microorganisms. One was the result of Pasteur’s work on fermentation. He argued that their emergence and diversity were due to the action exerted by different microbes, which are recognizable by their constant morphology. Although he had no way of proving this, due to his limited knowledge of botany and his use of liquid media for cultures, Pasteur insisted on the existence of fixed forms, indispensable for sustaining the notion of the specificity of ferments and, therefore, of the etiological agents of diseases.

Koch, on the other hand, provided ammunition to those who argued against polymorphism – and he himself was its most radical adversary – by developing cultures in solid media, a technique that reduced the undesirable co-existence of numerous species of bacteria.

In addition, the research by brothers Louis René (1815-1885) and Charles Tulasne (1816–?), and of Anton De Barry (1831-1888) on the polymorphism of certain fungi gave strength to the conviction that this property could also be found in ferments and bacteria. Ernst Hallier (1831-1904), professor of botany in Jena, took this doctrine to extremes in the 1860s. For him, the microscopic forms of these organisms consisted not of genera and species, but merely of stages in the development of more complex fungi, accompanying changes that take place in the moisture, the temperature and other environmental factors. Hallier studied plant and animal parasites and altered these factors to induce changes in form. He concluded that if mold spores were placed in a mixture of sugar, water and ammonia salt, the plasma of the spore would divide into small nuclei (coci) that would in turn continue to multiply by division. This
was the basis of all fermentation in rich-in-nitrogen media, that is, in putrid fermentations, and their agent received the name of nucleated yeast (*Kernhefe*) or *Micrococcus*. If the nitrogen were consumed to a certain point, the nuclei changed, then producing a membrane that expanded and gave them the aspect of yeast cells that reproduced, now by gemination. The fermentation became alcoholic and the fungus entered the *Cryptococcus* stage. Then came acetic fermentation, when the yeast entered the *Arthrococcus* stage. When filaments appeared, it became a *Leptothrix* or a *Mycothrix*.

The most common criticism of polymorphism was in reference to accidental contamination of cultures by microbes carried in the air or already present in the inoculum before being inseminated. Hallier’s theory nevertheless influenced a number of researchers, some quite renowned in the history of bacteriology, such as Lister (1873), Ray Lankester (1873), Huxley (1870), Klebs (1873), Warming (1875), Nägeli (1877, 1882), Cienkowski (1877), Büchner (1882), Metchnikoff (1888) and, especially, Billroth (1874) and Zopf (1879-1885).37

**Ferdinand Cohn and the classification of bacteria**

Neither the spontaneous generation nor the pleomorphism that these investigators saw in the microbial world was acceptable for the Linnean botanist Ferdinand Cohn. Unicellular forms had stirred up his interest thanks to the speculations of Schleiden and Schwann on the origin of cells.

In an article published in 1854, Cohn sought to untangle the confused systematic relationships in this domain in order to clearly define good species. Among the unicellular forms, there were those that Christian Ehrenberg (1838) classified into the family *Vibrio*, placing four genera into it: *Bacterium*, *Spirillum*, *Spirochaeta* and *Spirodiscus*. Due to their vigorous movements, he had included them in the animal kingdom, but Cohn considered them plants and, to demonstrate this, he described the life cycle of the organism that Ehrenberg called *Vibrio lineola*. He found it in putrefying matter, where it formed gelatinous masses similar to those of the alga *Palmella*. Cohn therefore proposed the inclusion of vibriones among the colorless microscopic plants that lived in infusions, specifically among the aquatic fungi, or *Mycophyceae*. But this arrangement did not satisfy him because it artificially brought together plants that belonged to different families and genera. He held that these organisms should be classified with the algae to which they were similar, in spite of their lack of color (Mazumdar, 1994, p.49).
Nägeli, as we saw above, separated fungi, which were colorless, from algae, which had chlorophyll or some other pigment, classifying the green ones as *Protococcus* and those that had blue-green or orange pigments as Chroöcoccaceae and Nostocaceae. Cohn’s studies on pigments led him to the discovery of new relationships among algae, which he then divided into two groups, the Chlorosporaceae, that contained only chlorophyll or a modification of it, and Phycochromacae, that contained chlorophyll associated with some other pigment. Taxonomic categories based on shape and the mode of reproduction derived from this basic division.

The tradition of classifying plants mainly on the basis of their reproductive organs went back to the 16th century, to the Aristotelian botanist Caesalpinio, for whom the essence of these organisms was their vegetative soul, that is, their ability to grow and reproduce. Linnaeus was faithful to this principle, but
he adapted it to phanerogams, plants whose reproductive organs are very evident. Cohn sought to respect Linnaeus when, in 1872, he produced a more elaborate systematization of cryptogams. He thus gave up the tripartite division of Algae, Fungi and Lichen and based his scheme only on secondary markers (habitus, vegetative organs, anatomy and means of life), and divided the class Thallophyta into seven orders, each containing several families. The first order, the Schizosporeae, that reproduced by simple cell division, included the families Schizomycetae, Chroococcacea; Oscillariaceae; Nostocaceae, Rivulariaceae and Scytonrmaceae.38

Contrary to the prevailing trend among his colleagues, Cohn considered it possible to discern species among the bacteria, now classified with the algae,39 but he was aware of the difficulties involved.

Even if we ignore the transformism of those mycologists who think that everything can arise from anything and develop into anything else, when we see an agglomeration of bacteria, we are beset with the doubt that these countless tiny bodies, of every conceivable form, can be separated into natural species ... I am nevertheless convinced that bacteria can be classified into species that are as clear and unmistakable as those of other lower plants and animals. It is only because of their exceptionally small size, their habit of living among many different types associated with one another, and the variability of types they become, that differentiation is often impossible with the means we now have at hand. (Cohn, 1875, p.133, quoted in Mazumdar, 1994, p.57)

It was difficult to apply the rules of Linnean tradition to bacteria because they did not seem to have any special means of reproduction, nor could any complete life cycle be determined by observing any given individual. In many cases, not even any form could be detected, and classification had therefore to be based on pigments or on the fermentation produced.

Indicated by many historians as the founder of bacteriology as a specialized branch of biology, Ferdinand Cohn set down the bases of his taxonomic system in the classic work entitled Untersuchung über Bacterien (1875).40 It was imperative to settle the controversy over the fixity or variability of bacteria in order to establish the science of bacteriology and realign the map of diseases accordingly. As we saw above, the notion of etiological specificity presupposed the reduction of the microbial magma to fixed categories with unmistakable morphological features.

Although Cohn underscored the insufficiency of morphological criteria, his system was nevertheless based essentially on the form of microbes – and the
reader will undoubtedly note how often Adolpho Lutz uses this word “form” to designate every organism that appeared under the lens of his microscope. Cohn classified bacterial cells into four groups or tribes, with their respective genera and species.41 Learning to recognize these typical forms – micrococcus, bacterium, bacillum and spirillum – medical students were introduced into the science of microbes during the same period that Adolpho Lutz published his book on the new genus into which he intended to include the “fungi” or “myxomicetes” of leprosy, tuberculosis, malaria and syphilis.42

One year after the publication of his article, on 22 April, 1876, Cohn received a letter from Robert Koch, then an unknown physician working in Wollstein, a remote village in the Province of Posen. In the letter, Koch told “Herr Professor,” Director of the Institute of Plant Physiology in Breslau, that after working for some time with the contagion of anthrax, he had succeeded in mapping the life history of this bacillus. Before publishing his study, he wished to hear Cohn’s opinion, because this latter seemed to be the only botanist seriously interested in giving some order to bacteria.

According to Mazumdar (1994, p.58-70), Koch’s observations and arguments made a very positive impression on all his listeners. The growth of the anthrax bacterium from spores, the conditions under which they are formed, and the relationship of both with the disease – answered all of Cohn’s questions on the matter. One of his most serious problems was how to establish the specific identity of a given organism and the limits within which it varied during the different stages of its life cycle. Koch explained that bacilli did diversify beyond prescribed boundaries, had a well-defined life cycle, produced a clearly determined disease, and belonged to a single species.
Sketch of *Bacillus anthracis* F. Cohn et R. Koch (carbuncle). I. Preparation of blood from mouse spleen. II. Preparation of agar cultivation. III. Involute forms in preparation of agar stained with fuscine. IV. Anthrax and agar filament. V. Colorless preparation dropping from cultivation liquid; the spores begin to show. VI. Preparation with guinea pig lungs: formation of capsules. VII. Preparation with rabbit liver: forms called “bamboo”. Lehmann & Neumann (1910, plate 43).
Through Cohn, Koch came into contact with the medical-intellectual elite of Breslau, especially with Julius Cohnheim, director of the Institute of Pathology, and his assistant, Carl Weigert (cousin to Paul Ehrlich), who was developing staining methods for bacteria based on aniline, referred to above.

During this period (1876-1878) Koch introduced improvements in microscopic techniques and in the methods for fixing, staining and photographing microorganisms (he was convinced that microphotographs would be much more convincing than drawings to prove the existence of different species of bacteria). The use of the new microscopic techniques developed by the physicist Ernst Abbé for Carl Zeiss’s company in Jena allowed Koch to see bacteria in animal tissues without interference from shadows projected by the tissues themselves.

In his articles on the etiology of infections in wounds, published during this period, Koch added a new method for verifying bacterial species: the types of diseases with which they were associated. “Every disease corresponds... to a different bacterial form, and this form is always the same, no matter how often the disease is transmitted from one animal to another.” Animals’ bodies thus became for him a medium for producing pure cultures of microorganisms and, at the same time, indicators of the properties of the species that was being cultivated.

One drawing presented by Nägeli in the book he published in 1877 (Die niederen Pilze), reviewed by Koch in Deutsche Medizinische Wochenschrift, showed different types of schizomycetes (Spaltpilze). There, a wavy line of interconnected cells led to the perception that the spiraled forms were nothing more than cords of cocci.

Koch referred to this image in a letter to Ferdinand Cohn, and commented that:

I was especially attentive to this point from the very beginning of my investigations ... [namely], the disintegration of Bacilli into Micrococci and vice-versa [and] the formation of rods from micrococci. Our understanding of bacteria will change completely whether this is confirmed or it is proved to be wrong. This, then, is the most important issue in bacteriology. It must be settled if there is to be any consensus among bacteriologists... (quoted by Mazumdar, 1994, p.65)

Adolpho Lutz in contradiction with Koch

“The form of bacteria is constant,” wrote Kolle and Hetsch (1908, p.18), authors of one of the best-known treatises on bacteriology in the early 20th century (La bacteriologie expérimentalle). Continuing, they said: “By this we
mean that, in their normal state, cocci always produce cocci, rods produce rods, and spirilla produce spirilla.”

“Many transitions occur among micrococci and to this day some forms are designated as bacilli”, Lutz responded in his second article on the agent of leprosy, published in 1886. In fact, rods could disintegrate into shapes similar to cocci, but the bacteriologists who observed this phenomenon – in the tuberculosis bacillus, for example – tended to consider it an artifact resulting from the way the microorganism was handled, or else an expression of its degeneration.

“When a rod breaks down into small round cells, this is not necessarily a dying process,” wrote Lutz. The typical forms of bacterial morphology were easily identifiable by well-known methods, but the specific methods of preparation he developed proved to be indispensable to give meaning to certain forms that to some looked like rods and to others like cocci or micrococci. Combining the new techniques with the precision and meticulousness that characterized his way of working, Lutz began researching the media and the envelopes that gave form to these anomalous cells, as well as their modes of reproduction. He concluded that there was no justification for separating forms with and without chlorophyll forms into different orders, and that certain properties seen in algae were pertinent to those seen in bacteria and fungi. Coccothricaceae, the family that Lutz created to include the microbes of leprosy, tuberculosis and their correlates, gave meaning to the properties that he had brought together in such an original way at Unna’s laboratory. It had the characteristics of two bacterial families – the Coccaceas and Bacillaceas – but was essentially classified in the kingdom of Fungi.

His proposal was advanced ten years later (1896) by that of Karl B. Lehmann and R. O. Neumann, who included the agents of leprosy and tuberculosis in the genus Mycobacterium (from the Greek word Mykes, fungus). According to Obregón (2002, p.34), they coined that name because of the fungus-like appearance of stems cultivated in liquid media. According to current definition, mycobacteria are aerobic and alcohol-acid-resistant bacteria with thin, sometimes ramified rods that are either straight or slightly curved in shape. This genus includes thirty species that differ from other bacteria in a number of ways, many related to the amount and type of lipids contained on their walls (Bier, 1963, p.129; Trabulsi, 1991, p.188).

For Bertha Lutz (Lutziana), Arthur Neiva (1941, p.iii) and other Brazilian biographers, Adolpho Lutz provided the evidence needed for Coccothrix to be
the valid name for this genus. In 1936, Lutz himself (Neiva, 1941, p.373-81) complained that

The germ considered the cause of leprosy is generally called leprosy bacillus or Hansen bacillus. In fact, it is not a real bacillus. In 1886, I proposed the generic name of *Coccothrix* for it and for the tuberculosis germ, which should have priority over the name *Mycobacterium*, which is generally used.

The priority claimed by Lutz was denied by a decision handed down by a Judging Commission designated at the First International Congress on Microbiology, held in Paris in 1930. The Committee for Bacteriological Nomenclature, set up on that occasion, named the Judging Commission and assigned them the duty of preparing a Code of Nomenclature for Bacteria to settle the disputes that had accumulated in this area of study. The code was approved at the International Congress on Microbiology held in Copenhagen in 1947 and revised by decision of the subsequent congress, held in Rio de Janeiro in 1950. The International Code of Nomenclature for Bacteria and Viruses, approved in Rome in 1953, was submitted to further revisions consequent to decisions determined by the Judging Commission. In 1958, it decided that the genus *Coccothrix* Lutz 1886 had not been published in a valid manner because the author failed to use that generic name in binary combination with one and another species included by him in the genus (the leprosy and tuberculosis bacilli). He had also failed to refer to descriptions of these species previously published under other names (Lessel Jr., 1960, p.117).46

For Otto Bier (1963, p.538), the granulations found in the leprosy bacillus should be called Lutz's granulations because they were thoroughly studied by him. Although having underscored the similarities between the bacilli of Koch and of Hansen, arguing for the inclusion of both in the same genus, there are very few references to his work in the literature on leprosy. Lutz himself did not persist in this line of investigation. In 1906, he wrote in a letter to Unna stating that “I am very sorry that you never again concerned yourself with the question of the grains of bacillus (*Coccothrix*) and completely abandoned Ernst, Babes and Neisser at that time. Now the issue is up in the air and there is still much to be done. I wonder if you still have the energy?”47 We hope the material made available in this edition of the writings of the Brazilian scientist Adolpho Lutz will encourage biologists and historians to go more deeply into the analysis of this question and deal with it better than we have done.
Other articles and papers on dermatology by Adolpho Lutz (1886-1889)

During his stay in Hamburg, Lutz worked with Unna in research on other microorganisms related to skin diseases. These studies gave rise to an article in Monatshefte für Praktische Dermatologie about a schizomycete very similar to that described by Ferrari in an article reviewed by Lutz himself (1886d) in that same journal. Ferrari distinguished only two types of pityriasis, the versicolor and the erythematous forms. Examining the literature on the disease, he came to the conclusion that the organisms described by Malassez, Bizzozero and Rivolta were identical and should be called Saccharomyces furfur, differing from Mikrosporon anomaeon Vidal. Based on his own experience, he concluded that erythematosus pityriasis, in hairy parts, was produced by a Saccharomyces and, in bald parts, by Mikrosporon anomaeon. The fungus that Lutz and Unna found in the scales of an eczema similar to psoriasis seemed to be the same as that which Ferrari had related to erythematous pityriasis and was also similar to the spores of herpes tonsurans (known today as tinea tonsurans). However, inoculations that Lutz performed on himself “on the skin of his lower arm and between his toes” gave negative results, leading him to doubt whether the fungus really had any pathological importance (Lutz, 1886e).
While in Hamburg, he wrote three other reviews for Unna’s periodical (Lutz, 1886f; 1886g; 1886h). He summarized a new communication by Ferrari to the Academia Gioenia di Scienze Naturali on micrococci and bacilli present in the secretion of soft ulcer; another review was about an article by G. Lewin on cysticercus, a larval form of cestoid platyhelminths, that are parasites in vertebrates and become tapeworms when ingested by humans in infested pork or beef. The evolutionary cycle of this parasitic worm, how it infects humans, and the diagnosis of the disease it causes were still being studied. In the text on Lewin’s article, Lutz included observations he himself had made in Brazil of the presence of cysticercus under the skin of two of his patients. The third review he published in Monatshefte für Praktische Dermatologie was also related to parasitic diseases, specifically, about an article written by Sigmund Theodor Stein on the evolution of human cestoids.

After returning to Brazil in mid-1886, Adolpho Lutz stayed only a short time in Limeira, even though his clinical work there had been reborn like “the phoenix from the ashes” and had evolved “magnificently”. These are Unna’s expressions, and they represented the feeling he had when reading Lutz’s enthusiastic letters. At Unna’s suggestion, Lutz soon moved to São Paulo, about 200 kilometers south of Limeira. In this growing metropolis, and even more so, in Rio de Janeiro, Unna saw better opportunities for Lutz to develop his “talent as a consultant”. Lutz continued to publish, in Germany, articles related to dermatology and helminthology, and his name appeared on the first page of Unna’s journal “as the correspondent on South American literature in Portuguese”. 48

The difficulty bacteriologists faced in cultivating in vitro and replicating in animals the Bacillus leprae – or, if we are to use Lutz’s terminology, the Coccothrix leprae – made it essential for him to have constant contact with lepers and the cadavers of persons who had died of leprosy, in order to renew the organic material he needed for his studies on the morphology and biology of the microorganisms and how the bacillus becomes distributed in organs and limbs. These lines of investigation led Lutz to spend some time during 1887 at the Hospital dos Lázaros, in Rio de Janeiro (see Lutz, 1887a). 49

In fact, this was a very prolific year for Lutz’s scientific production. He published two further reviews (Lutz, 1887b; 1887c) in Unna’s periodical. In one he analyzed the data presented by Beaven Rake in his report on leprosy in Trinidad and, in the other, he developed ideas on the etiology and prophylaxis of the disease presented by J. L. Bidenkap. In 1887, based on observations
made in Limeira, Adolpho Lutz sent another important article about Hansen’s disease to Monatshefte für Praktische Dermatologie. This time, he emphasized clinical and therapeutic aspects and, especially, the disease’s mode of transmission (Lutz, 1887d). This study was reproduced, almost in full, in the Annales de Dermatologie et de Syphiligraphie, through the initiative of its editor, Adrien Doyon (1887).

Lutz’s medical practice in São Paulo provided him with the elements he needed to publish two clinical studies on skin diseases that were rare in Brazil: rhinoscleroma, described for the first time by Ferdinand von Hebra, and lichens, a group of dermatoses that Hebra had divided into two groups: lichen scrofulosus and lichen rubber, this latter having two varieties, acuminatus and planus.50

Lutz’s article (1887e) on lichen ruber was based on only one case, that of a young pharmacist, approximately 25 years of age, who had become ill in December, 1885, with intense cardialgias. The patient later presented red blotches on his forearms and the back of his feet. The blotches disappeared spontaneously three weeks later but, in August, 1886 – Lutz had just returned from Hamburg – they returned and spread to the patient’s entire body. At the end of that year, after self-medication with Fowler’s solution and ointment of chrysarobin, the pharmacist went to see Lutz. This latter, having made a diagnosis that he considered correct, prescribed Unna’s sublimate carbol ointment, which gave positive results.

During the first examination of this patient, Lutz discarded eczema papulosum and syphilitic papules, and saw that this was a case of lichen ruber,
part of the efflorescence showing characteristics of *lichen planus* and another part, those of *lichen obtusus*. Lutz found no signs of the *lichen acuminatus* indicated by Hebra.

This case brought up interesting questions as to the relationship of the cardialgias with the disease; the possibility, even if temporary, of spontaneous cure; the location of lichen planus in the palm of the hand, something new even for Unna; and, from the “medical-geographical” point of view, the occurrence, finally proven in a “tropical” region of Brazil, of lichen ruber, a rare disease anywhere (Lutz had no word of any other case of lichen in South America).

The brief communication about a case of rhinoscleroma was published in July, 1890. It also was based on a clinical case seen in São Paulo that Lutz considered important to divulge because of “the place of observation and the race of the person affected”.

Florentino, a 30-year-old black man, had noticed the onset of the disease two years and six months earlier. It started on his neck, attacked his upper lip and then a nostril that was entirely closed when Lutz started treating him. When Lutz first examined him, four years earlier, the patient had already sought out various doctors in São Paulo and Limeira, and they had diagnosed cancer and syphilis. Only Dr. Vergueiro, a colleague trained in Europe, recognized the rhinoscleroma and called Lutz’s attention to that rare case. Lutz confirmed the diagnosis and proposed re-establishing breathing through the nostril, which he succeeded in doing with medicated tampons and in introduction of cannula of varying calibers. However, he was unable to cure the patient. Without having much success either, he tried carbolic salicylic acid, pyrogallic acid, chrysarobin and corrosive sublimate. The treatment recommended by Doutreletpont had no effect either. He was unable to try out other medications because the patient moved to another city.

Florentino – the only full-blown case Lutz had encountered in his clinical practice – showed him, first of all, that this was not a disease to be cured rapidly and permanently, even though its anatomical and etiological study was almost complete. Secondly, it proved the occurrence “there,” in Brazil, of that disease which, like lichen ruber, was very rare.

Lutz published this article when he was already in Honolulu, as Government Physician for the Study and Treatment of Leprosy. In the period between his return from Hamburg to Brazil and his next trip abroad (1886-1889) he published no fewer than nine articles of great value in the field of parasitology, as well as
his first article in protozoology, in another major German periodical, the *Centralblatt für Bakteriologie und Parasitenkunde* and in the *Giornale della R. Accademia di Medicina di Torino* (Lutz, 1887f; 1888a; 1888b; 1888c; 1888d; 1888e; 1888f; 1888g; 1889h). Through these articles, Lutz began interacting more regularly with the community of colleagues comprised of Leuckart, Grassi, Laveran and other physicians, zoologists and bacteriologists that had been developing what would soon be called “tropical medicine” (Worboys, 1996).

As we show in the historical presentation to Book 2, the president of the Board of Health of the Kingdom of Hawaii asked Unna to name a doctor to apply his therapeutic methods in a leprosarium recently founded on the Island of Molokai. Unna indicated Adolpho Lutz and, in July, 1889, Lutz visited Unna, who helped him gather everything he would need on Molokai. According to biographers, this meeting took place in Hamburg, but all indications are that Unna and Lutz were together at an event that was very important for the consolidation of skin diseases as a medical specialty in its own right: the First World Congress of Dermatology, held in Paris from 5 to 10 August, 1889 (Shelley & Shelley, 1992, p.12-3).

The international congress and the institution of dermatology in Brazil

Paris was the center of worldwide attention. Thousands of visitors, of all nationalities, were visiting there, including intellectuals, important dignitaries, politicians and statesmen, men of commerce, of industry, of finances or those simply dedicated to the idle enjoyment of their wealth, sometimes with their families and servants, all euphoric over the grandiose international exposition that had been organized to celebrate the first centenary of the French Revolution in 1789. They were celebrating the revolution where first the heads of kings and aristocrats of the *ancien régime* had rolled and then those of the Jacobins and other revolutionaries – all now dissolved in the conservative humus that made possible the vigor of French industry and culture, symbolized at the moment by the impressive Eiffel Tower.

At the same time as this cosmopolitan celebration was taking place, the sessions of the World Congress of Dermatology were also being held at the world’s oldest hospital specialized in this type of pathology, Hospital St. Louis.

It was built in response to the epidemic of the black plague in 1562, which caused 68,000 deaths in Paris alone and which the only “asylum” in the city,
the Hotel-Dieu, was utterly unable to handle. Henry IV therefore determined the construction of a new establishment for the victims of contagious diseases and for all the poor who were cast in such places. The complex, designed by Claude Vellefaux, was named St. Louis in honor of King Louis IX, who had died of the plague near Tunis, in 1270. The hospital was opened in 1610, when Louis XIII rose to the throne, and received its first patients during the epidemic of 1618, holding six patients per bed. It had been requisitioned for other functions on several occasions, until Hotel-Dieu burned down in 1773, thus requiring it to operate permanently. Jean Louis Alibert installed his dermatological clinic there in 1801. The worldwide reputation of the St. Louis as a dermatological center was built up by generations of physicians, including Alibert himself, Gibert, Devergie, Biett, Lugol and, later, the generation of Cazenave, Bazin, Hardy, Vidal, Besnier and Fournier. The hospital underwent considerable remodeling to house the 1889 Congress. Its participants were received in the grand hall of the museum that now housed the extraordinary representations of skin diseases modeled in wax by Jules Baretta.\textsuperscript{51}

According to Tilles (2002), French dermatologists organized the congress to restore their international influence, which had been overshadowed by the prestige of the School of Vienna and the dynamism in other centers in Central Europe. These groups were nevertheless solidly represented at this prestigious

Saint-Louis Hospital in Paris, where the First International Congress of Dermatology and Syphilography in 1889 took place Congrès International de Dermatologie et de Siphiligraphie (1889).
event, which strengthened the prominence of St. Louis Hospital. There, differently from the organization in German-speaking countries, the study and treatment of skin diseases were symbiotically bound to those of syphilis.

As Carrara (1996, p.39) has shown, syphilis was thought to have the ability to manifest itself through so many different forms that it constituted a type of general etiological principle. “It was no longer seen as just a disease, but as a generating principle of diseases.”

The Société Francaise de Dermatologie et Syphiligraphie was founded on 22 June, 1889, one month before the congress.52

Chronologically, the first important moment in the process in France was the establishment, in 1868, of the Annales de Dermatologie et de Syphiligraphie, mentioned above, through the initiative of Pierre-Adolphe-Adrien Doyon (1827-1907), a physician who was to exert great efforts to make the work of Germanic dermatologists better known at a time when the relationships between France and Germany were the worst possible.53

Similar journals had already been founded with more or less ephemeral histories, including Syphilidologie, published in Leipzig in 1838 by F-J. Behrend. It remained in circulation until 1862. Annales des maladies de la peau et de la
Le Musée de l'Hôpital Saint-Louis à Paris

Iconographie des maladies cutanées et syphilitiques
avec texte explicatif
par MM.

Ernest Besnier, A. Fournier, Tenneson, Hallopeau, Du Castel,
 Médecins de l'Hôpital Saint-Louis.

Avec le concours de M. Henri Feulard,
Administrateur du Musée.

Sécrétaire général: M. L. Jacquet,
Sécrétaire de la Société de Dermatologie et de Syphiligraphie.

Mit einem deutschen Vorworte von

Geh. Med.-Rat Prof. Dr. A. Neisser (Breslau).

50 farbige Folio-Tafeln mit Text in Mappe Mark 84.—.

syphilis, an initiative of A. Cazenave, were published from 1843 to 1845 and, later, in collaboration with Maurice Chausit, from 1850 to 1852. The *Journal of Cutaneous Medicine and Diseases of the Skin*, founded in London in 1867 by Erasmus Wilson, lasted only four years. The *Giornale italiano delle malattie veneree e delle malattie della pelle* was founded by G. B. Soresina in Milan in 1866.

According to the editorial of the first issue of *Annales de Dermatologie et de Syphiligraphie*, in 1868, this periodical would provide specialists with a tribune for an open debate on numerous obscure aspects in the field of dermatological diseases. Progress in this field would be assured by the publication of original papers, theoretical and practical critiques of new diagnostic methods, treatment and statistics related to syphilis and skin diseases, and an inventory of everything published in the field around the world. Abstracts and reviews of congresses, books and articles produced in various countries would assure the cosmopolitan character of *Annales*. In fact, as Wallach (1994) has noted, this section of reviews and abstracts, written by Doyon himself, was to occupy an important place in the journal.

Another important historical fact was that *Annales* began circulating at a time when the teaching of dermatology was being contested in France. In addition, the long-awaited establishment of the professorship in clinical treatment of skin and syphilitic diseases at the Paris Medical School – which Tilles (n.d.) describes as “an essential part” of the institution of French dermatology – had faced considerable resistance. Tilles attributes this resistance, on the one hand, to the intellectual climate hostile to anything that could not be considered encyclopedic knowledge and, on the other, to the conflicts of jurisdiction between two pillars of the health system in France, Paris Medical School itself, and *Assistance Publique*, responsible for caring for patients in the hospitals.

After the revolutionary events of July, 1830, the Minister of Public Instruction of the restored monarchy, the Duke of Broglie, summoned a commission to re-examine the organization of medical teaching. The report, written by a leader of French social medicine, Jules Guérin, called for the establishment of specialized professorships an essential step toward the improvement of medical education. He thus suggested not only a professorship in skin diseases, but others in different areas, including: the history of medicine; general, compared and pathological anatomy; general pathology and treatment; and clinical work with children’s diseases. The opposing resistances exerted
by the Medical School on the one hand and Public Assistance on the other resulted in the fact that only free courses were given, outside the regular curricula. The course on skin diseases became the responsibility of Cazenave from 1841 to 1843, and was taken over by Alfred Hardy after 1862. Verneuil gave free courses on syphilitic infirmities.

Thus, while medical schools in Germany and England were resolutely promoting specialties, those in power at the Paris Medical School rigidly insisted on encyclopedic teaching, considering specialized clinics and hospitals as fatal “to science and to art” (Tilles, n.d.).

Only after France’s humiliating defeat from the Germans in the War of 1870-1871 did the French State succeed in forcing the school congregation and the physicians at hospitals to establish a common ground where specialized teaching could make use of patients, a practice that was indispensable for clinical demonstrations. The professorship in skin and syphilitic diseases was formally set up, by decree, on 31 December, 1879. Installed at St. Louis Hospital on 8 January, 1880, its first director was Alfred Fournier, the leading organizer in the 1889 International Congress.54

During this same period similar processes were taking place at the medical schools in Rio de Janeiro and Salvador, Brazil, as the result of the reform carried out by Leônio de Carvalho, the Viscount of Sabóia (1882-1884), commented on by Adolpho Lutz early in his medical career in Brazil.55 The discipline named, in the French fashion, Clinic of Cutaneous and Syphilitic Affections, was founded in 1883, and its most important professors were João Evangelista de Castro Cerqueira (1855-1935), in Salvador, and João Pizarro Gabizo (1845-1904), in Rio de Janeiro.

Castro Cerqueira identified tinea nigra in 1891, but the observations he made after experimentally reproducing the disease by inoculating a volunteer with scales extracted from a lesion were not published. This fact is mentioned in the doctoral thesis of this physician’s son, Antônio Gentil de Castro Cerqueira Pinto, on “Keratomycose Nigricans Palmar” (1916). Gabizo, the professor in Rio de Janeiro, was not known for the excellence of his scientific work. Although he had spent some time in training at the clinic of Hebra and Kaposi in Vienna, he published only one article on the regulation of prostitution, one conference on leprosy, and another on venereal diseases (Carneiro, 2002, p.44-6; Mota, 1944, p.102).

The most creative figure in Brazilian dermatology was undoubtedly António Pereira da Silva Araújo. He was trained at the Tropicalist School in Bahia and
since 1875 had been dealing with topics related to parasitology and microbiology in the so-called Gloria Conferences (Fonseca, 1996). He also published important articles on filariasis (1875, 1878), Demodex folliculorum (1877), and the “Treatment of Elephantiasis by Electricity” (1876).

In 1881, with Júlio de Moura, Moncorvo de Figueiredo, Cypriano de Freitas and Moura Brasil, Silva Araújo founded the journal União Médica, which began “pressuring the authorities to take measures in public health against the spread of syphilis in the country” (Carrara, 1996, p.82). In that same year, he participated with Figueiredo and other physicians and “benefactors” of the foundation of the General Polyclinic of Rio de Janeiro, inspired on the analogous institution in Vienna.56 One year before establishing the dermatological professorships at the schools of Rio and Salvador, Silva Araújo opened the Service for Skin Diseases and Syphilis at the Polyclinic and began lecturing on this topic to classrooms packed with students, “impregnated with pasteurian ideas” (Rabello, 1974, p.262). He then carried out studies on syphilitic chancres and on dermatoses such as yaws, which, at the time, was considered “a very malignant tropical form of syphilis, especially affecting individuals of the black race. With his disciple Bruno Chaves, Silva Araújo established the therapeutic value of a mercury salt for treating syphilis, that would be used to treat the disease until the 1940s.” 57

In approximately 1894, Oswaldo Cruz, a recent graduate, was invited to organize a laboratory to diagnosis syphilis and internal diseases at Silva Araújo’s clinic. These two clinicians, together with Salles Guerra, Werneck Machado and Alfredo Porto, were known as the “group of five Germanists,” due to their efforts to learn German, the language of the most advanced medical texts of the period (Benchimol, 1990).

In 1882, Silva Araújo was elected full member of the Imperial Academy of Medicine. In the following year, to accompany the first courses in dermatology in Brazilian schools, he published Atlas de doenças da pele [Atlas of Skin Diseases] (1883), with colored engravings and texts in French. Also in 1883 he gave conferences on “The Sanitary Regulation of Prostitution,” a theme he would return to in 1890 with an article entitled Prophilaxia pública da syphilis [Public Prophylaxis of Syphilis] (1891).58

The emerging Brazilian dermatology was represented at the Congress in Paris by Silva Araújo, one of the foreign assistant secretaries on the organizing board for the event. The other Brazilians present were Pizarro Gabizo, Bruno Chaves, Oscar de Bulhões and Adolpho Lutz.
The organizers of the congress scheduled a number of topics to be debated, an indication of the extent of the uncertainties and controversies related to the field of dermatology. The first question and, in fact, the most debated, was in regard to the lichen “genus,” under which the older dermatologists classified a great number of diseases that the more “modern” professionals considered different from one another. The organizers asked which “species” should be kept in this genus and which others should be taken out and classified elsewhere. Similar doubts were brought up about dermatitis exfoliativa, including the distinctive characteristics of pityriasis rubra. Should pityriasis rubra pilaris be considered an independent disease or a species of some other genus, such as psoriasis? What are the relationships between skin diseases called erythema scalatiniforme and primitive generalized exfoliative dermatitis.

Pemphigus was also brought up for discussion at the congress to decide whether diseases until then classified under this name should or should not be considered distinct species. Another disease, trichophytosis, was the subject of the fourth question. Its natural history, manifestations and transmission by contagion were well known, but there were still doubts as to the best treatment, which could not be the same in all countries.

There was already reasonable consensus among specialists in syphilis regarding the evolution of trichophytosis, the distinctive characteristics of its manifestations and the necessary sanitary and therapeutic measures involved. But there were serious disagreements among clinicians as to the opportunity and duration of the treatment and the preventive value of the medications prescribed. The organizers of the congress therefore asked at what stage in the disease should treatment of syphilitic infections begin and with what therapeutic methods? When should iodine-based preparations (especially potassium iodide) be associated with, or replace, mercurial treatment, and what are the counter-indications of each? Tertiary syphilis was also a major issue for debate, in terms of its relative frequency and the real influence of the causes supposedly favorable to its onset: age, constitution, personal or family medical history, occupation, alcoholism, depression, etc.

Besides these basic issues, the Organizing Board listed other topics that participants could decide whether or not to debate, namely, fungoid mycosis, Pruritus hiemalis, the contagiousness of leprosy and the number of its victims in Europe, the state-of-the-art regarding the parasitic nature of diseases such as dry circinate eczema, Gibert’s pityriasis rosea, seborrheic eczema, and others. The Organizing Board also suggested a debate on the relationships between
syphilis and certain diseases of the nervous system, such as tabes and general paralysis, the unicity and duality of venereal chancre, the relative frequency of soft chancre in different countries, the value of amputation of syphilitic chancre, experiences in different countries regarding regulations and prophylaxis for wet nurses and abandoned children still being breast fed, and the teaching and practice of dermatology.

The organizing board suggested that a committee be named to simplify dermatological nomenclature and that an international atlas of rare dermatoses be published (Congrès, 1890, p.ix-xiii). At the opening session, the renowned venereologist Philippe Ricord, Honorary President of the Congress, welcomed 220 participants. Among the authors of the 70 communications presented during the following six days were well-known specialists, such as Kaposi, Unna, Radcliffe-Crocker, Pringle, Boeck, Fournier, Besnier, Hallopeau, Brocq, and Wickman.

Kaposi presented his attempts to give some order to the various dermatoses identified as lichens, the name under which Erasmus Wilson included all eruptions of small papules. For Kaposi, the lichen ruber described by Hebra was the same as lichen ruber acuminatus, and both were nothing more than Erasmus Wilson’s lichen planus. It was he who said that Besnier’s pityriasis rubra pilarsis, was only another version of lichen planus, a position contested by Unna and other participants, who also debated whether this form of pityriasis was or was not merely a phase of dermatitis exfoliativa. Another controversial issue was dermatitis herpetiformis, described by William Tilbury Fox in 1880 and by Louis Adolphus Duhring in 1884. This was a chronic skin disease characterized by serious pruriginous lesions and groupings of blisters and papules, also known as Duhring’s disease. For Kaposi, it was a form of pemphigus. Brocq, who had published an article on this topic in 1884, defended the singularity of dermatitis herpetiformis.

At this Congress, the participants also described experimental treatments of tinea capitis, emphasizing the abrasion of the skin with sand paper followed by the application of a solution of mercury bichloride. Many dermatologists held that it was best to postpone the treatment of syphilis until the second stage started, then recommended the application of ointment with 50% oleated mercury.

The speech Adolpho Lutz delivered at the closing dinner was certainly one of his most literary pieces of writing. However, to judge from what its organizers chose to publish, his participation in the congress was surprisingly limited.
Lutz remained silent during the long controversy over lichens, even though he had published an article on the topic, but he did speak during the debates on diseases caused by trichophytes (Congrès, 1890, p.191-307). Dr. Butte, a dermatologist from Paris, described the results he obtained with a certain number of parasiticides at the St. Louis Hospital ward specialized in treating victims of tinea tonsurans. The treatment of this tenacious disease consisted, first of all, of a painful procedure – the removal of the hair – and then of the use of substances to eliminate the fungus that caused it. Lotions based on poisonous mercuric chloride (HgCl₂) and friction with mercurial or iodated ointments were not proving to be very efficient. Cure often took over a year and in some cases it seemed to result from simple spontaneous elimination of the parasite. Butte succeeded in producing better results by using lanolin as the excipient for less toxic parasiticides such as silver nitrate and iodine protochloride.

Ernest Besnier, also from St. Louis Hospital, disagreed with Butte and, especially, with Unna, in regard to the chemical substances he considered capable of directly destroying the parasites of tinea. According to Besnier, such substances could only be considered parasiticides if they actually destroyed the “microphytes”, but experiments showed that they destroyed the living cells that sustained them. Therefore, these substances produced only an “eliminatory irritation,” which could be obtained just as effectively through mechanical means without so seriously endangering the vitality of the tissues, especially, in this case, hair follicles (p.218).

Besnier called the attention of his colleagues to the fact that trichophytoses had been analyzed mainly by French scientists, and this would seem to indicate that they were more frequent in France. Hans von Hebra confirmed Besnier’s observation, assuring his listeners that these diseases were much more frequent in England and Italy than in Germany and Austria.

Lutz’s intervention in this session, held on Wednesday morning, August 7, was in respect to the prophylaxis for trichophytoses, which Besnier had slightly mentioned only in passing when he praised the measures taken by the French government to avoid contagion in schools.

“I would like to make an observation regarding the propagation of trichophytosis,” he said. It often begins in dogs and then often affects a child that plays with one of these dogs. It then spreads from this child to others in the same family. Therefore, in families where there is a tricophytic child, the dogs that live in the same house must also be examined because, if they are tricophytic, they can still transmit the
disease to children that are as yet unaffected or, by successive contaminations, prolong the duration of the disease among those who have already been infected. (p.219)\(^5\)

Adolpho Lutz’s other interventions occurred during the session of Friday, 9\(^{th}\) August, this time regarding a communication by Kalindero on leprosy in Romania. The concern of the latter was to stress the contagiousness of the disease and minimize hereditary transmission. The epidemiological history of the disease in that country, the clinical history of the cases Kalindero examined in Bucharest, as well as his anatomopathological, histological and bacteriological investigations, all showed that the leprosy bacillus was easily transmitted from person to person, especially through the skin. One of the cases described by Kalindero was to become paradigmatic for contagionists: a bearer of “trophoneurotic” leprosy had apparently transmitted the disease to her son during breast-feeding, and the child’s lesions had appeared exactly on its cheeks, that had been in contact with its mother’s breasts. Those rare cases that Kalindero treated in which hereditariness might have been involved, were prejudiced because the leprosy bacillus was found even in the testicles, the sperm and the ovaries of the bearers of the disease.

Another participant who spoke during the debates was Zambaco-Pacha, from Constantinople, a fervent defender of hereditary transmission, who identified leprosy as an urban disease associated with dire poverty. This motivated Lutz’s next comment: “I have seen leprosy in Rio de Janeiro and São Paulo, Brazil, and was able to note that it is not a disease of the cities. Nor is poverty a sine qua non cause, since persons who live comfortably can also be affected” (Congrès, 1890, p.613).\(^6\)

Bruno Chaves debated the same point: poverty was not a necessary factor. In fact, climate seemed to be more important, to the point that not a single case was found in southern Brazil, whereas in other regions of the country leprosy was endemic.

The predominant theme of the debates was the treatment of leprosy, with various interventions related to the promising effects of chaulmoogra oil, (Leloir, Zambaco, Chaves) and of gynocardic acid (Zeferino Falcão, from Lisbon). Having seen considerable improvement of a patient following a crisis of erysipelas, De Amicis, from Naples, wondered if intercurrent infections might not constitute a useful means to fight the leprosy bacillus. Leloir then informed that this tactic of “gendarme microbes” had been tested at St. Louis: the inoculations with erysipelas to combat leprosy resulted in accidents due to the
former, without any improvement in regard to leprosy. Bringing up a doubt as to the signs of recovery indicated by participants in the debate, Lutz observed that: “When we see one leprous tubercle overcome, one must always fear the eruption of another. True leprous embolisms seem to occur. I should also say that internal medication is preferable to external treatment to prevent the occurrence of facts of this nature” (ibid., 617).61

This is a very concise comment for a physician who was about to carry out a decisive experiment in the treatment of leprosy. Some of those present had resorted to the medication proposed by Unna. For Falcão, Ichthyol gave better results in cases of anesthetic leprosy than in other forms of the disease. De Amicis had obtained considerable improvement in a case of macular leprosy by using Unna’s treatment. Kalindero combined this method with the use of corrosive sublimated without attaining any complete cure. In the debate held that Friday, the last day of the Congress, Unna expressed his optimism: leprosy was not the incurable disease it had been ten years earlier. There was less desperation, and doctors were working with greater energy and perseverance. “I firmly hope we will see better results. For my part, in Hamburg, I have experimented with several different medications” (ibid., p.614).

The closing dinner was held on Saturday, 10th October, 1889, under a large tent decorated with the colors of the nations represented at the Congress and using a recently invented type of light: Edison’s incandescent electric lamps.

Adolpho Lutz was one of the speakers, as the representative of São Paulo. Leading French physicians and delegates from many other foreign countries also spoke. Using elaborate medical metaphors and with surprising humor, Lutz praised the international fraternity of dermatologists, which he saw spreading like a contagious affection not at all different from those that had been debated during the congress.62

**Adolpho Lutz in Hawaii and California**

On the 15th of November 1889, the very date on which the Brazilian monarchy was deposed, Adolpho Lutz disembarked in Honolulu. The Receiving Station in Kalihi was the location he chose to study the efficacy of Unna’s therapy, while supervising the treatment of over nine hundred lepers confined on Molokai Island. In April 1891, Lutz married an English nurse, Amy Marie Gertrude Fowler, a lay sister in the Third Order of St. Dominick (Corrêa, 1992, p.148-9), sent by the British Society for Assistance to Lepers to work as
a volunteer on Molokai. In September 1890, both resigned for reasons explained in Book 2 of this collection. Adolpho Lutz maintained a private clinic in Honolulu until mid-1892, when he transferred to San Francisco, California. In a circular letter dated 25th July, he informed physicians there that he was opening an office as a clinician and specialist in venereal and skin diseases.

Having made complete studies in Europe, and served a year as hospital physician, I practised 10 years in Brazil and the Sandwich Islands, observing and investigating specially Leprosy, Ankylostomiasis and other diseases of warm countries. As for Dermatology, I made special studies in Vienna and Hamburg, where I was assistant-physician in Dr. Unna’s Hospital for skin diseases.

Lutz supplied the address of his home and office – 933 Sutter Street – and office hours: from 1 to 3 p.m., from 6 p.m. to 7:30 p.m. and, on Sundays, from 9 to 10 a.m. A curious detail: he already had a telephone.

During the period he lived in the Pacific region, he continued to publish on human and animal verminosis in CentralBlatt für Bakteriologie and Parasitenkunde. In Hawaii, he began the entomological observations that were the foundation of his work in public health. Biographers note that Lutz’s work on Fasciola hepatica and its transmitters led him to study gastropods in different parts of the island where there was sheep farming.

The masthead of Monatshefte für Praktische Dermatologie includes Adolpho Lutz as its San Francisco correspondent. We have already commented on his article on rhinoscleroma, published in 1890. The following year, Dermatologische Wochenschrift published another article about the treatment of atheromas, tumors that particularly affect the scalp, made up of sebaceous material that looks like crumbled soap (Littré-Gilbert, 1908, p.120). At the time, the normal procedure was surgical removal of atheromas. In the article, Lutz (1891) defended a simpler and safer procedure that replaced excision with incision, especially when the cysts are small and thin-walled.
SAN FRANCISCO.

July 25th. 1892.

Dear Doctor:—

I beg to inform you that I have established myself in this city as a general practitioner and specialist for Cutaneous and Venereal Diseases. Having made complete studies in Europe, and served a year as hospital physician, I practised 10 years in Brazil and the Sandwich Islands, observing and investigating specially Leprosy, Ankylo stomatitis and other diseases of warm countries.

As for Dermatology, I made special studies in Vienna and Hamburg where I was assistant-physician in Dr. UNNA’S Hospital for skin diseases.

Yours Respectfully,

Dr. A. Lutz.

Office & Residence, 933 Sutter St.

Hours: 1 to 3 & 6 to 7.30. Sunday 9 to 10.

Telephone No. 2324.
His observations of pathologies encountered in that region of the tropics, especially skin diseases, were published in epistolary form in a series of articles published between September 1891 and August 1892 in *Monatschefe für Praktische Dermatologie*, under the title “Letters from Honolulu.”65

The climate of the archipelago, one of its “truly paradisiacal” characteristics, was one of the main categories in Lutz’s analysis of the diseases and the inhabitants’ lifestyles, but in a different way from the neo-hippocratic medical geography still broadly practised at the time, with its emphasis on epidemic conditions created by miasmas. “The expression ‘climate’,,” he wrote, “should be limited to meteorological factors; fauna and flora of pathogenic agents should constitute the *genius loci endemicus et epidemicus*” (endemic and epidemic
nature of the place). Nutrition, customs and economic development, shortage of competent doctors and non-observance of the rules of hygiene also contributed to the morbidity and mortality prevalent in the region. “All of these factors should be taken into consideration and there is no greater error than to impute to climate alone the fact that a trade or agricultural colony does not thrive beyond the second or third generation.”

For nineteenth-century hygienists, climatic and telluric conditions of the so-called hot countries were a great obstacle to their civilization, especially when they occasioned the annihilation of European immigrants, considered especially vulnerable to the unhealthy tropical climate, in contrast to natives and the “acclimatized”.

Going against the grain of this thinking, Lutz affirmed that recent arrivals stood the climate better than older immigrants and natives: “a vigorous organism allows them to resist effectively the passing action of a hot climate... As elsewhere, in hot climates serious diseases and deaths are not caused by climatic conditions as such.” Lutz was sure that, with improvements in health conditions, “the morbidity of many people in these places will be less than in temperate zones.”

Climate was an important category of analysis for Lutz because of the effect of temperature and humidity on the proliferation of pathogenic organisms, stimulating or inhibiting it, and on the customs of human beings that contribute to these organisms’ culture or to the singular course taken by the pathologies they occasioned.

The influence of heat on skin diseases, even in Europe where it could be intense at certain times of the year, was a subject that Lutz thought was unjustly overlooked by scholars. In Hawaii, heat was particularly favorable to the observation of dermatomycoses. He did not find cases of favus and herpes tonsurans capilliti, but other diseases had high levels of incidence, especially among people who transpired a lot, and Lutz was especially interested in erythema marginatum and pityriasis versicolor, known as *kane* in Hawaii.

Abundant perspiration also encouraged the appearance of miliaria rubra or prickly heat, also known as tropical lichen. This fact proved how absurd it was for Europeans and the Europeanized to use woolen underwear. Temperatures during most of the year made it unnecessary and uncomfortable, and Lutz thought that the spread of European clothing had contributed to increased morbidity and apathy among natives.

The atony of the nervous system, allied to the lack of distractions, led to abundant use of stimulants: coffee, alcohol and even opium, mainly consumed by the Chinese. One of the stimulants preferred by the natives was ava or kava-kava.
(Piper methysticum), whose prolonged use gave rise to alterations in the skin different from known medicamentous dermatosis: it was comparable to an accentuated ichthyosis on the extremities of members, with atrophy like that of senile skin.

Lutz supposed that the hot atmosphere allied to consumption of mangoes, rich in turpentine, encouraged the appearance of urticaria. He then analysed the effectiveness of old and new medicines, especially antipyrine, in the treatment of common urticarias and of “giant urticaria,” as the disease described by the physician from Kiel, Heinrich Irenaeus Quincke (1842-1922), was sometimes called. He also described an eczema that attacked exclusively the fingers of Europeans of the “educated classes”.

Environmental factors proved to be equally important to understanding the mechanisms by which human skin adapted to animal parasites that caused other kinds of dermatoses: mites responsible for acarinosis, the common flea (Pulex irritans) and lice (Pediculus capitis) were widely disseminated; ticks were only parasites to quadrupeds, and chigoes (Tunga penetrans) were unknown in Hawaii. As for mosquitoes, Lutz recorded two species, known locally as daytime and nighttime mosquitoes, the latter being, probably, the intermediate host of Filaria sanguinis. Worms had not yet been introduced into the archipelago, although rice and yam plantations were a very favorable environment for reproduction of mosquitoes. Lutz recorded the use of Pyrethrum cinerariaefolium, produced by Buhach in California, to combat the mosquitoes that infested Honolulu. He also refers to animals responsible for painful bites and stings: a kind of wasp, a scorpion and a large centipede.

Another issue he discussed was skin tumors: benign fibromas and lipomas; a xanthoma found in eyelids; Molluscum contagiosum, lodged in abdominal skin; cancroids of the skin and carcinomas of internal organs.

In greater or lesser detail, Lutz described the symptoms and treatment of these diseases, emphasising how they were different from cases described in the European literature. He paid great attention to their various manifestations and uneven incidence in the races.
nationalities and professional categories that made up the population of Hawaii. One could say that class, profession, nationality and, especially, race are operational concepts as important to Lutz as climate.

Immigrants made up about half of the islands’ population, Asians being the main component of the working class. Based on recent census data, Lutz called attention to the impressive decline in numbers of natives, which he attributed mainly to diseases introduced with the exchange between peoples: smallpox, measles and tuberculosis, at first; diphtheria, revigorated by trade between San Francisco and Australia; and epidemics of flu and other sporadic infectious diseases, like mumps, lobar pneumonia and intermittent fever.

Lutz emphasised the significance of venereal diseases; syphilis, whose florid processes affected about 5% of the Kanakas, by his estimate; gonorrhea and soft chancres.

He also paid attention to diseases not found in Hawaii: malaria and lupus, for example, did not seem to exist there; scrofulous affectations of the bones and joints were much rarer than in Europe. His extensive comments on leprosy and its associations with other diseases and the almost pathological panic that he called “leprophobia” have already been commented on in the introduction to Book 2.

Biographers of Adolpho Lutz, when they refer to the series of articles published in *Monatschefte für Praktische Dermatologie*, highlight only the juxta-articular nodosities that he described for the first time and that were described ten years later by the French physician, Antoine Edouard Jeanselme (1858-1935) “as a new thing” (Neiva, 1941, p.iv).

In the article Lutz wrote in Honolulu in September 1891, he discussed an affection he had often observed in natives and foreigners, some of whom were leprous and all of whom were suspected of having syphilis: tumors located close to a bone, usually close to a joint, on the elbow, near a rib, on the hip, palm of the hand, forearm or fingers. These tumors were different from chondromas and exostosis because they were not continuous with the bone and regressed under the action of potassium iodide.

In 1904, unfamiliar with Lutz’s work, Jeanselme presented a paper at the Colonial Congress of Paris on identical cases he had observed in 1899 and 1900, during a long stay in Indochina. Then he described the juxta-articular nodosities in his *Précis de pathologie exotique* (1909); from then on, foreign authors began to associate Jeanselme’s name to a syndrome first described by Lutz.
Actually, several other researchers described it at about the same time as the French parasitologist. Steiner reported the occurrence of “multiple subcutaneous nodules, hard and fibrous” on Java — and one of the names still used for it is Steiner’s syndrome. It was studied by Lustig; by Gross, who in 1907 found a dozen cases in Algeria; by Brault who, three years later, located another such number there; Neveux identified the disease in Senegal; Leboeuf and Ouzillau noted cases in the Antilles and Belgian Congo, respectively; and Brumpt observed juxta-articular nodules in settlements along the River Nile in what was then called British East Africa.

In Brazil, the first to report a case was Eduardo Rabelo, at a session of the Brazilian Dermatology Society on 4 August 1816, transcribed at the end of this volume. From that time on, Lutz-Jeanselme’s juxta-articular nodules, as they are now known, were studied by other Brazilian physicians. Zielberberg was among them, and at the time he published his paper the etiology and pathogenesis of the disease were still very controversial. Few researchers believed in a mechanical origin — irritation, repetitive rubbing or pressure on points close to the joints.

In Madagascar, Carougeau discovered a fungus on those affected, which he called Dyscomyces carougeau. Lustig described Nocarda carougeau as a producer of juxta-articular nodules. The theory of mycosis was embraced by Steiner, Fontoyjont (who observed the disease on the coast of Somalia and in Madagascar), MacGregor (who found it in New Guinea). Jeanselme believed in an etiology based on a yet undiscovered parasite, but was not able to identify it.

For other investigators, juxta-articular nodules were merely sclerotic and calcified tubercular gummas. Two other theories related them to syphilis and bubba, diseases caused by very similar treponemas, with advanced manifestations so similar that some authors postulated that they were the same disease, affirming that syphilis of the barbarians was bubba and the bubba of the civilized was syphilis (Zilberber, 1938, p.32).

The first to launch the hypothesis that the nodules had a syphilitic origin (contested by Jeanselme) was Adolpho Lutz, when he observed the beneficial effects of potassium iodide and mercury on the lesions. Silva Araújo, who
studied sixty cases, also defended this theory, which in France was supported by Foley, Parot, Gougerot, Brunstig, Gange and Argaud.

The investigators that attributed Lutz-Jeanselme nodules to bubba argued that they were common in the Belgian Congo, one of the most important foci of trepanomotosis and where the majority of the natives were unscathed by syphilis. On the other hand, in the 1940s most Brazilian authors found a solid argument against this etiology in the little-noticed fact that the Northeast of Brazil was an endemic focus of bubba but the two syndromes did not coexist.

Lutz at the head of the Bacteriological Institute of São Paulo

Adolpho and Amy Lutz returned to Brazil in January 1893 and set up house in São Paulo, where professional opportunities for him were better and the climate was “more favorable to a lady who had come from temperate and cold regions” (Bertha, Lutziana). The couple’s two children were born in the city of São Paulo: Bertha Maria Júlia (2 August 1894) and Gualter Adolpho (3 May 1903), who later became, respectively, a naturalist at the Brazilian National Museum and a chaired professor of forensic medicine at the National Faculty of Medicine.

This marked the beginning of the phase of Adolpho Lutz’s life that his future collaborator Arthur Neiva (1941, p.iv-v) called the “most brilliant ... He personified new ideas and seemed revolutionary to the medical milieu where he worked ... In these fights the fact that he was profoundly cultured and had experience unlike any other came to his aid.”

Adolpho Lutz was in the vanguard of movements that instituted pasteurian and tropical medicine, occurring more or less at the same time and with considerably synergy in different capitals of the Old and New Worlds (Bayet, 1986; Busvine, 1993; Worboys, 1996). Among the physicians who led the movement in Brazil, Lutz was no doubt the best technically qualified and the one with the greatest experience, most publications and best relations with the international scientific community, though mainly the German-speaking part of it.

At the turn of the 19th to the 20th centuries, the small group of Brazilian doctors of which Lutz was a part placed itself at the center of burning controversies with clinicians and other social actors, involving the identification and, therefore, prevention and treatment, of diseases in urban centers and
rural areas of Brazil, especially in the Southeast, convulsed by foreign immigration, political change, industrialization and the socio-economic repercussions of the downfall of slavery. Several states reequipped health services or set them up for the first time, leading to demand for chemical and bacteriological laboratory services. It took a long time for plans to be put into practice in most states. In Rio de Janeiro and São Paulo, bacteriology played a decisive role in confronting problems of public health, thanks to the work of that still small group of professionals with the skills and ambition necessary to increase the social importance of the discipline and oppose existing practices based on the ideas of miasmas and environmental sources of disease.

These conflicts over public health contributed to the belligerent atmosphere in which the republican oligarchy consolidated its power. It was an atmosphere convulsed by the Navy Revolt (September 1893 to March 1894), the Federalist Revolution (1893-1895), the Revolt of Canudos (June 1896 to October 1897) and the assassination of the Minister of War, marshal Carlos Machado Bittencourt (5th November 1897). These events received considerable attention from the newspapers and influenced not only the repercussions but the alignment of forces during the frequent public health crises.

On 18th March 1893, Adolpho Lutz was appointed assistant director of the Bacteriological Institute of São Paulo, one of the branches of the Public Health Service established in July of the previous year (Telarolli Jr., 1996; Antunes, 1992). Through Ambassador Gabriel Toledo Piza e Almeida and Henrique Gorceix, a French scientist who directed the Ouro Preto Mining School, São Paulo authorities got Pasteur to recommend someone to direct the institute: Félix Alexandre le Dantec. He took office on 15th December 1892, but less than a year later returned to Europe, “having done nothing more than a little research on yellow fever”, the secretary of the interior, Cesário Mota Júnior observed acidly, “which he took with him when he left and that seems to have been the only reason for coming to Brazil” (Lemos, 1954, p.14).

Actually, the soul, brain and mainspring of the Bacteriological Institute of São Paulo’s work was Adolpho Lutz. Officially appointed director only on 18 September 1895, he remained in the post for 15 years, until he transferred to Instituto Oswaldo Cruz in November 1908. The small staff of three assistants and two general services personnel, at the beginning, had heavy responsibilities:

- the study of microscopy and bacteriology in general and especially regarding the etiology of the most frequent epidemic, endemic and epizootic diseases; preparation and packaging of products needed for
preventive vaccination and therapeutic applications as they become necessary; microscopic examinations necessary for elucidation of clinical diagnosis. (ibid., p.16, 19)

With his staff, Lutz carried out wide-ranging research on infectious diseases that were endemic or epidemic in the state of São Paulo. Outbreaks of cholera, typhoid, dysenteries, yellow fever and other diseases revealed the importance of bacteriology for public health. The diagnoses made by Lutz and some younger professionals that were becoming prominent as bacteriologists in Rio de Janeiro were based on laboratory evidence not accessible to most doctors.

Among Lutz’s conflicts with the majority of doctors and with other social actors, two were especially noisy (Lutz and Lutz, 1943): the cholera controversy led him to contact Dunbar at the Institute of Hygiene of Hamburg, who attested to the presence of Koch’s vibron where his adversaries had only seen dysenteries caused by local telluric and alimentary factors. The controversy over typhoid fever put Lutz in touch with Carl Joseph Eberth (1835-1926), who discovered the “Eberth bacillus,” later called Eberth Salmonella typhi; he was then director of the Anatomical Institute of the University of Halle. He endorsed Lutz’s cultures, opposing the supposition of most doctors in São Paulo that the fevers that were rife in the city – “Paulista fevers” – were just the native or local version of malaria.

Yellow fever stands out among the public health issues that pressed themselves on Adolpho Lutz’s attention. In 1880-1881, Carlos Juan Finlay, a Cuban physician, affirmed that the disease was transmitted by a mosquito (Stepan, 1978; Franco, 1969). The time between the moment this theory was proposed and its confirmation in 1900, by the US medical team headed up by Walter Reed, is explained by François Delaporte (1989) by the relationships of theoretical affiliation between Finlay and Patrick Manson, and between Walter Reed and Ronald Ross. In 1877-1878, Manson had explained almost the whole cycle of the parasite that caused filiarosis, also known as Arab elephantiasis (Greek elephantiasis was taken under the heading of leprosy), putting together the pieces of an enigma that Otto Wucherer started to decipher in Brazil in 1866. When Ross showed, in 1898, that the mosquito was the intermediate host of the malaria parasite, it was inevitably supposed to fill an identical role with yellow fever, which, moreover, was often confused with malaria in clinical diagnosis.

The miasmas, fungus and bacilla associated with yellow fever were not immediately buried, but the experiments in Cuba in 1900 did dismantle the
controversies over its etiology and made possible public health campaigns that neutralized epidemics in the coastal towns of America for the first time.

The discovery of how malaria is transmitted led immediately to new directions in studies of yellow fever at the Bacteriological Institute of São Paulo. In 1898 Vital Brazil raised the first experimental objections to the icteroid bacillus proposed by the Italian, Giuseppe Sanarelli (1897) and Adolpho Lutz began to study the distribution of Stegomyia fasciata in different regions of Brazil.

Starting in January 1901, public health commissions in Sorocaba, Santos and Campinas started to routinely eliminate stagnant water containing mosquito larvae. In Ribeirão Preto (1903), disinfection was abandoned and Finlay’s theory was adopted as a guideline, under the personal supervision of Emilio Ribas, director of the São Paulo Health Service. At the end of 1901, at Lutz’s suggestion, Ribas obtained authorization from the São Paulo state president, Francisco de Paula Rodrigues Alves, to repeat in São Paulo, considered free of yellow fever, the experiments made by the US team in Cuba. The aim was to answer objections to the “Havana theory” made by physicians who endorsed Sanarelli’s bacillus or other microbes discovered by the Italian’s Brazilian competitors (Benchimol, 1999).

In another volume of Adolpho Lutz’s Obra Completa we will examine the development and repercussions of the experiments he coordinated as head of São Paulo Bacteriological Institute.

Besides attending to exhausting laboratory routines associated with epidemic diseases that succeeded each other on the health authorities’ agenda, and meeting countless demands from clinicians in the city and state of São Paulo, Lutz continued to do research on skin diseases as they related to these demands or, out of a strong personal interest, to medical zoology.

In the reports written during the years he headed up the Bacteriological Institute (see especially Lutz, 1898) and in summaries published in Revista Médica de S.Paulo, Lutz drew a profile of the dermatoses present in the towns and rural areas under his jurisdiction. Besides continuing his studies of nematode worms of the Ascaris kind, he was the first to identify the presence of herpes tonsurans in cats; he studied the biology of arachnid insects harmful to local populations, such as mites and ticks; he also studied argasids, hematophagous insects found in dovecotes, and Dermayssus avium, a chicken louse; the cutaneous lesions produced by parasites on man led Lutz to pay attention to Carcotes scarbei, the agent of scabies, Phthirus inguinalis,
Pediculus vestimentis, Pediculus capitis and Pulex penetrans (now classified as Tunga penetrans), the uncomfortable creature that infested the feet of the barefoot multitude that walked the streets and fields of São Paulo (Vieira, 1942, p.285-6).

In August of 1899, Adolpho Lutz published a detailed study of a case of myiasis, classifying for the first time the species of insects that caused the terrible damage to human tissue and cavities by using them as nests and fodder for their larva: Licilia cyanoventris or Compsomia macelaria, very similar to Sarcophaga camiaria, commonly known as a blowfly. He studied the pathogenic action of the parasite on man and verified its life cycle experimentally in dogs.  

**Lutz’s disease**

In 1908, he published in *O Brazil Médico*, an article that would be recognized as his main contribution to Brazilian dermatology: the discovery of a disease characterized by serious lesions – ulcers that take over the mouth, destroying the mucosa of the gums and palate with painful ganglial consequences. Lutz described it as a pseudococcidic mycosis, after identifying the fungus that caused it and describing its characteristic mode of reproduction.

The disease was to have several names because of the difficulty of diagnosing its difference from other mycoses caused by fungus of similar species and the disputes over prestige and concepts between the many researchers who worked to decipher this complex pathological syndrome. Similarities to mycoses described shortly beforehand in Argentina and the United States led Lutz to include his in a group that he called American hyphoblastomycosis.

“The history of this nosological grouping on the American continent is the history of a great mistake,” wrote Eduardo Rabelo in 1945 (p.11). A decade later, the nomenclature of the affection continued to be “very badly fixed” (Langeron & Vanbreuseghem, 1952, p.483). Authors from the United States called it South American blastomycosis to differentiate it from the disease described by Gilchrist, North American blastomycosis. South Americans, when they did not use the term Brazilian blastomycosis, preferred Lutz’s disease or Lutz-Splendore-Almeida, associating the name of the person who described the first cases in Brazil to that of Splendore – the first to make cultures of the pathogenic fungus – and Almeida, author of the first major study of the disease. In the 1950s, the names granuloma and paracoccidioidic granulomatosis fell
into disuse; they expressed the parallel between Lutz’s disease or Lutz’s mycosis and coccidiodomycosis. In the medical literature there were still other synonyms: paracoccidioidosis, malignant coccidioidian lymphogranulomatosis; coccidioidian lymphogranuloma; malignant ganglionic granuloma of blastomycotic origin and neotropical blastomycoidian ganulomatosis (op. cit. and Lacaz, 1960, p.242).

Lutz’s article of 1908 was the product of a detailed study begun two and a half years before, when he was called by Dr. Walter Seng, an Austrian physician well known in São Paulo,69 to examine a 40-year-old Spaniard who worked in the warehouses of a railway company and had a neoformation “the size of a two-franc coin” between the base of his tongue and his jaw, as well as a diffuse, hard infiltration in the submaxillary region. In spite of noting a certain similarity to an epithelial chancre, neither Seng nor Lutz had seen lesions like them in the mouth.

From a fragment of tissue, Lutz extracted hypertrophied papillas; when he cut them, he found cystic corpuscles and granulation cells in the thickened epithelial layer that were not like those of real abcesses. Lutz did not find any giant cells in this material, but in the submaxillary tumor withdrawn with Seng’s help, he did find enormous ones, containing sometimes three hundred nuclei. There were tubercula full of pseudococcidia in these cells. Lutz discarded epithelioma and diagnosed a pseudopsorospermosis or coccidiosis. In 1905 he presented the clinical case together with fungus cultures to the Scientific Society of São Paulo.

The fact that he did not present the paper to the Society of Medicine and Surgery showed how far his relations with that body had deteriorated during the controversies over cholera and Paulista fevers (Benchimol, 2003). Lutz was one of the founders of the Scientific Society which, as long as it existed, was an important forum for debate for professionals with different kinds of training. Vital Brazil, former assistant to Lutz and director of the Butantã Institute, was among the founding members, as was Roberto Hottinger (187501942), a veterinarian with a diploma from the University of Zurich who had been assistant to the famous pathologist Zschokke and to Treadwell, one of the great proponents of analytical chemistry, before being hired, through the offices of the Brazilian Legation in Berne, to lecture at the São Paulo Polytechnic.70

Lutz encountered a second case of pseudococcidic mycosis in 1905, once again thanks to Seng. The patient was just over 30 years old and had been ill for four years, having received treatment as for syphillis, to no end. He began
to be treated with X-rays and sodium iodureto in high doses, which had achieved positive results in the previously diagnosed case.

Lutz lost sight of the second patient and then, months later, ran into him in a hospital, thin, weak and hoarse, with persistent diarrhea and difficulty in swallowing because of the proliferation of lesions in his mouth. In the uvula tissue that had been amputated so that the patient could breath and swallow, Lutz found large groupings of cells that resembled tuberculc, including a large number of giant cells; there were also large masses that seemed to be constituted by malformed crystals. They had such an unusual appearance that he thought at first that they were contaminants introduced during histological preparation, but he soon verified that they were groups of calcified pseudococcidia. Besides calcium degeneration, he observed another kind that gave the contents of the corpuscles an appearance of vacuoles.

The grouping of cystic corpuscles is quite typical. There is usually a larger one in the middle and smaller ones around it, which always gave me the impression of being the result of a process of gemmation, but this cannot usually be observed in fresh or immediately fixed tissues. If tissues are left in a sterile environment at room temperature for some time ... a large number of groups can be found in which the connection between the mother cell and daughter cells still exists in the form of cylindrical peduncles.

The forms of tissue are not observed in the cultures, where gemmation is different... In the tissue, forms are always spherical, while in cultures they are ovoid or cylindrical-ovoid and their membrane ... never forms a capsule as in tissues. In the cultures the filiform shapes soon appear ... later, maybe as a result of less abundant nutrients, the filaments become thinner and finally become hyphas, with cylindrical segments and septums that are far apart. (Lutz, 1908, p.22-3)

As he made the studies, Lutz began to reevaluate the cases he had seen or heard about in the past and had been unable to classify, suspecting them of being cases of the disease he was describing. Microscopic examination of preparations taken from altered tissue was the only way of establishing a diagnosis of “pseudococcidian hyphoblastomycosis” that differentiated it from diseases that could be confused with it: scleroma, when located in mucosa and not in the nose (rhinoscleroma); scurvy, bubba, syphillis and even sometimes tuberculosis.

The term “blastomycete” was coined, it seems, by the botanist Naegeli to designate fungus that reproduces by means of sprouts. Blastomyces, for its part, was used by Constantin Roland to designate a filamentous fungus. In
papers published in the 1890s, Abraham Buschke (1868-1943) defined as blastomycosis the diseases caused by spherical or almost spherical fungus in the affected tissues, behaving as cells that multiply by sprouts although outside of this environment they may (or may not) release filaments. In 1901 Paul Vuillemin defined as blastomycosis diseases produced by fungus similar to yeasts (single-cell fungus of the sacaromycetaceous family that includes a number of fermentation agents and pathogenic yeasts). According to Fialho (1946, p.12), this concept was criticised by mycologists because it did not refer to any specific parasitosis as a specific etiological agent, but to a heterogeneous grouping of diseases.

Adolpho Lutz tried to organize, within this universe, what he had found in Brazil, modifying the group’s profile a bit in order for the singular properties of his fungus to fit.

“In the last 15 years,” he wrote in 1908,

pathological microbiology has recognized the existence of pathogenic forms of blastomycetes or fungus that multiply by gemmation, such as the sacaromycetes, and not by hyphas, like most multicellular species for which the general term hyphomycetes is used. This distinction ... does not cover the whole field, given that there are species in which both forms of growth exist, requiring new categories.

At that time, blastomycetes covered three groups of diseases. One was constituted by sporotrichosis or trichosporiosis, observed in men and rats; Lutz had written a wonderful paper on this subject the previous year, in collaboration with Splendore (Lutz & Splendore, 1907). The other group was made up of diseases caused by organisms that grew the same way in tissues as in cultures, distinguishable from real saramycetes simply by the fact that they did not present spore forms. The classical cases of this group, which Fialho called “European blastomycoses,” had been described in Germany and France by Otto Busse (1867-1922) and Abraham Buschke. The latter used the term Hautblastomikose in a Dermatology Congress in Strasbourg in 1898 and in 1902 he published an important monograph on the subject.

During the same period, Curtis (1895) published the results of a study made in France, based on material taken surgically from a man who had a tumor of myxomatous appearance in the Scarpa triangle. He also discovered vegetal corpuscles that he classified as yeast and in 1896 he published a more complete study of the parasite called Saccharomyces subcutaneus tumefaciens in the Annales de l’Institut Pasteur.
According to Lutz, the third group of diseases classified as blastomycoses had as agents hyphoblastomycetes that were similar to the thrush fungus. The forms found in tissues did not look like fungus because they were round, with an external membrane so thick that it recalled coccidia enclosed in cysts or entozoarian eggs. Lutz gave both cases he had observed in Brazil the name pseudococcidian hyphoblastomycosis because he recalled the enigma created by the first representative case of this group, described in Buenos Aires by Posadas and Wernicke as sporospermosis, a name chosen because of the illusion that the agent was a coccidium.

Alejandro Posadas (1870-1902) was the son of a Spanish immigrant who got rich by trading with Indians on the border and then became a rancher. He entered the Faculty of Medicine of Buenos Aires in 1888; three years later, as a student at the University Hospital, he found a serious festering vegetant lesion that had been diagnosed as a fungoid mycosis on a soldier of the cavalry serving in the Chaco. As he was interested in the histology of tumors, Posadas’ attention was drawn to the singular structure of the cutaneous and ganglial neoplasms. He collected material and observed spherical, thick-walled organisms under the microscope which contained small round formations. He identified them as spores and the microorganism seemed to him to be a sporozoarian. His professor, the pathologist Robert Johann Wernicke (1854-1922), monitored his student’s studies, which resulted in two research notes published in 1892: Wernicke’s “Ueber einen Protozoenbefund bei mycosis fungoides”, in Centralblatt für Bakteriologie und Parasitenkunde (v.12, p.859-61, 1892); and Posadas’, in an Argentine journal, Círculo Médico Argentino (v.15, p.585-97, 1892), under the title “Un nuevo caso de micosis fungoidea con psorospermia,” the term “psorospermios” referred to the same organisms that Lutz knew at the time as coccidia.75

Posadas graduated with honors in 1894 and the same year presented a thesis entitled “Psorospermiosis infectante generalizada”. He had been able to
transmit the disease to animals in the laboratory – the guinea pig being, in Lutz’s opinion, the most suitable experimental animal. Posadas had reproduced the characteristic parasites and multiple lesions, especially in the spleen, liver and lungs, in these animals. He did not make cultures of the parasite, which Fialho attributes to his supposition that he was dealing with a protozoan, which he later called Megalosporidian.

Posadas (1897-1898) monitored the evolution of the disease in the soldier until 1897, when he died; the autopsy revealed extensive lesions on his vital organs.

That year, Adolpho Lutz traveled to Montevideo to participate in a conference in which Giuseppe Sanarelli announced the discovery of the supposed yellow fever bacillus. On his return, he went through Buenos Aires and saw close up both the prepared sections for microscopic examination in Wernicke’s laboratory and the diseased man under Posadas’ care. Mixed, energetic, prolonged treatment for syphilis had yielded nothing. Local symptoms had been improved by repeated surgery, which had also supplied the study material. In the man suffering from Posadas disease, also known as Coccidiodiomycosis, Lutz also saw the characteristic spots that become papilomatous vegetation and inexorably spread, as well as the subcutaneous tubercula and ganglial infiltrations, less common and typical lesions. “The process”, Lutz wrote (1908, p.6-7), “is not benign but is not as serious as malignant tumors or perhaps even fungoid mycosis in the second period, but is similar to local tuberculosis, to which it is analogous in many ways.”

The nature of the microorganism described by Posadas had yet to be explained.

The similarity of cystic corpuscles to round coccidia was extraordinary, at first sight, and this classification is understandable, but we must take into account that at the time there was a tendency to attribute neoplasms to the parasitism of coccidia. Moreover, in all of parasitology nothing similar was known except the eggs of certain entozoarians, which could not be considered in this case. I came to the conclusion that... they were other organisms, belonging to a category completely unknown to the parasitology of the time, and I wanted very much to observe and study another case of the same thing. (Lutz, 1908, p.10-1)

This case, as we have seen, took its time to come to Lutz’s attention and, meanwhile, he noted (1908, p.10-1), the Posadas and Wernicke case “remained isolated, a kind of pathological curiosity”. 76

Contemporary US researchers faced a similar dilemma.
In 1893, in San Francisco, where Lutz had lived for almost a year, Dr. Rixford began to treat a Portuguese immigrant who had been hospitalized for a festering cervical lesion the size of the palm of the hand, formed by granulomas and papilomas. Spherical bodies were found in his exuded matter, with a very refractive capsule that multiplied by endosporulation. The histological incisions showed tuberculosis-like lesions. The disease was transmitted to a dog by inoculating the man’s pus in its scarified skin. The case was described in the pages of *Occidental Medical Times* (May 1894, p.125) and debated in the California Academy of Medicine, where it was correlated not only with the pathology described by Posadas and Wernicke but to the very similar case that Thomas Caspar Gilchrist (1862-1927) had presented to the American Dermatological Association in June of that year in Washington, a case diagnosed by Dühring as “chronic scrofuloderma.”

In his histopathological incisions, Gilchrist identified forms similar to yeast and in 1896 he published, with Rixford, a detailed description of clinical, anatomopathological and bacteriological aspects of the syndrome, which became known as Gilchrist’s disease and California sickness. Ophüls and Moffitt (1900) gave the definitive name to the causal agent of this mode of blastomycosis, *Coccidiodes* (similar to Coccidia) *immitis* (*im*=not, *mitis*=moderate or mild).

Between 1900 and 1915, thirty-one case histories were published in the US literature, of which 30 were from California.

**Descriptions of Lutz’s Disease in Brazil**

The disease described by Lutz became one of the main objects of clinical and bacteriological investigation by the physicians who founded Brazilian dermatology.

In 1909 Alfonso Splendore, Lutz’s collaborator at the Bacteriological Institute of São Paulo, described a new case and, in a paper presented the following year at the 4th Latin American Medical Congress, he showed that all cases observed until then in Brazil – Lutz’s two cases, and the three he had examined – were similar and shared a singularity: the location of the first lesion in the mucosa of the mouth.

Patients often complained of the difficulty of swallowing; some had enormous secretion of saliva; almost all spoke of extraordinary general fatigue, always increasing. Some died after extreme cathearsis, others are still alive but have not noticeably improved. No local or general medication has shown good results to date. (Splendore, 1912, p.422-3)
Examining material collected from scraping the lesions, Splendore obtained fungus identical to that isolated by Lutz on two occasions, but the corpuscles found in the third case were different. Splendore concluded that blastomycosis, in Brazil, could be caused by two kinds of fungus, one of the genus *Oidium* and the other a sacaromycete.⁸⁰

In 1912 he published a paper considered fundamental, by many authors, on the mycosis that was still subject to so many uncertainties, especially about whether it was identical to those described in the United States and Argentina.

“It is a mycotic disease especially dominant in Brazil,” Splendore wrote,

that may be classified among the so-called widespread blastomycoses described mainly in North America but, given the specific location of its lesions, in the mouth cavity, has no parallel pathology in other countries, to date. (quoted in Lacaz, 1960, p.245)

Based on a paper by Beurmann and Gougerot (1909) about “Exascoses” (the name given to blastomycoses in France), for which they proposed the new genus *Zymonema*, Splendore called the microorganism he and Lutz had found *Zymonema brasiliensis*.

Langeron and Vanbreuseghem (1952, p.484) note that Splendore saw perfectly the multiple germination characteristic of the parasite in tissues, on which basis modern authors formulate a specific diagnosis. In spite of that, the subsequent 25 years were of a great deal of confusion about the matter and Lutz’s disease was regularly confused with cocciodiodomycosis. Only in 1929, with Floriano de Almeida’s comparative study of the two funguses responsible for the affections, was it possible to distinguish them.

In this interval, Carini (1909, 1915), Lindemberg (1909), Gaspar Vianna (1913), Carvalho (1911), Dias da Silva (1912, 1914), Portugal (1914) and Kehl (1915), among others, described cases of the disease originally described by Lutz.

Gaspar Vianna, who was a pathologist at Instituto Oswaldo Cruz and died at a young age in 1914, had a strong interest⁸¹ and published a paper on it, written in collaboration with Miguel Pereira (1911). The thesis he submitted to the Faculty of Medicine of Rio de Janeiro to obtain his post-doctoral degree (1913) was dedicated precisely to the “Posadas-Wernicke sickness”. Splendore had indicated the clinical signs of location in the lungs and the presence of parasite in patients’ sputum and urine. Vianna traced a more complete clinical and pathological profile of the disease, showing that after the initial cutaneous-
mucous locations, it propagated itself through the lymph system to the whole organism (Fonseca Filho, 1974, p.91; Fialho, 1946, p.41-2).

In 1919 Walther Haberfeld, who held a chair at the São Paulo Faculty of Medicine, published a monograph in which he described the pathological anatomy and histology of the mycosis he called “malignant ganglial granuloma of blastomycetic origin (*Zymonema histosporocellularis*)”. Haberfeld denied that there were genuine sprouts in the tissues and affirmed that the mycosis fungus reproduced itself by endosporulation alone.82
Granuloma Ganglionar Maligno
DE ORIGEM
"BLASTOMYCETICA"
(ZYMONEMA HISTOPOROCELLULARIS)

PELO PROF. DR.
WALther HABERFELD
LENTE CATHEROTICO DA FACULDADE
DE MEDICINA E CHURJIA DE S. PAULO

Front cover of Haberfeld paper Granuloma ganglionar maligno de origem blastomycetica (Zyomonema histoporocellularis) published in São Paulo in 1919.
According to Fialho, with the exceptions of Haberfeld and Splendore, scholars of the subject thought *coccidioides imitis* were its agent until, in 1929, Floriano Paulo de Almeida (1898-1977) published a comparative study of coccidioidic granuloma in the United States and Brazil, showing that there were clear differences between the two diseases. He then proposed that the genus *Paracoccidioides* be created (Almeida, 1930), but Olympio da Fonseca Filho (1939), a mycologist at Instituto Oswaldo Cruz, defended a different classification and a new name for the disease, though this was not well accepted by their peers.

According to Fonseca Filho, the authentic forms of fungus isolated by Splendore in his patients’ tissues were associated to contaminating yeasts and the Italian parasitologists had described all of this as a single species and given it the name *Zymonema brasiliense*. According to the rules of botanical nomenclature instituted at the Brussels Congress in 1910, he had created a “confused name (*nomen confusum*), that is, a name initially applied to two or more different species” and that was not useful to designate “a species type of a new genus that was being or was going to be proposed.” These were the reasons that Fonseca Filho questioned the genus that Floriano de Almeida created on the basis of Splendore’s null species. “A revision of all of the literature on the subject allowed us to conclude that the first specific name used validly for the Lutz’s disease mycete was *Zymonema histosporocellularis*, proposed by Haberfeld in 1919. Hence, in 1939, we based the new genus *Lutziomyces* on it.”

Fonseca also rejected the *Adenomyces* genus, created by Ezequiel Caetano Dias, “because it is based on a species, *A. cruzi*, that is, a mixture of several mycetes, as well as contaminant bacteria.” Between 1914 and 1917, the period in which he headed up Instituto Oswaldo Cruz in Belo Horizonte (now named Instituto Ezequiel Dias), Oswaldo Cruz’s son-in-law published a series of papers on an affection similar to tuberculosis, syphilis and leukemia that was mistakenly diagnosed as Hodgkin’s disease, adenoma or lymphosarcoma. The most noticeable sign of the disease was cervical, submaxillary and supraclavical ganglia that were sometimes enormously engorged. Ezequiel Dias found a supposed fungus in them, named *Adenomyces cruzi*. Its accentuated
polymorphism, explained Fonseca Filho (1974, p.77-8), actually was caused by Dias’s mistakes when he described as a single microorganism the legitimate colonies of the fungus responsible for Lutz’s disease contaminated by other fungus of the *Isaria* genus.

**Adolfo Lutz at Instituto Oswaldo Cruz**

In 1908 Adolfo Lutz moved to the institute directed by Oswaldo Cruz, in Rio de Janeiro. Founded in 1899 to provide the capital with serum and vaccine against the bubonic plague, like Instituto Butantã in São Paulo (Benchimol & Teixeira, 1993), the institute was at a critical moment of a change that made it, for several decades, the center of gravity of Brazilian experimental medicine and public health.

Lutz and Cruz had crossed paths fifteen years earlier, during the cholera epidemic in the Paraíba Valley (Benchimol, 1999). Oswaldo Cruz had just taken over his deceased father’s clinic; he and Francisco Fajardo, Eduardo Chapot-Prévost, Miguel Couto and other young pioneers of bacteriology in Rio de Janeiro regarded Lutz, the “savant from Rio,” whose training was solid and germanic, as a model to be followed. But Oswaldo Cruz’s scientific writings as a bacteriologist and entomologist have stayed in the shadow of his extraordinary achievements as a sanitarian and science administrator. Thanks to his abilities as a public figure, leader of his staff and strategist of institutional policy, the modest Sorotherapeutic laboratory in Manguinhos became the dynamic Institute of Experimental Pathology, renamed Instituto Oswaldo Cruz in March 1908. The change took place during Afonso Penna government (1906-1909), which followed that of Rodrigues Alves (1903-1906) and confirmed Oswaldo Cruz in the post of Director-General of Public Health.

The increased importance attributed to the institute at Manguinhos was in part due to the euphoria of public opinion because of the successful campaigns against yellow fever and bubonic plague in Rio de Janeiro. The city’s new avenues and palaces gave the impression that the capital of Brazil had finally become civilized. The “rabble” that had led the revolt against mandatory antiviral vaccination – the Vaccine Revolt (Benchimol, 2003; Sevcenko, 1984; Chalhoub, 1996) – had been expelled from the part of the city that Mayor Pereira Passos had renovated. A good number of adversaries of the new urban order had surrendered to the rhetoric of Brazil’s “regeneration,” backed by monuments like the imposing Moorish castle built on the Manguinhos property. But the
decisive factor that led Congress to give in to Oswaldo Cruz’s project was the gold medal he won at the 14th International Congress of Hygiene and Demography and the concurrent Hygiene Exhibition, held in Berlin in September 1907. Four years later, Instituto Oswaldo Cruz shone at the International Hygiene Exhibition, held in Dresden in June 1911. At the first exhibition, the pièce de résistance was the documentation of the successful campaign in Rio de Janeiro against Stegomyia fasciata, currently known as Aedes aegypti, the transmitter of yellow fever. In Dresden, the work on the disease produced by Trypanosoma cruzi, which became internationally known as Chagas disease, was presented. The discovery of the transmitter consolidated protozoology as one of the most important fields of research at Instituto Oswaldo Cruz, not only because of Chagas’s talent, but also because of the intrinsic qualities of the whole group, which had published a substantial number of papers related to prevention of malaria, the evolution of parasites in hosts, the systematics and biology of insects that transmit human and animal diseases.

The extraordinary zoological knowledge that Adolpho Lutz took to Manguinhos was decisive in building its biological collections and in the training of young doctors, all of them in their twenties, who Oswaldo Cruz had recruited to his “scientific kindergarten” (Aragão, 1950, p.14). These young doctors right out of medical school learned many of the tools necessary to investigate complex cycles of parasites and their hosts from Adolpho Lutz. His arrival coincided with the height of German influence on Manguinhos. In the interval between Berlin and Dresden, it welcomed Max Hartmann from the Institute of Infectious Disease in Berlin, and two professors from the School of Tropical Medicine in Hamburg: Stanislas von Prowazek, author of important works on chlamydozoans, and G. Giemsa, inventor of the staining method most used to observe hematozoans. Later on, Hermann Duerck, who taught pathology at the University of Jena, came to Manguinhos. The Memórias do Instituto Oswaldo Cruz, first published in 1909, publicised the work of its scientists, almost always in Portuguese or German, and Adolpho Lutz had the arduous and humble task of translating Portuguese into German, the hegemonic language until World War I. His good relations with European and North American universities, museums and research institutes must have contributed to the consolidation of Instituto Oswaldo Cruz’s international reputation.

Lutz was the keystone and catalyst of innovation of the Bacteriological Institute of São Paulo. When he left, it went increasingly into a crisis that was lucidly described by Martin Ficker, the Berliner professor the São Paulo
government hired to rebuild the institution. Besides the dubious quality of its facilities and equipment, Ficker said, its work had taken the wrong direction because it was restricted to routines aimed at public health to the detriment of training on a more solid scientific foundation.83

Lutz was a scientist who liked solitary laboratory and field work. The decision to migrate to Instituto Oswaldo Cruz seems to be related to the possibility of withdrawing into the environment where he felt completely comfortable, returning to the research in zoology and botany that had taken second place during the time he was immersed in the conflict-filled terrain of bacteriology and on the front line of public health. During the final third of his professional life, in Manguinhos, he was prolific on themes of medical interest, like schizotrypaniasis, or purely biological interest, like anuranous amphibians, and remained distant from the internal and external conflicts that marked the institution’s arrival at maturity.

Authors describing the history of Brazilian dermatology consider Instituto Oswaldo Cruz to be as important as the chairs created in Brazilian medical schools as catalysts of transformation of a clinical specialty into a specialized branch of scientific research. The relations between doctors that taught, cared for clinical assistance or carried out research into skin diseases gained density and national scope after the Brazilian Society of Dermatology was founded in 1912, at the initiative of leaders from Manguinhos and the Faculty of Medicine of Rio de Janeiro.

We have already observed different IOC researchers in action, studying Lutz’s disease. They studied other pathologies that, in principle, were within the field of dermatology but they were not “specialists” in the sense we understand the word today.

At the time Adolpho Lutz migrated to Instituto Oswaldo Cruz, none of its technical staff were specialists nor was there any separation between the routines of research, teaching and manufacture of biological products. At the end of 1906, for example, Figueiredo de Vasconcelos, the more senior of the two department heads supervised the production of malleina, serum and vaccine against the plague, studied glanders and the transmission of chicken spirilloasis to bedbugs. Vasconcelos had attended the classes of Pinoy and Sabouraud in Paris (Lacaz, 1983, p.265) and discovered, some time afterward, a new species of tricophyte, the Trichophyton griseum (Fonseca Filho, 1974, p.76).

Henrique Aragão, for his part, diagnosed the plague, prepared antistreptococcal serum, studied equine piroplasmosis and the systematics of a
family of ticks, the ixodids. As we showed in Book 2 of this collection, in the 1910s he and Adolpho Lutz participated decisively in debates over the transmission and prevention of leprosy.

In 1906 the other department head at Manguinhos, Henrique da Rocha Lima, recently arrived from Germany, investigated the pathology of yellow fever and organized a specialized course that taught PhD students and graduate doctors theoretical and practical lessons in bacteriology, parasitology, pathology and histology. Many professionals who took the course later became prominent in clinical practice and teaching of dermatology, during the phase historians of the field call “scientific” (see, for example, Carneiro, 2002, p.41; Padiilha-Gonçalves et al., 1999, p.31). In 1912, at the Institute of Tropical Medicine in Hamburg, Rocha Lima showed that *Histoplasma capsulatum*, the etiological agent of histoplasmosis, was a fungus and not a protozoan.

Gaspar Vianna (1885-1914) took over responsibility for the pathology laboratory in 1909, replacing Rocha Lima when he left the Institute. Besides the studies of blastomycosis, he discovered *Leishmania brasiliensis* (1911) and the therapeutic value of antimony in curing leishmaniasis, as an emetic tartar in intravenous injections. Later, the substance was also used to treat donovanosis and schistosomiasis. Besides classifying as leishmaniases the Bauru ulcer and the “wild ulcers” of the Amazon River, Vianna investigated the evolution of *Trypanosoma cruzi* in human and animal tissues.

Paulo Parreiras Horta (1884-1961), who worked for a time in Manguinhos, published a fundamental study in 1911, on a disease called black piedra, in whose nodules he found formations he called cysts. In 1928, Fonseca Filho and Arêa Leão verified that they were actually ascus, or small organs in the form of a sack inside of which a fungus’s sexual spores were formed; they created the genus *Piedraia*, baptizing *Piedraia hortai* the agent of ascosporic piedra. Parreira Horta also described a new species of *Microsporon flavescens*, and studied a fungus isolated by Oswaldo Cruz in the Amazon from a case of pedal mycetoma, which he described in 1919 as a new species called *Madurella oswaldoi* (Fonseca Filho, 1974, p.76).
Carlos Chagas was Oswaldo Cruz’s successor as director of Manguinhos Institute and during his administration, from 1918 until his death in 1934, the tendency towards specialization increased, though more in some fields than others. The regulations of 1919 and 1926 demarcated “sections” for the first time, covering established and new laboratories, separating their routines more clearly from the production of serums and vaccines.

The old sections of Medical Zoology was responsible for maintaining collections and studies related to protozoology, helminthology, entomology and any vehicles for parasites. This section was, in fact, the laboratories of entomologist Ângelo Moreira da Costa Lima, helminthologists Gomes de Faria and Lauro Travassos and the multivalent Adolpho Lutz, who was then researching tabanids and Nematocera as transmitters of human diseases.

Mycology stands out among the new sections created under Chagas. It aimed to provide a firmer base for the work of the institute “especially in botany ... almost entirely neglected.” Olympio da Fonseca Filho, who made this comment (1974, p.78), directed the section from 1922 to 1937 and was, in Lacaz’s opinion (1983, p.265), the soul of “Manguinhos school of mycology”, which trained, among others, Floriano Paulo de Almeida.84

Fonseca Filho was already involved with botany when he taught Natural Medical History at Rio de Janeiro Faculty of Medicine and tended to its herbarium. In 1916 he had taken a general mycology course in the Botanical Garden, taught by Eugênio Rangel, an agronomist who was a disciple of André Maublac, a renowned French mycologist. When Carlos Chagas decided to invest in mycology in Manguinhos, he obtained a scholarship for Fonseca Filho to study in the United States. Chagas had just been appointed director of the National Public Health Department and, that same year of 1920, he applied for help to Lewis Wendell Hackett, representative of the Rockefeller Foundation. Brazil was one of the main theaters of Rockefeller Foundation’s campaign to erradicate yellow fever in different countries of the Americas and Africa (Benchimol, 2001).

Important discoveries in medical mycology had been made in the United States but in the two decades since his visit, observed Fonseca Filho (1974, p.80),

American literature on mycosis, besides an increased number of case histories, focused almost solely on clinical and anatomo-pathological aspects of the same morbid entities. During those twenty years, there seems to have been little interest on the part of American researchers in researching the etiological agents of mycosis in man ... In contrast,
there was a lot of research activity in mycology ... among botanists at the universities and in phytopathology services of the US Department of Agriculture and its equivalents at state level; they were concerned about the biology of fungus and the plant diseases they produced.

In the eight months he spent at John Hopkins University in Baltimore, Fonseca Filho often visited the cryptogamic botany laboratory of Duncan S. Johnson; the Pathology Department, where William MacCallum worked; and the clinics of T. C. Gilchrist, who was head of the Dermatology Department at John Hopkins and the University of Maryland. Fonseca Filho interned for three months in Washington, in the laboratories of the Bureau of Plant Industry and the Bureau of Chemistry, with Erwin F. Smith, who researched plant diseases, and Charles Thom, a specialist in *Penicillium* and *Aspergillus*. On the same Rockefeller scholarship, he worked at St. Louis Hospital in Paris and its Lailler School for children with scalp ringworm, and the Municipal Laboratory of the City of Paris, under the direction of Raymond Sabouraud, “the founder, one might say, of modern medical mycology.” In the parasitology laboratory of the Faculty of Medicine, Fonseca Filho spent ten months studying mycology applied to human and veterinary medicine, with Emile Brupt and Maurice Langeron (the former was then studying tick fever or bovine piroplasmosis). Then he spent three months in Lyon, with Alexandre Guillermond, “whose studies of vegetal cytology and the sexuality and systematics of yeasts were then being applauded.” In the second half of 1922, before returning to Brazil, he visited the most important European centers for mycology, including the laboratory of Christine Marie Berkhout, creator of the *Candida* genus, in Holland (Lacaz, 1983, p.265).

“We carried more than eight hundred cultures of fungus in two heavy cases. They constituted, at the time, one of the largest collections of live cultures of these lower vegetals,” wrote Fonseca Filho (1974, p.81).

Armed with know-how and valuable inputs, he began to organize the Mycology Laboratory at Instituto Oswaldo Cruz, with Antonio Eugênio de Arêa Leão (1895-1971) as his principal collaborator; the latter was responsible for Wassermann reactions done by the dozens every week, at the request of Santa Casa da Misericórdia Hospital in Rio de Janeiro. Arêa Leão had been an intern and then a volunteer assistant at the dermatological clinic of Rio de Janeiro Faculty of Medicine, whose chaired professor, Fernando Terra, gave IOC access to the patients in that clinic. In one of his reports (1929), Carlos Chagas called the mycology section “one of its kind in the country”, and its collection of
fungus cultures, with more than a thousand species, “one of the richest and most precious in the world.” Starting in 1930, the section began to free itself from the burdensome routine of microscopic exams, cultures and innoculations by which it provided care to 6,841 clinical cases that year alone, in the Institute or in the laboratory linked to the chair in Dermatology and Syphillography at the Faculty of Medicine, occupied by Eduardo Rabello since 1925 (Benchimol, 1990, p.62).

In 1906 he and Fernando Terra competed for a substitute teaching position in the clinic. They tied for first place. Terra was chosen because he had been an assistant to the chair in the field since 1891. In 1910, when Chaves Faria, the chaired professor, died, he took the post and invited Rabello to replace him at the Dermatology Clinic. They gave it a new direction, reinforcing lab practices, clinical experimentation and interaction with Instituto Oswaldo Cruz, where both had been interns (Carneiro, 2002, p.51-5).

Important contributions came from the Clinic of the Faculty of Medicine, showing its dynamic role at the center of dermatological research (Carneiro, 2002, p.53). In 1910, Rabello published a monograph on “Dermatomycoses” and, two years later, began the research that led to the first revelation, in Brazil, of Charles Donovan’s corpuscles, the agents of donovanosis, then called ulcerous or venereal granuloma. Everything known about the subject had been catalogued by Souza Aranha in his doctoral thesis (1917).

Fernando Terra was one of the first dermatologists to describe the treatment of rhinoscleroma by radiation therapy. He published a textbook on Dermato-Syphilography for students (Carneiro, 2002, p.55) and studied blastomycosis with particular interest. In 1923, he produced an important article with Fonseca Filho, Arêa Leão and Magarino Torres about chromoblastomycosis, a term they created to designate “a morbid entity until then ... covered by cutaneous manifestations of other diseases under the name ‘verrucous dermatitis’.”

What role did Adolpho Lutz have in the new conjuncture of Brazilian dermatology? On the one hand, as a scientist oriented to medical zoology, he enriched this clinical specialty with enigmas and approaches that were on the agenda of tropical medicine. On the other, as an ‘authority’ recognized in Brazil and abroad, he lent his name to the initiatives of a younger generation and placed his vast knowledge and mania for precision at the service of those who acted more directly to produce original knowledge about skin diseases.

Lutz was present at the inaugural session of the Brazilian Society of Dermatology, on Sunday, 4 February 1912, in the Miguel Couto Pavillion of
Advertisement of Mycol vaccines published on the front cover of Revista Medico-Cirurgica do Brasil, (n.9, September 1932), periodical published in Rio de Janeiro by Fonseca Filho, the head of Instituto Oswaldo Cruz mycology laboratory, and by the son to Carlos Pinto Seidl (1867-1929), former contributor to Oswaldo Cruz’s work and Public Health general director for many years.
Santa Casa de Misericórdia. There the other 17 physicians were all from Rio de Janeiro, three from Instituto Oswaldo Cruz: Gaspar Vianna, Parreiras Horta and Werneck Machado. The organizing committee was made up of Werneck Machado, Fernando Terra and Eduardo Rabello. The remaining founding members were: Moncorvo Filho, Alfredo Porto, Eduardo Magalhães, Víctor de Teive, Caetano de Menezes, Leal Júnior, Oscar da Silva Araújo, Juliano Moreira, Zopyro Goulart, Miguel Salles, Eduardo Jorge e Franco de Carvalho. A draft of the statutes was drawn up by Terra.

Juliano Moreira, Fernando Terra, Adolpho Lutz, Werneck Machado and Eduardo Rabello presented the final version of the statutes and they were published in the journal of public record, Diário Oficial da União, the same day (Carneiro, 2002, p. 55-6). In 1913, Adolpho Lutz was elected honorary president of the Society.

At the end of its first year of activity, it had 81 full members. “There were almost no specialists at the time,” wrote Portugal and Azulay (n.d., p. 7). “Most members were clinicians, pediatricians, researchers and microbiologists.” They met on the last Wednesday of each month in the amphitheaters of Santa Casa until 1922, when they moved to the auditorium of the Brazilian College of Surgeons in Botafogo. Clinical demonstrations were done in the two infirmaries,
one for men and one for women, of the Skin Disease and Syphilis Service (Carneiro, 2002, p.58).

The period in which Adolpho Lutz participated most intensely was the 1910s, especially between the Society’s foundation and 1915, when he bet all of his prestige in the defense of the transmission of leprosy by mosquitoes, as one of the Society’s delegates to the Leprosy Prevention Commission. As we have shown in Book 2, the Commission was constituted by the federal government to establish policy guidelines on leprosy carriers.

Lutz’s constant presence and the increasing participation of other scientists from Manguinhos in the Brazilian Society of Dermatology during that decade has an interesting dimension: the renewed traffic of information between tropical medicine and skin disease clinics. The minutes of the Society’s meetings, reproduced in part at the end of this book, clearly reflect the change in perspective on health problems in Brazil, shifting the emphasis from infectious diseases that spread epidemically in urban centers along the coast to scarcely known endemic diseases found in the interior, that frequently manifested themselves in serious cutaneous lesions.
This change became more accentuated after Oswaldo Cruz left the post of Director-General of Public Health in 1909. These were troubled times, of the death of Afonso Pena, the interim presidency of vice-president Nilo Peçanha and the presidential campaign polarized between the “civilianist” Rui Barbosa and Marshal Hermes da Fonseca. Though he was beloved all over the country, Cruz had been unable to meet the goals of his second term as head of the Department of Public Health. The campaign against tuberculosis had faded away for lack of funds and political support; implementing regulation of the mandatory vaccination law continued to be postponed in spite of a serious epidemic of smallpox in 1908. Backed up by the federalist constitution, the state-level oligarchies blocked the central government’s health work in their territories in spite of widespread yellow fever in many cities of the North and Northeast.

The Hermes da Fonseca government was punctuated by social crises, such as the Navy Revolt, led by sailor João Cândido in Rio de Janeiro, and the War of Contestado, a peasant movement that followed a messianic leader, João Maria, on the border between the states of Paraná and Santa Catarina; the economic crises precipitated by the collapse of rubber and the negotiation of a moratorium of payment of the foreign debt; and a political crisis unleashed by the unseating of several political bosses and handing over of their political machines to oligarchical groups aligned with Pinheiro Machado, a political leader from Rio Grande do Sul, very influential at the time.

Though Oswaldo Cruz’s health reform sank, health action intensified outside of the capital under his coordination, as director of Manguinhos, by means of personal contacts with the federal and state governments and large companies involved in large-scale projects in the interior of Brazil.

In January 1912, Congress belatedly approved the Defense Plan for Rubber and created an agency, the Superintendency of Defense of Rubber, subordinated to the Ministry of Agriculture, Industry and Trade. Besides counseling the modernization of extraction, processing and sale, the Plan intended to make the work process more “rational” by improving organization and medical assistance, which should keep “within normal limits the absurdly high mortality coefficient” (Albuquerque et al., 1991). On 17 August 1912, the Superintendency signed a contract with Oswaldo Cruz to study health conditions in the great Amazon tributary valleys.

At the same time that Carlos Chagas, Pacheco Leão and João Pedro de Albuquerque made that study (October 1912 to March 1913), other Instituto
Oswaldo Cruz expeditions traveled around central and northeastern Brazil. Between September 1911 and February 1912, Astrogildo Machado and Antônio Martins visited the São Francisco and Tocantins valleys with the Central do Brasil Railway Company survey team that was tracing the route of the line that would have linked Pirapora to Belém.

Three teams were active in the Drought Prevention Works Inspectorate, which was created in 1909 as part of the Ministry of Transports and Public Works. One of the Instituto Oswaldo Cruz expeditions, in which João Pedro de Albuquerque and Gomes de Faria participated, crossed the states of Ceará and Piauí from March to July 1912. Belisário Pena and Artur Neiva traveled about 7,000 kilometers through Bahia, Pernambuco, Piauí and Goiás, from March to October 1912.

Adolpho Lutz and Astrogildo Machado (1915) kept a detailed medical and zoological inventory of the São Francisco Valley, which they journeyed down from Pirapora to Juazeiro, from April to June 1912, visiting some tributaries and most riverside settlements.87

The reports that these doctors wrote on the public health, bioecology, sociology and ethnography of the regions they visited were a first modern inventory of rural health conditions in Brazil. They had considerable impact on intellectuals in large cities – Jeca Tatu, the fictional character created by the author of children’s books, Monteiro Lobato, is an example of this – by providing information in debates about the national question, which began to be seen in terms of the dualistic terms that have persisted in Brazilian social thought (Lima, 1999). The triumphalist touting of Brazilian civilization, instigated by the remodeling of its capital, was hard hit by revelations about the “other”, poor and sick, part of the country.

The debacle of Amazonian rubber was irreversible and the Old Republic of political bosses did not want to confront the age-old tragedy of drought in the Northeast. In that sense, the medical-sanitarian commissions were not productive. But the laboratories of Instituto Oswaldo Cruz and other medical institutions in the country and abroad provided very valuable observations and materials about Brazilian fauna, flora and pathologies. These inputs fed into many applied health studies and encouraged greater autonomy for specialties in zoology, botany and clinical medicine.
Advertisement of Talcoform inside Boletim da Academia Nacional de Medicina, year 109, n.6, April 1938.
Epilogue

According to Salomon-Bayet (1986), the Pasteurian revolution ran its course during these years. During the First World War, the devastation of infectious disease was reduced and armies were only exposed to the slaughter of arms, but was finally disarmed by the Spanish flu pandemic, costing at least 21 million lives in 1918-1919 (Crosby, 1989; Brito, 1997). The tragic death count showed up medicine’s difficulties in dealing with viruses, still invisible to microbiologists, and in Brazil showed up the precarious situation of health services, increasing the dissatisfaction with the oligarchies that had so badly neglected collective health. The most immediate result of the crisis was the creation of the National Department of Public Health (1920-1922), whose scope of action went beyond a few coastal cities for the first time. More lasting action was taken to cure and prevent endemic diseases in rural and suburban zones (Hochman, 1998; Castro Santos, 1987). The Lieutenants’ Insurrections, movements for reform of other spheres of public life and internal schisms of the oligarchies that led to the Revolution of 1930 and the foundation of a Ministry of Education and Public Health finally made health the object of national policy, with the help of Rockefeller Foundation, a powerful enclave with a mandate and prerogatives that rivalled the State in this field.

But that is another story and goes beyond the scope of this text, a story that Adolpho Lutz experienced with increasing alienation because of fatigue and increasing age. He no longer had the energy to embrace great medical causes and increasing blindness kept him from observing mosquitoes, minuscule worms and fungus that demand hours of patient observation at the microscope. In his last years, spent in the laboratory, Lutz dedicated himself to amphibians, large animals that he could probe with the help of his faithful assistant Joaquim Venâncio. “I witnessed that,” scientist Hugo de Souza Lopes said. “He held an amphibian, already fixed, held its feet and checked whether it had blisters in its nails, or a parotid crest or glands and asked, ‘What color is this animal, Joaquim?’ And he defined the animals like that, by palpation.”88 Another recent arrival to Manguinhos, entomologist Sebastião José de Oliveira, remembers a scene that he saw every morning when he went up the imposing staircase of the Moorish castle: sitting on the top step, already blind, Adolpho Lutz listened to his daughter Bertha read him the words of that fading group of peers, from which he finally departed on 6 October 1940, when he died as a result of pneumonia. The obituaries exalted the monumental work he left to coming generations, part of which the reader will find in the pages that follow.
Notes

1 See, in Book 1 of this collection, correspondence sent from Rio de Janeiro in April, 1882 to Correspondenz-Blatt für Schweizer Ärzte (v.XII, n.7, p.210-4).

2 The articles by Adolpho Lutz on veterinary medicine will be published in Volume IV, Book 3, of this edition of his Obra Completa.

3 The articles by Adolpho Lutz on helminths will be included in Volume 5, Book 1 of this edition of his Obra Completa.

4 Translated to English by C. H. Fagge and published under the title On diseases of the skin, including the exanthemata. London, 1866-1860. New Sydenham Society (Series); v.30, 5v. illus (v.3-5 by F. Hebra and M. Kaposi).


6 This physician organized in Munich the first medical-chemical laboratory associated with a hospital, Besides Handbuch der hautkrankheiten, 1881-1884, which was volume 14 in (2 parts) of Handbuch der speziellen pathologie und therapie (Leipzig, 1874-84), there was the Handbuch der Krankheiten des Nervensystems (Leipzig: F. C. W. Vogel, 1878), in two volumes. The first was on diseases of the peripheral nervous system, and the second was about the diseases of the vasomotor system, epilepsy, eclampsia, tetanus, Parkinson’s disease, hysteria and disorders of movement. In 1882, Hugo von Ziemssen, who was also well known as an electrotherapist, showed, for the first time in a living person, whose heart was visible following a surgical intervention in the thorax, that electrical impulses controlled ventricular activity.

7 “His treatise on syphilis is monumental” (Pusey, 1933, 111). He published an important study on senile skin in 1869 entitled Über die senilen Veränderungen der Haut des Menschen (Holubar, 1898).

8 This reference can be found in Opp (1932). Hollander (1987) quotes what is probably an abstract, Archiv für Mikroskopische Anatomie (1876, v.12, p.665) published under the title “Beiträge zur Histologie und Entwicklungsgeschichte der menschlichen Oberhaut und ihrer Anhangsgebilde” (Contributions to the histology and embryology of human epidermis and its appendices). Unna’s original approach was severely criticized by Friedrich Daniel von Recklinghausen (1833-1910), who did not believe that scientifically valid conclusions could be obtained by using stains. The thesis had to be re-written before it was accepted, in 1875 (Oppl., 1932; Enersen, 1994-2001).

9 Besides Unna’s text and an article by Auspitz on pathology and the therapeutics of the skin, mentioned above, the Handbuch der hautkrankheiten, published in English as Handbook of diseases of the skin (New York, W. Wood and Company, 1885), contained the following articles: Physiology, by H. Von Ziemssen; Hyperaemiae, anaemiae, and hemorrhages of the skin, by E. Schwimmer; Dermatitis superficialia, by T. Veiel; Acute deep-spreading inflammations, by E. Geber; Chronic deep-spreading inflammations, by E. Schwimmer; Anomalies of the epidermis; pt I by E. Lesser; pt. II by A. Weyl; Chronic infectious diseases of the skin, by A. Neisser; Neuroses of the skin, by E. Schwimmer; Anomalies in the growth and color of the hair, by P. Michelson; Anomalies in the color of the skin, by E. Lesser; Anomalies of the sebaceous glands, by E. Veiel; Acne rosacea and sycosis, by T. Veiel; Morbid changes of the nail and its bed, by E. Geber; Anomalies of the sudoriparous glands, by E. Geber; Parasitic diseases of the skin, by A. Weyl and E. Geber; New formations of the skin, by E. Schwimmer and V. Babes, and Neuroma, adenoma, epithelioma molluscum, and carcinoma of the skin, by E. Geber.

10 Enersen’s entry states that the clinic was founded in 1881.

11 This periodical was originally published monthly, and became weekly in 1912, when its name was changed to Dermatologische-Wochenschrift. It was published again as Dermatologische Monatschrift, upon becoming the organ of the Society of Dermatology of the German Democratic Republic.

12 Only Hollander indicates the lapse of time between the new clinic and the activities of specialization. This author is the last living disciple of Unna when he presented his paper at the 17th International Congress of Dermatology, in 1897. Unna’s letters to Lutz in the 1880s carry the letterhead of “Heilanstalt für Hautkranke von Dr. P. G. Unna. Eimsbüttel, Parkallee 13, bei Hamburg.” The lapse of time might have been longer because, in a letter dated 10 August 1902, Unna comments that “You are probably aware of the intensification of my teaching activities, that were developing, little by little, from the founding of my dermatologicum and the two courses... for doctors.” On 1 September, 1904, he writes: “After the Dermatological Congress, that will begin 8 days from now in Berlin, my new dermatologicum will be set up. I myself built it and the first course there will be given in October.” (BR. MN. Fundo Adolpho Lutz.)

13 Hansen worked at the hospital in Lungegaard as an assistant to Danielssen, whose daughter he later married (Obregon, 2002, p.129).
At the time, Danielssen asked whether leprosy might not be a manifestation of tuberculosis. Besides the similarity of their respective bacilli, he often found both diseases in a single individual. He often observed that a pulmonary, abdominal or meningal tuberculosis would arise when the nodes began to be reabsorbed. Danielssen believed that, in acute nodular eruptions of leprosy, the pathogenic agent was a poison produced by the bacilli, since there was as yet no proof of the their presence in the “fresh” eruptions or in the bloodstream (Baumgarten, 1887, p.257). When writing this comment, Baumgarten quotes the article of the Norwegian dermatologist: “Beretning om Lungegaardshoipaalets Virksomhed I Treareet 1883 bis 1885” (Sep.-A. A. N. Mag. f. Laegev. 1886, p.9).


The stalk and roots of this plant have medicinal properties and the staining material containing hematoxilina is extracted from them.

Born in Dresden, Baumgarten had taken over that professorship in 1874, also becoming a professor of the same discipline in Tübingen in 1889. According to Bulloch (1938, p.351) he was one of the pioneers of bacteriology and did much for the progress of this science through his books and articles, especially through the book mentioned above, which Bulloch considers a very useful, precise and critical guide for bacteriologists. Also important among Baumgarten’s writings was Lehrbuch der pathologischen Mykologie: Vorlesungen für Ärzte und Studierende. Braunsewigh: Harald Bruhn, 1890. 2 volumes (the first was published in fascicles, and began circulating in 1886).

Baumgarten (1886, p.90-2; 1887, p.247-51); Unna’s articles quoted by Baumgarten are “Die Bacillenklumpen in der Haut sind keine Zellen,” Virchow’s Archiv, Bd. CIII, 1886, p.553; and “Die Lepra-Bacillen in ihrem Verhältniss zum Hautgewebe,” Dermatolog. Studien, Heft 1., Hamburg, Voss, 1886.

Baumgarten (1887, p.287). Hansen’s article reviewed in this source is “Die Lage der Leprabacillen,” Virchow’s Archiv, Bd. CIII, 1886, p.388.

Baumgarten (1887, p.290). Neisser’s article quoted by this commentator is “Histologische und bacteriologische Lepra – Untersuchungen,” Virchow’s Archiv, Bd. CIII, 1886, p.355.


Referred to in by Brouardel, Gilbert and Girode in their widely respected treatise on medicine and therapeutics (1896, p.314), Lutz’s article was reproduced almost in its entirety by Adrien Doyon (1886-1887) in the Annales de Dermatologie et de Syphiligraphie. It was also reviewed in Vierteljahresschrift Derm. Syph. (v.18, p.331-4, 1886), Friedländer’s Fortschritte der Medizien (Kokkothrix leprae, 1886) and in Baumgarten (1886, p.250-1).

In a paper presented at the 5th Congress of Internal Medicine, in Wiesbaden (“Zur Histologie und Therapie der Lepra”), 1886. Unna said that he had arrived at conclusions similar to those of Lutz on the morphology of leprosy microbes. He had studied what chemical factors of “Lutz-Unna method” were involved in the dissolution of the leprosy bacilli into rows of cocci and came to the conclusion that the predominant factor was iodine (Baumgarten, 1887, p.251-2). Campana (Baumgarten, 1887, 251-52) found Coccothrix leprae only in older nodes, whereas the rows of small colored spheres were found in the cells. This led him to believe that the Coccothrix formations were residues of old bacilli.


14 Baumgarten (1887, p.244, 251-252) states that, in Wiesbaden, Unna described the cure for a second case of tuberous leprosy using mainly salicylic acid plasters, creosole and chrysarobin, under which “the nodules visibly disappeared, partially through reabsorption, partially through exfoliation”. Unna’s article quoted in this work is Zur Histologie und Therapie der Lepra (Verhandihn. des V Congresses f. Innere Medicin zu Wiesbaden, p.277. Wiesvabden, Bergmann, 1886.)

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18 Born in Dresden, Baumgarten had taken over that professorship in 1874, also becoming a professor of the same discipline in Tübingen in 1889. According to Bulloch (1938, p.351) he was one of the pioneers of bacteriology and did much for the progress of this science through his books and articles, especially through the book mentioned above, which Bulloch considers a very useful, precise and critical guide for bacteriologists. Also important among Baumgarten’s writings was Lehrbuch der pathologischen Mykologie: Vorlesungen für Ärzte und Studierende. Braunsewigh: Harald Bruhn, 1890. 2 volumes (the first was published in fascicles, and began circulating in 1886).
28 Lutz had not yet mentioned the hematozoan discovered in 1880 in Algeria by the French military physician Charles Louis Alphonse Laveran. Osoriliae malariae (later called Plasmodium) was a protozoan and, even though the dysentery and surra had already been associated with this unicellular animal, there had not yet been any conclusive proof that it caused any significant human disease. The demonstration of an etiology of this nature was made difficult by the complexity of the life cycles of the animals in this sub-domain, by the absence of any precise system of classification and by the difficulty in obtaining artificial means for growing them in cultures. This contributed to the fact that Laveran’s discovery remained in the shadows of the bacillus of Klebs and Tommasi Crudelli for several years. Laveran published his discovery in 1880 in the Annales de dermatologie (1, p.173) and in the Bulletin de l’Académie de Medecine de Paris (v.44, 2ème série, n.9, p.1346). In this regard, see Busvine (1993, p.18-20).


30 Stanier and Lwoff (Bulloch, p.1192). Haecelk (1834-1919), an enthusiastic disciple of Darwin, formulated the “biogenetic law,” according to which ontogenesis (development of the individual from fecundation to maturity) is a recapitulation of phylogenesis (succession of previous evolutionary phases). His main works are Naturliche Schöpfungsgechichte (Natural history of creation, 1868) and Prinzipien der generellen Morphologie der Organismen (Principle of the general morphology of organisms, 1906). Die Weltträtsel (The mysteries of the universe, 1889) was, for a long period, a manual for materialists.

31 Cohn had already called attention to the co-existence in the writings of Pasteur, almost as synonyms, of microscopic cryptogamous plants, animalcules, mushrooms, Infusoria, toruláceas, bacteria, vibronies, monads, mucédeas, yeast, etc. (Bulloch, 1938, p.187). Stanier and Lwoff (ibid., 1938, p.1191) confirm that: “For Pasteur, the concept of microorganism as an object of biology remained quite vague. It was the activity that counted, and not the taxonomic position.”


35 Die niederer Pilze in ihren Beziehungen zu den Infektionskrankheitenund der Gesundheitspflege, Munich, Oldenbourg, 1877. Nägeli had already given up the idea that fungi were generated spontaneously, but denied the existence of genera and species among microorganisms that acquired diversified forms and functions as they adapted to external conditions. Opposing both Cohn’s classification and Pasteur’s specific fermentations, he argued that a single bacteria transplanted to different environments, could “successively, from one generation to another, produce in one place the acidity of milk or putric fermentation, or changes in wine, or the putrefaction of albuminoidal material, or the destruction of urea... and somewhere else generate dipherthia or typhus, or relapsing fever or cholera” (Wasserzug, 1888, p.76-7, 157).

36 Bulloch (1938, 186-17) indicates the following as representatives of the era of fungi, Klob (1867) and Thomé (1867), who found them in cholera, and Letzerich (1869, 1873) and Talomon (1881), who attributed dipherthia to them. From 1867 to 1877, micrococci were described in cases of diphtheria (Buhl, 1867; Tommasi and Hueter, 1868; Oertel, 1868; Nassloff, 1870; Eberth, 1872); endocarditis (Winge, 1870; Waldeyer, 1872; Eberth, 1872, 1875, 1879); and in septic and putrid infections (Leyden and Jaffe, 1867; Hueter, 1868; von Recklingshausen, 1871; Cohn, 1872; Klebs, 1873; Weigert, 1876). Bulloch makes no reference to polymorphus fungi and algae associated with yellow fever in the 1880s (see Benchimol, 1999) but, to show how naive the followers of these theories were, he goes on at length to describe Gemisma (miasma of the earth), fungus captured in malaric swamps by H. J. Salisbury (1862-1866).

37 Lister described changes in the forms of bacteria due to the effect of nutritional variations. For Huxley, they were the simplest stage in the development of fungi. For the Viennese surgeon Theodor Billroth, the forms found in putrid infusions, surgical infections and cadavers were no more than stages of the Coccobacteria septica. Names invented by him survived the refutation of his ideas. He called the smallest forms of this alga cocci (from the Greek kókkos, meaning seed), classifying them according to their size or arrangement: micrcocci, diplococci, streptococci, etc. After Cohn’s classification, the English zoologist Ray Edwin Lankaster studied a colored microbe, Bacterium tubescens, that presented the four fixed forms in that system as stages in its development (1873-1876). The connection among them could be authenticated by staining material specific to the microbe. Cohn tried to show that the forms corresponded to the different species (Bulloch, 1938, p.196-200).

38 Mazumdar (1994, p.52-5). The reference provided by this author is: “Conspectus familiarum cryogammarum secundum methodum naturalem dispositarum auctore Ferdinando Cohn,” Hedwigia, v.11, p.17-20, 1872.
He defined bacteria as cells without chlorophyll, but with certain determinable forms, which reproduced exclusively by cell division and lived in isolation or in families of cells. According to Cohn, although characterized by the absence of color, bacteria had similarities with cianofíceas, a class of unicellular or filamentous algae having a simple structure and blue-green pigments. Reproduction took place by binary division in both "blue algae" and bacteria. Bacterial cells always looked uniform, without internal differentiation, which was also a noticeable characteristic of blue algae, where no chloroplasts could be discerned, although these latter had already been recognized as the seat of photosynthetic pigments in vascular plants and in all other algae. Cohn therefore proposed to join together in a single classification, which he called Schizophytae, belonging to the plant kingdom, the two groups of microbes comprising the simplest forms of living beings.


Tribus I: Sphaerobacteria – Genus I: Micrococcus. Tribus II: Microbacteria – Genus 2: Bacterium. Tribus III: Desmobacteria – Genus 3: Bacillus; Genus 4: Vibrio. Tribus IV: Spirobacteria. Genus 5: Spathylococcis; Genus 6: Spirochaete. Among the round bacteria (Sphaerobacteria) he distinguished cromógenas (they color the environment where they are found), zimogenic (produce chemical fermentation) and pathogenic species.

According to the manuals of bacteriology at the end of the 19th century, bacilli were bacteria in the form of straight or curved rods of sizes varying from 30u to 0.4u in length (1u = one one-thousandth of one millimeter). Cocci were spherical or rounded bodies with diameters that varied from approximately 0.3u to that of a yeast cell (ca. 3u). They divide in one or more directions and not always on the same plane, and produce characteristic arrangements. The spherical cocci were called diplococci, joined two by two; tetrad are groupings of four; sarcina, of eight. When in the form of a string of beads or a long series, they were called streptococci. Staphylococci appeared in bunches, like grapes. Zoogliea are amorphous clumps of bacteria. The bacilli could also be aligned at their extremities (artrobacterias) If the cylinders of filaments were straight, they were called Leptotrix; the sinuous type were Streptotrix. The genus Crenothrix designated the filamentous and rounded forms surrounded by a gelatinous sheath; and Clodacthyx designated the joining of segments, not in a straight line but laterally, forming false branches. When the filaments were grouped into the form of a cauliflower, they belonged to the Beggiatoa. Finally, microbes joined into long flexible threads were called spirocytes (Galvão, 1901, p.173; Bullolch, 1938, p.193-5).

Neumann was a teacher at the University of Heidelberg and associated to the Seemannskrankenhause (Sailors' Hospital) and to Institut für Schiffs und Tropenkrankheiten (Institute for Naval and Tropical Diseases), in Hamburg. He traveled to Brazil with M. Otto in the summer of 1904 to study yellow fever, and then published Studien über das Gelbe Fieber in Brasilien (Leipzig, 1906).

Lessel Jr. lists quite a number of microbiologists who incorrectly used Coccothrix tüberculosis Lutz or Coccothrix lepae Lutz: Unna (1887, p.11); Toni and Trevisan (1889, p.943-4); Vuillemin (1913, p.527); Buchanan (1925, p.275); Bergey et al. (1934, p.536); Hauduroy et al. (1937, p.291; 1953, p.327, 335); Reed (1939, p.810; 1948, p.877); Krassilnikov (1941, p.107, 109; 1949, p.179-60); and Hanks (1948, p.882). According to the International Code of Nomenclature of Bacteria, the species Mycobacterium lepae Leumann & Neumann are synonymous with Bacillus lepae Hansen 1874, Coccothrix lepae Lutz 1886, Discomyces lepae Neveu-Lemaire 2019, Mycobacterium lepae hominis Lowe 1937, Mycobacterium Leprosy bacillus Hansen 1880, and Sclerotinia lepae Vuillemin 1921. (www.dsmz.de/bactnom/bactname.htm, 2000).

Excerpt of a letter from Altersdorf on 6 June, 1906 (BR. MN. Fundo Adolpho Lutz).

Excerpts of a letter from Unna to Lutz, dated 3 January, 1906 (BR. MN. Fundo Adolpho Lutz).

Monatshefte für Praktische Dermatologie (1887, v.13, p.596-7) published a letter written by Azevedo Lima, the director of the hospital and Guedes de Mello, translated from Portuguese into German by Adolpho Lutz. The letter was entitled "Über das Vorkommen der einzelnen Lepraformen, sowie der Erscheinungen an Augen, Nase un Ohren," and contained clinical observations on leprosy, especially on lesions on the nose, eyes and ears. Another issue of the same periodical (v.6, p.237) published another article by Azevedo Lima, "Mittheilungen über das Lepra-Hospital in Rio de Janeiro." It also may have been translated by Lutz. Both articles were reviewed in Baumgarten (1888, p.231).
50 Carrara (1996, p.83-4). Chaves was trained in Bahia and published his doctoral thesis in 1887 on “Mercury and its compounds,” indicating it as a treatment for syphilis. Summaries of the thesis were published in the Gazeta Médica da Bahia on the usefulness of the Viennese institution. In Rio de Janeiro the project was defended by Dr. Moncorvo de Figueiredo in his book Leçons sur les maladies de la peau, by M. Kaposi. Many detailed notes describing certain points of disagreement between the French and the Viennese schools were added to the 1881 edition.

51 See, in Book 1 of this collection, the letter published in April, 1882 in Correspondenz-Blatt für Schweize Aerzte (v.XII, n.7, p.210-4).

52 There were already similar societies in the United States, Germany, Italy, and England. From 1890 to 1897, the monthly meetings of the French society were held at the museum of St. Louis Hospital. According to Tilles (2002), the inclinations of its founders combined the tradition of the French school (Ricord, Hardy), with their openness to new ideas (Besnier), and the important place given to syphilis in this specialty (Fournier).

53 Doyon had been in Germany and Austria, knew the language very well, and maintained close relationships with Hebra, Neisser, Auspitz and Kaposi. An intern at hospitals in Lyons in 1848, he soon after worked as a physician at the Hospice de l’Antiquaille. Among his teachers were Rollet and Diday, well-known dermatologists and specialists in syphilis. With Diday he published several articles on genital herpes, the treatment of dermatoses and the teaching of the dermatology and venerology. He moved to Uriage in 1858 and participated in the founding of that spa where he served as inspecting physician until his death, there, on 21 September, 1907. Doyon was an official of the Legion of Honor and Associate Member of the Academy of Medicine. In cooperation with E. Besnier, he translated Leçons sur les maladies de la peau, by M. Kaposi. Many detailed notes describing certain points of disagreement between the French and the Viennese schools were added to the 1881 edition.

54 Une to the importance he gave to syphilis, he proposed that the course be divided and that syphigology be moved to the hospital in Midi. The proposal was rejected at a professors’ meeting on 19 May, 1881. Gauchier succeeded Fournier in 1902. Later Jeaneselme occupied the professorship as of 1918 and was succeeded by Gougerot in 1928. Only in 1953 a professorship specialized in clinical dermatology was created at the Paris Medical School.

55 This Polyclinic was intended as an institution to provide “free treatment for poor patients … and for the teaching of medical and surgical specialties, as well as all work of investigation related to … experimental medicine.” It was opened on 28 June, 1882 in the modest two-story house of the Public Archive, on Rua dos Ourives No 1. Next door, on the second floor, was the Imperial Academy of Medicine. During the urban reform of Rio de Janeiro it was transferred to Avenida Central. The first defender of the founding of polyclinics in Brazil was Pacífico Pereira, professor at the Medical School of Bahia. From the beginning, the idea was associated with a project to modernize the teaching of medicine. In 1877, Pereira published several articles in Gazeta Médica da Bahia on the usefulness of the Viennese institution. In Rio de Janeiro the project was defended by Dr. Moncorvo de Figueiredo in his book Leçons sur les maladies de la peau, by M. Kaposi. Many detailed notes describing certain points of disagreement between the French and the Viennese schools were added to the 1881 edition.

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58 Due to his intense activity, he became First Secretary in 1889, President in 1897 and, later, Perpetual President. He was also responsible for setting up the Museum of the National Academy of Medicine. (Azulay, 1974, p.221).

59 *Je désire faire une remarque à propos de la propagation de la trichophytie: elle debute souvent par les chiens et il arrive très fréquemment qu’elle atten une enfant qui joue avec un chien, puis qu’elle se propage de cet enfant à d’autres enfants de la même famille. Aussi est-il indispensable, dans les familles, où on rencontre un enfant trichophytique, d’examinar les chiens qui vivent dans la maison, car s’ils sont trichophytiques, ils peuvent encore transmettre la maladie à des enfants restés indemnes ou, par des reinoculations successives, prolonger la durée de la maladie chez ceux qui étaient déjà atteints.*

60 *J’ai observé la lèpre à Rio de Janeiro e à Saint-Paul au Brésil, et j’ai pu constater qu’elle n’était pas une maladie des villes. La misère n’en est pas non plus la cause en être attients.*

61 *Quand on voit se résoudre un tubercule lépreux, il faut toujours craindre qu’un autre ne survienne. Il semble faire de veritable embolées lépreuses. Aussi la médication interne est-elle préférable au traitement externe, pour empêcher des faits de cet ordre.*

62 His speech is transcribed below in this same volume. Ricord and Hardy, presidents of the congress, also spoke, as well as Henri Feuillet, its secretary. Other speakers were Kaposi, the delegate from Vienna; Malcolm-Morris, from London; Mansouret, from Moscow; De Amicis, from Naples; Unna, from Hamburg; Wetterazwski, from Warsaw; Olavide, from Madrid; Zambaco-Pacha, from Constantinople; and Kalinder, from Bucharest.
63 BR. MN. Fundo Adolfo Lutz, caixa 21, pasta 254, maço 3.
64 The other correspondents were Drs. H. G. Brooke, in Manchester; Dubois-Havenith, in Brussels; E. von Düring, in Constantinople; Henri Fournier, in Paris; Funk in Warsaw; Emil Kroug, in Hungerburg bei Narwa; E. Pontoppidan, in Copenhagen; S. Róna, in Budapest and P. Tommasoli, in Modena.
65 These articles were the object of a brief commentary by Unna in a review that focused more on articles about the influence of tuberculosis on leprosy, published in the Journal of the Leprosy Investigations Committee. About Lutz, Unna only said that he “discussed some interesting complications of leprosy, especially syphilis. Leprosy and syphilitic eruptions are easily diagnosed in the patient. The case of a patient with a cancroïd on a leprous base is also discussed” (Baumgarten, 1893, p.271).
66 Zilberberg (1938), the main source used here, was assistant physician at the 3rd dermo-syphiligraphic clinic of Santo Amaro Hospital in Recife. He refers to the dissertation on the disease defended by Flaviano Silva at the Medical School of Bahia, describing six cases. On Lutz-jeanselme nodules, see also Portugal (1944).
67 Zilberberg (1938) affirmed that a great deal of research was being done in Brazil in order to discover the parasite responsible for the syndrome. He himself tried, unsuccessfully, to cultivate material from a node. He believed that the nodules had a fungal origin, but only in a minimal percentage; syphillis and bubba were, in his view, more responsible for their etiology. Pinoy, Le Dantec and other authors questioned the existence of a pathogenic fungus. Le Dantec agreed on an etiology where syphillis was responsible together with other affections: mycoses, bubba, filariasis, etc.
68 These subjects will be examined in detail in the books of this collection dedicated to Lutz’s work in entomology and helminthology (Volume II, Books 2 and 3) and as director of the Bacteriological Institute of São Paulo (Volume IV, Book 1).
69 Walter Seng was born on 23 May 1873 in Vienna, Austria, and died on 28 June 1931 in São Paulo, SP. He married Mercedes Lisboa there on 26 October 1901. He is considered a pioneer of neurosurgery in São Paulo and was the first clinical director of Santa Catarina Sanitarium, the city’s oldest private hospital. Rua Dr. Seng, in Bela Vista neighborhood, is named after him.
70 He taught General and Special Zootechnics and Veterinary Medicine and Hygiene of Domestic Animals in the agronomy course. When the course was closed, Hottinger began to teach Biochemistry, Physical Chemistry and Electrochemistry in the Chemical Engineering course. “He was particularly concerned with the study of general processes to combat illnesses typical of our environment. Among his discoveries, the best known among us is the use of oligodynamic action of metals, with the use of colloidal silver to sterilize water. This discovery became known as the Salus sterilization process.” (Webpage of the Polytechnic School of São Paulo, consulted on 27 Feb. 2004: www.poll.usp.br/Organizacao/Historia/Historico/1893-1900.asp.)
71 Lutz (1908, p. 24) mentions cases observed by Splendore, of which more will be said; one described by Breda, who only knew the literature indirectly; and a case presented by Dr. Baldomero Summer at the Second Latin-American Medical Congress (Buenos Aires, 1904) with a probable diagnosis of bubba, “a word that designates a tropical raspberry or yaw… mistakenly taken as a synonym for syphilis.”
72 According to Fialho (1946, p.12), Buschke (1927) attributes the invention of the term to Naegeli, and Floriano de Almeida (1939) to Frank.
73 “The first human case of sporotrichosis was described in 1898 in the United States, by Schenck; two years later, L. Hetkoen and C. F. Perkins established a species now known under the name Sporotrichum schenckii” (Fonseca Filho, 1974, p.80).
75 In Wernicke’s laboratory, Posadas became skilled in pathology and microbiology. Posadas and Wernicke were the first to record a case of rhinosporidiosis, whose etiological agent is still uncertain.
76 Eliseo Canton proposed that the microorganism be called Posadasia esformine, but the name did not hold because of the work done by US researchers during the same period (Fialho, 1946, p. 13).
77 Fialho (1946, p.15-6). In a retrospective study quoted by Fialho, Rixford (1931) said that, at that time, in São Francisco, only two physicians were equipped to do bacteriological research: Mouser and Douglas Montgomery. Both examined materials from his case. The cultures remained sterile and a fungus grew in Montgomery’s tubes that he threw away as a contaminant, though it was a Coccidioides. Rixford and another Californian doctor, Dr. Thome, thought the agent of the mysterious disease was a protozoan and sent materials extracted from their patients to a well-known protozoologist in Washington, Dr. Charles W. Stiles, who suggested to Rixford and Gilchrist that they call their supposed protozoan Coccidioides immittis; Stiles called Thome’s Coccidioides piogenes. (Fialho, 1946, p.13; Fonseca Filho, 1974, p.80).
78 Oidium coccidioides, according to Fialho (1946, p.15).

Fialho (1946, p.41) considers this paper confusing, with traces of bad quality, because of the contamination of Splendore's cultures, at least the one that looked like Oidia. His opinion contrasts with that of Lacaz (1960, p.242), who considers all of Splendore's work "very well documented."

His interest was so great, Fonseca Filho (1974, p.91) recalls, "that he even taught a course on it in 1914, to a small group of students I was privileged to be part of, in the 19th infirmary of the General Hospital of Santa Casa de Misericórdia do Rio de Janeiro, which held the chair of Dermatology of the Faculty of Medicine."

He had not seen the gemmulation that Vianna had observed in pus, making chains of 4 to 5 individuals (Fialho, p.44). According to Fialho, Gaspar Vianna was right.

When the First World War broke out, Ficker had to return to Europe. The crisis of the Bacteriological Institute culminated in its closure by decree 3.876, of 11 July 1925 (Lemos, 1954; Stepan, 1976, p.142-3). We return to this subject in Volume IV, Book 1, of the Obra Completa de Adolpho Lutz.

Almeida took his degree in 1924 from the Faculty of Medicine and Surgery founded in São Paulo in December 1912. Supervised by Ernesto de Souza Campos, chaired professor of microbiology and immunology, he was an intern with Fonseca Filho at Instituto Oswaldo Cruz, and when he left he took fungus cultures to teach medical mycology at the Faculty in São Paulo. He then began to study the etiological agent of Lutz's disease, with Souza Campos (Lacaz, 1983, p.266; on the Medical Faculty see Casa de Oswaldo Cruz, www.dichistoriasaude.coc.fiocruz.br).

Fonseca Filho (1974, p.83-8). According to Lacaz (1983, p.265), it was first described by the German physician Max Rudolph, under the name Figueira.

Almeida’s work was so far, in the 1920s and early 30s, that it was not widely recognized at the time. The first description of the disease was by the German physician Max Rudolph, under the name Figueira.

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Fifty-two were from the Federal District, 13 from Minas Gerais, 8 from São Paulo, 2 from Bahia, and one each from Rio Grande do Sul and Espírito Santo. Physicians from the city and state of Rio de Janeiro remained a majority until the 1970s (Carneiro, 2002, p.55-6).

The report on this trip will be reproduced in another book of the Obra Completa de Adolpho Lutz.

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1886

MONATSHEFTE
FÜR
PRAKTISCHE DERMATOLOGIE.

UNTER MITWIRKUNG VON
H. VON HEBRA IN WIEN UND MAX BOCKHART IN WIESBADEN

REDIGIERT VON
P. G. UNNA
IN HAMBURG.

FÜNFTER BAND.
1886.

HAMBURG UND LEIPZIG,
VERLAG VON LEOPOLD VOSS
1886.