Prefácio / Preface
Adolpho Lutz, helminthologist

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As a physician and naturalist, Adolpho Lutz was keenly interested in everything that had to do with biology and pathology. This interest of course extended to helminths and to human and animal helminthiases. His 1885-1901 publications are primarily focused on ancylostomiasis, ascariasis, and taeniasis, in addition to some parasites of domestic animals. From 1917 to 1934, he concentrated mainly on *Schistosoma mansoni* and schistosomiasis, while still continuing to publish articles and notes on a broad range of topics and on many other species of helminth parasites of humans and animals.

He published articles on certain aspects of ancylostomiasis, along with one quite complete study that includes a meticulous description of all aspects of the parasite and the disease (1887-89).

It should be remembered that until the mid-nineteenth century, the relationship between Ancylostomidae and anemia was a subject of much debate. The discussion was only settled when it was shown that anthelminthic treatment could cure anemia; this was possible since some patients presented the parasite but no anemia (discussed later), and visa versa.

Lutz undertook a thorough review of the literature, in which he commented on each author’s contributions and also described in detail each stage of the life cycle of the helminth, from formation of germinative cells and their fertilization to the egg stage and through to infection of new hosts.

Lutz described adult worms in great depth. He also explained their pathological action, clinical presentation, diagnosis and treatment, epidemiology, and means of control.
His information was extremely precise, down to the illustrations that accompanied his publications. Based on his personal observations, autopsies, and experiments, he advanced upon or proved what other authors had stated.

Through his autopsy work, he ascertained that Ancylostomidae attached to the intestinal mucous, damaged it, and fed off blood. He measured the blood loss caused by each worm; by counting the eggs excreted in the feces, he calculated the helminth load of patients.

A stool exam to look for helminth eggs, based on dilution and sedimentation of a sample, is still called the “Lutz method” today. This was how the Brazilian scientist demonstrated the method for quantifying the excretion of eggs.

The articles now being republished – many for the first time in Brazil – attest to the true value of Lutz’s scientific work.

Back when these papers were first published, however, Lutz had no way of knowing certain facts that were discovered only later. For example, ancylostomiasis manifests only after the patient has used up his or her hepatic iron reserves (i.e., after some months). The level of these reserves depends on the relation between the quantity of iron and proteins in the patient’s diet and blood loss caused by the parasites, in people who are generally malnourished.

Nor did anyone know that Ancylostomidae larvae enter through the skin. Lutz described the infection as if the only way to acquire it were oral, by drinking contaminated water or by touching your mouth with your hands after first soiling them in feces-contaminated dirt (particularly a problem with children).

Lutz’s preventive measures included never defecating on the ground but only in latrines, and drinking only filtered or boiled water or water that had been left to sediment for a long while.

At that time, it was known that schistosomiasis could be contracted through the skin. Lutz provided a fine description based on experiments with laboratory animals.

He stated that the parasite load is acquired through contact with the surface waters of endemic foci, and that it increases in step with the
frequency of such contact or with how much of the body surface is exposed, especially when taking baths or swimming. He also indicated which times of the day carried greatest risk, since cercariae start to be excreted well after daybreak (coinciding with the hottest times of the day).

Preventive measures should therefore include attention to these facts, along with promotion of educational campaigns and sanitation programs that would prevent fecal pollution of the ground and water.

Lutz had received excellent medical training in Switzerland and had interned at laboratories in France, Germany, and England. He also practiced medicine for six years in Limeira, São Paulo. His writings reflected his concern with the clinical presentation of diseases and offered thoroughgoing analyses of each symptom, aimed at differential diagnosis vis-à-vis other nosological entities. But he emphasized how important lab exams were in confirming a diagnosis of intestinal helminthiases, specifically through parasitological examination of stools.

He was likewise concerned with the geographic distribution of endemic diseases. He first indicated that schistosomiasis was endemic to the states of Northeast Brazil and then to the state of Bahia (where Pirajá da Silva discovered the disease in 1908), dependent upon the presence of Biomphalaria glabrata (then called Planorbis olivaceus Spix) as the intermediate host. In 1917, he offered experimental proof of the development of larval forms of Schistosoma mansoni in this species of freshwater mollusk, from miracidia through the excretion of cercariae.

Extremely comprehensive, Lutz’s 1918 paper covered historical background as well as scientific publications through that year. He provided a wealth of details and illustrative drawings to describe the morphology of Schistosoma mansoni throughout all phases of its life cycle, distinguishing it from S. haematobium. He also included an exhaustive description of the process by which mollusks are infected and how the parasite develops in invertebrate and vertebrate hosts, for which he offered experimental proof.

With the same painstaking attention to meticulousness, this paper also addressed the pathogeny of schistosomiasis and its clinical presentations, possible complications, and so on.

He based his conclusions regarding pathological anatomy on his observations of autopsies of humans as well as of animals that had been infected in the laboratory and then sacrificed following different lengths
of time. He compared his data with the medical literature, including information on *S. japonicum*.

His 1919 article addressed prognosis, treatment, and prevention of schistosomiasis as well.

During later field studies in Minas Gerais (1933), he confirmed that the endemic area extended southward and that another mollusk – *B. straminea* (then called *Planorbis centimetralis*) – might be responsible for transmission.

He tried unsuccessfully to infect *B. tenagophila* (= *P. tenagophilus*) and other freshwater mollusks.

He began studying ascaridiasis in 1888. Much was already known about this infection, and Lutz focused on conveying to practicing physicians what was already known.

His own clinical experience included the analysis of a case of intestinal perforation autopsied shortly after the patient’s death. The case occurred on a plantation where slaves were heavily infected by the parasite.

He then analyzed the movement of *Ascaris* and its migrations, complications, and clinical presentations.

With the same purpose, he reviewed the pathology of strongyloidiasis, trichocephalasis, oxyuriasis, and taeniasis.

Lutz tested and evaluated the anthelminthic treatments then available, and later replaced by modern drugs. In 1888, he was responsible for introducing thymol in the treatment of taeniasis.

Published in journals in Brazil and abroad, the wealth of information gathered by Lutz in the field of helminthology was even more impressive given the limited technical resources then available for use in research.

Lutz passed away in 1940.

Innovative research technology like the electron microscope, the scanning electron microscope, biochemistry, and molecular biology were only to appear in the 1970s or later.

The most efficacious tools employed by Adolpho Lutz were his remarkable, creative mind, insatiable curiosity, dedication to his work, and keen interest in natural phenomena and medical issues, for which he always sought practical solutions.
He was inarguably one of the greatest figures in Brazilian science and a model researcher for new generations of physicians and biologists. We highly recommend the reading of his publications.

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