

100 Years of Chagas Disease: A Continuing Public Health Challenge

Simone Petraglia Kropf

Casa de Oswaldo Cruz/Fundação Oswaldo Cruz
(Rio de Janeiro, Brazil)

Global Health Histories Seminars
Tropical diseases: lessons from History

October 7, 2009, WHO, Geneva



- Chagas disease: the historic and social framing of a scientific-medical object and a social object
- ‘The disease of Brazil’: symbol of a ‘diseased country’ and of the science that would ‘redeem’ it
- Local dimension of tropical medicine in Brazil



The beginning of a 'new century': science as a key element of progress



Works of the urban renewal of Rio de Janeiro (1902-1906)

Photo: Augusto Malta.



Oswaldo Cruz: the 'sanitizer' of Rio de Janeiro

1900: creation of the bacteriological Institute of Manguinhos (Oswaldo Cruz Institute)

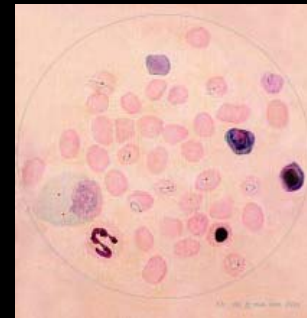
1903: Oswaldo Cruz's campaigns to fight yellow fever, smallpox and bubonic plague in Rio de Janeiro,

1897-1903: Carlos Chagas' course at Rio de Janeiro Medical School.



Central Avenue: symbol of the 'modern' capital.

Museu Histórico Nacional Archives.



Carlos Chagas' MD thesis on haematological aspects of malaria, 1903. Picture of patient's blood sample.

COC Archives



Carlos Chagas' training in malaria (1905-1908)

- June 1907: Chagas was appointed to fight a malaria epidemic that halted the extension works of Central do Brazil Railway in Northern Minas Gerais



Chagas (the second on the left) at a building of the Central do Brazil Railway in Lassance
COC Archives.



Central do Brazil Railway train. 1907

Source: Gerdodetti, Cornejo (2005).

The discovery of the *Trypanosoma cruzi* (1908)



Carlos Chagas (the first on the left side) and engineers in Lassance. On this occasion he was informed of the existence of the *barbeiros* (kissing bugs) in the rural huts of the region. COC Archives.



Pictures of the *barbeiro* and of the evolutive stages of *T. cruzi*. Published by Chagas in 1909 in *Memórias do Instituto Oswaldo Cruz* journal.

The discovery of a new tropical disease (April 14, 1909): a 'great feat' of Brazilian science



Carlos Chagas tending Rita, one of the first acute cases studied in Lassance.

For many years this girl was considered to be Berenice, the first case of the new trypanosomiasis

COC Archives.



Schaudinn Prize diploma, bestowed on Carlos Chagas by the Hamburg Institute for Tropical Diseases, Germany.
Hamburg, June 22, 1912

The first studies in the 1910s

- Clinical picture: acute and chronic phases; endocrine, neurological and cardiac disturbances
- Endemic goiter as main clinical sign of the disease and of its vast extension in the country



Chagas at his laboratory at the Oswaldo Cruz Institute



A sufferer of goiter,
considered to be a case
of Chagas disease



Histopathological data on the new
trypanosomiasis

Published in 1911 in *Memórias do Instituto Oswaldo Cruz* journal by Gaspar Vianna, Chagas' collaborator

The discovery of an unknown and poor country: rural Brazil at the national debate

- A disease deeply linked to poverty in the Brazilian hinterlands
- Tropical medicine in Brazil: science for the benefit of the national progress



Sick people at a hut typical of rural areas in Brazil
COC Archives.



The 'discovery' of the *sertanejos* (people from the hinterlands).
Source: *O Malho* magazine, 1919.

Controversies

COC Archives.

- 1915/1916, Argentine: criticism about the correlation with endemic goiter and the geographic spread of the disease
- Chagas' reply: endemic goiter as an issue open to discussion; new emphasis on the cardiac aspects
- 1922-1923, Brazil: polemics at the National Academy of Medicine
- Scientific doubts, nationalistic debate, personal rivalries
- An epoch of uncertainties...



The impact in the press.
'The debates of science',
A Noite newspaper, 1923



Chagas at the Oswaldo Cruz
Institute with the National
Academy of Medicine's
commission charged to
evaluate his studies, 1923

1930s: Salvador Mazza and the research in Argentina



Salvador Mazza (first on the left side) at the 9th Meeting of the Argentinean Society of Regional Pathology in Mendoza, 1935. The Brazilians Emmanuel Dias and Evandro Chagas were present at the event



Cecilio Romaña, E. Dias and João Carlos Pinto Dias



The Romaña's sign

The continuity of research in Brazil after Chagas' death (1934)



Emmanuel Dias (1908-1962) and Evandro Chagas (1905-1940), the main disciples to continue researches on Chagas disease at Manguinhos from the 1930s on COC Archives.

The Bambuí post: a critical contribution for the scientific and social recognition of the disease

- A new clinical picture: the chronic chagasic cardiopathy as the principal clinical manifestation of the disease
- The search for a prevention method: the gamexane (BHC) to fight the *barbeiros*
- 1950: the first campaign with insecticides in dwellings (Uberaba)

COC Archives

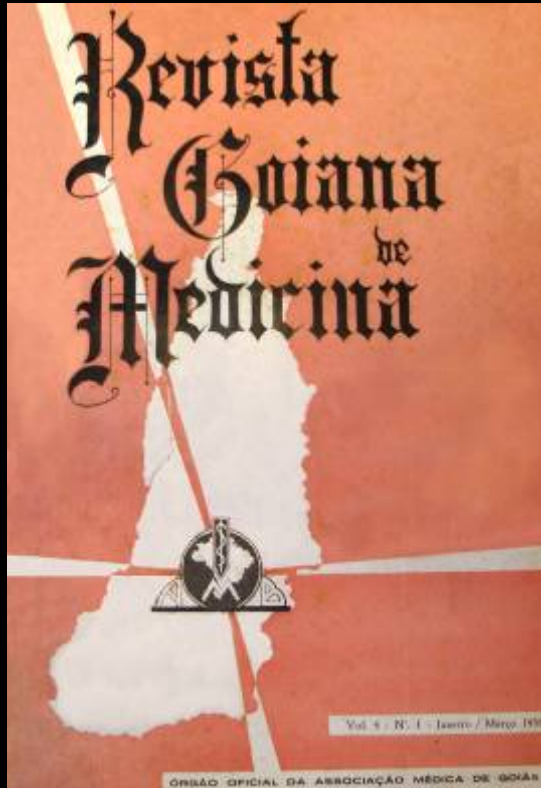


E. Dias tending a resident in Bambuí



E. Dias spraying insecticide in a dwelling in Bambuí

The alliance with the physicians from the hinterlands: the development of Central Brazil



The medical journal of Goiania, created in 1955.

We see the map of the state of Goiás and the site where the new country's capital Brasília was being built



7th Meeting of the 'Central Brazil Congresses'. Uberlândia, Minas Gerais, 1955.

Chagas disease was one of the main themes discussed at those meetings. On the second line, Joffre Rezende (the first on the left), who proposed the digestive form of Chagas disease
Courtesy Dr. Joffre Rezende.

The mobilization of Latin-American physicians and international organisations



Distribution of Chagas disease in the Americas. Map elaborated by Emmanuel Dias, 1954

INSTITUTO OSWALDO CRUZ
Centro de Estudos e Profilaxia de Moléstia de Chagas.

Bambu, em 30 de março de 1957.

Dr. Carlos Alberto Alvarado
Oficina Sanitaria Panamericana
Zona II
Calle de Roma 36-B
Mexico 6, DF

Prezado amigo Alvarado:

Torno a reler sua interessantíssima carta de 20 de fevereiro do ano passado, que chegou precisamente numa época em que me preparava para fazer com a doença de Chagas aquilo que a COMEP tem por escopo fazer em relação ao impaludismo. Com efeito, em março de 1956 dei início a um programa ensaio para testar um novo esquema de aplicação de BHC, com o qual pretendo conseguir eliminar totalmente os triatomíneos das casafas. Isto foi o que de fato obtive em 68 habitações tratadas com intervalo aproximado de 30 dias, que se baseou no tempo de eclosão dos ovos. Sendo justamente sensíveis ao inseticida as larvas de primeiro estágio dos barbeiros, não era de admirar que morressem elas rapidamente ao segundo expurgo; não só as larvas recém nascidas, como os eventuais remanescentes.

Diante do êxito obtido programei e pude executar com a colaboração da Comissão do Vale do São Francisco, diretor Superintendente o dr. Assis Sciffa e do Departamento Nacional de Endemias Rurais, diretor Geral Dr. Mario Finotti, uma campanha de erradicação em todo este município de Bambuí, que por sinal é dos maiores entre os municípios do Alto São Francisco, no qual os únicos transmissores da doença são o *Triatoma infestans* e o *Panstrongylus megistus*. Junto a esta o recorte do "Jornal do Comércio" de 2 de dezembro de 1956 com o texto da conferência que promovi a respeito desta campanha na Associação Nacional de Medicina. Agora nos agora go terceiro e último período da mesma, na qual estamos revendo toda a área de trabalho em busca de focos remanescentes que são logo extirpados.

Letter from E. Dias to Carlos A. Alvarado (Pan-American Sanitary Bureau) claiming on a program to eradicate triatomines from the Americas. Bambuí, 1957

Medal of the First International Congress on Chagas Disease. Rio de Janeiro, 1959

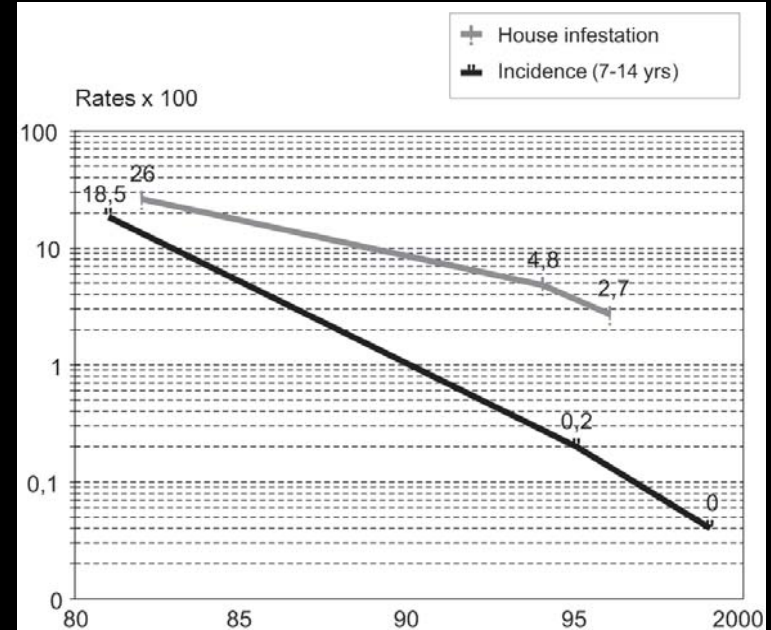


New paths for combating the disease



Fumigation of insecticide against the *barbeiros* within the National Program of Chagas Disease Control (initiated in the 1980s). Mato Verde (MG), 2007

Courtesy Dr. Liléia Diotaiuti.



Impact of the Southern Cone Initiative (1991) on the elimination of Chagas disease transmission in Brazil, 1982-1998
Published in Dias (2007).

New paths for research: the institutionalization of a scientific community



The Annual Meetings on Chagas Disease. Zigman Brener (standing), and, among the presents, Carlos Morel, Wanderley de Souza, Lain Pontes de Carvalho, Ruth Nussenzweig
Zigman Brener Archive.



3rd Meeting of the TDR Experts Committee on Chagas Disease Epidemiology. Geneva, 1980. From the left, sitting: Arquimedes Canese (Paraguay), Aluizio Prata (Brazil), Rolando Sifontes Ferrer (Venezuela), Gill Thring (Secretary). Standing: José Rodrigues Coura (Brazil), Benjamin Gilbert (Brazil), Robert Tonn (OSP, Washington), Peter de Raadt (WHO, Geneva), Alvaro Moncayo (Colombia), Hugo Schenone (Chile) and Hugo Lumbreras (Peru)
Courtesy Dr. Alvaro Moncayo.

The Trypanosomatid Genome project.
Science, 15 July 2005

Courtesy Dr. Carlos Morel.



New challenges in the 21th century



The disease in the Amazon region: cases of vectorial transmission outside of the home, by means of human entry into forests and contact with wild triatomines, as occurs with *Rhodnius brethesi* in the case of extraction activities relating to the *piçava* palm tree.

Courtesy Dr. José Rodrigues Coura.

The need for treatment.

DNDi poster.

Source: <http://www.treatchagas.org/>



RESEARCH ON NEGLECTED DISEASES
TIME TO TREAT
CHAGAS DISEASE!

Eyes on the future



Children of Lassance, 2009

Photo: Simone Kropf

Some lessons from history

- Science: innovative knowledge / solutions for social problems
- 100 years of Chagas disease: a collective process undertaken inside and outside laboratory

Science and society



Carlos Chagas' microscope



Residents in rural area in the state of Rio de Janeiro. 1920s.

Past and present: no more *barbeiros*, mas still the poverty...



Hut in Lassance, 2009

Photo: Simone Kropf.



Hut in Lassance,
1910s.

Thank you!



Children from Lassance showing their school work: miniatures of houses made of recycled materials. Lassance, 2009

Photo: Simone Kropf