

## Implication of *Phlebotomus* Sand Flies as Vectors of Bartonellosis and Leishmaniasis as Early as 1764

**Abstract.** *A written account implicating Phlebotomus sand flies as vectors of Carrion's disease and cutaneous leishmaniasis in Peru was published by Cosme Bueno in 1764. Bueno's report precedes other publications implicating sand flies in the transmission of human pathogens by nearly a century and a half.*

Evidence that *Phlebotomus* sand flies transmit *Bartonella bacilliformis* (Carrion's disease) and *Leishmania* spp. remained circumstantial for many years. During the present century these minute flies were initially incriminated as vectors of Carrion's disease in 1913 (1). *Bartonella bacilliformis* was transmitted experimentally in 1928 to *Macaca mulata* by exposing the monkey to wild-caught sand flies collected in an area where the disease was endemic (2). The first published reports suggesting *Phlebotomus* sand flies as potential vectors of human pathogens

(*Leishmania tropica* and sand fly fever virus) appeared in 1905 (3-5).

A recent note by Gooneratne (6) quoted an 1884 report by Mitford (7) on cutaneous leishmaniasis (Aleppo boil) in the Middle East; the disease was thought to be caused by "some mineralogical impregnation of the water, or some minute insect that inhabits it." Although in this case the possible participation of some insect was considered, its exact role in the transmission of the Aleppo boil was not clearly indicated. The first solid evidence that sand flies were involved in the epidemiology

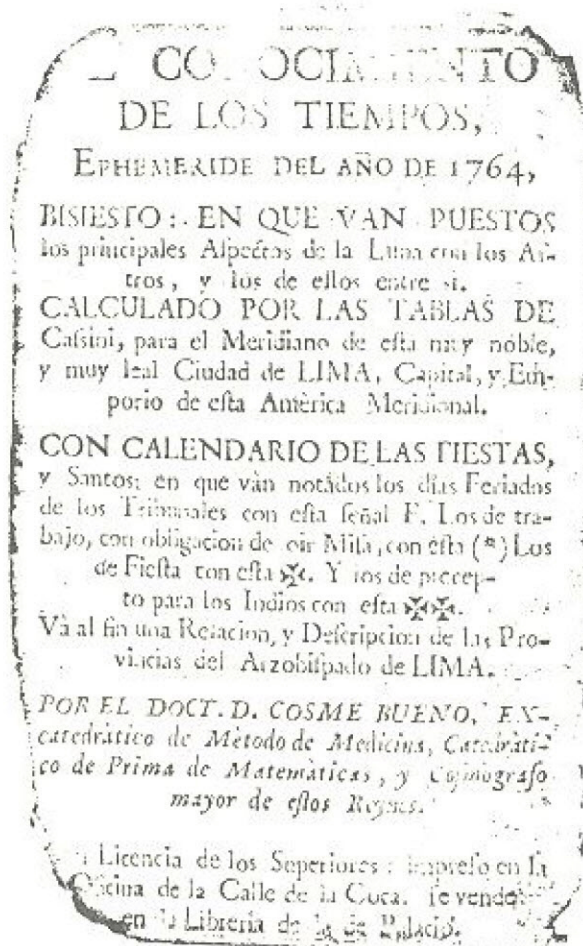


Fig. 1. Front cover of *El Conocimiento de los Tiempos*, a kind of almanac published in Lima, Peru, under the direction of Cosme Bueno during the 18th century. A single copy of this publication is available in the Biblioteca Nacional, Lima. This copy was partially burned during a fire on 10 May 1943.

