

NITROGEN FUMIGATION OF 56,000 INSECT-INFESTED BOOKS IN THE HISTORICAL LIBRARY “FOUNDATION OF FRANCKE” IN HALLE, GERMANY

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In the past time there was in Halle/Saale (Germany) a centre of the enlightenment (Aufklärung) and the piety in Europe so called the „Foundation of Francke“ (Francke'sche Stiftungen). In the library of the “Foundation of Francke” are about 56,000 volumes especially from the 17th until the 19th century.

As the renovation of the “Foundation of Francke“ started there was recognised that a lot of books were infested by different material- and stored-product insects. Through a good teamwork between the direction of the “Foundation of Francke“ in Halle, the management office Ziegemeier in Halle, the Rathgen Research Laboratory in Berlin, the Material Testing Centre Brandenburg in Eberswalde and the Company Binker Material Protection in Schwaig/ Nuernberg a nitrogen fumigation of all volumes could be organised as a one step measurement against the insect attack.

56,000 books were deposited on shelves in one room and carefully covered with a special foil to build one chamber. That's why it was possible to arrive within a very short time after starting with the nitrogen fumigation the very low content of the rest of oxygen in the chamber of about 0.01 %. The temperature was constant 22 - 23 °C.

For the biological demonstration of the measurement two new test methods with stored-product and wood-destroying insects were involved. Following test insects were used: *Stegobium paniceum*, *Dermestes* sp., *Tenebrio molitor*, *Anobium punctatum* and *Hylotrupes bajulus*. The different stages of these test insects were installed within of imitations of books and wood beams. 135 imitations were placed on the shelves in the fumigation chamber. Every week one part of the treated test insects inside of the book and wood beam imitations were examined to determine the mortality of the organisms. After four weeks all stages of the different test insects were killed by the nitrogen fumigation.

On the 15th of June 1998 the historical library of the “Foundation of Francke“ could be opened by the board of trustees (Kuratorium) in Halle, Germany.