

## **Insect Pests in Archives**

Documents and books are easily damaged by insect pests; moths, woodworm and other beetles, booklice and silverfish can destroy text and bindings, leaving a tattered, illegible mess. Records are seldom kept completely sealed, and there is always the possibility of insects setting up house, especially when they are left undisturbed season after season. A future discoverer may get an unpleasant surprise!

The best way to prevent insect damage in a collection is good housekeeping. By keeping shelves and boxes clean, and by periodic inspection of the documents themselves, infestations can be caught early, or avoided altogether; pests don't like lively neighbourhoods. Look on the sills of closed windows each spring--bodies of small reddish-brown beetles may signal the presence of woodworm. Silverfish are a sure sign that conditions are unsuitably damp for documents; they graze on mildewed paper and leather, sometimes right through the surface. Correct the damp problem, and the silverfish will go, too. Booklice are quick, tiny insects that feed, like silverfish, on microscopic moulds and carbohydrates; again, if you remove the damp and mould, the booklice will take care of themselves.

It's easy enough to brush papers and vacuum boxes; but how to get rid of insects that have settled into the crannies of a book? For many years, the answer to this problem was fumigation: the infested volumes would be put in a closed environment with a chemical such as mothballs (paradichlorobenzene), the vapour of which killed the insects. This took weeks to act, however, as it acted only on the grubs and adults--eggs and pupae don't breathe! Some chemicals could fade inks or otherwise damage documents, and had to be used very selectively. Fumigants were disagreeable and often poisonous; they usually have penetratingly unpleasant smells. 'Inert' fumigants like carbon dioxide are less harmful, but they still take time, and there's still a danger of suffocation.

In the last decade, research into alternative methods of controlling insect pests ranged from the use of ultrasonic vibration, to gamma radiation. Perhaps the most promising non-chemical process is freezing. Very low temperatures destroy all stages of insect development, while non-living materials like paper and cloth, which have less water in their structures, appear to be unharmed. It works more rapidly than chemical fumigants, and with minimal danger to staff. Freezing has also been used as a means of keeping wet material from going mouldy after a fire or flood, though only as an emergency measure. Many conservators feel that it is not a suitable treatment for parchment and vellum in any case, and it is certain that more research is needed on long-term effects. Some materials may prove to be vulnerable after many years, or some insects immune.

Cotton or wool can also be treated this way: moths in woollen clothes can be killed in a domestic freezer. Other materials, such as wood, might require more specialist treatment.

Freezing and thawing material for disinfection takes care and judgement: books should be carefully sealed into air-tight parcels before freezing, and these should not be opened until they are returned to room temperature, to avoid condensation and moisture damage. Insect remains should be left a while to dry out before removal; when newly thawed, they are soft, and might smudge if brushed off.

It does appear to be the least harmful, and most successful, method of killing inaccessible pests. It is not yet a common facility in record offices, but at least one--Surrey Record Office, in Kingston upon Thames-- operates a freezer as a commercial facility. If you would like advice on freezing, or where to take infested material, ask Mrs. Debby Rohan, the Cambridgeshire Archives' conservator; she will be happy to provide it.