

FUMIGATION CHAMBER AND AIRING ROOM COMPLEX AT VILLAWOOD

Timothy Walsh and Neville Corbett

'It would be ideal if all new items could be vacuum fumigated as is done at the Huntingdon Library, the National Archives and some other libraries . . .' So said a contributor to the 1971 Boston Athenaeum's Seminar on Conservation.¹ It is hard to disagree with this notion that, to prevent mould and pest damage to archival and library material, fumigation should occur before items are physically stored within an archival or library repository. To date this has never been possible in the Australian Archives because, although the problem of accessioning undesirable guests into custody with the records has been recognised, fumigation facilities have never been available. The practice has been to treat whole repositories annually with a commercial chemical such as dry malethion fog and then to deal with isolated severe outbreaks of mould and pests by using, say, the National Library's fumigation chamber.

The impetus to set up our own fumigation chamber came very largely from the twin disasters of the Brisbane Floods of January 1974 and the Darwin cyclone of December 1974.² The reaction by archivists and conservators to these natural occurrences are by now well known as are the effects of moisture on paper, leather and other archival material.

These disasters, and other lesser ones such as flooded basements and leaking roofs and sprinkler systems which seem to occur with almost indecent regularity, demonstrated how ill prepared some archival repositories are for natural and man-induced disasters.

Following Cyclone Tracy all the records in archival custody were flown to Sydney in R.A.A.F. Hercules and then to Brisbane where a temporary 'Darwin' office was established. We were lucky in being able to use the Queensland State Archives' fumigation chamber and fortunately little mould damage occurred.³ This led the then Regional Conservator at our Villawood N.S.W. repository, Neville Corbett, to suggest that not only a fumigation chamber but also an 'airing room' should be installed in the repository. The idea was that as mould-affected records should not enter the repository until they had been treated therefore what was needed was a light and airy room, separated from the main air conditioning, where records could be stored until fumigated or, if in a small quantity, treated in a thymol cabinet and dusted off.

In addition it is forecast by Neville Corbett that in future we will see the Vacuum Fumigation Chamber used with a suitable alkaline gas (Magnesium Methoxide in propellant for example) to de-acidify papers en masse, so that the three bugbears of mould, insects and acidity will be handled in the one operation.

In late 1975 and early 1976 an architectural brief for the proposed airing room and fumigation chamber to be built at Villawood was

completed by Repository Management staff. The initial drawings were based very largely on Neville Corbett's ideas. During 1976 when frequent discussions with the Department of Construction took place, modifications were made but only in matters of detail. The original idea to provide a fumigation chamber and airing room was maintained.

Fumigation Chamber

The chamber to be installed will be of Australian manufacture of about 450 cu. ft. capacity. Specifications will provide for types of fumigant:

1. Fumigas 10—a non-explosive gas with an ethylene oxide content sufficient to treat mold, silverfish, etc.
2. Sterigas 27—containing three times the amount of ethylene oxide as Fumigas 10 which is capable of complete sterilisation and eradication of all bacteria.

The chamber is to be housed in a building separate from the main repository area. It will be connected to the main processing reception area and the airing room by a covered walkway. Within the same structure will be two store rooms, for chemicals and flammable liquids. Fixed to the outside wall will be a shower to allow personnel who come in contact with chemicals by accident to wash themselves immediately with water.

Airing Room

The concept is perhaps somewhat more novel than that of a fumigation chamber and for this reason will be dealt with in more detail.⁴ In the architectural brief our needs were described as being for a fairly large, airy room with plenty of natural light in which mould and pest affected records could be laid out for treatment. Fundamental to this idea was the use of natural light, fresh air and very definitely an area *not* connected to the main air-conditioning plant for the repository. Mould spores, insect larvae and so on have to be kept away from the main holdings.

Naturally the airing room had to be easily accessible to the conservation workroom and if possible designed so that it could be seen into from the workroom. This was arranged by placing the Airing Room on the side of the present building immediately adjacent to the workshop and in front of the fumigation chamber.

The importance of an airing room will be immediately apparent to anyone who has experience of being given the material rescued from flood or fire or improper storage. It is important to keep mould or insect infected records out of the main Archives storage areas — especially if they are air-conditioned—yet the material must be dried and supervised and given some preliminary treatment *before* fumigation. It is an easy oversight to design a good modern Archives that is fully air-conditioned and not to make provision for the material to be held prior to fumigation and perhaps to be hosed, or arranged, or dusted.

The fittings in the Airing Room are to be minimal so as to allow as much space as possible for the spreading out of records. They will consist of work benches along the whole of one wall, a sink and a thymol cabinet. It was decided to install a conventional thymol cabinet

for the treatment of small quantities of records and particularly fragile material. If one volume needs treatment it is obviously impractical to put the main vacuum chamber into operation. Air-conditioning of this room was rejected for two reasons, cost and to retain the idea of having fresh air to help dry damp records.

The roof of the Airing Room is to be fibreglass to allow maximum light and the floor will be terracotta tiles to enable it to be hosed down frequently. Outside one wall of the room will be a concrete apron and hose tap to allow records affected by mud to be hosed down. Sliding windows and insect screens will be fitted.

Where the Archives is in the Tropics it may be important to have an airing room on an air-conditioning plant so that drying conditions can be made to prevail. High humidity may not allow fresh air alone to be sufficient.

Design of the fumigation-airing complex

The Australian Archives is lucky to have on its staff a draughtsman, Zirko Nikoloff, and as soon as the basic parameters of the complex had been worked out he drew an initial plan. This, with the architectural brief produced by Repository Management staff in Canberra was referred to the N.S.W. Branch of the Commonwealth Department of Construction. The architects took the plan a stage further, made several useful suggestions, told us what could and could not be done architecturally and took on the responsibility for constructing the complex.

Conclusion

This exercise has been important to Australian Archives for a number of reasons. The natural disasters of recent years demonstrated how lacking we were in the necessary machinery to treat damaged records. We will now at least have a technologically advanced facility in Sydney, which is a good start. The exercise has made us realize just how vital fumigation facilities are to an archives repository and how important it is to consider them an integral element in the accessioning of records. Up till now, fumigation chambers have tended to be seen as an appendage to a building, perhaps installed once other facilities have been completed. In fact we now realize that it is vital to plan fumigation facilities early in the design stage of a new building. In this way, records can be fumigated automatically and so the danger of importing mould spores, insect larvae and eggs, not to mention silverfish and their friends, is minimised. We would now consider it advisable to plan a new building so that the fumigation chamber is the first element completed. This allows materials being transferred from an older repository to the new to be treated before being stored in its new home.

The Australian Archives has in the last few years built new repositories at Sydney, Darwin and Perth. Sydney will be the first to be fitted with a vacuum fumigation chamber although Darwin and Perth have thymol cabinets. In the next decade, it is planned to construct new repositories in Melbourne, Canberra, Hobart, Brisbane and to remodel the existing Adelaide building. We are now firmly committed to installing a fumigation facility in each. An Airing Room is a logical extension to this.

NOTES AND REFERENCES

1. *Library and Archives Conservation*. The Boston Athenaeum's 1971 Seminar on the Application of Chemical and Physical Methods for the Conservation of Library and Archival Materials, 17-21 May 1971, edited by George Martin Cunha and Norman Paul Tucker, Boston 1972, p.137.
2. See 'Recovery of flood damaged documents by the Queensland State Archives' by Lee McGregor and Jim Bruce, *Archives and Manuscripts*, Vol. 5 No. 8, August 1974, and 'Damage to records in Darwin caused by Cyclone Tracy' by N. J. Corbett in *Archives and Manuscripts*, Vol. 6 No. 3, May 1975.
3. For a description of the Q.S.A.'s fumigation facility see 'The Queensland State Archives Fumigation Unit; Ethylene Oxide/Vacuum Fumigation as an aid for the preservation of Archives and Manuscripts' by A. J. Woodhouse in *Archives and Manuscripts*, Vol. 4 No. 3, November 1970.
4. Fumigation of records is dealt with in the major text books on conservation, for example see *The Conservation of Antiquities and Works of Art* by H. J. Plenderleith and A. E. A. Werner, O.U.P. London 1971; *Conservation of Library Materials* by George Martin Cunha and Dorothy Grant Cunha, Second Edition, The Scarecrow Press, Metuchen NJ., 1971; *Conservation and Restoration of Archive Material* by Yash Ral Kathpalia, UNESCO, Paris 1973.

DEACIDIFICATION, LAMINATION AND THE USE OF POLYESTER FILM

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At most European and American institutions, the lamination of manuscripts of archival value (papers which should be preserved indefinitely) has been almost completely abandoned in favour of techniques which are far less damaging to the originals and which leave them completely accessible for any future treatment if it is ever required.

There is ample evidence that lamination without deacidification and alkaline buffering is basically worthless as a preservation technique; and, if it is not already, it must very soon be accepted that all materials to be laminated must be deacidified and buffered with an alkaline salt which in turn must leave approximately 3% buffer-reserve in the paper. But most aqueous deacidification and buffering treatments used at present cannot be relied upon to leave this amount of alkaline reserve in all papers; for papers, differing widely in kind and condition, are receptive in different degrees to the treatment. As an example, the rather commonly-used Barrow's one-solution method, using 2 grams per litre magnesium carbonate, does not leave the adequate 3% reserve in the deacidified papers.

Documents for archival preservation, which are expected to last for hundreds of years after preservation treatment, should *never* be laminated, as there is sufficient evidence now available to eliminate it as an acceptable technique. The alternatives are techniques like polyester film encapsulation which cannot damage the documents in any way whatsoever.

Polyester film is by far the strongest physical support medium available and moreover it is instantly reversible, while all lamination processes need treatment with water and solvents before the tissue and